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PATENT OFFICE NOTICES

Registration to Practice

The following list contains the names of persons applying for registration to practice before the U.S. Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents on or before February 15, 1974.

Glassman, Jeremiah, 712 S. Pitt St., Alexandria, Va. 22314
Hensley, Max D., 3279 S. Stafford, Arlington, Va. 22206
Morse, Wayne A., Jr., 103 N. French St., Alexandria, Va. 22304
Oremland, Lawrence R., 1111 Leader Bldg., Cleveland, Ohio 44114
Sakovich, Michael M., P.O. Box 957, Sta. B., Ottawa, Canada
Toth, Victor J., 11701 North Shore Drive, Reston, Va. 22090
Woodley, John H., 133 Richmond St. W., Toronto, Canada.

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment

Closing of Patent Office on December 24 and 31, 1973

In view of the provisions of Executive Order 11750, issued December 13, 1973, for excusing employees of all executive departments, independent establishments, and other governmental agencies from duty on Monday, December 24, 1973, and Monday, December 31, 1973, and for consideration of those days as falling within the scope of Executive Order 11582 and 5 U.S.C. 5546 and 6103(b), each of those days constitutes "a holiday within the District of Columbia" under the provisions of 35 U.S.C. 21. Any action due in the Patent Office on December 24, 1973, is to be considered timely if taken on December 26, 1973, and any action due in the Patent Office on December 31, 1973, is to be considered timely if taken on January 2, 1974.

RENE D. TEGTMEYER,
Dec. 17, 1973 *Acting Commissioner of Patents.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,025,774, H. G. Bush, ACCESS AND PROTECTIVE COVER FOR VALVES, METERS, MANHOLES AND THE LIKE, **filed** Apr. 12, 1973, D.C., S.D. Calif. (San Diego), Doc. 73-142-S, *Brooks Products, Inc.* v. *Peterson Concrete, Inc. and South Bay Foundry Incorporated.* Defendants perpetually enjoined from infringing said patent, July 17, 1973.

3,072,582, C. B. Frost, POLYETHER-URETHANE FOAMS AND METHOD OF MAKING SAME, **filed** July 12, 1973, D.C. Del. (Wilmington), Doc. 4688, *Olin Corporation* v. *The General Tire & Rubber Company.*

3,201,855, B. F. Hay, ELECTRICAL RESISTOR AND METHOD OF MAKING SAME; **3,206,701**, same, ELECTRICAL RESISTOR; **3,295,090**, same, ELECTRICAL RESISTOR HAVING A CORE ELEMENT WITH HEAT DISSIPATING PROPERTIES; **D. 201,884**, Blake and Rakowsky, RESISTOR HOUSING OR SIMILAR ARTICLE, **filed** June 13, 1973, Ct. of Appeals, Mass. (Boston), Doc. 73-1203, *Dale Electronics, Inc.* v. *R.C.L. Electronics, Inc.* **Same, filed** June 13, 1973, Ct. of Appeals, Mass. (Boston), Doc. 73-1204, *Dale Electronics, Inc.* v. *R.C.L. Electronics, Inc.*

3,206,701. (See 3,201,855.)

3,234,317, H. R. Henderson, SWIVEL COUPLING FOR A COMBINED FLUID CONDUIT AND ELECTRIC CABLE; **3,573,419**, same, CUTTING AND GOUGING TORCH, **filed** July 12, 1973, D.C., N.D. Tex. (Dallas), Doc. CA-3-7401-E, *Arcair Company* v. *James T. Jeter, Jr. et al.*

3,197,710, H. C. Lin, COMPLEMENTARY TRANSISTOR STRUCTURE; **3,237,062**, B. T. Murphy, MONOLITHIC SEMICONDUCTOR DEVICES, **filed** July 29, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1862, *Westinghouse Electric Corp.* v. *Texas Instruments Inc.* Stipulation: parties ordered cause dismissed without prejudice, counterclaims dismissed, July 9, 1973.

3,237,062. (See 3,197,710.)

3,275,161, Davies and Havranek, REFRACTORY, **filed** Aug. 21, 1969, D.C., N.D. Ohio (Toledo), Doc. C69 643, *Dresser Industries, Incorporated* v. *Basic Incorporated.* Cause dismissed with prejudice, July 10, 1973.

3,295,090. (See 3,201,855.)

3,301,010, Levy, Herk, Stahl, and Lawrey, AUTOMATIC FRACTION COLLECTING SYSTEM FOR VAPOR PHASE CHROMATOGRAPHY, **filed** July 16, 1973, D.C., E.D. Pa. (Philadelphia), Doc. C.A. 73-1602, *David M. G. Lawrey et al.* v. *Perkin-Elmer Corp.*

3,115,292, G. S. Ericson, COIL WINDING AND TRANSFER APPARATUS FOR DYNAMOELECTRIC MACHINE CORE MEMBERS, **filed** June 26, 1973, D.C., N.D. Ind. (Fort Wayne), Doc. 73-F-52, *Essex International, Inc.* v. *Industra Products, Inc.*

3,126,131, Shema, Reilly, and Kubasko, SLIMICIDAL COMPOSITION AND METHOD, **filed** July 11, 1973, D.C., N.D. Ill. (Chicago), Doc 73c1783, *Betz Laboratories, Inc.* v. *Diamond Shamrock Corporation, doing business as Diamond Shamrock Chemical, Nopco Chemical Division.*

3,132,793, Muska, Schacker and McHattie, GROUNDING CONNECTION FOR ELECTRICAL UNIT, **filed** June 15, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73-1368-F, *William A. Muska et al.* v. *Sierra Electric, Division of Sola Basic Industries.*

3,181,121, W. E. Quinton, CANNULA EXTENSION AND CONNECTOR APPARATUS; **Reg. No. 888,757** (STERI-LOK), Quinton Instrument Co., **filed** June 8, 1970, D.C., W.D. Wash. (Seattle), Doc. 9013, *Quinton Instrument Co.* v. *Sweden Freezer Manufacturing Co. and Harvey F. Swenson.* Consent decree entered, June 8, 1973.

3,510,066, E. W. Swenson, SPREADER APPARATUS, **filed** July 6, 1973, D.C., S.D. Ill. (Springfield), Doc. S-C-73-136, *Swenson Spreader & Mfg. Co.* v. *Baughman Manufacturing Company, Inc.*

3,521,451, J. D. Fredrickson, PROCESS FOR INCREASING THE FILLING CAPACITY OF TOBACCO; **3,521,452**, Moser and Stewart, same, **filed** July 10, 1973, D.C., M.D.N.C. (Greensboro), Doc. C-214-G-73, *Reynolds Leasing Corporation* v. *American Brands, Inc.*

3,521,452. (See 3,521,451.)

3,567,029, B. A. Quame, COLUMN FOR TESTING BIOLOGICAL FLUIDS, **filed** July 13, 1973, D.C., N.D. Calif. (San Francisco), Doc. C-73-1206 SAW, *Bio-Rad Laboratories* v. *Brinkman Instruments, Inc.*

3,573,419. (See 3,234,317.)

3,602,442, C. E. Wenninger, SAND-MULLING APPARATUS; **3,666,243**, A. J. Bisinella, SAND MULLING OR CONDITIONING APPARATUS AND PLOW CONSTRUCTION THEREFOR, **filed** May 31, 1973, D.C., E.D. Mich. (Detroit), Doc. 40200, *Pettibond Corporation* v. *Fargo Machine & Tool Co.*

3,613,044, W. G. Rarick, POWER SUPPLY CORD HATCH, **filed** Dec. 11, 1972, D.C., N.D. Ind. (South Bend), Doc. 72S248, *Lyall Electric, Inc.* v. *America Sales Co., Inc. and Guy P. Bassi.* Consent judgment: defendants have infringed; permanently enjoined against infringing, entered July 6, 1973.

3,631,861, J. Trachtenberg, ANTENNA FOR USE WITH AN AUTOMOBILE, **filed** June 23, 1972, D.C.N.J. (Trenton), Doc. C-1076-72, *Interdynamics, Inc.* v. *Budge Mfg. Co., Inc.* Consent judgment in favor of plaintiff, July 19, 1973.

3,666,243. (See 3,602,442.)

D. 201,884. (See 3,201,855.)

Reg. No. 888,757. (See 3,484,121.)

Certificates of Correction for the Week of Feb. 5, 1974

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3,346,062
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3,764,524
3,764,628
3,764,776
3,764,934

Dedications

3,672,036.—*John P. Ziemianski*, Avonmore, Pa. METHOD OF MAKING ASSEMBLIES OF STAINLESS STEEL TUBING. Patent dated June 27, 1972. Dedication filed Oct. 24, 1973, by the assignee, *Allegheny Ludlum Industries, Inc.*

Hereby dedicates to the Public the entire term of said patent.

3,720,936.—*Abed G. Kahal*, Roselle, *Kenji Yatsushiro*, Chicago, and *Thaddeus S. Wielgos*, Des Plaines, Ill. WARNING SIGNAL RELAY AND SYSTEM. Patent dated Mar 13, 1973. Dedication filed Oct. 23, 1973, by the assignee, *Controls Company of America.*

Hereby dedicates to the Public the remaining term of said patent.

Disclaimers and Dedications

3,191,421.—*Aldo L. Coen*, Chicago, Ill. METHOD OF MAKING LOUD SPEAKER FIELD STRUCTURE. Patent dated June 29, 1965. Disclaimer and dedication filed Aug. 7, 1973, by the assignee, *Alpha Products, Inc.*

Hereby disclaims and dedicates to the Public the remaining term of said patent.

3,518,606.—*Robert A. Barker*, Port Huron, Mich. IGNITION CABLE WITH TERMINAL CONSTRUCTION. Patent dated June 30, 1970. Disclaimer and dedication filed Oct. 13, 1972, by the assignee, *Eltra Corporation.*

Hereby disclaims and dedicates said patent to the Public.

3,707,397.—*Donald W. Gagnon*, Sylvania, Ohio. PROCESS FOR PROVIDING UNIFORM ORGANOPOLYSILOXANE COATINGS ON POLYCARBONATE AND ACRYLIC SURFACES. Patent dated Dec. 26, 1972. Disclaimer and dedication filed, Oct. 9, 1973, by the assignee, *Owens-Illinois, Inc.*

Hereby disclaims and dedicates to the Public the entire remaining term of said patent.

Disclaimers

3,213,303.—*Robert H. Riley, Jr.*, Towson, and *Melvin H. Neuhardt*, Baltimore, Md. CORDLESS DIRECT CURRENT MOTOR DEVICE UTILIZING PERMANENTLY-MAGNETIC TUBULAR SEGMENTS. Patent dated Oct. 19, 1965. Disclaimer filed Nov. 7, 1973, by the assignee, *The Black and Decker Manufacturing Company.*

Hereby enters this disclaimer to the said claim of said patent.

3,275,186.—*Martin Hemmel*, Mount Vernon, N.Y. PERCOLATOR COFFEE POT AND TOP THEREOF. Patent dated Sept. 27, 1966. Disclaimer filed Nov. 12, 1973, by the assignee, *Tops Manufacturing Company, Inc.*

Hereby enters this disclaimer to claims 1, 2, and 10 of said patent.

3,563,990.—*Goetz E. Hardtmann*, Florham Park, N.J. 1-SUBSTITUTED-4-ARYL-2(1H)-QUINAZOLINONES. Patent dated Feb. 16, 1971. Disclaimer filed Sept. 21, 1973, by the assignee, *Sandoz Wander, Inc.*

Hereby enters this disclaimer to all claims of said patent.

3,613,544.—*Hanns Plihal*, *Gerhard Rothe*, and *Josef Schild*, Vienna, Austria. OPTICAL SYSTEM. Patent dated Oct. 19, 1971. Disclaimer filed Oct. 1, 1973, by the assignees, *Karl Vockenhuber and Raimund Hauser.*

Hereby enter this disclaimer to claims 1, 2 and 3 of said patent.

3,678,672.—*Charles David Bossey* and *Marvin Nathaniel Trotter*, Anderson, S.C. QUILL OR BOBBIN SPINNING AND WINDING FRAME WITH SEMI-AUTOMATIC DOFFING AND DONNING. Patent dated July 25, 1972. Disclaimer filed Sept. 28, 1973, by the assignee, *J. P. Stevens & Co., Inc.*

Hereby enters this disclaimer to claims 1, 2 and 3 of said patent.

3,691,928.—*Vernon R. Berg, Sr.* and *Vernon R. Berg, Jr.*, Marshfield, Wis. BARN VENTILATOR. Patent dated Sept. 19, 1972. Disclaimer filed Sept. 28, 1973, by the inventors.

Hereby enter this disclaimer to claims 1, 2 and 5 of said patent.

3,694,680.—*Anthony Jacuno*, Aurora, Ill. STAMPED SHELL SHEET METAL FRAME MODULE FOR A POWER TOOL. Patent dated Sept. 26, 1972. Disclaimer filed June 14, 1973, by the assignee, *McGraw-Edison Company.*

Hereby disclaims the portion of the term of the patent subsequent to Aug. 29, 1989.

3,711,839.—*Victor L. Sell*, Santa Monica, and *Syed M. S. Alvi*, Placentia, Calif. HIGH DENSITY CORE MEMORY MATRIX. Patent dated Jan. 16, 1973. Disclaimer filed Nov. 7, 1973, by the assignee, *Ampex Corporation.*

Hereby enters this disclaimer to claims 7, 8 and 18 of said patent.

3,715,072.—*Billy J. Miskopf* and *Ronald W. Wiemann*, Houston, Tex. MULTIPLE-CELL BOX FOR FLOWABLE MATERIAL. Patent dated Feb. 6, 1973. Disclaimer filed Oct. 19, 1973, by the assignee, *Crown Zellerbach Corporation.*

Hereby enters this disclaimer to claims 1 through 7 of said patent.

3,715,902.—*Francis Joseph Fuchs, Jr.*, Princeton Junction, N.J. METHOD AND APPARATUS FOR OPERATING ON A BLANK OF MATERIAL, E.G., DEEP DRAWING. Patent dated Feb. 13, 1973. Disclaimer filed Nov. 16, 1973, by the assignee, *Western Electric Company, Incorporated.*

Hereby enters this disclaimer to claims 1, 2, 3, 6, 7, 8, 37, 38, 39, 40, 41, 42, 60, 61, 62, 65, 66, 67, 96, 97, 98, 99, 100 and 101 of said patent.

3,738,480.—*Frank G. Chesley*, Red Wing, Minn. MEDICATION CONTAINER. Patent dated June 12, 1973. Disclaimer filed Nov. 9, 1973, by the inventor.

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,740,141.—*John H. De Witt, Jr.*, Nashville, Tenn. TIMING AND MEASURING METHODS AND MEANS FOR LASER DISTANCE MEASUREMENTS. Patent dated June 19, 1973. Disclaimer filed Oct. 11, 1973, by the assignee, *Laser Systems & Electronics, Inc.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,779,980.—*Harman L. Liebman* and *Shirley A. Liebman*, Lancaster, and *Gary W. Paddison*, York, Pa. POLY (VINYL CHLORIDE) HOMOPOLYMER COMPOSITES FREEZE-DRY TECHNIQUE FOR PREPARATION. Patent dated Dec. 18, 1973. Disclaimer filed Dec. 19, 1973, by the assignee, *Armstrong Cork Company.*

Hereby enters this disclaimer to claims 1 to 6 of said patent.

Patents Available for Licensing or Sale

3,237,885. SPACE CRAFT. Jack L. Mobar, 41 W. Arbor St., Long Beach, Calif., 90805.

3,295,265. CIRCULAR MULTI-PURPOSE BUILDING AND ITS ASSEMBLING METHOD. Naoto Hida. Correspondence to: Watanabe Patent Law Office, Koenji Minami 1-29-16, Suginami, Tokyo 166, Japan.

3,319,272. CURLER PILLOW. Mrs. E. F. Eller, 100 98th NE., Apt. E-1, Bellevue, Wash. 98004.

3,474,799. TOOTH SPACE CLEANER USING DENTAL FLOSS LINKS ON HOLDER. Vito P. Cappello, 1047 Franklin St., Santa Monica, Calif., 90403.

3,718,906. VENDING SYSTEM FOR REMOTELY ACCESSIBLE STORED INFORMATION. Robert W. Lightner, P.O. Box 42, Cocoa Beach, Fla., 32931.

3,727,118. CONTACTLESS REVERSIBLE DEVICE IN AN ELECTRIC CAR. Nippon Gijutsu Boeki Co., Ltd., 32F Kasumigaseki Bldg., 2-5 Kasumigaseki, 3-chome, Chiyoda-ku, Tokyo 100, Japan.

3,729,092. UNWIND SUPPORT FOR COILED WIRE. William B. Marcell, 3950 NW. 36th Terrace, Fort Lauderdale, Fla., 33309.

3,745,651. PROCESS FOR ADJUSTING THE FIT OF AND REPAIRING DENTURES. Etablissement Rivolan, Liechtenstein, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,756,462. NUT BOWL. Harvey D. Cain, 641 Cambrian Court, Sacramento, Calif., 95825.

3,758,894. CHAIR BATH. Mary L. Finley, 11440 S. Morgan St., Chicago, Ill., 60643.

3,742,718. TUBE DRIVING APPARATUS. Bruno Weiss, Kolberger, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,767,091. DEVICE TO RUFFLE OR PLEAT MATERIAL. Sylvester A. and Jewelle M. Dalske, 110 Caselli Circle, #1, Sacramento, Calif., 95823.

3,762,393. HAND WARMER BATTERY HEATER. Louis R. O'Hare, 940-B 49th St., Los Alamos, N. Mex., 87544.

The RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 67 patents.

Inquiries respecting licenses under RCA patents should be addressed to: RCA Corporation, Staff Vice President, Domestic Licensing, 1133 Avenue of the Americas, New York, N.Y., 10036.

Re. 27,793. BLANKING CIRCUITS FOR TELEVISION RECEIVERS.
3,762,723. AUTOMATIC RECORD CHANGER.
3,762,968. METHOD OF FORMING REGION OF A DESIRED CONDUCTIVITY TYPE IN THE SURFACE OF A SEMICONDUCTOR BODY.
3,763,311. REDUCTION OF NON-LINEAR SPATIAL DISTORTION IN HOLOGRAPHIC SYSTEM EMPLOYING DIFFERENT WAVELENGTHS FOR RECORDING AND PLAYBACK.
3,763,315. BLANKING CIRCUITS FOR TELEVISION RECEIVERS.
3,763,352. SELF-CLEANING READ HEAD.
3,763,393. LINEARITY CORRECTION CIRCUIT FOR A CATHODE RAY TUBE.
3,763,395. INTERFERENCE SUPPRESSION CIRCUITS.
3,763,396. INTERFERENCE SUPPRESSION CIRCUITS.
3,763,480. DIGITAL AND ANALOG DATA HANDLING DEVICES.
3,763,560. CUTTING PLIERS.
3,764,740. CATHODE-RAY-TUBE-YOKE COMBINATION WITH AT LEAST TWO SPACED BODIES OF ORGANIC THERMOPLASTIC MATERIAL THEREBETWEEN AND A METHOD OF MAKING SAID COMBINATION.
3,764,865. SEMICONDUCTOR DEVICES HAVING CLOSELY SPACED CONTACTS.
3,764,903. PHASE MEASURING SYSTEM.
3,764,929. PUSH-PULL DARLINGTON AMPLIFIER WITH TURN-OFF COMPENSATION.
3,765,023. CIRCULARLY POLARIZED ANTENNA.
3,765,586. FILM HANDLING APPARATUS.
3,765,941. METHOD OF PREVENTING INOPERATION OF A COMPONENT BY LOOSE PARTICLES OF MATERIAL.
3,765,970. METHOD OF MAKING BEAM LEADS FOR SEMICONDUCTOR DEVICES.
3,766,313. CIRCUIT FOR TRANSMITTING DIGITAL SIGNALS TO CONVENTIONAL TELEVISION RECEIVER.
3,766,328. SLANT TRACK ROTATING HEAD RECORDER-REPRODUCER SYSTEM FOR SELECTIVE RETENTION OF SPECIAL INFORMATION.
3,766,393. OPTICAL DATA TRANSMISSION SYSTEM EMPLOYING POLARIZATION-SHIFT, MULTIPLE-CAVITY LASER.
3,766,419. CATHODE-RAY TUBE WITH SHADOW MASK HAVING RANDOM WEB DISTRIBUTION.
3,766,530. COMMUNICATIONS BETWEEN CENTRAL UNIT AND PERIPHERAL UNITS.
3,766,637. METHOD OF MAKING MOS TRANSISTORS.
3,767,285. ENHANCED READOUT OF STORED HOLOGRAMS.
3,767,408. DIRECT PRINT-UT PHOTOGRAPHIC OPTICAL RECORDING MEDIA COMPRISING A RHODAMINE DYE.
3,767,462. METHOD FOR FABRICATION OF POLYCRYSTALLINE FILMS.
3,767,481. METHOD FOR EPITAXIALLY GROWING LAYERS OF A SEMICONDUCTOR MATERIAL FROM THE LIQUID PHASE.
3,767,581. RADIATION RESISTANT LITHIUM FERRITE CORES.
3,767,845. COLOR IMAGE REPRODUCING APPARATUS.
3,767,853. AUTOMATIC IRIS CONTROL.
3,767,854. DELAY OF VIDEO AMPLIFIER D.C. BIAS CHANGE TO ACCOMMODATE RISE/FALL OF KINESCOPE HIGH VOLTAGE AFTER TURN ON/OFF OF RECEIVER.
3,767,906. MULTIFUNCTION FULL ADDER.
3,767,943. DIRECT-COUPLED TRIGGERED FLIP-FLOP.
3,767,960. HIGH VOLTAGE REGULATOR.
3,767,963. HIGH VOLTAGE HOLD DOWN CIRCUIT.
3,767,967. INSTANT-ON CIRCUITRY FOR AC/DC TELEVISION RECEIVERS.
3,768,029. TEMPERATURE COMPENSATION OF TRANSFERRED ELECTRON AMPLIFIERS.
3,768,040. WAVEGUIDE ASSEMBLY INCLUDING A TOROID HAVING DIELECTRIC MATERIAL THEREIN.
3,768,043. WIDEBAND HYBRID SYSTEM.
3,768,047. LATTICE NETWORK USING DISTRIBUTED IMPEDANCE TRANSMISSION LINES.
3,769,588. REMOTE CONTROL SYSTEM FOR A TELEVISION RECEIVER.
3,769,589. RATE AIDED RANGING AND TIME DISSEMINATION RECEIVER.
3,769,602. ANALOG PHASE TRACKER.
3,769,617. TRANSMISSION LINE USING A PAIR OF STAGGERED BROAD METAL STRIPS.
3,769,688. METHOD OF MAKING AN ELECTRICALLY-INSULATING DEAL BETWEEN A METAL BODY AND A SEMICONDUCTOR DEVICE.
3,769,908. METAL MASK SCREEN FOR SCREEN-PRINTING.
3,770,434. METHOD FOR MAKING AN IMAGE SCREEN STRUCTURE FOR AN APERTURED-MASK CATHODE-RAY TUBE USING A MASK HAVING TEMPORARY APERTURES.

3,770,944. ARTICLE IDENTIFICATION APPARATUS.
3,770,973. APPARATUS FOR REMOTELY MEASURING THE TEMPERATURE AND EMISSIVITY OF A RADIANT OBJECT INDEPENDENT OF THE OBJECT'S RADIANT SURFACE PROPERTY.
3,771,059. UNIVERSAL DATA QUALITY MONITOR.
3,771,483. APPARATUS AND METHOD FOR THE AUTOMATIC NAVIGATION OF A SAILING VESSEL.
3,771,919. BRAKING ARRANGEMENT WHICH INCLUDES HYDRAULIC PUMP.
3,772,554. IN LINE ELECTRON GUN.
3,772,575. HIGH HEAT DISSIPATION SOLDER-REFLOW FLIP CHIP TRANSISTOR.
3,772,599. MICROWAVE DOUBLE BALANCED MIXER.
3,772,601. DUAL CHANNEL BALANCED LINE TYPE MODULATOR.
3,772,612. LIGHT MODULATOR.
3,772,613. BALANCED LINE TYPE PULSER CIRCUIT.
3,773,400. PROCESS FOR FIXING HOLOGRAPHIC PATTERNS IN ELECTRO-OPTIC CRYSTALS AND THE CRYSTALS PRODUCED THEREBY.
3,773,540. CATHODOCHROMIC IMAGE SCREEN AND METHOD FOR PREPARING CATHODOCHROMIC SODALITE FOR SAID IMAGE SCREEN.
3,774,116. ELECTRON BEAM ADDRESSABLE MEMORY SYSTEM.
3,774,158. MULTIPLE TERMINAL DISPLAY SYSTEM.
3,775,554. MODULATOR SYSTEM.
3,775,555. MODULATOR SYSTEM.
3,775,637. CATHODE RAY DISPLAY INTENSITY CONTROL CIRCUIT.

General Electric Company is prepared to grant non-exclusive licenses under the following 75 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following patent should be addressed to: Patent Counsel, Speed Variator Products Department, General Electric Company, 1501 Roanoke Blvd., Salem, Va., 24153.

3,207,974. INVERTER CIRCUITS.

Applications for licensing under the following patent may be addressed to: Patent Counsel, General Electric Company, Box 237 G.P.O., Detroit, Mich., 48232.

3,718,[illegible]7. GRINDING WHEELS FORMED FROM PREPOLYMER COMPOSITIONS CONTAINING ALIPHATICALLY UNSATURATED IMIDO RADICALS.

Applications for license under the following patent should be addressed to: Division Patent Counsel, Space Division, General Electric Company, P.O. Box 8555, Philadelphia, Pa., 19101.

3,736,447. UNIFORM IONIZATION MEANS FOR MHD GENERATORS.

Applications for licensing under the following patent may be addressed to: General Electric Company, Appliance Components Business Division, 1635 Broadway, Fort Wayne, Ind., 46804, Attn: Patent Counsel.

3,757,927. BAR STOCK STORAGE DISPENSING AND FEEDING APPARATUS AND METHOD.

Applications for licenses under the following patent may be addressed to: Division Patent Counsel, Switchgear Equipment Business Division, General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa., 19142.

3,761,599. MEANS FOR REDUCING EDDY CURRENT HEATING OF A TANK IN ELECTRIC APPARATUS.

Applications for licenses under the following 2 patents may be addressed to: General Electric Company, Construction Materials Division, 4755 Kingsway Drive, Suite 416, Indianapolis, Ind., 46205. Attn: Division Patent Counsel.

2,912,557. ELECTRIC COOKING APPLIANCE.
3,317,699. POWER SUPPLY FOR A MAGNETRON.

Applications for licenses under the following 5 patents may be addressed to: Patent Counsel, Drive Systems Product Department, General Electric Co., 1501 Roanoke Blvd., Salem, Va., 24153.

2,977,523. CONTROL CIRCUIT.
3,095,534. CIRCUIT FOR CONTROLLING ENERGIZATION OF A DIRECT CURRENT LOAD.
3,170,344. METHOD AND APPARATUS FOR CONTROLLING THE THICKNESS OF ROLLED STRIP MATERIAL.
3,343,063. VARIABLE FREQUENCY CONVERTER WITH VOLTS PER CYCLE PER SECOND REGULATION.
Re. 26,996. COMPUTER CONTROL SYSTEM FOR METALS ROLLING MILL.

Applications for licenses under the following 14 patents may be addressed to: Group Patent Counsel, Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky., 40225.

3,350,899. HOUSEHOLD REFRIGERATOR.
3,397,553. ICEMAKER INCLUDING IMPROVED SWEEP MEANS.
3,398,553. ICE MAKER INCLUDING IMPROVED SWEEP MEANS.
3,600,602. CONTROL ARRANGEMENT FOR A WASHING MACHINE.
3,721,900. MICROWAVE DETECTION INSTRUMENT AND ANTENNA THEREFOR.
3,734,416. WASTE FOOD DISPOSER MOUNTING ASSEMBLY.
3,736,037. RACK LEVEL ADJUSTMENT APPARATUS IN AN APPLIANCE CABINET.
3,747,518. TRASH COMPACTOR HAVING MEANS FACILITATING TRASH REMOVAL THEREFROM.
3,759,471. QUICK-RELEASE SUPPORT MEMBER ATTACHMENT MEANS.
3,760,792. FLOW-THROUGH SHUTTER FOR OVEN DOOR WINDOW.
3,760,838. HOSE STORAGE SYSTEM FOR A WASHING APPLIANCE.
3,761,153. DISH-WASHING MACHINE RACK ADJUSTMENT ASSEMBLY.
3,766,700. DECORATIVE TRIM STRIP MOUNTING MEANS.
3,767,897. PLUG-IN SURFACE HEATING UNIT WITH A TERMINAL BLOCK MOUNTING.

Applications for licenses under the following 34 patents may be addressed to: General Electric Company, Division Patent Counsel, Housewares Business Division, 1285 Boston Ave., Bridgeport, Conn., 06602.

3,138,674. ELECTRICAL TIME SWITCH MECHANISM.
3,118,027. ELECTRICAL SWITCH INCLUDING VISCOUSLY DAMPED TIMING DEVICE.
3,101,586. TIMER MECHANISM WITH IMPROVED GEAR MESHING MEANS.
3,086,351. COMBINED SWITCH AND ALARM ACTUATING APPARATUS.
3,085,136. TIME SWITCH.
3,078,358. TIME SWITCH.
3,062,931. ALARM CONTROL MECHANISM.
3,059,414. MINIATURE ALARM CLOCK.
3,033,948. TIME SWITCH AND ALARM.
2,994,183. ALARM CONTROL MECHANISM.
2,981,808. INTERVAL TIMER.
2,951,919. TIME SWITCH.
2,946,182. ALARM CLOCK CONTROL MECHANISM
2,921,149. SEVEN DAY TIME CONTROL SWITCH.
2,890,300. TIME CONTROL SWITCH.
2,792,510. MOTOR STRUCTURE.
2,786,972. COMMERCIAL POWER FREQUENCY CORDLESS SYNCHRONOUS CLOCK.
3,598,937. CLOCK TIMER SWITCH.
3,591,737. SWITCH MECHANISM FOR ELECTRIC MOTOR SPRING WOUND CLOCK.
3,559,396. VARIABLE LOUDNESS ALARM MECHANISM.
3,475,900. ALARM CONTROL MECHANISM.
3,344,598. ALARM CONTROL MECHANISM.
3,328,953. CLOCK ALARM SET INDICATOR.
3,328,952. ALARM CLOCK..
3,328,570. ILLUMINATED PANEL MEMBER.
3,308,617. REPEAT ALARM WITH CONDITION INDICATOR.
3,289,630. CLOCK DIAL HAND.
3,282,041. ALARM SET INDICATING MEANS.
3,281,548. INTERVAL TIMER.
3,280,547. ALARM CONTROL MECHANISM.
3,224,062. ATTACHMENT AND SPACING MEANS.

3,195,300. ALARM SET INDICATING MEANS.

3,175,352 BELL ALARM DAMPING DEVICE.

3,152,229. REPEAT MECHANISM FOR A CLOCK CONTROLLED SWITCH.

Applications for licenses under the following 15 patents may be addressed to: General Electric Company, Transformer and Distribution Equipment Business Division, 100 Woodlawn Ave., Pittsfield, Mass., 01201.

D. 211,391. FLOODLIGHT.

3,128,443. REACTIVE TRANSFORMERS.

3,334,270. DISCHARGE LAMP CIRCUIT.

3,334,271. ELECTRICAL DEVICE WITH VOLTAGE LIMITING ARRANGEMENT.

3,317,796. COOLING ARRANGEMENT FOR ELECTRICAL APPARATUS.

3,350,554. FLOODLIGHT.

3,501,627. AIRPORT LIGHTING FIXTURE.

3,523,238. CURRENT SENSING DEVICE.

3,524,107. LOW VOLTAGE LIGHTNING ARRESTER SPARK GAP.

3,657,650. CURRENT AND VOLTAGE MONITORING MODULE FOR ELECTRIC CONDUCTOR TERMINATIONS.

3,723,819. LOW VOLTAGE SECONDARY LIGHTNING ARRESTER SPARKGAP ASSEMBLY.

3,731,295. LEAK DETECTOR FOR ENCLOSED ELECTRICAL APPARATUS.

3,735,088. BRAZING METHOD AND APPARATUS.

3,737,712. SPARKGAP ASSEMBLY HAVING A SEMI-CONDUCTIVE COATING ADJACENT THE ELECTRODES THEREOF.

3,762,939. METHOD OF PROTECTING A METALLIC SURFACE FROM CORROSION AND RESULTANT ARTICLE.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the GSA Patent Licensing Regulations.

Copies of patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22151, at the prices cited. Requests for copies of patent applications must include the patent application number and the title. Requests for licensing information should be directed to the address cited with each copy of the patent application.

Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each. Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

National Institutes of Health, Chief, Patent Branch,
Westwood Building, Bethesda, Md. 20014

Patent application 357,272. Measurement of Carbon Dioxide. Filed May 4, 1973. PC $3/MF $1.45.

U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th and C Sts. NW.,
Washington, D.C. 20240

Patent application 401,004. Smelting of Nickel Oxide Ores To Produce Ferronickel. Filed Sept. 28, 1973. PC $3 MF $1.45.

Patent application 402,560. Constrained Layer Damper and Noise Suppressor for a Rock Drill Steel. Filed Oct. 1, 1973. PC $3/MF $1.45.

Patent 3,632,479. Treatment of Coal To Prevent Agglomeration. Filed Aug. 25, 1969. Patented Jan. 4, 1972. Not available NTIS.

Patent 3,634,070. Process for Recovery of Copper and Other Metals From Source Materials. Filed July 29, 1969. Patented Jan. 11, 1972. Not available NTIS.

Patent 3,653,875. Recovery of Metals and Phosphate From Waste Phosphate Sludge. Filed Mar. 2, 1971. Patented Apr. 4, 1972. Not available NTIS.

Patent 3,669,954. Process for Producing Semipermeable Membranes. Filed May 4, 1970. Patented June 13, 1972. Not available NTIS.

Patent 3,663,719. System for Cooking Fish. Filed Dec. 3, 1969. Patented May 16, 1972. Not available NTIS.

DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research,
Code 302, Arlington, Va. 22217

Patent 3,680,104. Phase Reversal Pulse Modulator and Pulse Compression Filter for a Coherent Radar. Filed July 22, 1970. Patented July 25, 1972. Not available NTIS.

Patent 3,680,136. Current Sheet Antenna. Filed Oct. 20, 1971. Patented July 25, 1972. Not available NTIS.

Patent 3,680,137. Circular Symmetric Bootlace Lens System. Filed Dec. 3, 1970. Patented July 25, 1972. Not available NTIS.

Patent 3,680,196. Process for Bonding Chip Devices to Hybrid Circuitry. Filed May 8, 1970. Patented Aug. 1, 1972. Not available NTIS.

Patent 3,689,848. Voltage-to-Current Converter. Filed May 4, 1970. Patented Sept. 5, 1972. Not available NTIS.

Patent 3,690,463. Floating Suction Head. Filed July 13, 1971. Patented Sept. 12, 1972. Not available NTIS.

Patent 3,690,915. Method of Forming Gallium Phosphide Coatings. Filed Dec. 16, 1969. Patented Sept. 12, 1972. Not available NTIS.

Patent 3,691,515. Variable Reluctance Magnetic Field Transducer. Filed Sept. 29, 1960. Patented Sept. 12, 1972. Not available NTIS.

Patent 3,693,038. Traveling Wave Tube (TWT) Oscillation Prevention Device. Filed May 3, 1971. Patented Sept. 19, 1972. Not available NTIS.

Patent 3,693,072. Ferromagnetic Resonance Magnetometer. Filed Aug. 25, 1967. Patented Sept. 19, 1972. Not available NTIS.

Patent 3,694,029. Aircraft Seat Restraint Tensioning Mechanism. Filed Sept. 22, 1971. Patented Sept. 26, 1972. Not available NTIS.

Patent 3,695,058. Flexible Link Rotatable Drive Coupling. Filed May 26, 1971. Patented Oct. 3, 1972. Not available NTIS.

Patent 3,696,066. Plasticized Compositions. Filed Jan. 8, 1971. Patented Oct. 3, 1972. Not available NTIS.

Patent 3,696,325. Complaint Suspension Cable. Filed May 14, 1970. Patented Oct. 3, 1972. Not available NTIS.

Patent 3,696,495. Threaded Ring Turning Device. Filed Apr. 5, 1971. Patented Oct 10, 1972. Not available NTIS.

Patent 3,696,599. Cable Fairing System. Filed July 16, 1971. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,696,621. Method of Soil Stabilization. Filed Aug. 10, 1970. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,696,846. Tool for U-Bending of Plated Wire. Filed June 15, 1971. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,696,894. Acceleration Sensitive Shock Absorber Valve. Filed July 2, 1971. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,697,154. Optical Viewing System. Filed May 12, 1971. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,697,422. Intumescent Fillers for Paints. Filed Nov. 23, 1970. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,697,425. Bearings Comprising Polyolefins and an Imine Modified Carbon Black Compound. Filed Jan. 14, 1971. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,697,434. Chemiluminescent Spray Formulation. Filed Oct. 5, 1965. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,697,476. Polyolefins Containing an Imine Modified Carbon Black Compound. Filed Jan. 14, 1971. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,697,831. Series Electrical, Parallel Thermal Gunn Devices. Filed Dec. 28, 1970. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,697,856. Voltage Regulating Circuit. Filed Dec. 14, 1970. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,697,886. Solid State Radio Frequency Voltage Controlled Oscillator, Power Amplifier and Direct Current Power Supply. Filed Nov. 8, 1971. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,697,890. Wide Deviation Voltage Controlled Crystal Oscillator With Temperature Compensation. Filed June 9, 1969. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,697,969. Magnetic Tape With Plural Clocks. Filed Nov. 29, 1971. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,698,098. Method for Drying Articles Having a Low Heat Tolerance. Filed Mar. 29, 1971. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,698,420. Drain Valve Having Auxiliary Seal. Filed Dec. 5, 1968. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,698,591. Pressure Chamber Closure. Filed Jan. 4, 1971. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,698,960. Solid Battery Electrolyte and Method of Preparation Thereof. Filed June 21, 1971. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,699,423. D.C. to A.C. Converter With Unique Feedback Demodulation. Filed Dec. 29, 1971. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,699,763. 24-Hour Digital Clock. Filed July 6, 1971. Patented Oct. 24, 1972. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—Code
GP–2, Washington, D.C. 20546

Patent application 263,230. Amplitude Steered Antenna Array. Filed June 15, 1972. PC $3/MF $1.45.

Patent application 340,862. Electro-Mechanical Sine Cosine Generator. Filed Mar. 13, 1973. PC $3/MF $1.45.

Patent application 370,999. Transmitting and Reflecting Diffuser. Filed June 18, 1973. PC $3/MF $1.45.

Patent application 393,526. Condensate Removal Device for Heat Exchange. Filed Aug. 31, 1973. PC $3.25/MF $1.45.

Patent application 393,527. Remote Platform Power Conserving System. Filed Aug. 31, 1973. PC $3/MF $1.45.

Patent application 394,206. Radiation Hardening of MOS Devices by Boron. Filed Sept. 4, 1973. PC $3/MF $1.45.

Patent application 395,493. Totally Confined Explosive Welding. Filed Sept. 10, 1973. PC $3/MF $1.45.

Patent application 395,868. Dish Antenna Having Switchable Beam Width. Filed Sept. 10, 1973. PC $3.25/MF $1.45.

Patent application 397,477. Alphanumeric Character Generator for Oscilloscopes. Filed Sept. 14, 1973. PC $3.25/MF $1.45.

Patent application 398,901. Hole Cutter. Filed Sept. 19, 1973. PC $3/MF $1.45.

Patent application 402,867. Meteoroid Impact Position Locator Aid for Manned Space Vehicles. Filed Oct. 2, 1973. PC $3/MF $1.45.

Patent application 403,695. All Sky Pointing Attitude Control System. Filed Oct. 4, 1973. PC $3.75/MF $1.45.

Patent application 402,868. Vacuum Leak Detector. Filed Oct. 2, 1973. PC $3/MF $1.45.

Patent 3,748,722. Production of Hollow Components for Rolling Element Bearings by Diffusion Welding. Patented July 31, 1973. Not available NTIS.

Patent 3,375,885. Burrowing Apparatus. Patented Apr. 2, 1968. Not available NTIS.

Patent 3,749,332. Space Vehicle With Artificial Gravity and Earth-Like Environment. Patented July 31, 1973. Not available NTIS.

Patent 3,752,665. Synthesis of Superconducting Compounds by Explosive Compaction of Powders. Patented Aug. 14, 1973. Not available NTIS.

Patent 3,753,148. Infrared Tunable Laser. Patented Aug. 14, 1973. Not available NTIS.

Patent 3,754,236. Digital to Analog Conversion Apparatus. Patented Aug. 21, 1973. Not available NTIS.

Patent 3,754,263. Lightning Tracking System. Patented Aug. 21, 1973. Not available NTIS.

Patent 3,755,265. Highly Fluorinated Polyurethanes. Patented Aug. 28, 1973. Not available NTIS.

Patent 3,755,686. Powerplexer. Patented Aug. 28, 1973. Not available NTIS.

Patent 3,757,183. Redundant Speed Control for Brushless Hall Effect Motor. Patented Sept. 4, 1973. Not available NTIS.

Patent 3,757,476. Expandable Space Frames. Patented Sept. 11, 1973. Not available NTIS.

Patent 3,757,568. Compression Test Assembly. Patented Sept. 11, 1973. Not available NTIS.

Patent 3,757,659. Exposure Interlock for Oscilloscope Cameras. Patented Sept. 11, 1973. Not available NTIS.

Patent 3,758,718. Transparent Switchboard. Patented Sept. 11, 1973. Not available NTIS.

Patent 3,758,741. Enhanced Diffusion Welding. Patented Sept. 11, 1973. Not available NTIS.

Patent 3,758,781. Radiation and Particle Detector and Amplifier. Patented Sept. 11, 1973. Not available NTIS.

Patent 3,759,152. Automatic Lightning Detection and Photographic System. Patented Sept. 18, 1972. Not available NTIS.

Patent 3,759,588. High Speed Hybrid Bearing Comprising a Fluid Bearing and a Rolling Bearing Convected in Series. Patented Sept. 18, 1973. Not available NTIS.

Patent 3,759,672. Star Tracking Reticles. Patented Sept. 18, 1973. Not available NTIS.

Patent 3,760,239. Coaxial Inverted Geometry Transistor Having Buried Emitter. Patented Sept. 18, 1973. Not available NTIS.

Patent 3,760,257. Electromagnetic Wave Energy Converter. Patented Sept. 18, 1973. Not available NTIS.

Patent 3,760,394. Event Sequence Detector. Patented Sept. 18, 1973. Not available NTIS.

Patent 3,762,884. Nickel Aluminide Coated Low Alloy Stainless Steel. Patented Oct. 2, 1973. Not available NTIS.

Patent 3,762,918. Cobalt-Base Alloy. Patented Oct. 2, 1973. Not available NTIS.

Patent 3,763,204. Polymerizable Disilanols Having In-Chain Perfluoroalkyl Groups. Patented Oct. 2, 1973. Not available NTIS.

Patent 3,763,691. Meteoroid Detector. Patented Oct. 9, 1973. Not available NTIS.

Patent 3,763,928. Electrostatically Controlled Heat Shutter. Patented Oct. 9, 1973. Not available NTIS.

Patent 3,764,209. Hand Held Photomicroscope. Patented Oct. 9, 1973. Not available NTIS.

U.S. DEPARTMENT OF TRANSPORTATION

Patent Counsel, 400 7th St. SW., Washington, D.C. 20590

Patent application 396,769. Statistical Sound Level Analyzer. Filed Sept. 13, 1973. PC $3/MF $1.45.

[FR Doc. 74-1231; Filed 1-15-74; 8:45 am]

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JANUARY 19, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-02-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-25-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	10-11-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-04-73
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	9-01-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	6-13-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	9-18-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-02-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	8-16-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	2-02-73
DESIGNS, GROUP 290—R. L. CAMPBELL, Director Industrial Arts; Household, Personal and Fine Arts.	4-11-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	3-16-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	2-26-73
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	3-02-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-22-73
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-28-72

Expiration of patents: The patents within the range of numbers indicated below expire during January 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,775,762 to 2,779,941, inclusive
Plant Patents	Numbers 1,543 to 1,558, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED FEBRUARY 5, 1974

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T919,001

MIXED ACETALS AND PROCESS FOR THEIR PREPARATION

Lucien Person, Chicago, Ill.
(136 Boulevard Jean Jaures, 92-Clichy, France)
Continuation of abandoned application Ser. No. 876,022, No. 12, 1969. This application Dec. 29, 1972, Ser. No. 319,325
Int. Cl. C07c *43/20*
U.S. Cl. 260—615 B
No Drawing. 16 Pages Specification

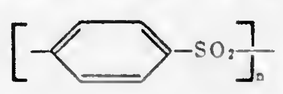
Mixed acetals of low molecular weight alcohols and compounds containing one or more hydroxyl groups are prepared by reacting an alpha-halo dialkyl ether, a compound containing at least one hydroxy group and an alkylene oxide in a temperature range of about 20° C. to 150° C. The mixed acetals are useful as surfactants and are characterized by excellent stability in alkaline media.

T919,002

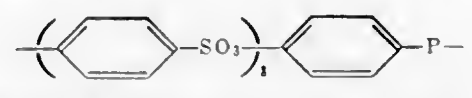
AROMATIC POLYSULPHONES PRODUCED BY OXIDATION OF AROMATIC POLYMERS

John Brewster Rose, Letchworth, and Ian Charles Taylor, Hertford, England, assignors to Imperial Chemical Industries Limited, London, England
Filed Jan. 19, 1973, Ser. No. 324,968
Claims priority, application Great Britain, Feb. 7, 1972, 5,488/72, 5,489/72
Int. Cl. C08g *23/00*
U.S. Cl. 260—49
No Drawing. 26 Pages Specification

Aromatic block copolymers are provided whose molecular chains comprise blocks having the formula



where *n* is an integer having the value 2 or greater the blocks being linked by units and/or a plurality of units having the formula —Ar—Q— and optionally also —Ar—, in which Ar is a phenylene radical, preferably 1,4-phenylene and Q is —O—, —CO—, —CR_1R_2—, where R_1 and R_2 may be the same or different and represent hydrogen, lower alkyl, lower aryl and halogen substituted groups thereof. A preferred block copolymer comprises a chain which comprises blocks having the formula



where P is selected from —O—, —CO— and

—$C(CH_3)_2$—

These block copolymers may be formed by reacting the corresponding aromatic polysulphide with an oxidizing agent such as hydrogen peroxide in glacial acetic acid. A preferred method for making these block copolymers which have at least one unit having the formula

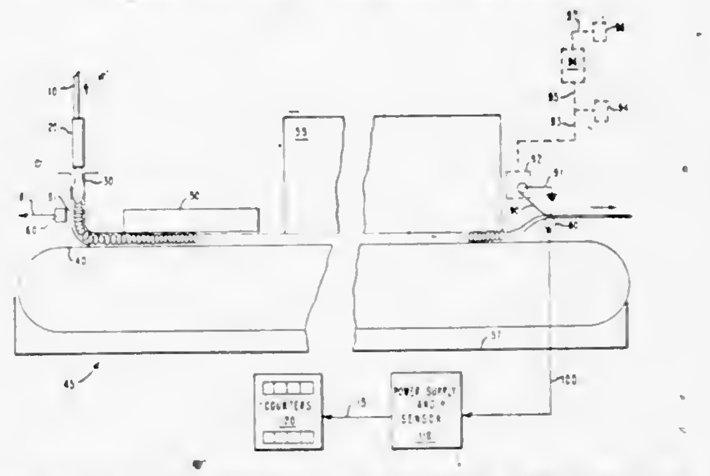
—Ar—O—

comprises reacting an alkali metal salt of at least one halophenol with a substantially equimolar mixture of at least one dihalobenzoid compound and a dialkali metal salt of at least one bisthiophenol in which the halogen atoms of the halophenol and dihalobenzenoid compound are activated by at least one electron-attracting group to form an aromatic polysulphide and then reacting the aromatic polysulphide with an oxidizing agent.

T919,003

AUTOMATIC CONTROL FOR TOW DRYERS

Frank Melvin Heckendorn II, 118 Leonards Circle, Camden, S.C. 29020
Filed May 18, 1973, Ser. No. 361,409
Int. Cl. F26b *13/00*
U.S. Cl. 34—55
3 Sheets Drawing. 4 Pages Specification



An apparatus combining void detection at the entrance and moisture detection at the exit of a tow dryer. The void detector comprises a pneumatic sensor and associated pressure switch and relay elements to provide readout and to stop the dryer motor drive upon detection of a void. Moisture is monitored by a continuous electrical conductivity measuring apparatus comprising a grounded feeler riding above and against the tow and a conducting guide below the tow which is attached to electrical circuitry arranged not only to count and alarm when moisture in the tow exceeds certain predetermined limits but also to provide a measure of length of such moisture spots in the tow. The grounded feeler also serves as a part of a detector of tow mechanical defects by being mounted to the input shaft of a pneumatic position transmitter which in turn is arranged to stop the tow moving means when actuated by movement of the feeler as a knot or similar defects passes under the feeler.

T919,004

PROCESS FOR PREPARING A FLAME RESISTANT, HEAT TRANSFER PRINTED FABRIC

Gary L. Bond, 1352 Warpath Drive, Apt. 1, Kingsport, Tenn. 37664
Filed July 16, 1973, Ser. No. 379,874
Int. Cl. B41m *5/18*
U.S. Cl. 117—36.2
No Drawing. 7 Pages Specification

Disclosed is a process for preparing a flame resistant, heat transfer printed fabric. According to this process a

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heat transfer printing paper is prepared by applying a sublimable disperse dye to selected locations of the paper and uniformly applying to the paper a sublimable organic bromine compound of at least 6 carbon atoms containing, based on the weight of the organic bromine compound, from about 40 to about 85 weight percent bromine. A polyester fabric and the heat transfer printing paper are then brought into juxtaposition and the fabric, organic bromine compound and disperse dye are heated in a temperature range of about 200–215° C. In a preferred embodiment of this process the organic bromine compound is a phosphorus-containing aliphatic bromine compound. In a still more preferred embodiment of this process the organic bromine compound is tris(2,3-dibromopropyl phosphate) and the fabric is 100% poly(ethylene terephthalate).

REISSUES

FEBRUARY 5, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,909

FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

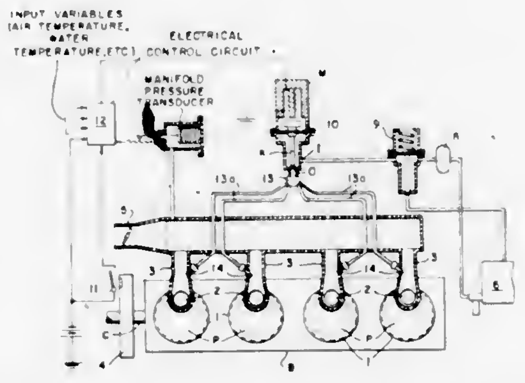
Robert Huber, Zumikon, Switzerland, assignor to Societe des Procedes Modernes d'Injection Sopromi, Les Mureaux, Yvelines, France

Original No. 3,460,520, dated Aug. 12, 1969, Ser. No. 629,190, Apr. 7, 1967. Application for reissue July 6, 1971, Ser. No. 159,970

Claims priority, application Switzerland, Apr. 14, 1966, 5,374/66

Int. Cl. F02m *51/00*

U.S. Cl. 123—32 EA **10 Claims**


INPUT VARIABLES (AIR TEMPERATURE, WATER TEMPERATURE, ETC.)
ELECTRICAL CONTROL CIRCUIT
MANIFOLD PRESSURE TRANSDUCER
12
10
9
13a
13
13a
3
14
2
1

A single fuel metering valve is provided to control the injection of fuel into a plurality of cylinders in an internal-combustion engine. A plurality of fuel injection nozzles are each coupled between the outlet of the fuel metering valve and the air intake conduit of a corresponding cylinder. An electrical control circuit is coupled between the crankshaft of the motor and the fuel metering valve to control the timing and the quantity of fuel injected into the air intake conduits through the fuel injection nozzles. The fuel injection nozzles can be electromagnetically actuated valves which are opened in sequence during the intake stroke of the corresponding cylinders. A fuel distributor can also be connected between the fuel metering valve and the injection nozzles to couple the fuel injection nozzles to the outlet of the fuel metering valve in time sequence.

27,910

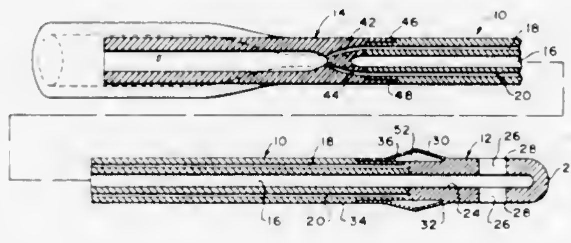
CATHETER

William C. Birtwell, North Scituate, R.I., assignor to Biomedical Engineering Associates, Inc., Boston, Mass.

Original No. 3,547,126, dated Dec. 15, 1970, Ser. No. 705,667, Feb. 15, 1968. Application for reissue July 29, 1971, Ser. No. 167,535

Int. Cl. A61m *25/00*

U.S. Cl. 128—349 B **8 Claims**



A Foley-type balloon catheter having an extruded body made of silicone rubber with a single drainage lumen and a plurality of inflation lumens, and a molded tip of silicone rubber attached to the body and having a drainage eye communicating with the drainage lumen, and a molded funnel attached to the other end of the body and having passages which communicate with drainage and inflation lumens.

27,911

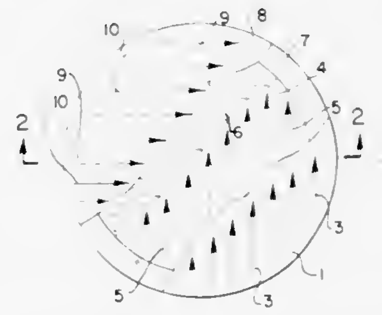
MEANS FOR ROTATING THE POLARIZATION PLANE OF LIGHT AND FOR CONVERTING POLARIZED LIGHT TO NON-POLARIZED LIGHT

John F. Dreyer, Cincinnati, Ohio, assignor to Polacoat Incorporated, Cincinnati, Ohio

Original No. 3,592,526, dated July 13, 1971, Ser. No. 841,857, July 15, 1969. Application for reissue Nov. 1, 1971, Ser. No. 194,610

Int. Cl. G02b *5/30*

U.S. Cl. 350—159 **11 Claims**



A light transmissive device which will rotate the plane of polarized light and will also de-polarize plane polarized light passed through the device, said device comprising a pair of directionally oriented supporting surfaces, such as unidirectionally rubbed glass or plastic plates, rotatable relative to each other and separated by a thin film of a non-optically active nematic liquid crystal material, the device acting to rotate the plane of the polarized light when the directionally oriented surface first contacted by the entering light is either parallel or perpendicular to the plane of polarization of the entering light and the remaining directionally oriented surface is rotated so as to bring its oriented surface to the desired plane of polarization for the exiting light, the device also acting to convert plane polarized light to non-polarized light when the oriented surface first contacted by the entering light lies at an angle of 45° with respect to the plane of polarization of the entering light and the directionally oriented surfaces are parallel to each other.

27,912

SCUM-RETARDANT CARRIER PARTICLES AND COMPOSITIONS THEREOF

Howard A. Miller, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original No. 3,547,822, dated Dec. 15, 1970, Ser. No. 702,201, Feb. 1, 1968. Application for reissue Dec. 23, 1971, Ser. No. 211,629

Int. Cl. G03g *9/02*

U.S. Cl. 252—62.1 **10 Claims**

Magnetically responsive carrier particles for use in magnetic-brush development of electrostatic images, comprising a core of ferromagnetic material overcoated with a thin, continuous layer of a film-forming, alkali-soluble carboxylated polymer. The particles have a reduced tendency to cause scum formation on the surface of a photoconductive element.

27,913

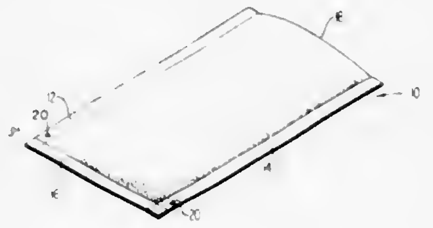
EASY OPEN POUCH CONSTRUCTION

James L. Hutcheson, Mechanicsville, Va., assignor to Reynolds Metals Company, Richmond, Va.

Original No. 3,650,461, dated Mar. 21, 1972, Ser. No. 11,459, Feb. 16, 1970. Application for reissue June 23, 1972, Ser. No. 265,737

Int. Cl. B65d *5/54, 31/02*

U.S. Cl. 229—66 **3 Claims**



An easy open pouch construction and a method of and apparatus for making same. Flexible packaging material is formed into a strip of pouches joined along their longitudinal side seams and fed intermittently through guide means adjacent a reciprocable hole puncher. The feeding means includes means such as an electric eye assembly for detecting the mid-point of the longitudinal side seam between adjacent pouches whereby the reciprocable hole puncher is actuated to punch a hole spaced a slight distance from the mid-point of the longitudinal seam. The strip of pouches is then cut to form an individual pouch which is filled conventionally. The resultant pouch is found to have improved easy opening characteristics.

27,914

SCISSORS-TYPE LINKAGE

John Calaby King, North Balwyn, Victoria, Australia, assignor to Concrete Formwork Engineers Pty., Ltd., Northcote, Victoria, Australia

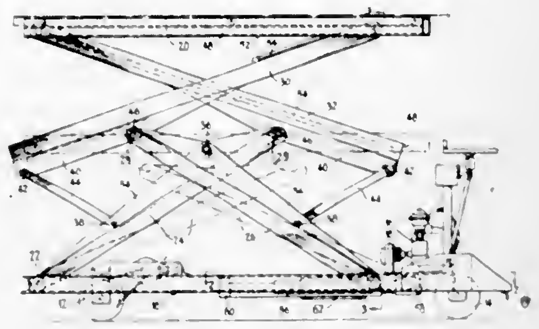
Original No. 3,700,070, dated Oct. 24, 1972, Ser. No. 164,756, July 21, 1971. Application for reissue Nov. 21, 1972, Ser. No. 308,336

Claims priority, application Australia, July 21, 1970, 1,921/70

Int. Cl. E04g *1/22*

U.S. Cl. 182—16 **7 Claims**

The invention relates to a scissors-type linkage mechanism for raising and lowering working platforms. The invention overcomes the prior art disadvantage of high initial raising force by providing a mechanism in which, in the fully collapsed position, the pivot point between the two lowest links is substantially above the line of action of a horizontally acting hydraulic cylinder.



27,915

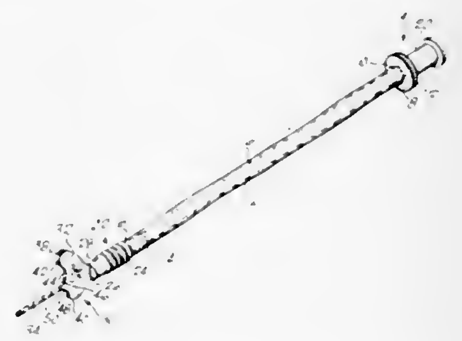
CERVICAL BIOPSY-SAMPLING INSTRUMENT

Gerald C. Kohl, Tacoma, Wash., assignor to Medics Research and Development, Inc., Spokane, Wash.

No Drawing. Original No. 3,554,185, dated Jan. 12, 1974, Ser. No. 709,470, Feb. 29, 1968. Application for reissue Nov. 29, 1972, Ser. No. 310,387

Int. Cl. A61b *10/00*

US. Cl. 128—2 B **7 Claims**



A cervical biopsy-sampling instrument is disclosed which comprises an aspirator having a spatulated sampling tip thereon by which a mucus aspirate and surface scrapings are collected from the cervix for cytological diagnosis. The tip is flexibly connected with the aspirator so that it can follow the relative deflection of the cervical canal when the canal is out of alignment with the vaginal canal. In addition, the scraping edge of the tip is defined on at least one side by a profile face of the tip which is substantially flat over the entire profile on that side, so that edge and face of the tip can be applied to a smear plate in the manner of a spatula for purposes of transferring the scrapings directly to the plate from the tip.

PLANT PATENTS

GRANTED FEBRUARY 5, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,463

CHRYSANTHEMUM PLANT

Leonard H. Shoesmith, Westfield-Woking, England, assignor to Pan-American Plant Company, Chicago, Ill.
Filed May 30, 1972, Ser. No. 258,004
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—79 **1 Claim**

A new variety of *Chrysanthemum morifolium* of standard incurved type for greenhouse culture having a nine-week response and producing very large, long lasting, golden apricot-bronze flower heads. This plant is a sturdy and vigorous grower with abundant foliage and is most suited for spring and fall flowering in northern states and for flowering from October through March in the southern states.

3,464

ROSE PLANT

Roy L. Byrum, Richmond, Ind., assignor to Joseph H. Hill Company, Richmond, Ind.
Filed May 24, 1972, Ser. No. 256,621
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—18 **1 Claim**

A new variety of greenhouse rose plant distinguished by its free and vigorous growing habit and its excellent production of medium large pink flowers having outer petals with delicate ruffled edges which give the flowers the "Old Lace" effect.

3,465

AZALEA PLANT

Anthony M. Shammarello, 4590 Monticello Blvd., Cleveland, Ohio 44143
Filed Dec. 17, 1971, Ser. No. 209,481
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—57 **1 Claim**

1. A new and distinct variety of azalea plant of the hardy evergreen type, substantially as herein shown and described, characterized particularly as to novelty by the radiant dark red color of its flowers resembling Wards Ruby, by the absence of fading of the flowers when exposed to the sun, by the hardiness of the plant and buds at low temperatures equal to the parent Hino-Red, by flowers slightly larger than the parent plant Hino-Red, and retaining the good qualities of the plant character of Hino-Red.

3,466

ROSE PLANT

Roy L. Byrum, Richmond, Ind., assignor to Joseph H. Hill Company, Richmond, Ind.
Filed May 24, 1972, Ser. No. 256,620
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—26 **1 Claim**

A new variety of pink floribunda rose for greenhouse culture distinguished by its free propagating ability, its vigorous growth habit, and its continuous and abundant production of medium sized blooms having a very attractive Dawn Pink to French Rose coloring.

3,467

ALMOND TREE

Alfonzo Ramos Carrion, Rte. 1, Box 32, Arbuckle, Calif. 95912
Filed Jan. 26, 1972, Ser. No. 202,709
Int. Cl. A01h *5/03*

U.S. Cl. Plt.—30 **1 Claim**

1. A new and distinct variety of almond tree characterized by good disease resistance and a well-sealed nut of good quality and flavor comparable to the Mission variety.

3,468

ROSE PLANT

Roy L. Byrum, Richmond, Ind., assignor to Joseph H. Hill Company, Richmond, Ind.
Filed July 26, 1972, Ser. No. 275,361
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—26 **1 Claim**

A new variety of greenhouse rose plant distinguished by its free and vigorous growing habit, consistency of propagation, abundant production, profuse lush green foliage and flowers of a lighter, more iridescent pink which have excellent keeping qualities.

3,469

BEGONIA PLANT

Dieter Hayler, Endersbach, Germany, assignor to Mikkelsens, Inc., Ashtabula, Ohio
Filed Aug. 22, 1972, Ser. No. 282,695
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A novel and distinctive elatior begonia cultivar which is a mutation of the cultivar Schwabenland, the new cultivar being characterized particularly by its salmon red colored, ruffled camellia type flowers having unusually heavy textured bracts and carried on strong, thick pedicels originating from an unusually heavy peduncle; foliage which has an overall wavy or undulating surface, and raspy edges, with the foliage being considerably thicker than average begonia foliage, and quite resistant to powdery mildew; by its tight compact growth associated with close internodes, heavy thick stems, and heavy thick leaf petioles; by its vigorous growth habit, and by its ability to be produced year around under controlled environmental conditions.

3,470

IVY PLANT

Mary Helen Poirier, 1701 Rosalind St., Sacramento, Calif. 95838
Filed May 17, 1972, Ser. No. 254,318
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—67 **1 Claim**

A mutation of *Hedera canariensis variegato* (Algerian variegated ivy) is distinctly characterized as a new variety by leaves which are all white (Plate 18–D–1 of Maerz and Paul Dictionary of Color). The new variety has been successfully asexually reproduced from cuttings as well as by ground-layering.

PATENTS

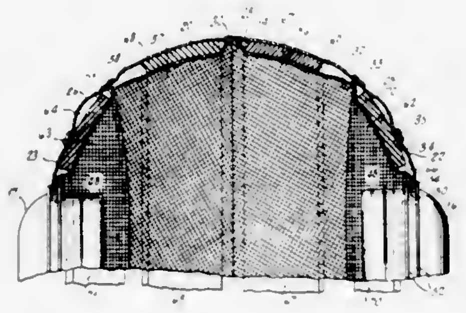
GRANTED FEBRUARY 5, 1974

GENERAL AND MECHANICAL

3,789,427

HEADGEAR STRUCTURE

Jackson Anthony Aileo, 200 Park St., Carbondale, Pa.
Division of Ser. No. 88,823, Nov. 12, 1970. This application Mar. 20, 1972, Ser. No. 236,524
Int. Cl. A42b *3/00*
U.S. Cl. 2—3 R **24 Claims**



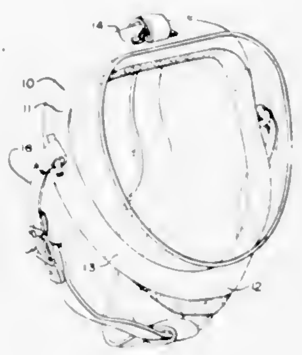
A flexible helmet having plural inner and outer panels of woven fabric cut and assembled so as to conform closely to heads of different shapes and sizes, and plural pads for protecting the wearer's head against impacts, the pads being removably carried in separate pockets formed by the inner and outer panels. The pads may be fabricated of resilient energy-absorbing material and/or may include a layer of flexible, ballistic material for protection against blows from sharp objects. The helmet panels may be made of open mesh fabric, and the pads may be perforated for ventilation of the helmet; also, the inner surfaces of the pads may be so shaped or lined as to provide ventilation spaces between the pads and the wearer's head. Sound-attenuating earcups are carried by the helmet in position for close-fitting engagement with the head. Size adjustment of the helmet is effected by means of a variable length nape strap at the rear of the helmet. In addition, the helmet may carry communications equipment, including earphones within the earcups, and a microphone, with a switch for the microphone sealed in a watertight enclosure within one of the earcups. An elongated flap extending across the lower inner margin of the rear of the helmet may be folded over and fastened to provide a passage for holding the wiring of the communications equipment. For further protection of the head, a rigid outer shell may be placed over and detachably secured to the flexible helmet, being stabilized in position relative thereto by means of cooperating, complementary pressure-actuable surface contact fastening elements respectively carried on the crown portions of the outer surface of the flexible helmet and the inner surface of the rigid shell.

3,789,428

FACE PROTECTOR

William H. Martin, 124 Wildwood, Winnipeg, Manitoba, Canada
Filed Oct. 29, 1971, Ser. No. 193,638
Int. Cl. A42b *1/06*
U.S. Cl. 2—9 **4 Claims**

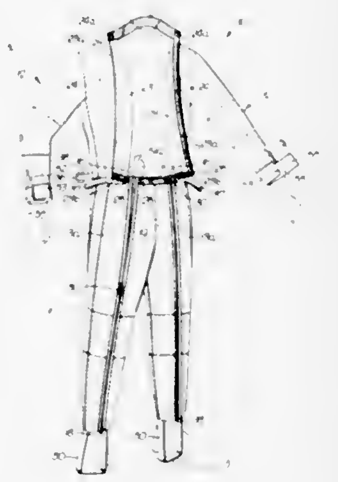
An open ended portion or buffer component is fitted to a flange having a flexible gasket engaging the face and a strap holds the protector onto the head of the wearer. The gasket can be positioned on the flange to suit the wearer. The open end portion protects the face and eyes by means of a buffer action thus preventing wind from striking the face and eyes. A detachable tinted strip can be used and also a detachable fine screen cover if desired.



3,789,429

JUMP SUIT WITH ADJUSTABLE TRUNK

Joe N. Garcia, Wildomar, Calif., assignor to Marshall Yoakum, Los Angeles, Calif.
Filed Apr. 20, 1972, Ser. No. 245,774
Int. Cl. A41d *13/02*
U.S. Cl. 2—79 **5 Claims**

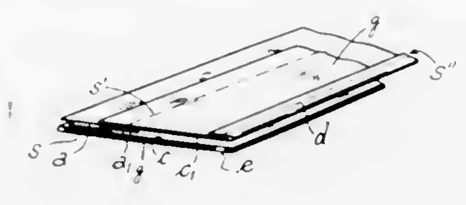


A parachutist's jump suit comprises, in combination,
a. a trunk and arm and leg sleeves,
b. the trunk having a vertical split at the front thereof between the neck and waist, and having a horizontal split at the waist front,
c. structure to releasably fasten the trunk along said splits, and
d. means accessible at the sides of the trunk to enlarge and diminish the encircling dimension of the trunk proximate the waist thereof

3,789,430

PREFABRICATED TROUSER FLY

Christian Bernard, Mouvaux (Nord), France, assignor to Dolfus-Mieg & Cie, Paris, France
Filed June 22, 1971, Ser. No. 155,426
Claims priority, application France, Sept. 18, 1970, 70.33877
Int. Cl. A41d *1/06, 27/00*
U.S. Cl. 2—234 **7 Claims**

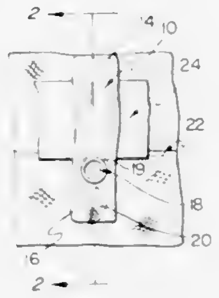


Improved fly for trousers of all types, obtained by prefabrication during a stage preceding the actual trouser making stage, the closing system of this fly being attached to at least one support consisting of any suitable material differing from the trouser material and having the form of a tape which, during the actual garment-making process, is secured for example by stitching to the trousers.

3,789,431

CLOTHING HAVING ADJUSTABLE BELT LOOPS

Robert B. Rand, P.O. Box 1939, Daytona Beach, Fla.
Filed Aug. 2, 1972, Ser. No. 277,267
Int. Cl. A41f *9/00*
U.S. Cl. 2—236 **10 Claims**



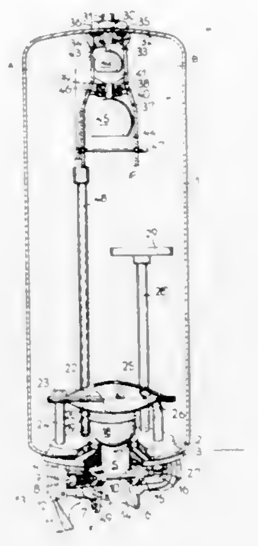
Belt loops for an article of clothing normally worn with a belt which are adjustable to accommodate different width belts. Each loop comprises a length of loop material secured to the underlying main body surrounding portion of the garment at a first and second point of attachment along the length of the loop with at least one point of attachment being achieved by the use of disengageable fastening members which permit the space between the attached points to be enlarged or reduced as required.

3,789,432

FLUSHING SYSTEM

Jean-Pierre Pozzi, Meudon, France, assignor to LaTrombe, Paris, France
Filed Apr. 17, 1972, Ser. No. 244,631
Claims priority, application France, Apr. 19, 1971, 71.13689
Int. Cl. E03d *3/00*
U.S. Cl. 4—26 **12 Claims**

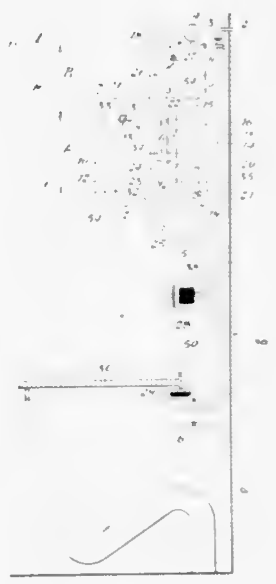
Flushing apparatus is provided comprising a cistern mounted between the feed-pipe and the flush-pipe and containing a device with an entry and air escape valve as well as a valve connected with a seating formed at the entry to the flush-pipe and subject to the hydrostatic pressure of the water contained in a chamber communicating with the said pipe through a valve governed by the handle operating the flush, wherein the valve (connected with the seating formed at the entry to the flush-pipe) is suspended from a flexible diaphragm forming one of the walls of said chamber communicating with the cistern through a small aperture provided in another section of the wall.



3,789,433

SIPHON WITH PNEUMATIC PRIMING AND SUCTION

Angelo Brugnoli, Sidney, New South Wales, Australia, assignor to Francesco Amici and Maria Brugnoli, both of Rome, Italy
Filed Mar. 22, 1972, Ser. No. 236,891
Claims priority, application Italy, Apr. 6, 1971, 49565 A/71
Int. Cl. E03d *1/04, 5/04*
U.S. Cl. 4—44 **6 Claims**



A siphon device for water closet tanks which includes a double bell siphon submerged in the liquid to be discharged, a liquid discharge pipe extending from the siphon to the closet bowl, a gas delivery and suction pipe, and a priming device which, in the inactive state, retains in the siphon, by means of a liquid column, a compressed air cushion, said compressed air cushion being formed during the submersion of the siphon. A pneumatic pump, connected with the priming device, sucks the liquid in said device and lets the compressed air cushion, which, in the state of rest, prevents the siphon from being primed, freely discharge into the siphon.

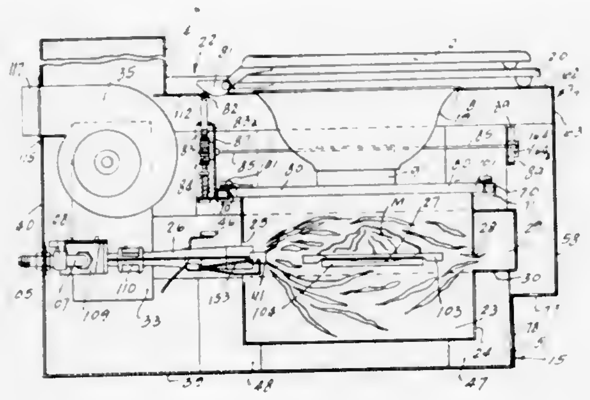
3,789,434
INCINERATOR TOILET

Walter J. Vollrath, Jr.; Richard J. Vollrath, both of Sheboygan; Paul R. Virnoche, Newton; Joseph Turk, Sheboygan; Paul E. Gerdes, Sheboygan, and Roy W. Singer, Sheboygan, all of Wis., assignors to Polar Ware Company, Sheboygan, Wis.

Filed Aug. 3, 1971, Ser. No. 168,577

Int. Cl. A47k *11/02*

U.S. Cl. 4—131 11 Claims



A compact, low cost, efficient gas fired incinerator toilet has a chassis within which is suspended an insulated firebox with which is associated an afterburner passage leading to a mixing chamber upstream relative to an exhaust fan and duct. A toilet seat is mounted on a cabinet top separably carried by the top of the chassis for ready access into the unit. Various operating and safety structures and controls are provided.

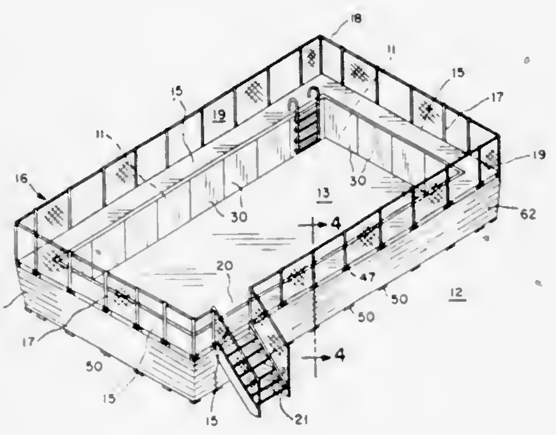
3,789,435
PREFABRICATED SWIMMING POOL

Mark Heisner, 651 N. Terrance Ave., Mount Vernon, N.Y.

Filed May 8, 1972, Ser. No. 251,448

Int. Cl. E04h *3/16, 3/18*

U.S. Cl. 4—172.19 8 Claims



A prefabricated swimming pool is described which comprises steel walls and integral deck formed of prefabricated panels. A vinyl liner is employed to contain the water. The panels, which are generally of an inverted L-shape, are supported by an exterior truss construction where they are joined to adjacent panels, which simultaneously provides mounting means for a fence post permitting safe enclosure of the pool. The pool is especially adapted for above-ground use. Its modular construction also affords a wide variety of sizes. Among its main advantages are low cost, and fast installation without the need for skilled labor.

3,789,436
WASHING DEVICE

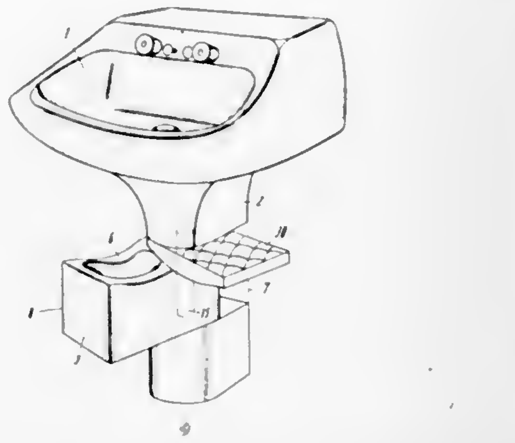
Hartmut-Wolfgang Maier-Gerber, Titusweg 1, 7501 Langensteinbach Baden, Germany

Filed Oct. 20, 1972, Ser. No. 299,202

Claims priority, application Germany, Oct. 20, 1971, 2152158

Int. Cl. A47k *1/04, 3/22, 11/08*

U.S. Cl. 4—166 9 Claims



A washing device which comprises a washing basin and a seat washing basin. A mixing water feed feeds water selectively into said washing basin and into said seat washing basin, respectively. The washing basin and the seat washing basin are combined to a single functional unit including a single, joint armature battery controlling the mixing water feed and including a joint water waste for removing selectively waste water from the washing basin and from the seat washing basin, respectively. The seat washing basin includes means for moving the latter selectively into one of two positions, one of the positions constitutes a covered resting position and the other of the positions constitutes a use position.

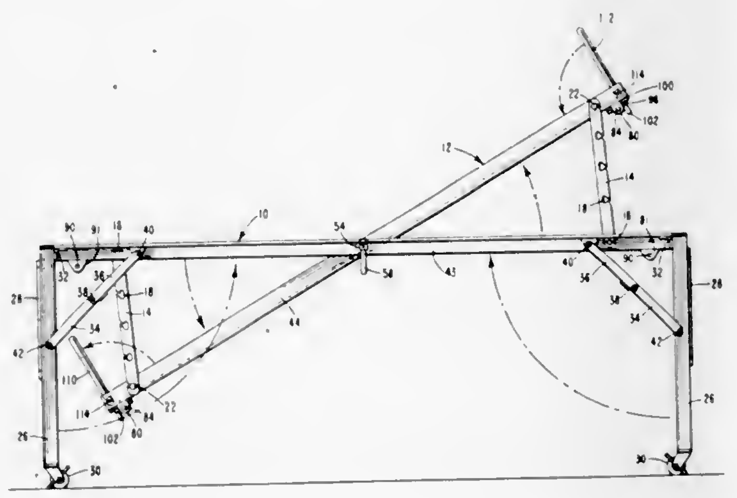
3,789,437
FOLDING HOSPITAL BED

Gilbert M. Garte, 62 Curtis St., Situate, Mass.

Filed Jan. 11, 1972, Ser. No. 216,955

Int. Cl. A45f *1/00;* A61g *7/10*

U.S. Cl. 5—62 6 Claims



A folding bed including a main frame and an inner bed spring frame pivotally connected to the main frame at generally the longitudinal midpoint of said bed spring frame. The latter can be inclined relative to the main frame and locked in the desired position of adjustment. To store the bed, the inner bed spring frame can be disposed parallel to and within the main frame and the legs of the bed folded to provide a compact assembly. Inflatable pillows and mattress are stored in a deflated condition.

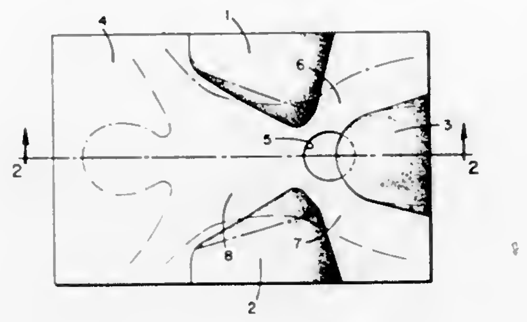
3,789,438
PROTECTIVE MATTRESS

Jean-Francois Hery, 5, Square Saint-Pasquier, Nantes, France

Filed Apr. 17, 1972, Ser. No. 244,455

Int. Cl. A61g *7/04*

U.S. Cl. 5—91 9 Claims



A protective mattress having an upper face comprising three thickened portions, which define therebetween three divergent channels which intersect, and an orifice at said intersection whereby the body of a baby or ill adult may be disposed with the legs in two of said channels and the trunk in a third thereby to orient the body so that body wastes are discharged into said orifice without soiling the mattress user. The mattress may be complete or intended for support by a lower mattress.

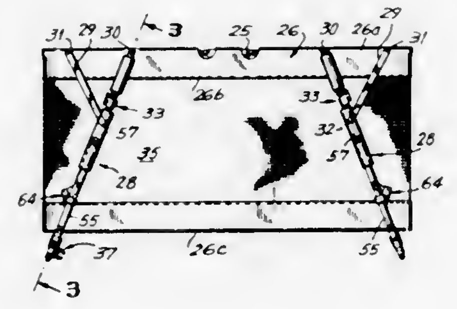
3,789,439
FOLDABLE AND ADJUSTABLE CRIB

Donald P. Berg, Shaker Heights, and Hugh F. Groth, Brecksville, both of Ohio, assignors to Cross-River Products, Inc., Croton-on-Hudson, N.Y.

Filed Oct. 27, 1972, Ser. No. 301,287

Int. Cl. A47c *27/08*

U.S. Cl. 5—99 C 25 Claims



There is disclosed a crib which can be folded into a highly compact form, and which can be converted for use as a playpen or a dressing table with a minimum of effort. The unit includes four legs each of which is pivoted at its upper end to a side of a foldable rim, and each of which has a link which connects another point on the same side of the rim to an intermediate point on the leg. Between those pivot points on the leg connected between the rim and the link there is provided a hinge joint which permits the two sections of each leg to be rotated 180° relative to each other. At a point further below the link pivot on each leg, there is provided another link which connects the leg to the side of a floorboard section. The four lower links permit the floorboard to be switched between two distinct positions with a minimum of effort.

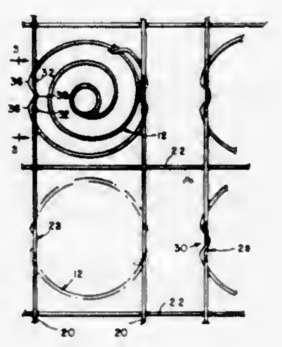
3,789,440
SPRING ASSEMBLY

Harry A. Garceau, Charlton City, Mass., assignor to Webster Spring Co., Inc., Oxford, Mass.

Continuation-in-part of Ser. No. 97,733, Dec. 14, 1970, Pat. No. 3,662,411. This application May 11, 1972, Ser. No. 252,185

Int. Cl. A47c *23/02*

U.S. Cl. 5—256 2 Claims



A coiled spring structure comprising a wire frame to which there are attached spaced pairs of longitudinally and transversely extending wires providing at their intersections end supports for the ends of coiled springs and coiled springs having end loops provided with diametrically disposed, reversely bent segments adapted to be sprung into engagement with the wires at the seats.

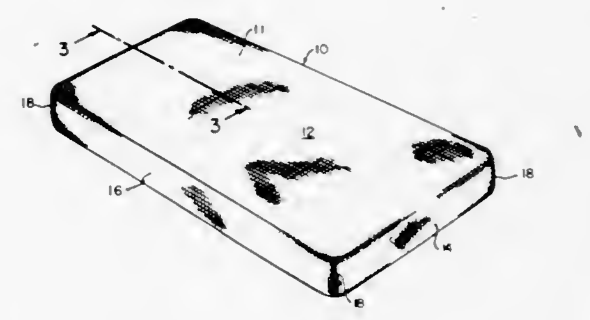
3,789,441
FITTED CONTOUR NO-IRON SHEET CONSTRUCTION

Sidney Matthew Weiss, c/o The Griswald-Eshleman Co., 655 Madison Ave., New York, N.Y.

Filed Jan. 24, 1972, Ser. No. 220,153

Int. Cl. A47g *9/00;* A47c *23/00*

U.S. Cl. 5—334 C 6 Claims



A fitted contour no-iron sheet is provided for mattresses, studio couches and the like, comprised substantially of cotton knitted fabric, having balanced two-way stretch characteristics. The sheet is made from a single piece of fabric, devoid of any separate pieces or elastic additions and is formed after cutting by four simple corner stitches. In addition, a conventional border stitching of the rolled edges of the sheet may be provided. The formed contour sheet will conform to several size mattresses and can be fitted without raising the mattress edges. The sheet of the invention is particularly appropriate for hospital beds because the stretch characteristics eliminates strain on corner construction and the usual failure thereof by the raising and lowering of hospital beds to a variety of positions. Furthermore, the sheet conforms to the mattress in its various raised positions.

3,789,442

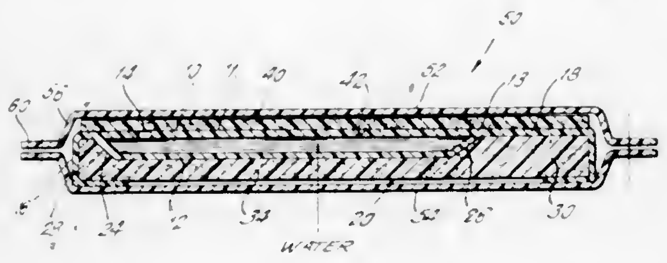
LIGHT-WEIGHT MINIMUM VOLUME WATER PAD WITH INTEGRAL WATER CONTAINER SECUREMENT MEANS

Sidney Tobinick, Oldbridge, N.J., assignor to Aqua Therm Products Corporation, Rahway, N.J.

Continuation-in-part of Ser. No. 199,853, Nov. 18, 1971, Pat. No. 3,702,484. This application Oct. 26, 1972, Ser. No. 300,917

Int. Cl. A47c *27/08*

U.S. Cl. 5—348 WB **11 Claims**



A low liquid volume, low weight liquid or water pad for use as a mattress comprised of a lower cellular foamed material flexible pad, which is hollowed out for receiving a flexible material, liquid filled container. The lower pad has an unhollowed extension portion for a user's head, upper body, or the like, which the liquid container does not rest on. The liquid container includes edge flaps which are wrapped around edges of the lower foam pad to secure the liquid container in position. Extending across the lower pad, the hollow therein and the liquid container is an upper flexible pad of the same cellular foamed material. The entire aforesaid structure is enclosed within a flexible, water impervious sheath which is loaded with the structure through openings in the ends of the sheath. The end openings are secured closed.

3,789,443

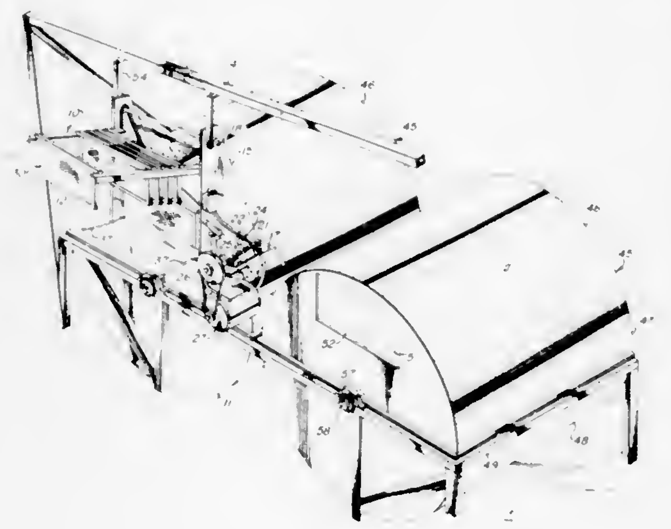
HONEYCOMB DECAPPING AND HONEY EXTRACTING APPARATUS

John F. Cowen, P.O. Box 206, Parowan, Utah

Filed July 28, 1972, Ser. No. 276,047

Int. Cl. A01k *51/00*

U.S. Cl. 6—12 A **20 Claims**



In general this apparatus includes means for removing the wax caps from honeycombs, moving the decapped combs from the decapping means into apparatus for extracting the honey from the decapped combs and moving the empty combs from the extracting apparatus for cleaning, if necessary, and replacement in the hives. More specifically, the apparatus has a plurality of extracting units disposed in side-by-side relation, each unit having a cylindrical casing with a rotatable reel inside. The reel has guide tracks for receiving and holding decapped combs while rotative movement is imparted to the reel to centrifuge the honey from the combs. Drive means serve to alternately rotate the reels, and while each reel is stationary a decapping device is registered with a loading station of the extractor and operated to decap the combs and load them onto the stationary reel. The loading operation also serves to unload the empty combs onto a conveyor holder from which they can be removed for transportation to and replacement in the hives. The apparatus is semiautomatic in operation, the filled combs being manually loaded into the decapping device, which is manually moved from one extractor unit to another, and the empty combs are manually unloaded from the conveyor holder.

3,789,444

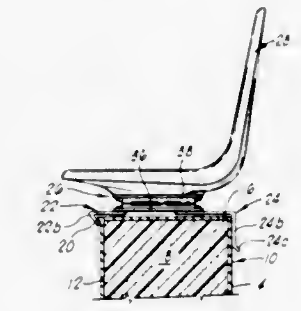
BOAT SEAT HOLDER ASSEMBLY

Byron McCord, 2045 Phoenix Ave., Camden, Ark.

Filed July 7, 1972, Ser. No. 269,710

Int. Cl. B63b *29/00*

U.S. Cl. 9—7 **1 Claim**



A boat seat holder assembly including a pair of bracket plates, and a swivel plate seat mounting assembly interconnecting the bracket plates. The bracket plates include a forward plate having a substantially monoplanar main plate portion having apertures therethrough, and having a turned over flange at the forward edge thereof defining with the main plate portion an angle of less than 60°. A second or rear bracket plate has a substantially monoplanar main plate portion having apertures therethrough, and having a first flange portion bent from and extending at a right angle to, said main plate portion. The flange portion has at its free edge, a turned out, finger grip, portion. The front and rear bracket plates cooperate in fitting across the permanent seat of a boat and gripping such seat. The swivel plate assembly supports a swiveling fisherman's chair or seat for accommodating a fisherman sitting in the boat

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3,789,445

BUOY CONSTRUCTION

Larry Vane W. Frazier, Ventura, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

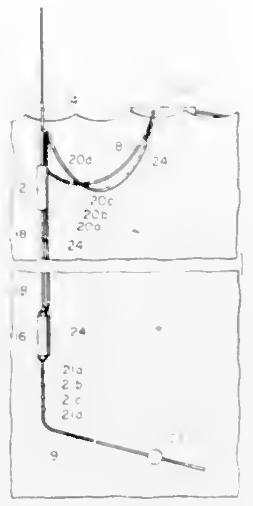
Filed Nov. 12, 1971, Ser. No. 198,138

Int. Cl. B63b *21/52*

U.S. Cl. 9—8 R **2 Claims**

A vertically disposed tube having valves at each end and suspended in the ocean for the purpose of creating dynamic

system stability. When the valves are closed, water is trapped in the tube and forms a large mass which is added to the system. If both valves are open, water flows freely through the tube with no vertical stability added to the system.



3,789,446

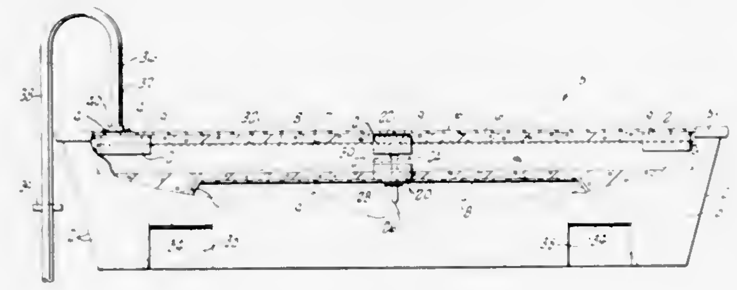
UNSINKABLE RAFT

John Rudelick, Milwaukee, Wis., assignor to Multi-Pro, Inc., Milwaukee, Wis.

Filed Dec. 16, 1971, Ser. No. 208,745

Int. Cl. B63c *9/04*

U.S. Cl. 9—11 R **5 Claims**



An unsinkable raft comprising a plastic foam filled hull capped by a flat deck. An inwardly displaced bottom portion of the hull provides a substantially large central cavity in its underside which enhances the buoyancy and stability of the raft. The bottom of the cavity is spaced a distance beneath the deck, and an anchor line attaching eye disposed at its underside, is attached to an elongated girder confined in the space under the deck, so that the pull of an anchor line will be transmitted to surfaces of substantial area in the interior of the body.

3,789,447

SWIMMING ACCESSORY

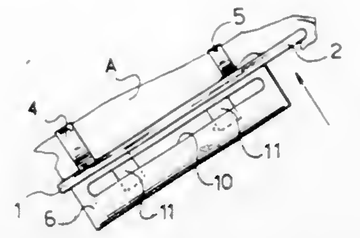
Viateur Lavallee, 5305 Forget St. Louis de, Terrebonne, Quebec, Canada

Filed Dec. 12, 1972, Ser. No. 314,415

Int. Cl. A63b *31/06*

U.S. Cl. 9—303 **4 Claims**

A swimming accessory adapted to be secured to one's limb, such as an arm, and including a pair of fins which are apertured to allow the water to pass therethrough during the negative or back stroke and which are of buoyant construction to supplement the buoyancy of the user thereof. A swimming limb accessory including an elongated board, bands secured to the board to attach the same to a limb, leg or arm, a pair of fins each having an aperture therethrough and integrally constructed and hinged to the board to cause the apertures to close during the positive stroke and to cause the same to open during the back stroke to then reduce the negative water action thereon, and spring blades arranged to resiliently restrain the pivoting of the fins away from the board.



3,789,448

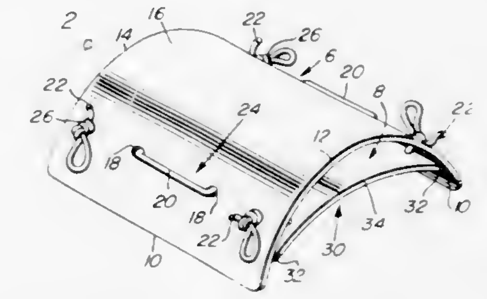
FOOT AND HAND MOUNTED SWIMMING AIDS

James P. Mitchell, Rt. 1 Box 16, Hepler, Kans.

Filed Nov. 14, 1972, Ser. No. 306,453

Int. Cl. A63b *31/04*

U.S. Cl. 9—307 **4 Claims**



A swimming aid for hand and foot propulsion characterized by suitably aligned first and second bendably resilient plastic sheets. The second sheet is smaller in plan than the first sheet. These two sheets are arcuately bowed and laced together in a manner to clampingly and retentively embrace the swimmer's wrist or foot, as the case may be. The overlapping and overhanging marginal portions of the first sheet provide propulsion flippers. The free ends of the cord-type laces can be, and preferably are, used to tie and retain the swimming aid in ready-to-use position.

3,789,449

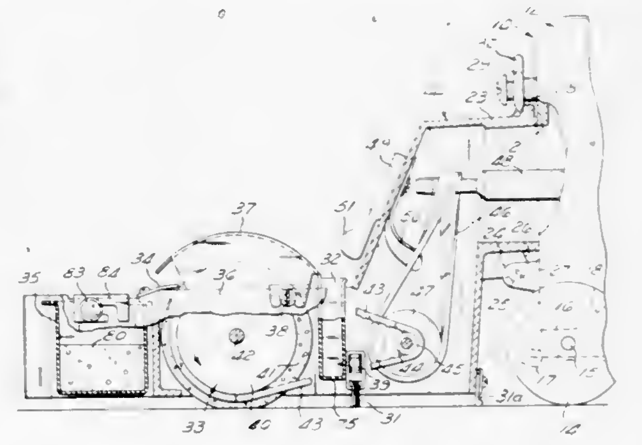
HARD SURFACE FLOOR CLEANER

Charles H. MacFarland, and Alexander A. Papp, both of Cleveland, Ohio, assignors to The Scott & Fetzer Company, Cleveland, Ohio

Filed June 21, 1972, Ser. No. 264,840

Int. Cl. A47l *11/292*

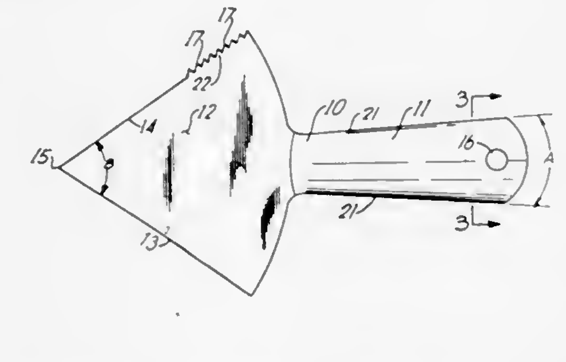
U.S. Cl. 15—4 **9 Claims**



A hard surface floor cleaner which is capable of being detachably mounted to the motor housing of a vacuum cleaner is disclosed. The floor scrubber includes a liquid dispenser for flowing a quantity of liquid detergent onto the floor, a scrubbing brush, and a power driven, open cell polyurethane roll for picking up the liquid detergent and dirt from the floor. A receptacle for picked up detergent and dirt is mounted ahead of the roll and a shear blade is mounted between the receptacle and the roll. An edge of the shear blade contacts the surface of the roll for shearing detergent and dirt therefrom and depositing detergent and dirt in the receptacle. An air blast assists in drying the floor.

3,789,450
PAINTER'S PAL

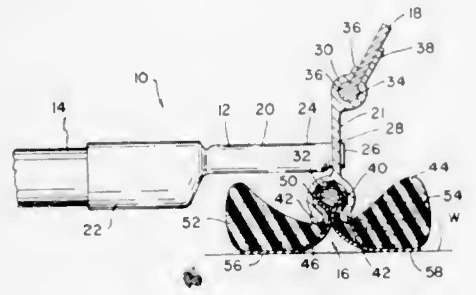
Bernard Mozdenski, and Bernard T. Mozdenski, both of Long Island, N.Y., assignors to The Raymond Lee Organization Inc., New York, N.Y., a part interest
Filed Feb. 29, 1972, Ser. No. 230,438
Int. Cl. A47l *25/00;* **B25f** *1/00*
U.S. Cl. 15—105 **2 Claims**



A painter's tool comprising an angular shaped metal blade fastened by a plastic or wooden handle. The blade is pointed with one edge being of straight configuration, and the second edge being of straight configuration for a section of said edge with protruding angular shaped teeth on a portion of said second blade edge, said protruding teeth being of use in the cleansing of paint brushes. The straight edges and points of the blade are of use in scraping paint from the surfaces to be repainted. The sides of the brush handle diverge from each other at an eight degree angle so as to furnish a desirable grasping surface.

3,789,451
WINDOW CLEANING IMPLEMENT

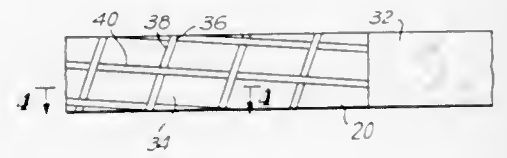
Walter William Laitner, Grosse Pointe, Mich., assignor to Laitner Brush Company, Detroit, Mich.
Filed May 26, 1972, Ser. No. 257,199
Int. Cl. A47l *1/08*
U.S. Cl. 15—118 **1 Claim**



A portable implement for cleaning a smooth surface such as a vehicle windshield. An absorbent member is folded upon itself and the folded portion is clamped to a supporting frame. An abrasive sheet is folded inside the absorbent member. When pressed against a smooth surface, the absorbent member spreads out to subject the surface to the combined washing and abrading action of the abrasive sheet and the absorbent member.

3,789,452
TAPE AND CASSETTE FOR CLEANING MAGNETIC RECORDING HEADS

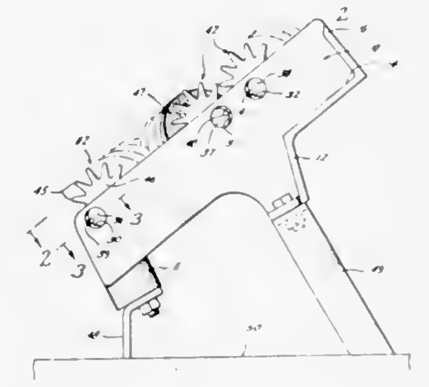
Tsuneo Nemoto, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Sept. 17, 1971, Ser. No. 181,342
Claims priority, application Japan, Sept. 18, 1970, 45-92601
Int. Cl. G11b *5/00, 3/58*
U.S. Cl. 15—210 R **9 Claims**



A tape cassette for use in recording and reproducing apparatus having magnetic heads adapted to be engaged with tape in the cassette includes a generally hollow case, a pair of tape reels rotatably mounted therein, and a magnetic head cleaning tape having its ends respectively secured to the reels for winding thereon. The tape has a base formed of a nonwoven fibrous material and a plurality of reinforcing threads are located on at least one side thereof for engaging the magnetic head during operation of the apparatus to wipe the head and remove dust and other impurities therefrom.

3,789,453
CLEAT CLEANER

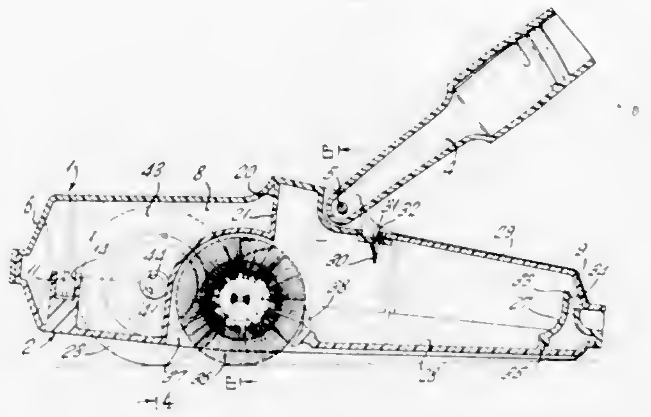
Gerald J. Curtis, 8806 Glen Loch, Houston, Tex.
Filed Mar. 10, 1972, Ser. No. 233,594
Int. Cl. A47l *23/26*
U.S. Cl. 15—237 **10 Claims**



A shoe cleat cleaner comprises an inclined, hollow base having a plurality of inclined axles held by the base, each of the axles inclined at an angle between 20° and 30° from right angles between the two sides of the base wherein one axle is inclined from one side of the base and the other axle is inclined from the opposite side of the base, and a plurality of rotatable cleaning members on each axle, the cleaning members being preferably emery dressing wheels but which may also be wire brush wheels, the cleaning members extending above the top of the base and spaced from one other and each cleaning member adapted to wobble on the axle and rotate thereon.

3,789,454
CARPET SWEEPER

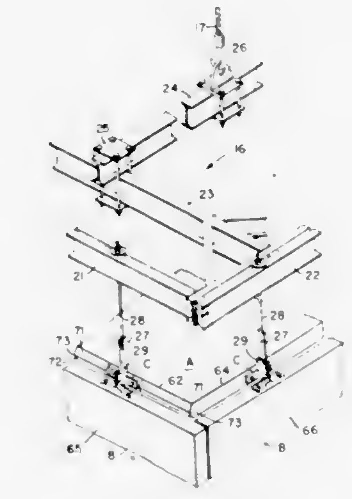
Robert E. Drappeu; Hughjean Burton Gould, both of Berwyn, and Daniel A. Maust, Winfield, all of Ill., assignors to The Drackett Company, Cincinnati, Ohio
Filed July 7, 1972, Ser. No. 269,632
Int. Cl. A47l *11/00*
U.S. Cl. 15—41 R **5 Claims**



The subject invention relates to a carpet sweeper having a minimum of parts, most of which are molded completely of plastic. The sweeper is provided with a dust collecting bin having a lid which provides easy access from the upper portion of the sweeper. A simple gear system transmits rotating motion directly from the wheels to the rotating brush. The housing consists of an upper and lower portion which are both constructed of a molded plastic material. The upper portion has provision to accomodate the dust bin lid and the lower portion has integrally molded means to mount the brush and brush drive system.

3,789,455
METHOD OF AND MEANS FOR MULTI-UNIT BUILDING CONSTRUCTION

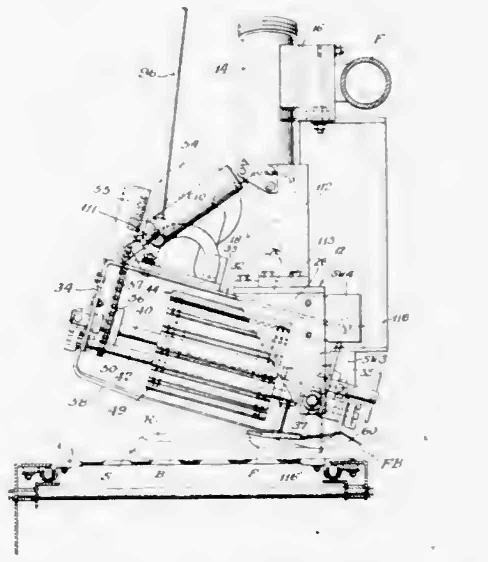
Oleg V. Miram, 759 Flood Building, San Rafael, Calif.
Division of Ser. No. 134,623, April 16, 1971, Pat. No. 3,724,157. This application Aug. 21, 1972, Ser. No. 282,398
Int. Cl. E04g *21/14*
U.S. Cl. 16—128 R **1 Claim**



A method of constructing buildings of modules is disclosed in which the modules are formed of overhead and wall panels fabricated with means embedded therein having no portion extending beyond the boundaries thereof for distributing the weight thereof to a plurality of points spaced from each other along their edges, which edges are mechanically interconnected by removable hinge joinder means extending between the embedded means in adjacent panels when they are in selected juxtaposition. Means for raising the overhead panels to an elevated position including said removable hinge joinder means are described. Preferred means for forming the overhead and wall panels in the selected juxtaposition and preferred removable hinge joinder means are disclosed. Preferred methods and means for interconnecting vertically and horizontally adjacent modules into structural units of the final building structure before or after removal of said removable hinge joinder means are described.

3,789,456
RIB CUTTING APPARATUS

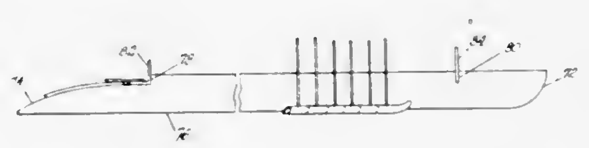
Richard E. Doerfer, Waterloo; Homer N. Leymaster, Cedar Falls, and Richard R. Neebel, Waterloo, all of Iowa, assignors to Doerfer Corporation, Cedar Falls, Iowa
Filed Sept. 9, 1971, Ser. No. 178,914
Int. Cl. A22c *17/00*
U.S. Cl. 17—1 R **13 Claims**



An animal processing machine including rib cutting apparatus constructed and arranged so as to optimize the rib portion cut from an animal side. The rib cutting apparatus includes a frame having a movable conveyor thereon operable to convey an animal side to a rib cut knife. Driven rotatable means urge the animal side against the conveyor. The rib cut knife is mounted at an angle relative to the direction of conveyor travel and is adapted to be tilted relative to the animal side and then raised from the animal side to provide a desirable taper on the end of the cut ribs.

3,789,457
METHOD AND APPARATUS FOR EVISCERATING CLAMS

Harold F. Snow, R.D. 4 Pine Pt., Scarborough, Maine
Filed Apr. 17, 1972, Ser. No. 244,616
Int. Cl. A22c *21/00*
U.S. Cl. 17—48 **13 Claims**



Evisceration of clams is accomplished by positioning a clam on a conveyor belt with the clam root at the trailing end; bringing the clam under a skate bar positioned over the belt and longitudinally in relation to the belt travel, the skate bar pinning the clam against the belt while the clam slides along the bottom of the skate bar with the clam muscles on opposite sides of the skate; pushing the clam muscles to the sides further away from the skate bar by moving the clam under a V-shaped plow mounted in conjunction with the skate bar over the belt, the plow having each leg of the "V" on opposite sides of the skate bar and its apex away from the direction the belt travel, the plow displacing the muscles to the sides and away from the skate bar as the remaining clam body slides under the plow and the skate bar; and eviscerating the clam by passing it between the belt and a pressure pad whereby force is applied to the pad and against the clam body between the muscles progressively from the leading end to the trailing or root end of the clam to squeeze out the viscera

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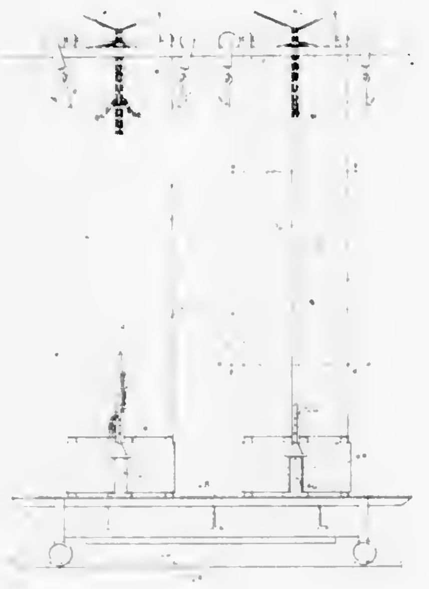
3,789,458
HOG SKINNING II

Kenneth J. Brown, P.O. Box 2036, Plainview, Tex.
Filed June 14, 1972, Ser. No. 262,527
Int. Cl. A22b *5/16*
U.S. Cl. 17—21 **7 Claims**



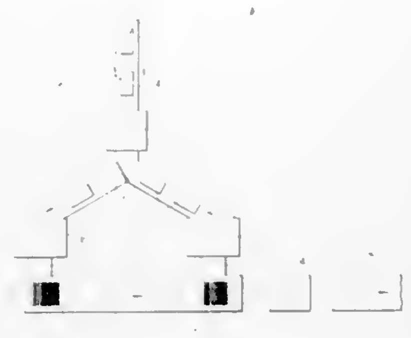
A series of hogs are hung by their hamstrings and moved progressively along a conveyor. The skin is cut from the belly, legs and head of each hog and then heads of the hogs, by pairs, are held down while the skins of the hogs, by pairs, are pulled upward. The skins are pulled upward over a tent-shaped backing to protect the mechanical portions of the puller from blood and offal.

The skin is pulled over a double cone-shaped roller at the top so the skins are channeled to the center in this area.

3,789,459
METHOD AND APPARATUS FOR INCREASING PORTION YIELD FROM INDUSTRY STANDARD FROZEN FISH BLOCKS

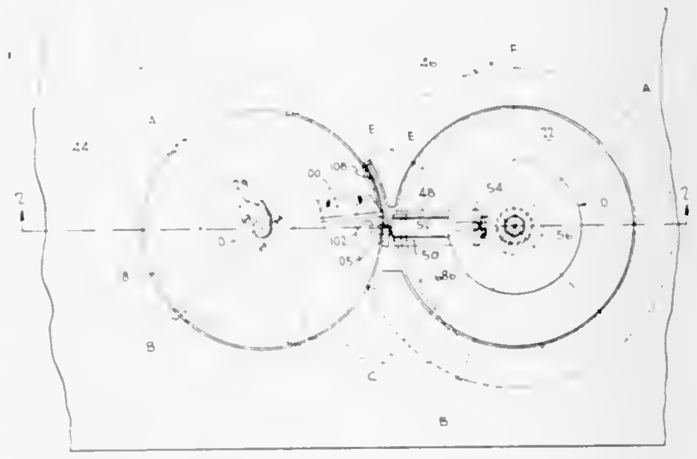
John F. Krakowski, Waltham, Mass., assignor to Methods, Inc., Smyrna, Del.
Filed Oct. 31, 1972, Ser. No. 302,596
Int. Cl. A22c *25/18*
U.S. Cl. 17—52 **8 Claims**

Industry standard size and weight frozen fish blocks, usually slightly overweight, are conveyed over an automatic weigher which will record the excess weight in each block over that weight needed to produce the required number of portions from the block. As successive blocks pass over the weigher, each will have its overweight added, or its underweight subtracted, with reference to the weight necessary to produce the required number of portions. When the automatic weigher records from a number of blocks an accumulated overweight equal to the weight of one strip taken from a block to produce a given number of portions, an automatic diverting means associated with the weigher will divert one block to a stripping saw which will produce from that block one extra strip in comparison to a second saw which receives and processes all other blocks in the procession crossing the automatic weigher.



3,789,460
CRAWFISH PEELER

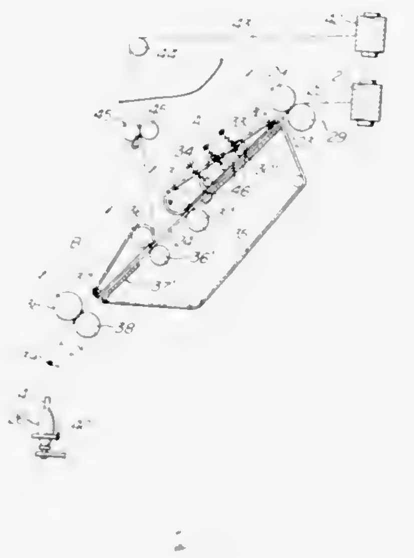
Edgar J. Ingalls, Kendalwood Rd., Baton Rouge, La.
Filed Jan. 19, 1972, Ser. No. 218,871
Int. Cl. A22c *29/00*
U.S. Cl. 17—73 **6 Claims**



Pairs of grippers for operative engagement with the tail and head ends, respectively, of a crawfish are supported for movement in synchronized relation through separate but tangentially related orbits wherein both pairs of grippers simultaneously move in a common direction through or past the point of tangency of their respective orbits. Thus a crawfish, the tail of which is placed in the tail grippers with its head projecting therefrom, will be carried toward the point of tangency to place its head in the head grippers, which will then be closed approximately at the point of tangency to then remove the head during continued movement of both pairs of grippers through and past the point of tangency, leaving the meat within the portion retained in the tail grippers. A nozzle which penetrates the tail section of the shell, then injects a blast of air into the shell to eject the meat. The deveining pin on which the shell and meat are impaled when initially placed in the tail grippers, functions to open and remove the sand vein from the crawfish incident to its ejection under the influence of the air blast. During continuance of their rotation, and before again approaching the point of tangency, the tail grippers are opened to release the empty shell segment therefrom and to receive a fresh crawfish. The head grippers are similarly opened to discharge the head.

3,789,461
APPARATUS FOR PREPARING SPUN YARN

Hiroshi Nakano, Suita; Hideo Takai, Fuji, and Fumio Nakajima, Yoshiwara, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Division of Ser. No. 618,469, Feb. 24, 1967, Pat. No. 3,596,458. This application Mar. 18, 1971, Ser. No. 125,524
Int. Cl. D01g *1/08;* **D01h** *5/86*
U.S. Cl. 19—.35 **3 Claims**

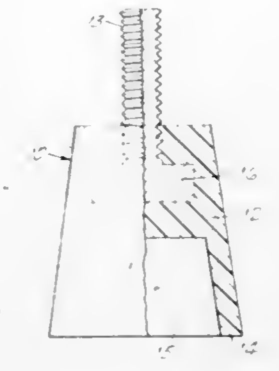


Apparatus for preparing spun yarn comprising back rolls for feeding fiber from a supply thereof to front rolls spaced from the back rolls and serving to draft fiber received therefrom. A stretch breaking zone and a draft zone are arranged in succession in that order between the back rolls and the front rolls. An endless bottom apron extends between the back rolls and front rolls over the stretch breaking zone and the draft zone, and the bottom apron passes on respective support plates adjacent the back rolls and front rolls. Output rolls are mounted in the stretch breaking zone for drawing fiber from the back rolls and stretch breaking the fiber, and input rolls are provided in the draft zone for receiving fiber from the output rolls and for advancing the fiber to the front rolls. Both the input and output rolls include top and bottom rolls for advancing the fiber therebetween. The bottom apron extends on and is driven by the bottom rolls of the input and output roll means. A first top apron is mounted in the stretch breaking zone, and a second top apron is mounted in the draft zone, the first top apron passing on a further plate and on the upper roll of the output rolls in the stretch breaking zone and driven by the latter, the second top apron passing on a further plate and on the upper roll of the input rolls in the draft zone and driven by the latter. The first and second top aprons are opposed to the bottom apron to control the feed of the fiber therethrough.

3,789,462
ABRASIVE-FILLED DENTAL PROPHYLACTIC CUP

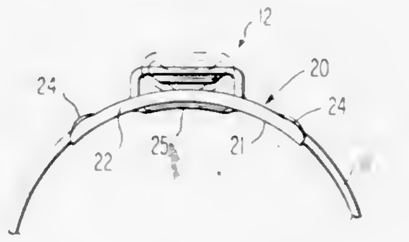
Charles Reich, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St Paul, Minn.
Filed Mar. 26, 1973, Ser. No. 345,101
Int. Cl. A61c *3/06*
U.S. Cl. 32—59 **3 Claims**

An abrasive-filled, paste-free dental prophylactic cup is formed from a urethane elastomer. The elastomer consists essentially of tolylene diisocyanate endcapped polytetrahydrofuran cured with 4,4′-methylene bis(o-chloroaniline). The elastomer has 25 – 50 percent by weight of pumice added to the elastomer as a dental abrasive. Prophylactic cups formed from the abrasive filled elastomer will perform a suitable dental prophylaxis without the addition of prophylactic paste.



3,789,463
BRIDGING MEMBER FOR HOSE CLAMPS

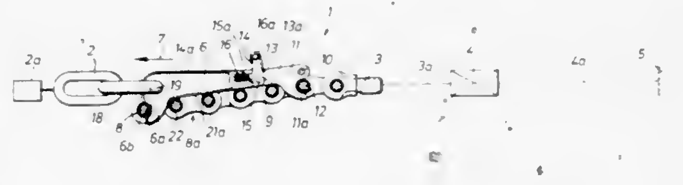
Hans Oetiker, 21, Oberdorfstrasse, Horgen, Switzerland
Filed Nov. 19, 1971, Ser. No. 200,384
Int. Cl. B65d *63/02*
U.S. Cl. 24—20 CW **21 Claims**



A bridging member for bridging the gap formed in the circumferential band portion of a hose clamp provided with an outwardly extending fold adapted to be contracted, whereby the bridging member consists of relatively thin material and includes a base portion adapted to abut against the radially inner surface of the band and side walls extending substantially at right angle to the base portion and provided with inwardly directed projections near the outer ends which can snap-in behind the outer surface of the band and thereby hold the bridging member in the assembled condition.

3,789,464
COUPLING RELEASABLE UNDER TENSION

Heikki Collanus, Tampere, Finland, assignor to Oy Tampella Ab, Tampere, Finland
Continuation of Ser. No. 121,463, March 5, 1971, abandoned. This application May 8, 1972, Ser. No. 251,335
Claims priority, application Germany, Mar. 7, 1970, 2010806; Mar. 7, 1970, 2010807
Int. Cl. B60d *1/00*
U.S. Cl. 24—68 CT **10 Claims**



A coupling arrangement capable of being released while the coupling is under considerable tension and particularly adapted to connect an object to a roller chain or similar device having at least two cross elements like the rollers of a chain. A lever has an offset front end which engages one of the cross members and has a coupling element pivoted to its other end to engage the other crossed element. The offset end of the lever is recessed to pivotally engage the first cross element and the coupling element has a recess which engages under the second cross element. The line of force between the lever and object is offset to one side of the first cross element to provide a moment of force that assists pivoting the lever to a released position about the first cross element. A spring urged latch normally maintains the coupling element in its locked position in which pivotal movement of the lever about the first cross element is prevented.

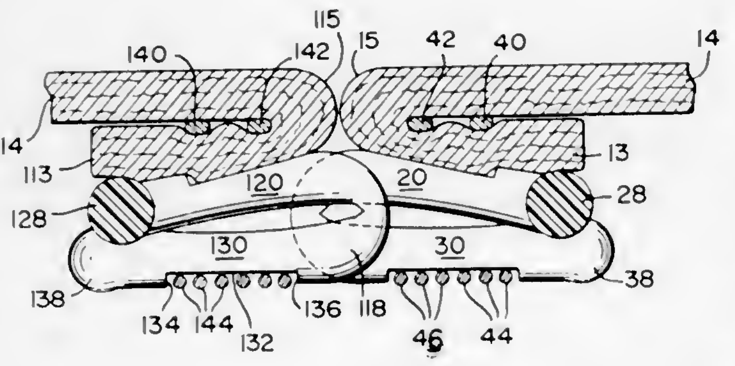
3,789,465
SLIDE FASTENER DEVICE

George B. Moertel, Conneautville, Pa., assignor to Textron Inc., Providence, R.I.

Filed July 17, 1969, Ser. No. 842,529

Int. Cl. A44b *19/10, 19/34*

U.S. Cl. 24—205.1 C **6 Claims**



A seam type closure for a slide fastener device having a stringer of filamentary material constructed with a series of head portions interconnected with a series of heel portions by a plurality of leg elements, and having a carrier tape secured to leg elements by stitching threads which pass through a layer of the carrier tape that is disposed to overlie only one of each pair of the leg elements.

3,789,466
CAM-LOCK SLIDER

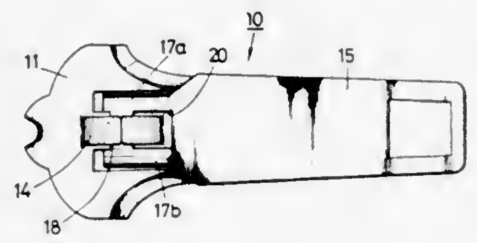
Koichi Watanabe, Kurobe, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 9, 1973, Ser. No. 331,072

Claims priority, application Japan, Feb. 16, 1972, 47-019321[U]

Int. Cl. A44b *19/30*

U.S. Cl. 24—205.14 A **1 Claim**



A cam-lock type of slider for slide fasteners is disclosed which includes a pull tab provided with a pair of laterally spaced cams for urging the fastener elements into locking engagement with a recess in the rear wing of the slider. The cams are formed by press into a rigid structure wherein the cams are bridged together and reinforced throughout their entire length against forces tending to distort or deform the same.

3,789,467
HELMET CHIN STRAP

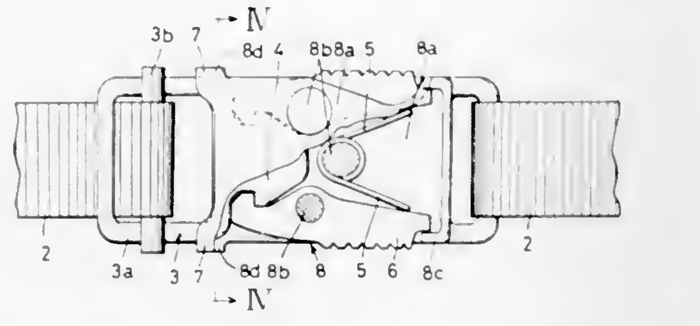
Norio Aratani, Kawasaki, and Masaki Nakano, Niiza, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 29, 1972, Ser. No. 230,440

Claims priority, application Japan, Mar. 1, 1971, 46-12052

Int. Cl. A44b *11/26*

U.S. Cl. 24—230 AT **4 Claims**



First and second portions of a chin strap of a helmet are respectively connected to first and second engaging members of a buckle connector. The first engaging member includes a projecting portion and the second engaging member includes a pair of pivotal claws for engaging the first engaging member. A spring acts on the claws to urge the claws to an operative position in which the first engaging member is engaged by the claws. The first engaging member is guidably engaged by side walls on the second engaging member in the course of engagement and disengagement with the claws to restrict lateral movement of the first engaging member.

ERRATUM

For Class 24—230 AL see:
Patent No. 3,789,492

3,789,468
TENTER CLIP

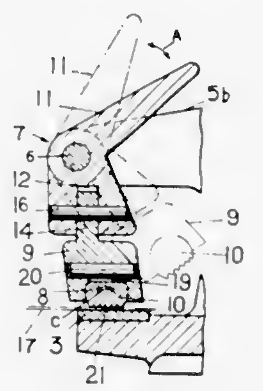
Shigeaki Takasaki, Amagasaki, Japan, assignor to Kaneshigl Tenter Clip Co., Ltd., Amagasaki, Hyogo, Japan

Filed Feb. 23, 1972, Ser. No. 228,572

Claims priority, application Japan, Feb. 26, 1971, 46-45944

Int. Cl. D06c *3/04*

U.S. Cl. 26—62 B **10 Claims**



Tenter clip comprising a pressing vane having at the bottom thereof a longitudinal groove of semicircular cylindrical shape, with an aperture on its side for fitting a pin therein, an interchangeable pressing member having a notch parallel with or at a certain angle to a recess in the vane, with interchangeable parts allowing different materials to be securely clipped, such as thick or thin materials (cloth or film), those with a varying thickness, and/or high- or low-friction material surfaces (e.g., slippery sheets).

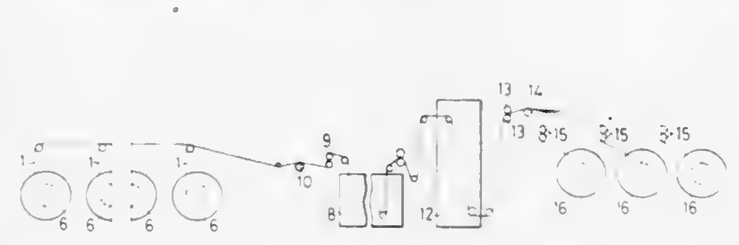
3,789,469
YARN TREATING METHOD

Mikio Kodama, Shizuoka, Japan, assignor to Fuji Spinning Co., Ltd., Tokyo, Japan

Filed Feb. 15, 1972, Ser. No. 226,490

Int. Cl. D02h *9/00; 5/02*

U.S. Cl. 28—72.6 **4 Claims**



A plurality of sheet-like yarn groups each consisting of a number of parallel yarns are drawn out from respective supply beams and laminated in layers to form a laminated yarn group. The laminated yarn group is divided into a plurality of parallel narrow yarn groups and subjected to treatment in liquid. Each treated narrow yarn group is wound up on an associated take-up beam.

3,789,470
METHOD OF MANUFACTURE OF DISPLAY DEVICE UTILIZING GAS DISCHARGE

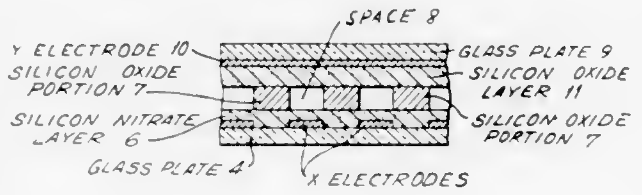
Kenichi Owaki; Kentaro Kiyozumi, and Norihiko Nakayama, all of Akashi, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation-in-part of Ser. No. 832,062, June 11, 1969, abandoned. This application June 25, 1971, Ser. No. 156,930

Claims priority, application Japan, June 12, 1968, 43-40428

Int. Cl. H01j *9/18*

U.S. Cl. 29—25.13 **1 Claim**



Each of a pair of spaced glass insulating substrate components has a plurality of mutually isolated conductive electrode layers on a surface thereof. Each surface faces the other and each plurality of electrode layers face the other. A layer of insulating material is applied to cover the electrode layers on each surface. A plurality of spaces are etched in a second layer of insulating material. The second layer is positioned between and joins the first layers of insulating material with the spaces between such layers sealed air tight, so that ionizable gas fills the spaces.

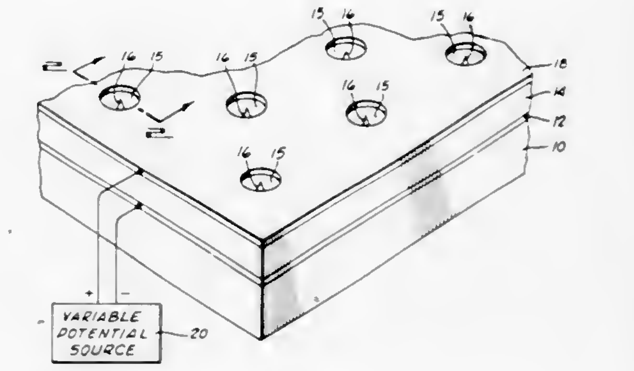
3,789,471
FIELD EMISSION CATHODE STRUCTURES, DEVICES UTILIZING SUCH STRUCTURES, AND METHODS OF PRODUCING SUCH STRUCTURES

Charles A. Spindt, Menlo Park; Kenneth R. Shoulders, Woodside, and Louis N. Heynick, Palo Alto, all of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Division of Ser. No. 9,139, Feb. 6, 1970, Pat. No. 3,755,704. This application Jan. 3, 1972, Ser. No. 215,068

Int. Cl. H01j *9/02*

U.S. Cl. 29—25.17 **2 Claims**



Vacuum devices incorporate electron or field forming sources formed by a cellular array of emission sites. The sources comprise a metal/insulator/metal film sandwich on a substrate with a cellular array of holes through the upper metal and insulator, leaving the edges of the upper metal electrode effectively exposed to the upper surface of the lower metal electrode. Sharp protuberances directed toward the upper electrode and constituting emitter tips of controlled configurations are formed on the exposed area of the lower electrode. A method of forming the structure includes starting with the metal/insulator/metal film sandwich having the cellular array of holes already formed and directing permanent electrode material into the cellular array of holes and masking or subsequently removable material onto the surface surrounding the holes whereby an individual sharp cone-like emitter is formed within each of the holes in the cellular array. Vacuum devices are formed from such structures. For example, a diode is formed either by making the masking material over each emission site an electrode or by removing the masking material and applying a conductive electrode material over each emission site.

3,789,472
DEVICE FOR AUTOMATICALLY CHANGING TOOLS

Pierre Pegard, Courbevoie, France, assignor to Ateliers G.S.P. (Guillemin, Sergot, Pegard), Courbevoie, France

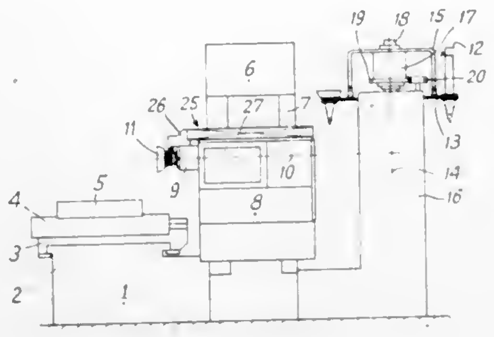
Filed Aug. 24, 1971, Ser. No. 174,314

Claims priority, application France, Sept. 3, 1970, 7032105

Int. Cl. B23q *3/157*

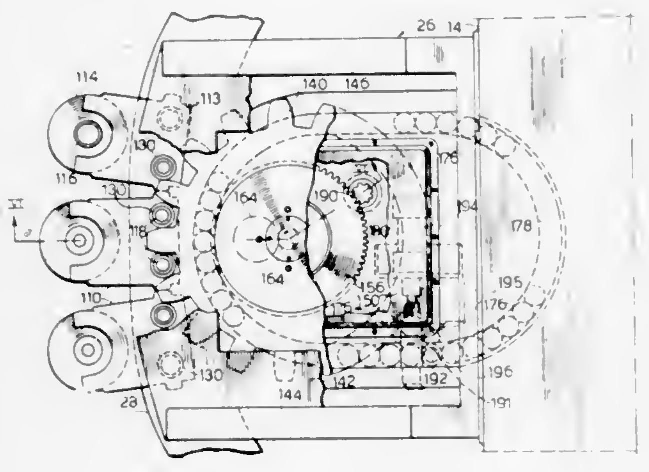
U.S. Cl. 29—568 **7 Claims**

A device for automatically changing tools which can be used with a machine which has at least one substantially horizontal tool holder, the device including a transfer mechanism for transferring the tools from a tool holder to a magazine, and having a clamp with jaws which are capable of gripping and holding a flange projecting from the tool, and which, while the machine is in operation, are open and located on opposite sides of the flange of the tool mounted in the tool holder, the tool having a projecting main plate, which is of the same shape as the flange and which is so arranged in front of the flange that it defines with the latter an opening into which a jaw of the clamp can enter, the main plate being located when a tool is mounted in the tool holder in the same plane as a pair of plates on the holder to form a protector against the penetration of shavings between the flange and the jaws of the clamp.



3,789,473
MACHINE TOOL HAVING AUTOMATIC MEANS FOR TOOL-CHANGE

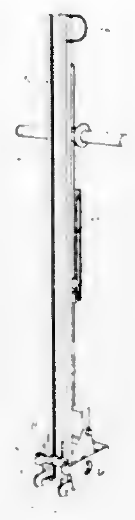
Elio Pagelia, and Giorgio Ollearo, both of Ivrea, Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Torino, Italy
Filed Oct. 15, 1971, Ser. No. 189,501
Claims priority, application Italy, Oct. 31, 1970, 70639 A/70
Int. Cl. B23q *3/157*
U.S. Cl. 29—568 **17 Claims**



A machining center has a tool magazine in the form of an endless track. The tools are each mounted in an individual carriage, the carriages being packed end-to-end in the track and being drivable along it. A tool-change station is defined by a gap in the track from which one carriage may be removed for insertion of the tool into the machine spindle. A main tool-change incorporates a section of the track which completes the magazine track when this arm is in one position, and an auxiliary or carrier arm completes the track when the main arm is located away from the track. To avoid direct reading of the tools or carriages (which change their order in the magazine as tools are used and replaced) a simulator track is provided along which elements simulating the tools or carriages are driven simultaneously with the drive to the carriages. A reading device reads distinctive indicia on the simulator elements as they pass a reading station, and a signal is generated which governs the movement of the carriages and simulator elements. When a simulator element corresponding to a fresh tool required is read, the drive is stopped with this tool in the correct position for the first stage of tool-change.

3,789,474
METHOD FOR JOINING CROSSWISELY EXTENDING REINFORCING BARS

Mats Folke Skold, Backvagen 78, Hagersten, Sweden
Filed Feb. 28, 1972, Ser. No. 229,702
Claims priority, application Sweden, Mar. 2, 1971, 2618/71
Int. Cl. B23p *17/00*
U.S. Cl. 29—155 R **2 Claims**



Method for elevating and joining crosswisely extending reinforcing bars and supporting them in a position raised above the deck of the casting mold in a spacing member having an inverted generally U-shaped body and rod engaging recesses

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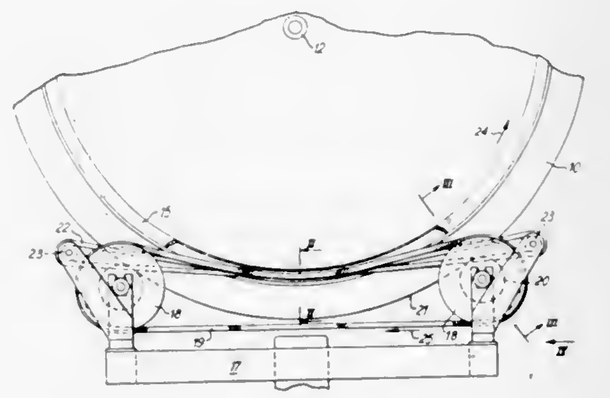
3,789,475
METHOD OF AND APPARATUS FOR TRUING SPOKED WHEEL

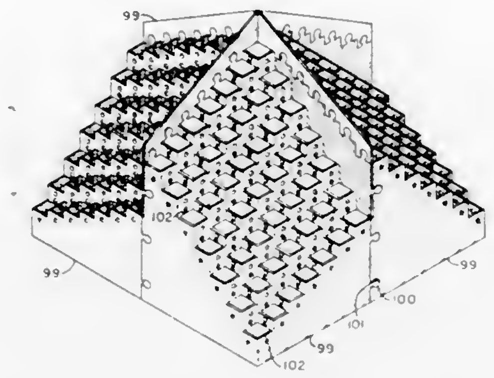
Ian John Barwell, Lae, Guinea, assignor to Raleigh Industries Limited, Nottingham, England
Filed Jan. 5, 1973, Ser. No. 283,034
Int. Cl. B21f *39/00;* **B21k** *1/34*
U.S. Cl. 29—159.02 **12 Claims**



A method and apparatus for truing a spoked wheel is disclosed whereby a hub and rim, after having spokes threaded and secured by nipples, are located in a clamping device and the spoke nipples are partially tightened by rotating the clamped wheel relative to a resilient band, then offsetting the hub relative to the rim in one direction and then in the other over a fixed distance and rotating the clamped wheel after each offsetting action to tighten further a series of the spoke nipples by causing them to rotate as they are contacted by the resilient band means and repeating the alternating offsetting actions and intermediate nipple tightening until the wheel becomes substantially true.

3,789,476
METHOD OF MANUFACTURING A NUCLEAR FUEL ASSEMBLY SPACER

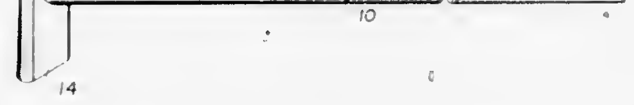
Charles C. Ripley, San Jose, Calif., assignor to General Electric Company, San Jose, Calif.
Division of Ser. No. 772,206, Oct. 31, 1968. This application Mar. 15, 1971, Ser. No. 124,319
Int. Cl. B23p *15/16*
U.S. Cl. 29—163.5 R **5 Claims**



A method for manufacturing an expanded sheet spacer for nuclear fuel rod assemblies is presented. In general the method has the first step of forming a plurality of spaced slits along parallel lines on a sheet material so that each slit has a length of at least two times the distance between pairs of slits and the center of each slit is located adjacent the space between slits of the next line of slits. The second step of the method is bending the sheet below each slit perpendicular to the slits so that a portion of the sheet below each slit is displaced in the same direction away from the original plane of said sheet and a plurality of channels having axes substantially parallel to each other and to the plane of the sheet are formed.

3,789,477
TOOL FOR INSTALLING DISC BRAKES

Carl W. Shadoan, Bloomington, Ill., assignor to The Raymond Lee Organization, New York, N.Y., a part interest
Filed July 24, 1972, Ser. No. 274,590
Int. Cl. B23p *19/00, 19/04*
U.S. Cl. 29—200 P **5 Claims**



A tool comprising: an elongated horizontal handle; and a vertical plate secured to one end of the handle, the handle being joined to the plate at an acute angle.

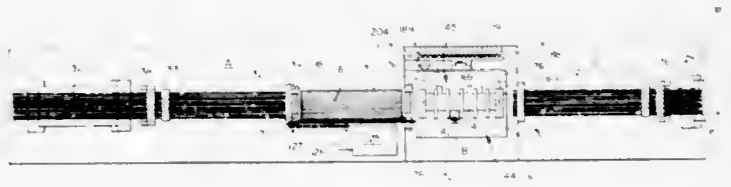
3,789,478
NEEDLE BEARING ASSEMBLING MACHINE

Donald R. Stenger, Rockford, Ill., assignor to Hill-Rockford Co., Rockford, Ill.
Filed Dec. 13, 1972, Ser. No. 314,513
Int. Cl. B23p *19/04*
U.S. Cl. 29—201 **10 Claims**

The needles or rollers are dropped by gravity through a so-called cascade into an annular space around a cylindrical centering pin and in front of a sleeve which is reciprocable with the centering pin to shift a collected set of needles into the ultimate bearing disposed in coaxial relationship to the pin and sleeve. The cascade has a narrow, zig-zag passageway extending vertically therethrough that is only slightly wider than the needles, and ledges are defined on opposite sides of this passageway in zig-zag relationship to one another the full length thereof, which by abutment with the needles insure their arrival at the discharge end always parallel to the centering pin. The ledges are all rounded, being defined by needles set in three-quarter round recesses defined in zig-zag relationship to one another the full length of the cascade, thus reducing wear on the ledges while also enabling replacement of these few needles from time to time as the exposed portions thereof defining the abutments commence to show wear, so as to restore the cascade to new condition at a very low cost utilizing the same needles as are used in the needle bearings as replacements and insure continued good operation. Removable cover plates on the front and back of the cascade expose the ends of these needles so that removal and replacement of the worn needles presents no problem.

3,789,479
MACHINE FOR ASSEMBLING TUBES IN A HEAT EXCHANGER

Morton F. Zifferer, and Donald E. Flinchbaugh, both of York, Pa., assignors to Mordo Company, Mt. Joy, Pa.
Filed June 30, 1972, Ser. No. 268,088
Int. Cl. B23p *15/26*
U.S. Cl. 29—202 R **14 Claims**



Machine for assembling automatically the tubes of a shell and tube type heat exchanger having many tubes of uniform length and a plurality of perforated baffle plates through which the tubes pass. A machine is provided having a tube holding fixture mounted on a work table. By means of opposing rods, selected quantities of tubes are transmitted successively from a tube supply to the fixture. Suitable controls are employed to complete one full tubular assembly during each operative cycle of the machine. The tubes are transmitted and assembled in the fixture in a single working plane. Following each deposit of tubes, the fixture is adjusted relative to the working plane preparatory to receiving the next quantity of tubes.

3,789,480

METHOD OF AND APPARATUS FOR APPLYING INSULATING DISCS TO CONDUCTORS

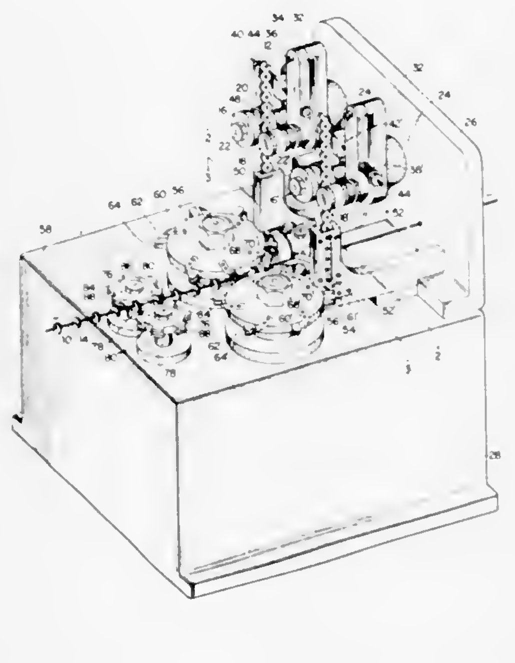
Rama Iyengar, Dollard des Ormeaux, Quebec, and Bretislav Paul Zuber, Montreal, Quebec, both of Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Feb. 10, 1972, Ser. No. 225,100

Claims priority, application Canada, Nov. 29, 1971, 128860

Int. Cl. H01b *13/20*

U.S. Cl. 29—203 C 15 Claims



A method of and apparatus for applying insulating discs upon a continuously advancing conductor comprises advancing a continuous chain of discs towards a disc applicator station. First and second means carried by an applicator wheel sever individual discs from said chain and advance the discs along a predetermined path. Slitting means mounted in said predetermined path impart a slit to the disc and an arcuate guide member extending from the slitting means to the conductor enters the slit in the disc and gradually expands the slit to facilitate application of the disc upon the conductor.

3,789,481

MECHANICAL ANALOGUE COMPUTER AND WIRING MACHINE

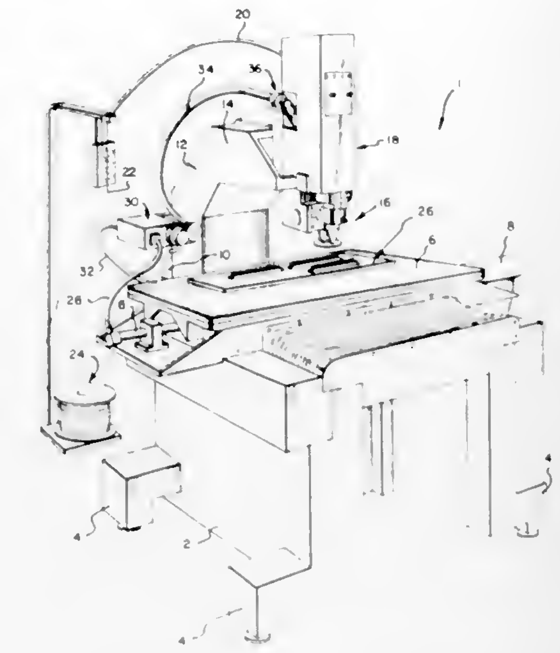
James Ray Coller, Mechanicsburg, Pa.

Filed May 24, 1972, Ser. No. 256,519

Int. Cl. H05k *13/04*

U.S. Cl. 29—203 P 7 Claims

A wiring machine for bridging a discrete length of electrical wire between selected point-to-point locations of a printed circuit board and a mechanical analogue computer used to compute the length of wire required to bridge between the point-to-point locations. The machine includes a table which carries the printed circuit board for displacement along each of two orthogonal axes. The computer is responsive to displacement of the table and includes a system of gear trains for driving a wire feeding mechanism to feed a discrete length of wire corresponding to the length of table displacement along either of said orthogonal axes. When said table is diagonally displaced with respect to the orthogonal axes, the computer will drive the wire feeding mechanism to provide a length of wire equivalent to the length of such diagonal displacement, thereby providing discrete point-to-point wiring on the printed circuit board.



3,789,482

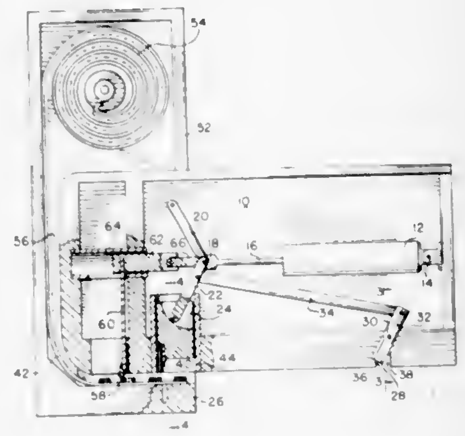
MACHINE FOR SPLICING COMMUNICATION CABLES

Jimmy C. Ray, Rt. 1 Box 226, Mineral Wells, Tex.

Continuation of Ser. No. 525,506, Feb. 7, 1966, abandoned. This application Aug. 8, 1972, Ser. No. 278,757

Int. Cl. H01r *43/04*

U.S. Cl. 29—203 D 7 Claims



The machine is for splicing communication cables. An anvil on a base plate and a hammer mounted for movement on the base plate crimps connectors therebetween. The connectors are attached to a web in a web holder. Feed means attached to the base plate feeds the connector between the anvil and hammer in pairs.

3,789,483

APPARATUS FOR FEEDING PRINTED CIRCUIT BOARDS

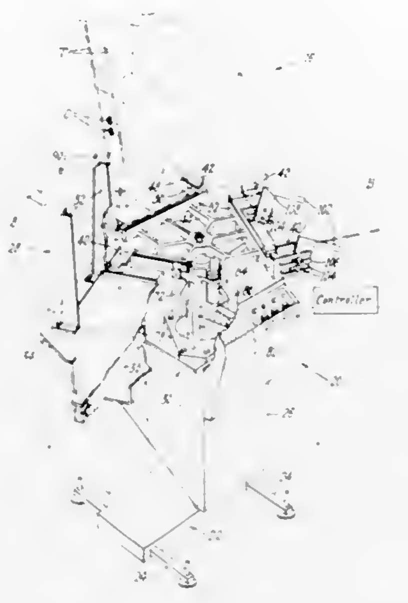
Raymond A. De Vita, Hamilton; Vincent P. Romeo, Danvers, and James E. Carney, Methuen, all of Mass., assignors to USM Corporation, Boston, Mass.

Filed Aug. 28, 1972, Ser. No. 284,280

Int. Cl. H05k *13/04*

U.S. Cl. 29—203 B 6 Claims

Assembly apparatus including mechanism for automatically supplying work pieces such as printed circuit boards sequentially to one or more work stations from a stack and for thereafter unloading the boards seriatim whereby only a single operator is required. The mechanism may be a vertically movable, free-standing turntable or turret type for simultaneously serving a selected one or more stations, operation of any one of the stations desirably controlling the turret indexing whereby the several stations operate simultaneously. The mechanism is adapted to service at least one work station optionally including an X-Y positioning table whereat successive boards during dwell times may be shifted to programmed component receiving positions prior to return to the turret feeding mechanism.



3,789,484

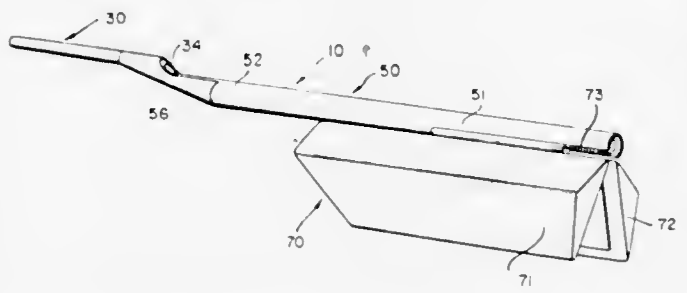
ELECTRICAL CONTACT TERMINAL HAND TOOL

Thomas Morgan, Los Angeles, Calif., assignor to G & H Technology, Inc., Santa Monica, Calif.

Filed Dec. 22, 1972, Ser. No. 317,513

Int. Cl. H01r *43/00*

U.S. Cl. 29—203 H 18 Claims



A tool is provided for facilitating removal and/or insertion of an electrical contact terminal of the type releasably lockable within a bore of an electrical connector body. A pair of elongated, hollow, half-cylindrical working members are mounted for movement between a closed position in which the members mate to form a uniform, open-ended, hollow, cylindrical working portion and an open position in which the working members are spread apart. In the open position the spaced working members are disposed for receiving a wire lead which may be connected to a contact terminal to be removed from, or inserted into, a bore in the connector body. In the closed position the hollow cylindrical working portion may be inserted into the bore without damaging the insulation surrounding the bore for releasing the contact terminal from its locked position therein. The working members are individually mounted on relatively rotatable hinge members having a pivotal axis radially spaced from the axis of said hollow cylindrical working portion, each of the hinge members being equipped with a pair of manually engageable wing grips or handles permitting selective manual movement of the working members between their open and closed positions.

3,789,485

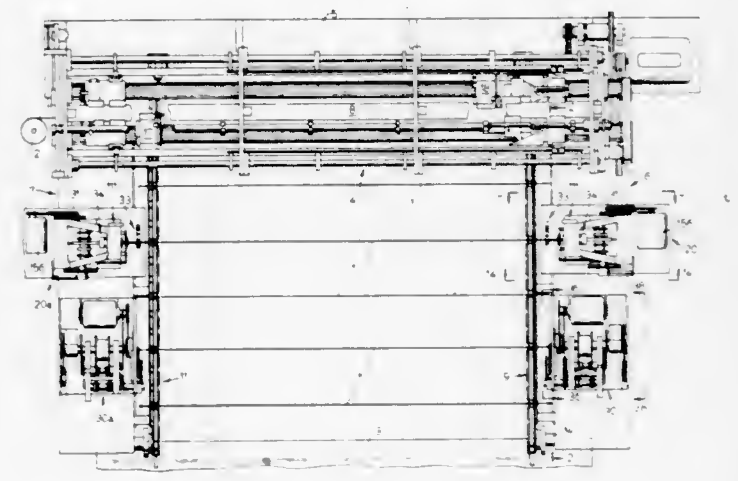
METHOD AND APPARATUS FOR PRODUCING FLEXIBLE FIBER OPTICAL LIGHT CONDUCTORS

Ragnar Gudmestad, West Allis, Wis., assignor to Artos Engineering Company, New Berlin, Wis.

Filed Jan. 24, 1973, Ser. No. 326,380

Int. Cl. H01r *43/04, 9/00*

U.S. Cl. 29—203 D 21 Claims



A stepwise advancing conveyor moves parallel fiber optical ribbons successively sidewise into endwise alignment with a ferrule attaching unit which during short periods of temporary standstill of the conveyor attaches a ferrule to the free end of each successive ribbon. Subsequent advance movement of the conveyor aligns the ribbon and attached ferrule with a cutting unit which trims the ferrule and ribbon end therein so as to provide the ribbon with a plane, light admitting and emitting end face.

3,789,486

END-STOP APPLYING APPARATUS FOR CONCEALED ZIP FASTENERS

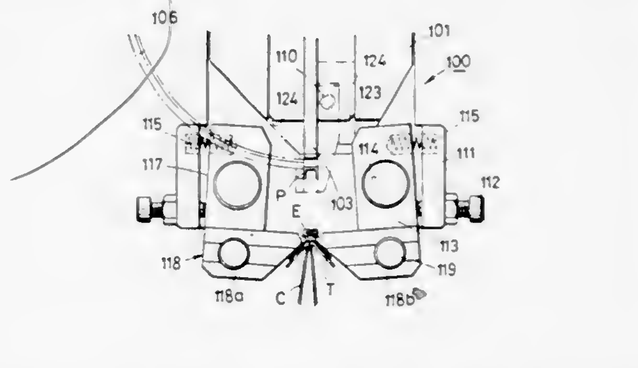
Hisashi Douri, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 2, 1972, Ser. No. 293,995

Claims priority, application Japan, Oct. 2, 1971, 46/77308

Int. Cl. B23p *19/04*

U.S. Cl. 29—207.5 ST 5 Claims



An apparatus is disclosed for applying end-stop members to concealed type zip fasteners in particular, which apparatus includes a pair of opposed spring-biased rocking arms provided with cam faces and a curling die removably mounted thereon. A reciprocating ram carries a clamping punch operatively associated with the die and movable through a pocket means and forwarding end-stops one at a time therewith to a clamping position. The ram is provided with cam faces engageable with corresponding cam faces of the rocking arms to permit the opposed rocking arms to assume an upright position in which the plane of the die lies normal to the axis of movement of the punch.

3,789,487

SLIDER AND END STOP APPLYING MACHINE FOR A SLIDE FASTENER CHAIN

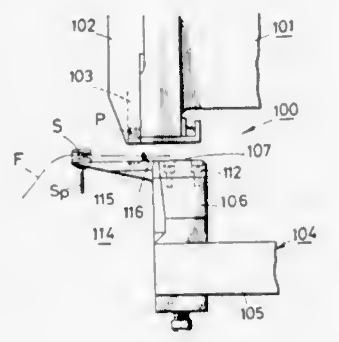
Koichi Kawakami, Toyama, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 27, 1972, Ser. No. 301,450

Claims priority, application Japan, Nov. 1, 1971, 46-87044

Int. Cl. B23p *19/04*

U.S. Cl. 29—207.5 SL **5 Claims**



A machine is disclosed for applying a slider and an end stop in succession to a slide fastener chain on one and the same unit of the machine. The provision of a removably connected unit on the anvil part of the machine permits of the mounting of a slider and a bottom end stop as required on the fastener chain which has previously been attached to a prefinished garment such as trousers. The combination slider retainer and end stop die unit extends horizontally and forwardly of the anvil a sufficient length to provide unobstructed working space such that the fastener-attached, rather bulky garment can be advanced into the required position for the part assembly.

3,789,488

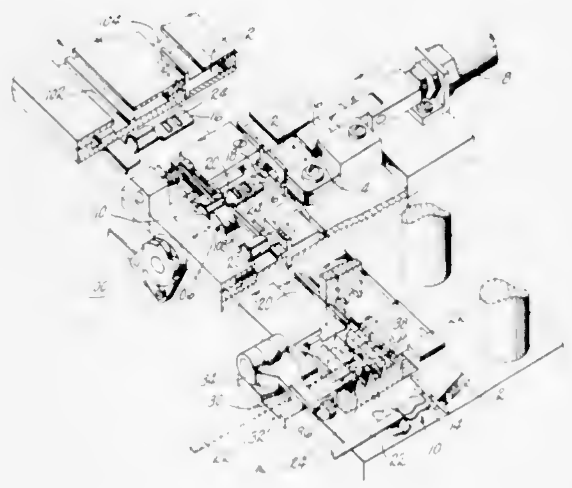
ASSEMBLY MACHINE FOR A SEAL

Sigurd M. Moberg, 91 Ridge St., Apt. 101, Orange, N.J.

Filed Aug. 30, 1972, Ser. No. 284,870

Int. Cl. B23p *19/04*

U.S. Cl. 29—208 D **5 Claims**



A machine for assembly of the component parts of a seal of the type comprising a plastic body, a metal ferrule assembled with the body and a flexible shackle secured at one end to the ferrule. The machine comprises a pair of inclined feed tracks down which the ferrule and body slide to a first station where means is provided for forcing the two parts into non-removable assembly. The assembled pieces are then allowed to slide down to a second work station, where an end shackle is inserted into the ferrule and the ferrule deformed to retain the shackle. The assembly is then ejected from the machine.

3,789,489

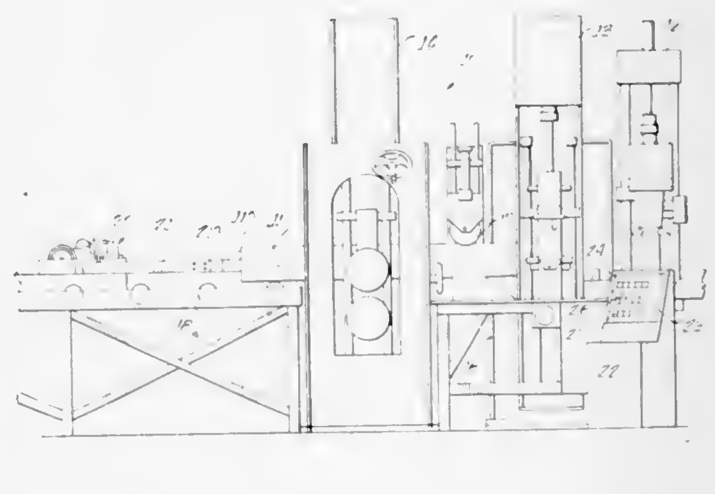
APPARATUS FOR FABRICATING STRUCTURAL MEMBERS

Raymond L. Valente, Kankakee, Ill., assignor to Manco Mfg. Co., Bradley, Ill.

Filed Sept. 12, 1972, Ser. No. 288,257

Int. Cl. B23p *19/04*

U.S. Cl. 29—208 C **9 Claims**



A machine for effecting fabrication of a structural member including tool means, drive means for advancing the structural member longitudinally of a work station, and apparatus for properly positioning the tool means with respect to a predetermined location on the structural member at which tooling operations are to be performed. A gear rack and rotary gear cooperate on the downstream side of the drive means to operate an encoder which produces pulses corresponding to the longitudinal extent of travel of the structural member as it passes the work station. The output pulses from the encoder are delivered to a readout control which gives visual indication of the distance traveled in feet, inches and fractions of an inch. The probe means includes pivotal actuating means for arcuately swinging the probe out of the way to facilitate removal of the structural member from the conveying apparatus.

3,789,490

STUD STORAGE SYSTEM

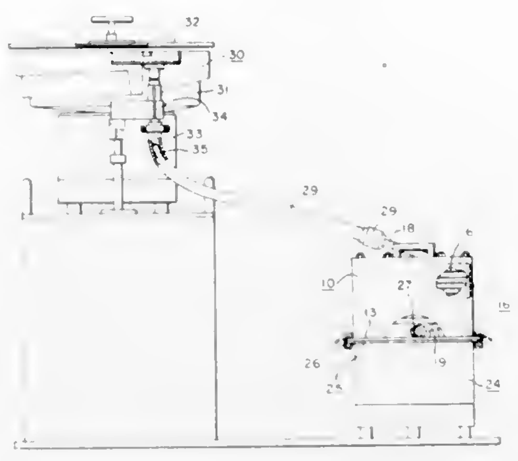
Ralph A. Kohart, Cherry Hill, N.J., assignor to Omark Industries, Inc., Portland, Oreg.

Filed Feb. 17, 1972, Ser. No. 227,122

Int. Cl. B23q *7/10*

U.S. Cl. 29—211 R **3 Claims**

A portable stud storage system for use with stud welding apparatus of the type employing a stud orientating apparatus which delivers studs to a stud feeding apparatus that in turn delivers studs to a stud welding gun for welding. The stud storage apparatus employs a housing and a coil of hollow tubing into which the studs are fed, after orientation, at a first location, whereupon the loaded magazine is transported to a remote second location and interconnected to the stud feeding apparatus at which the studs are discharged from the opposite end of the coil and fed to the stud welding gun.



3,789,491

APPARATUS FOR JOINING AND SUPPORTING CROSSWISELY EXTENDING REINFORCING BARS

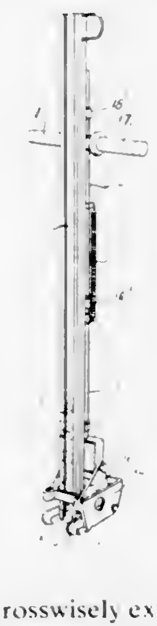
Mats Folke Skold, Backvagen 78, Hagersten, Sweden

Continuation-in-part of Ser. No. 3,765, Jan. 19, 1970, Pat. No. 3,694,988. This application Feb. 28, 1972, Ser. No. 229,703

Claims priority, application Sweden, Mar. 2, 1971, 2619/71

Int. Cl. B23q *7/10*

U.S. Cl. 29—212 R **17 Claims**



Apparatus for joining crosswisely extending reinforcing bars at their intersection in preparation for casting concrete slabs and the like and supporting them in elevated position above the casting mold by means of a clip having an inverted generally U-shaped body in which the upper one of the bars is resiliently maintained in contact with the lower one of the bars which is seated in a recess, the axis of which extends transversely to and below the upper rod.

3,789,492

LOCK FOR MOTOR VEHICLE SAFETY BELT

Wolf-Dieter Klink, Danziger Weg 520, Lindach, Germany

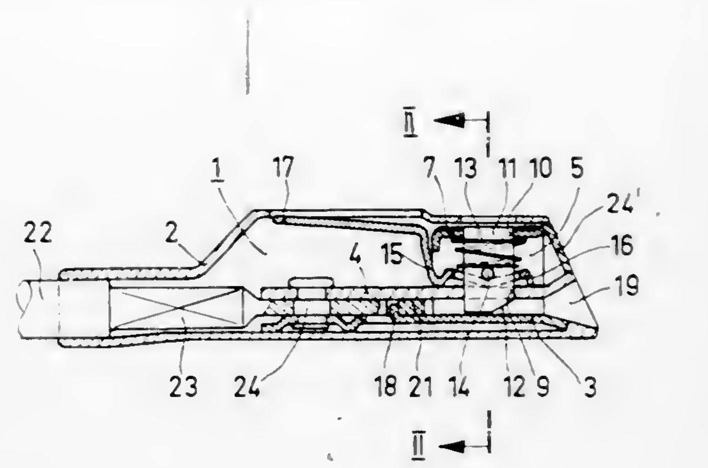
Filed Feb. 16, 1972, Ser. No. 226,714

Claims priority, application Germany, Feb. 17, 1971, P 21 07 666.4

Int. Cl. A44b *11/26*

U.S. Cl. 24—230 AL **3 Claims**

Lock for motor vehicle safety belt having a coupling member connected thereto, the coupling member being provided with a tongue-shaped insert portion insertable in direction of tension of the belt into the lock and formed with a through-opening therein, includes a lock member having a base plate, a pair of extension arms therefrom bent into the shape of a U and formed with recesses therein, and a support plate held in the recesses and extending spaced from and parallel to the base plate; and a stop bolt mounted in the lock member and being axially displaceable against a spring-biasing force transversely to the insertion direction of the tongue-shaped insert portion so as to engage in the through-opening formed therein, the support plate having guide means for guiding the stop bolt transversely to the insertion direction.



3,789,493

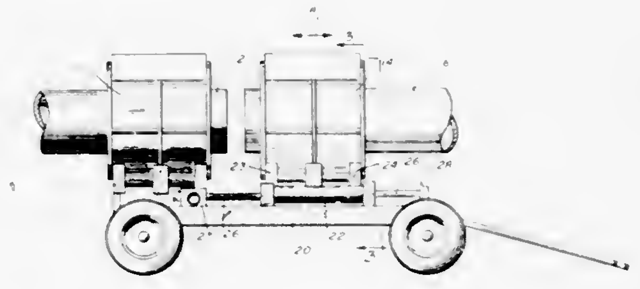
HYDRAULIC ACTUATED FUSION UNIT FOR PLASTIC PIPE

William F. Province, Bartlesville, Okla., assignor to The Ridge Tool Company, Bartlesville, Okla.

Filed Feb. 7, 1972, Ser. No. 223,855

Int. Cl. B23p *19/04*

U.S. Cl. 29—282 **3 Claims**

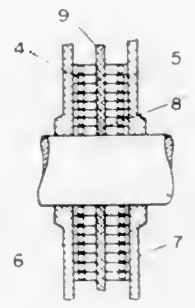


This invention describes an improved method of supporting and axially traversing a movable pipe clamping means in a fusion type plastic pipe joining apparatus. Two rods are provided, one on each side of the frame, on which are supported hydraulic cylinders. Pistons are mounted centrally on the rods and the cylinders are adapted to fit the pistons and also to seal along the rods which serve both as support and guide rods and as pistons rods. The movable pipe clamp is supported by the two cylinders and is adapted to slide axially supported on the two piston rods. The piston rods are drilled axially from each and so that hydraulic fluid can be inserted through the axial conduits into the cylinder spaces on each side of the pistons so that by applying pressurized liquid to one side or the other of the pistons the cylinders carrying the movable pipe clamp, and movable pipe section, can be traversed axially.

3,789,494

METHOD OF SPIRALLY WINDING STRIP TO PRODUCE PINNED UNITS

Bertil Ingemar Bostrom, Taby; Soren Folke Samuel Ljungdahl, Danderyd, both of Sweden, and Stellan Knoos, Malibu, Calif., assignors to AGA Aktiebolag, Lidingo, Sweden
Filed Apr. 24, 1972, Ser. No. 246,655
Int. Cl. B23p *15/26, 17/00*
U.S. Cl. 29—423 **17 Claims**

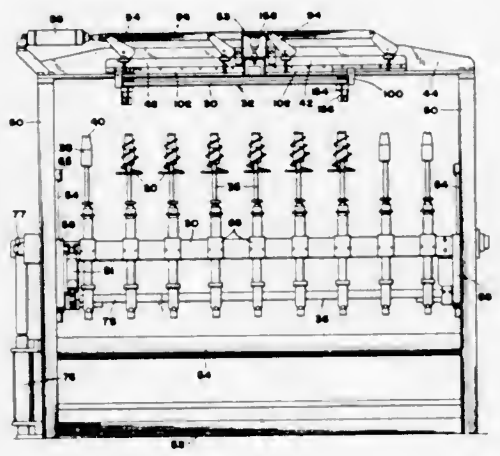


A design of finned units, intended for example for thermal regenerators, heat exchangers or burners for liquid fuel. The finned units are manufactured by simultaneous spiral winding of a strip forming fins and a spacer element forming a distance between the fins. The spacer elements are wholly or partially removed when fixing elements have been introduced in a number of holes distributed about the circumference. The cross-sectional area of each fixing element is equal to or smaller than the cross-sectional area of the corresponding holes in the fins. As a consequence thereof each fixing element prevents movement of the fins exclusively in a plane perpendicular to said fixing element.

3,789,495

METHOD FOR MANUFACTURING BOX SPRING

Walter Stumpf, Munster, Ind., assignor to Simmons Company, New York, N.Y.
Division of Ser. No. 829,533, June 2, 1969, abandoned. This application Jan. 18, 1972, Ser. No. 218,821
Int. Cl. B23p *21/00*
U.S. Cl. 29—429 **10 Claims**



A method and apparatus for assembling box spring "constructions" by stapling rows of springs to a base frame. The method utilizes a wire spring coil in which the wire at one end of the coil is bent to cross the bottom convolution so that stapling gun inserted axially into the spring from the other end will secure the spring to the frame with one staple. The staple is driven with enough force to impress the cross-wire into the surface of the frame.

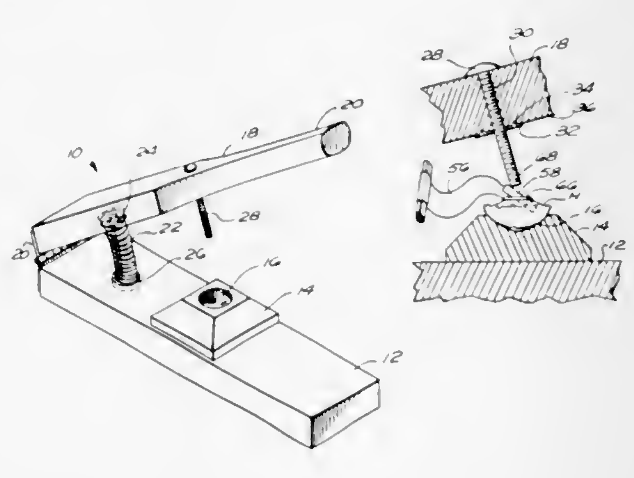
The apparatus handles the springs and frames upside down, the guns being lowered for loading with springs, and raised for firing. The gun muzzles are adapted to receive an inverted spring and to position it rotatively so that the staple when driven will encircle the cross-wire from which the spring is suspended on the gun.

After each firing, the frame indexes for another row, and is followed at a controlled interval by a second frame brought into the mechanism automatically from a magazine.

3,789,496

BUTTON ASSEMBLING DEVICE AND METHOD

Andrew A. Barabas, Danbury, Conn., assignor to Castro Convertible Corporation, New Hyde Park, N.Y.
Filed July 11, 1972, Ser. No. 270,665
Int. Cl. B23p *11/02*
U.S. Cl. 29—453 **11 Claims**



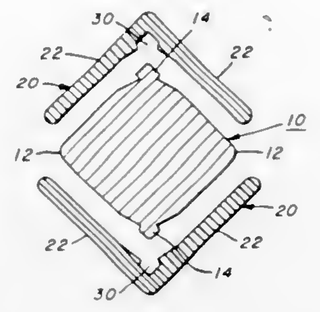
A device is disclosed for assembling the head and tab of a tufting button wherein the head has an opening on one side thereof and the tab has an elongated connecting end whose length is greater than the diameter of the button opening. The device, which automatically inserts the tab's connecting end in the hollow button head includes a recessed support block for supporting the button head on the side thereof opposite its opening and an elongated insertion rod operatively associated with the support block for movement between first and second positions with respect thereto. In its first position the insertion rod is located at a point remote from the support block and positioning of the cloth tab's connecting end within the opening. The second position of the rod is selected so that the rod will extend through the opening of a button positioned on the support means at an angle to the plane of the opening. As a result, when the insertion rod is moved from its first to its second position, the rod engages the cloth tab connecting end, which is partially located within the opening of the button on the support block, and urges the connecting end into the opening to complete the tufting button without damage to either the connecting end or to the button itself.

3,789,497

METHOD OF PRODUCING COMPOSITE METAL ARTICLE

Robert H. Snodgrass, Massena, N.Y.; James R. Carter, Bath, Maine, and Carl M. Edstrom, Massena, N.Y., assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed Sept. 29, 1972, Ser. No. 293,486
Int. Cl. B23p *11/02*
U.S. Cl. 29—453 **20 Claims**

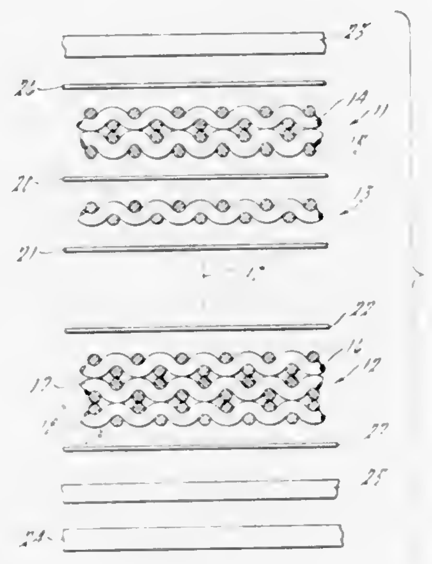
A composite metal body is produced using a metal cladding and metal core with longitudinal dovetail-wedge or diamond shaped tongue and groove means for interlocking engagement, rolling the assembly to effect interlocking, and further rolling the assembly to metallurgically bond the cladding to the core.



3,789,498

METHOD OF DIFFUSION BONDING

Frederic W. Cole, Detroit, Mich., assignor to AMBAC Industries, Incorporated, Carls Place, N.Y.
Filed Nov. 1, 1971, Ser. No. 194,231
Int. Cl. B23k *1/20*
U.S. Cl. 29—470.9 **11 Claims**



A separator is used in the diffusion bonding of materials such as wire cloth and laminates to prevent unwanted bonding of adjacent surfaces. The separator sheet is formed by the oxidation of metal alloy surfaces either before or during the bonding to form a refractory oxide barrier layer. Iron-chromium-aluminum alloys are especially useful and may be modified by the addition of rare earth metals such as yttrium.

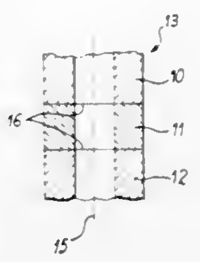
3,789,499

METHOD OF FABRICATION OF A COMPOSITE PRODUCT MADE UP OF AT LEAST TWO COMPONENTS HAVING DIFFERENT COMPOSITIONS

Michel Pequignot, Clamart, France, assignor to Commissariat A L'Energie Atomique and Societe Pour L'Application Des Hautes Temperatures (Quartex), Paris, France
Filed Aug. 3, 1972, Ser. No. 277,529
Claims priority, application France, Aug. 9, 1971, 7129035
Int. Cl. B23k *31/02*
U.S. Cl. 29—472.9 **5 Claims**

At least two components having different compositions, such as niobium and alumina, and mating contact surfaces are brought together in edgewise relation in order to be diffusion-bonded, the contact surface adopted for each component or the line of extension of said surface being such as to pass through an axis which is common to both components.

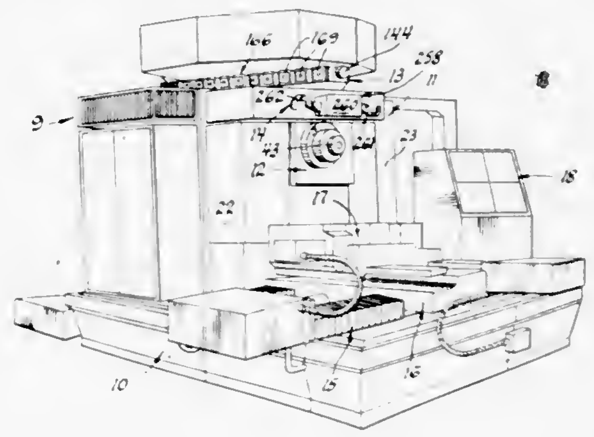
Each surface is polished to an optical finish and the components are assembled so that said surfaces are in mating relation with zero clearance. A moderate holding pressure is applied to the components and these latter undergo a heat treatment at high temperature for a limited period of time and at low pressure in an inert atmosphere or in a vacuum.



3,789,500

MACHINE TOOL WITH AUTOMATIC TOOL CHANGING MEANS

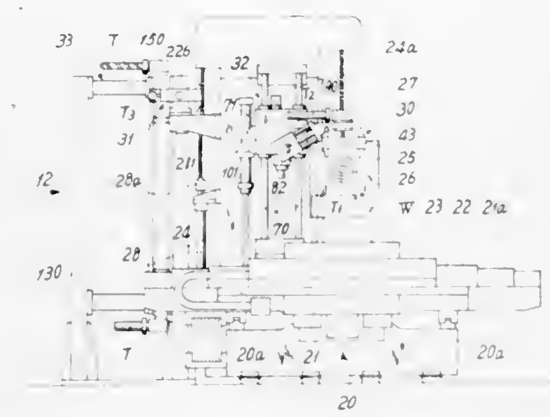
Dale J. Bondie, Fowlerville; Robert S. Sutton, Franklin, and James D. Lewelling, Birmingham, all of Mich., assignors to Ex-Cell-O Corporation, Detroit, Mich.
Filed July 28, 1971, Ser. No. 166,886
Int. Cl. B23q *3/157*
U.S. Cl. 29—568 **13 Claims**



A machine tool having an automatic changing means and which is constructed and arranged to carry out a variety of machining operations, such as milling, drilling, boring, tapping and the like. The machine includes a rotary, four-position index work table which is carried on two movable, perpendicularly disposed slide members to provide movement of the work table along X and Z axes. A tool spindle assembly is slidably mounted on a "Y" axis between two column members with a tool spindle, spindle drive motor, gear box, tachometer and resolver mounted in axial alignment with each other for movement as a unit along said Y axis. A tool storage conveyor is disposed horizontally on said column members above the tool spindle assembly and for moving tools into a tool changing position above the tool spindle. A tool changer means is mounted between the column members and between the tool spindle assembly and the tool storage conveyor for automatically transferring tools directly between the tool storage conveyor and the tool spindle.

3,789,501
MACHINE TOOL WITH TOOL CHANGE DEVICE

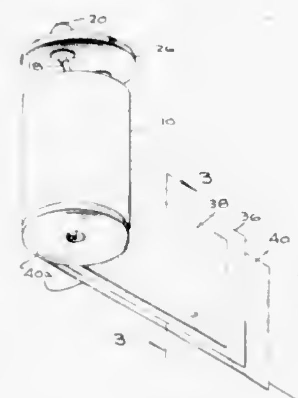
Mikishi Kurimoto, Nagoya; Keniti Munekata, Kariya, and Yoji Kamiya, Anjyo, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan
Filed Nov. 30, 1971, Ser. No. 203,406
Claims priority, application Japan, Dec. 4, 1970, 45/107854
Int. Cl. B23q *3/157*
U.S. Cl. 29—568 **9 Claims**



A machine tool is provided with an automatic tool change device for permitting the same to perform a variety of machining operations on a workpiece. The tool change device comprises a tool storage magazine installed on the floor adjacent the machine for removably storing a plurality of diverse tools, a carriage mounted on an upstanding column of the machine and an intermediate transfer device mounted on the carriage and carrying a tool holding device thereon. The carriage follows the movement of a spindle head receiving a spindle therein so that a tool change operation can be effected between the tool holding device and the spindle by a main transfer device immediately following a machining operation. Means are also provided for rendering the following movement of the carriage inoperative so that the intermediate transfer device may be rotated, while being retractable and extendable, in the direction of the tool storage magazine to permit a tool change operation by a sub-transfer device to be performed between the tool holding device and the tool storage magazine during the machining operation.

3,789,502
FUSED CATHODE ELECTROLYTIC CAPACITORS AND METHOD OF MAKING THE SAME

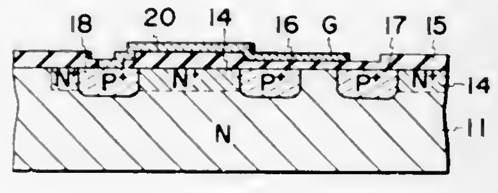
Harold T. Callins, and William H. Doster, both of Greenfield, Tenn., assignors to Whitehall Electronics Corporation, Richardson, Tex.
Filed June 5, 1972, Ser. No. 259,920
Int. Cl. B01j *17/00*
U.S. Cl. 29—570 **4 Claims**



A metallic foil electrolytic capacitor and method of making the same, wherein anode and cathode foils and dielectric sheets are wound into a capacitor cartridge or roll with a lateral edge of the cathode foil protruding in exposed relation at the bottom of the roll beyond the edges of the dielectric sheets and anode foil insulated therebetween, and thermally fusing the protruding exposed cathode foil edges together in a selected pattern spanning the bottom of the roll.

3,789,503
INSULATED GATE TYPE FIELD EFFECT DEVICE AND METHOD OF MAKING THE SAME

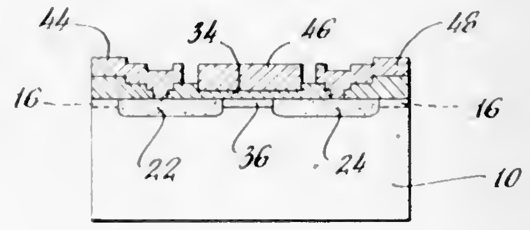
Sumio Nishida, and Yasunobu Kosa, both of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed June 25, 1971, Ser. No. 156,709
Claims priority, application Japan, June 26, 1970, 45/55148
Int. Cl. B01j *17/00*
U.S. Cl. 29—571 **9 Claims**



An insulated gate type field effect transistor having a source, a drain and a clamping diode region of P conductivity type formed in an N conductivity type silicon substrate and a low resistivity region of N^+ conductivity type formed in the substrate surface except in the channel region so as to bridge the source region and the clamping diode region.

3,789,504
METHOD OF MANUFACTURING AN N-CHANNEL MOS FIELD-EFFECT TRANSISTOR

Abdulmassih Y. Jaddam, Whitestone, N.Y., assignor to GTE Laboratories Incorporated, Waltham, Mass.
Filed Oct. 12, 1971, Ser. No. 188,205
Int. Cl. B01j *17/00*
U.S. Cl. 29—571 **12 Claims**

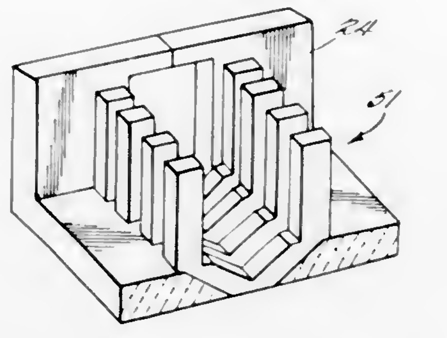


The process for fabricating an N-channel enhancement type field-effect semiconductor device includes the step of implanting impurity atoms to form a channel region in a high resistivity substrate between the source and drain regions. By utilizing ion implantation, the amount and location of impurities can be accurately controlled. During the subsequent growth of the gate oxide layer, the impurity distribution is changed to provide a semiconductor device having the desired operating characteristics.

3,789,505
METHOD OF MAKING A MULTI-CORE MAGNETIC HEAD WITH A NON-MAGNETIC HOLDER

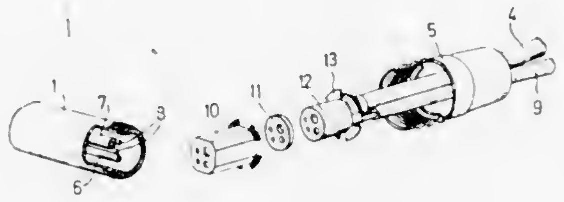
Robert L. Huntt, 25007 Woodfield Rd., Damascus, Md.
Filed Feb. 11, 1972, Ser. No. 225,571
Int. Cl. G11b *5/42*
U.S. Cl. 29—603 **10 Claims**

A method of making a multi-core magnetic head whereby a plurality of slots are produced in the base portion of a U-shaped block of non-magnetic ceramic material, such as Zinc Ferrite. Pieces of magnetic ceramic material, such as Nickel Ferrite, which have been ground to the appropriate shape are each slipped into the slot and bonded therein, for example, by glass bonding, so as to extend into the region bounded by the legs of the block of non-magnetic ceramic material. This region is then filled with a potting material which lends mechanical strength. The pieces and block are then cut in half along a line which passes through each piece and the surface thus formed on each half gound, lapped and polished to profile the desired pole piece dimensions. If desired the base of the block can then be grooved and shields placed in the grooves to reduce cross-talk. Spacing material is then deposited, for example, Titantium by vacuum deposition, on the non-magnetic block to set the gap thickness. The two ground halves are then bonded together and potted to form the multi-core head.



3,789,506
DENTAL HANDPIECES

Richard Bell Johns, Orpington, England, assignor to Vann Brothers Limited, London, England
Filed Dec. 23, 1971, Ser. No. 211,458
Int. Cl. A61c *1/10*
U.S. Cl. 32—27 **3 Claims**

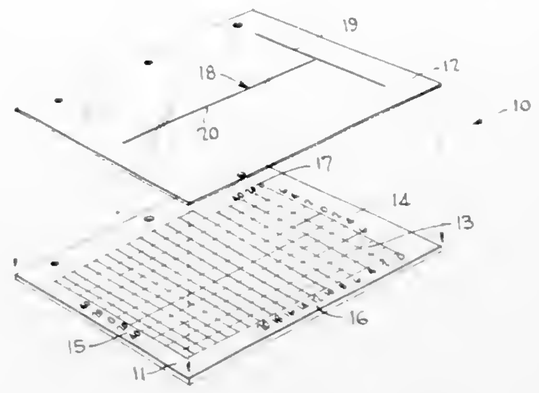


A handpiece for a dental drill comprising a fibre optic light conductor passing along inside the handpiece and emerging towards the operative end thereof the said conductor terminating adjacent the operative end of the handpiece so as to illuminate a drill tip when such is fitted in the handpiece.

3,789,507
MACHINE ELEMENT ALIGNMENT SYSTEM

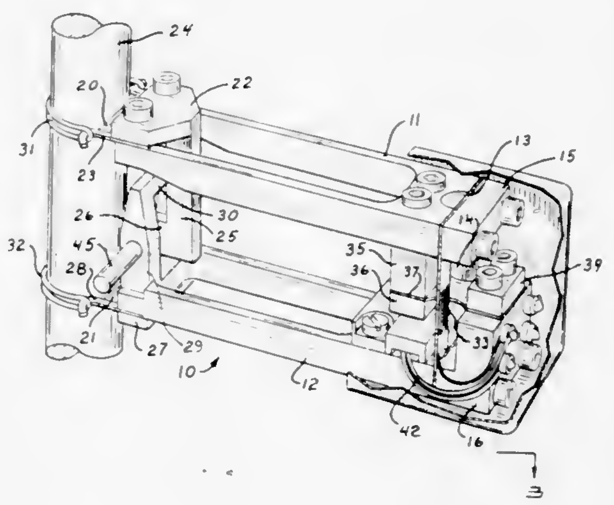
Malcolm G. Murray, Jr., 785 Robindale Rd., Brownsville, Tex.
Filed Feb. 17, 1972, Ser. No. 227,525
Int. Cl. G06g *1/00*
U.S. Cl. 33—1 SD **20 Claims**

A graphical method for determining corrections required to align one machine element with another employing a plotting board-overlay combination comprising a grid, said grid comprising scale means whereon is represented machine element spatial orientation and dimensions, and a transparent or semi-transparent form for overlay onto said plotting board whereon is plotted said one machine element spatial orientation and dimensions. The method comprises superposing said form onto said plotting board, plotting machine spatial orientation and dimensions of said one machine element onto said overlay form, repositioning said overlay form to correspond with existing machinery orientation, and reading magnitude and direction of said required misalignment corrections directly from said plotting board grid.



3,789,508
EXTENSOMETER

Harry R. Meline, Minneapolis, Minn., assignor to MTS Systems Corporation, Minneapolis, Minn.
Filed Aug. 18, 1971, Ser. No. 172,828
Int. Cl. G01b *5/00*
U.S. Cl. 33—148 D **11 Claims**

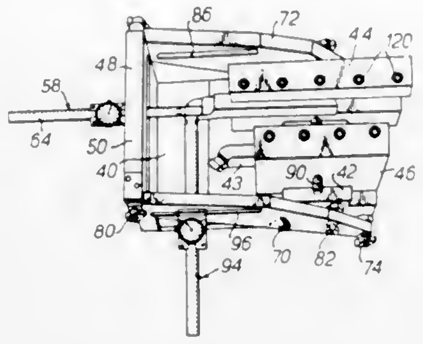


A strain gage extensometer used for measuring and controlling strain in tensile tests, compression tests and fatigue tests on specimens. The extensometer has a pair of arms that are connected together with a flexible element. The arms are coupled to move with the specimen when the specimen is subjected to strain and thus cause a strain in the flexible element supporting the arms. Suitable strain gages are utilized on the flexible element so that the strain in the specimen can be determined. As shown, the arms are also coupled with a cross flexure element to stabilize the arms.

3,789,509
METHOD AND APPARATUS FOR SETTING CUTTING TOOLS IN MACHINE TOOLS

Leslie Harkness, Halifax, England, assignor to Warner Swasey Asquith Limited, Halifax, England
Division of Ser. No. 752,604, Aug. 14, 1968, Pat. No. 3,625,097. This application Sept. 27, 1971, Ser. No. 183,949
Int. Cl. B27g *23/00*
U.S. Cl. 33—185 R **4 Claims**

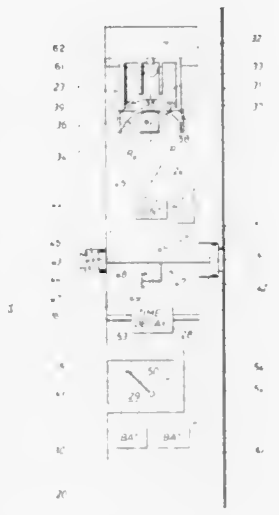
A machine tool has front and rear cross slides with tool locating means thereon and a turret with a tool locating datum surface thereon. The cutting tools for the machine tool are preset prior to their being mounted on the turret and cross slides. The tools are preset by using apparatus which includes a first jig operable to preset tools for use on both the front and rear cross slides prior to positioning said tools on said cross slides and a second jig for presetting tools for use on said turret. Both jigs include a reference surface simulating the datum plane so that tools preset on said jigs are easily and quickly positionable on the machine tool with reference to the datum plane. The apparatus further includes a datum surface transfer arm having a transfer surface adapted to lie on the datum surface, and means for mounting said transfer arm on the turret so that the transfer arm is operable to facilitate positioning the tools on the cross slide.



3,789,510
BOREHOLE DEVIATION MEASUREMENT WHILE DRILLING

Albert P. Richter, Jr., Houston, and William R. McEvers, Jr., Bellaire, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 29, 1971, Ser. No. 213,581
Int. Cl. E21b *47/022;* **G01c** *9/06, 9/20*
U.S. Cl. 33—306 **11 Claims**

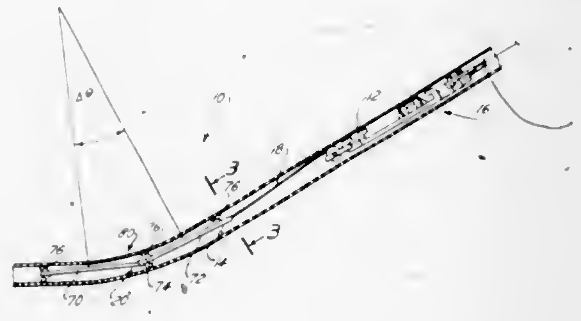


Disclosed is a downhole deviation-sensing system for enclosure in a drilling string during the drilling operation. The system produces a control signal representative of the deviation of a drilling collar of a drilling string relative to a vertical. The system employs a hollow lens enclosure with a concave configuration, the enclosure being partially filled with an opaque, anti-foaming liquid so that a bubble is formed within the lens enclosure, and an area is exposed on a concave inner surface of the enclosure, the area being bounded by an imaginary cylinder at right angles to the inner surface. A collimated light source and a photocell are aligned with the central axis of the imaginary cylinder, with the photocell having a surface area similar in size to the area defined by the cylinder. Dependent upon the degree of tilt with respect to a vertical, the area formed by the bubble on the lens controls the amount of light transmitted to the photocell. The photocell output is calibrated so that it is a function of the angle of deviation. The system is adapted for downhole operation in a drilling string, and series-connected switches for controlling the conditions of operation, i.e., when not drilling, are employed.

3,789,511
APPARATUS FOR SENSING A CURVATURE IN A CONDUIT

Jack J. Groom, Columbus, Ohio, and Gary L. Kinzel, Lafayette, Ind., assignors to Columbia Gas System Service Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 12,961, Feb. 20, 1970. This application Feb. 4, 1972, Ser. No. 223,671
Int. Cl. E21b *47/02*
U.S. Cl. 33—312 **29 Claims**

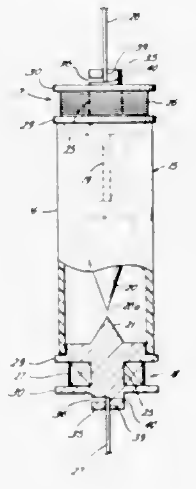


The change in slope of a bore, conduit or pipeline is determined by supporting a pair of pivotally interconnected rigid components in the bore with the ends of the components and the pivotal interconnection therebetween located on the centerline of the bore. The change in slope between the components at the pivotal interconnection therebetween is detected, and this change in slope, because of the manner in which the rigid components are connected, is the same as the change in slope of the bore or pipeline in which the rigid components are placed and is in proportion to the strain in the surrounding pipeline. Apparatus is provided for determining the change of slope in a bore, in this manner, and is particularly adapted for use in pipelines being laid or retrieved.

3,789,512
PLUMB BOB DEVICE WITH SPOOL MEANS FOR TETHERING LINES

Wilfred T. Gros, Rt. 12, Box 565, Houston, Tex.

Filed Feb. 7, 1972, Ser. No. 223,908. The portion of the term of this patent subsequent to Aug. 15, 1989, has been disclaimed.
Int. Cl. G01c *15/10*
U.S. Cl. 33—393 **2 Claims**



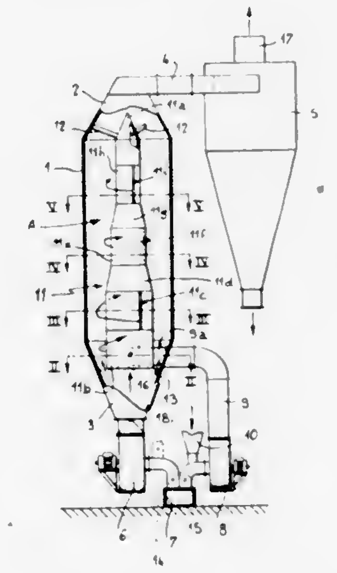
A plumb bob device is suspended on a flexible member in a liquid in a closed container. The container is provided with a centrally positioned, upwardly pointed indicator means for aligning with the plumb bob to indicate a true vertical relationship, and spool means are provided adjacent each end of the container for receiving a flexible line so that the flexible line may be wound on each of the spool means when the plumb bob device is not in use, but may be unwound therefrom to secure the plumb bob device in position for use.

The spools adjacent each end of the container include axially extending shafts with slot means whereby the flexible lines on the spool means may be positioned in the slots to properly position the plumb bob device during use.

3,789,513
PNEUMATIC DRYERS

Andre Mark, 54, cours Lafayette, Lyon, France

Filed Jan. 26, 1973, Ser. No. 326,962
Claims priority, application France, Feb. 4, 1972, 72.04761
Int. Cl. F26b *3/10*
U.S. Cl. 34—10 **11 Claims**



In a pneumatic dryer having a vertical chamber through which the drying gas with the divided material in suspension therein flows upwardly, hot gas streams without divided material are injected tangentially into the chamber alternately in one and the other direction about the axis of the chamber. These streams may issue from a slotted central column. The gas entraining the divided material may be injected tangentially into the bottom of the chamber.

3,789,514
BULKHEAD FILTER ASSEMBLY

Stewart W. Faust, and L. Dean Kuhn, both of Newton, Iowa, assignors to The Maytag Company, Newton, Iowa

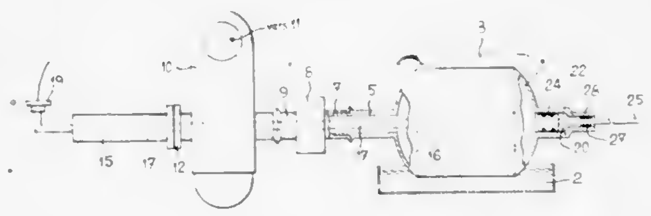
Filed July 24, 1972, Ser. No. 274,647
Int. Cl. F26b *21/06*
U.S. Cl. 34—82 **13 Claims**

A removable filter assembly includes a perforate grid portion openly facing the interior of a tumbling chamber and effectively forming a portion of the stationary bulkhead engageable by the tumbling fabrics and further includes a fine mesh filter screen disposed in the path of air being drawn through the tumbling chamber. Lint and other particles removed from the airflow are collected on the fine mesh screen and trapped within the assembly between the perforate portion and the fine mesh screen which are removable from the bulkhead as a unit.

3,789,515
APPARATUS FOR CONDITIONING LYOPHILISED PRODUCTS

Jacques Duprai, Seyssinet, and Henri De Roissart, Grenoble, both of France, assignors to L'Air Liquide Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude, Paris, France

Filed Aug. 13, 1971, Ser. No. 171,682
Claims priority, application France, Aug. 18, 1970, 7039335
Int. Cl. F26b *5/06, 13/30*
U.S. Cl. 34—92 **5 Claims**



This invention relates to apparatus for conditioning a lyophilised product under atmospheric pressure in an enclosure linked to a pumping unit and lyophilisation is effected under vacuum. The enclosure is associated with means for moving a stopper adapted hermetically to block a neck on the enclosure, and this means is adapted to enable the stopper to move on both sides of the blocked position, viz: to a withdrawal position within the enclosure or to a separation position outside the enclosure in an extension of the neck. The neck includes means for attachment to various accessories in a sealed manner.

3,789,516

CONTINUOUS TUNNEL OVEN FOR BAKING AND/OR DRYING

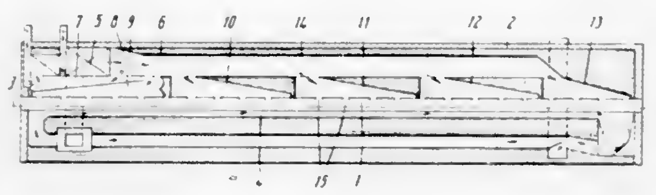
Horst Schraft, Stuttgart, and Horst Mack, Boblingen, both of Germany, assignors to Firma Werner & Pfeiderer, Stuttgart, Germany

Filed Sept. 19, 1972, Ser. No. 290,373

Claims priority, application Germany, Oct. 8, 1971, 21501928

Int. Cl. F26b *19/00*

U.S. Cl. 34—216 **2 Claims**



A continuous tunnel oven for baking and/or drying utilizes a baking belt passing through a baking chamber with a nozzle heater arranged in individual zones with the free valve opening area of the nozzles being adjustable.

3,789,517

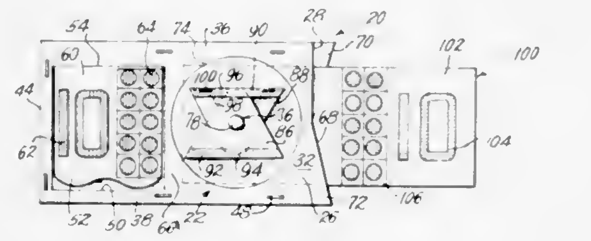
EDUCATIONAL FLASH CARDS

Catherine J. Romstad, 1776 K St., Menominee, Mich.

Filed Nov. 27, 1972, Ser. No. 309,723

Int. Cl. G09b *1/06*

U.S. Cl. 35—9 E **9 Claims**



Educational teaching aids in the form of flash cards for visual display of problems and solutions in teachings of mathematics have sleeve like pockets connected together at their sides and at one end. The other end is open to receive a slidable card, and the sleeve has at least one window opening therein. Indicia is inscribed both on the card and on the sleeve, and certain of the indicia can be displayed in the window selectively.

3,789,518

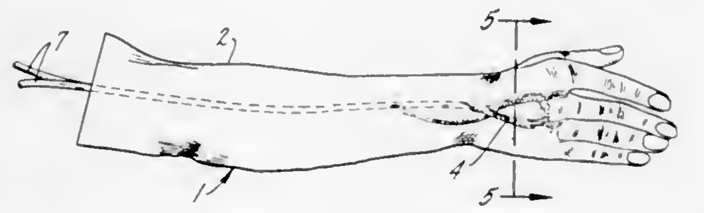
SIMULATED HUMAN LIMB

Myron C. Chase, Red Wing, Minn., assignor to Weatherby/Nasco, Inc., Fort Atkinson, Wis.

Filed Apr. 12, 1972, Ser. No. 243,353

Int. Cl. G09b *23/34*

U.S. Cl. 35—17 **6 Claims**



An anatomical part simulacrum wherein a core is enclosed within a skinlike glove and the method of forming the simulacrum by separately forming a core and a glovelike element and thereafter applying the element to the core.

3,789,519

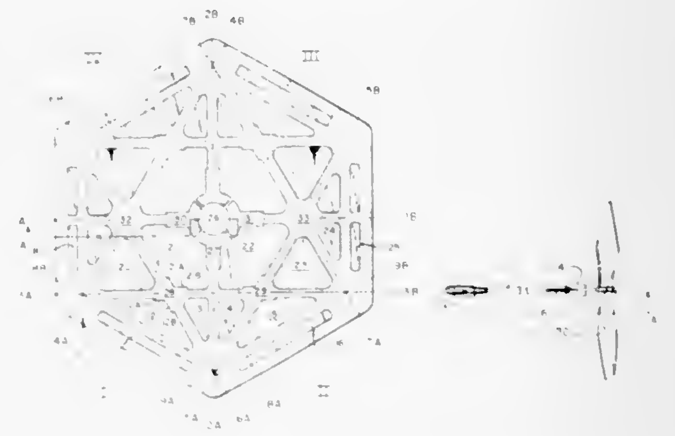
ROTOPLANE PLATFORM ENERGY SOURCE

Marshall A. Montgomery, Pleasant Hill; Herbert D. Thier, Moraga, both of Calif., and John B. Orfei, North Revere, Mass., assignors to American Science & Engineering Inc., Cambridge, Mass.

Filed June 15, 1972, Ser. No. 263,107

Int. Cl. G09b *23/08*

U.S. Cl. 35—19 R **10 Claims**



An educational experimental unit demonstrating principles of mechanical energy storage and conversion comprises a platform base which is rotatable and is driven by at least one propeller supported from the base. The base allows multiple orientations of the propeller and the use of multiple propellers to provide an effective series of experiments for demonstrating the principles involved.

3,789,520

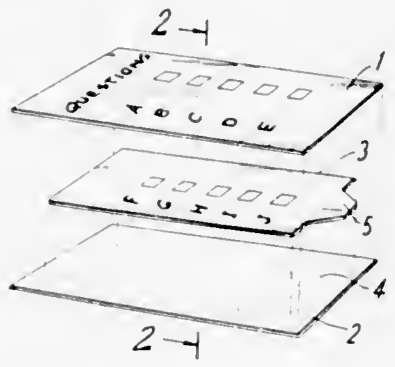
INFORMATION RECORDING DEVICE

Bertram H. Lowi, 135 Amity St., Brooklyn, N.Y.

Filed June 9, 1972, Ser. No. 261,320

Int. Cl. G09b *3/06*

U.S. Cl. 35—48 A **5 Claims**



A answer storage device for such purposes as opinion surveying having means for providing two simultaneous records of an answer made by the subject: an overt record made directly by the respondent and visible to him, and a covert record made by a force responsive medium within the form and not visible to the subject or changeable by him.

3,789,521

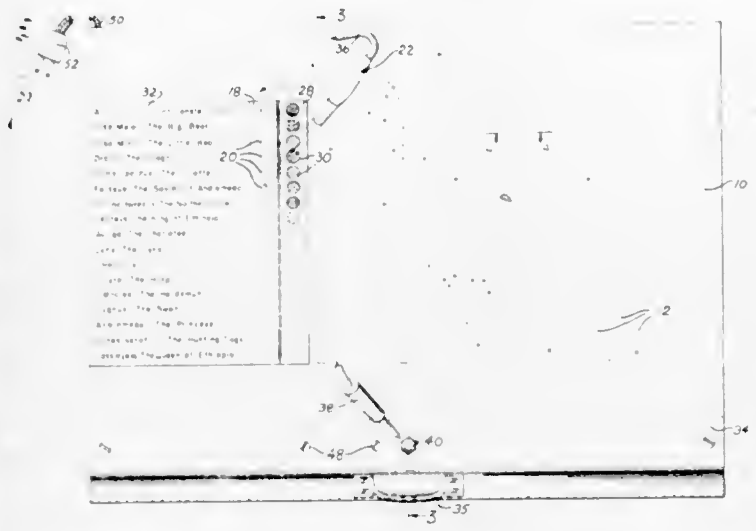
FIBER OPTIC TEACHING AID DISPLAY

Frederick L. Way, and Donald F. Way, both of Signal Hill Rd., Brookfield, Conn.

Filed Oct. 20, 1972, Ser. No. 299,440

Int. Cl. G09b *27/04*

U.S. Cl. 35—43 **6 Claims**



A teaching aid comprises a display surface having a plurality of lighting element locations arranged in predetermined patterns. The ends of a plurality of light-conducting fibers are received in and extend from the lighting element locations on the display surface. The other ends of the light-conducting fibers are received in a support surface which retains the ends in predetermined groupings corresponding to selected patterns on the display surface. A movable pen light is provided for selectively illuminating the various groupings of fiber ends on the support surface, the fibers transmitting the light to illuminate the corresponding patterns on the display surface.

3,789,522

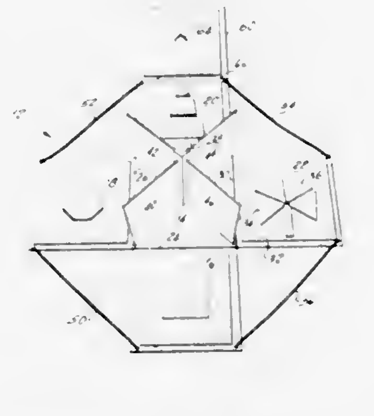
EDUCATIONAL TOY DEVICE

Jaymes D. Moore, 16198 N.E. 8th Ct., North Miami Beach, Fla.

Filed Mar. 19, 1973, Ser. No. 342,870

Int. Cl. A47b *41/00*

U.S. Cl. 35—60 **9 Claims**



An educational toy device which is a three dimensional unit for storage and includes a base with a plurality of hingedly connected panels at its outer edge adapted to be folded into the plane of the base with each of the panels defining a work station and having sockets to receive items of a predetermined geometrical shape sized to fit the respective sockets of the work stations and wall portions extending outwardly from the central portion of the base to separate the work stations from one another so that a plurality of youngsters may use the toy simultaneously, each working at a separate work station.

3,789,523

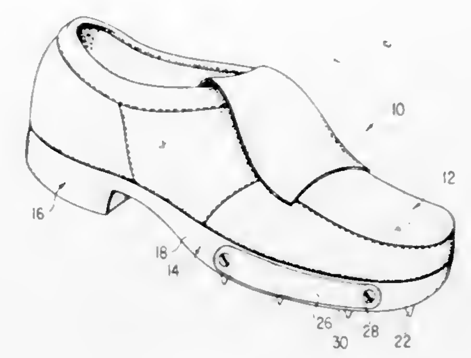
GOLF SHOE

Robert M. Rubin, 6545 Rustic Dr., Mesa, Ariz.

Filed Oct. 16, 1972, Ser. No. 297,926

Int. Cl. A43b *13/22*

U.S. Cl. 36—2.5 AH **6 Claims**



A golf shoe designed to aid a golfer in assuming a proper stance on a golf playing surface so that when addressing the ball the golfer pivots about a more or less stationary vertical line rather than swaying during his swing. The shoe includes a sole attached to an upper. The sole has opposed inner and outer sides, the outer side of said sole extending from the upper to a lower elevation than the inner side to create a toe-in effect when the golfer assumes his stance on a golf playing surface. A metal plate is fixed to the sole along the outer side thereof to preclude undue bending and wear of the sole edge during the pivotal portion of the golfer's swing. A plurality of cleats are attached to the sole and extend along the sole adjacent the outer and inner sides thereof. The cleats adjacent the outer side of the sole are smaller than the cleats adjacent the inner side of the sole by an amount approximately equal to the difference in elevation between the outer and inner sides of the sole so that when the golfer walks on a planar surface, his foot will be substantially level.

3,789,524

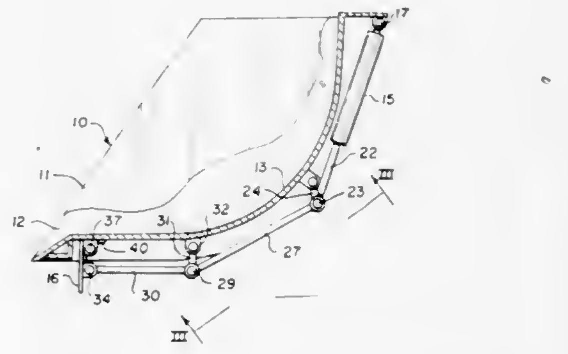
PIPE CRADLER ATTACHMENT FOR EXCAVATOR BUCKET

David Mashuda, R.D. No. 1, Evans City, Pa.

Filed Oct. 10, 1972, Ser. No. 295,967

Int. Cl. E02f *3/60*

U.S. Cl. 37—118 R **7 Claims**



An excavating bucket, such as may be used on a back-hoe for digging a trench. The bucket is provided with a recessed back in which is mounted adjacent the front edge a hinged template. The template is normally swung back into the recess but is optionally swung outward and forward by pressure operated cylinders at the back of the bucket under control of the operator. In its extended position below the front edge of the bucket, the template scoops a cradle or channel in the bottom of the trench for pipe to seat in.

3,789,525

3,789,527

3,789,529

card, removable labels may be placed which contain informa-

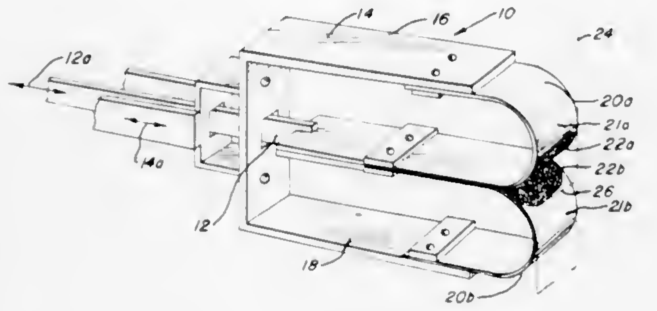
3,789,525
ELECTRO-MECHANICAL DISPLAY DEVICE

Kenly C. Bugg, Fort Wayne, Ind., assignor to Kendick Manufacturing Co., Fort Wayne, Ind.

Filed Nov. 3, 1972, Ser. No. 303,332

Int. Cl. G09f *9/30*

U.S. Cl. 40—28 C **6 Claims**



There is disclosed an electro-mechanical display device which is actuated by low level power signals which is particularly adapted to be used in readout devices for digital logic circuitry. The display device comprises two segments of resilient film, a first support, one end portion of each of the segments are supported in contiguous relation to one another by the first support, a second support attached to each of the opposite end portions of this film segment, and a means for imparting a relative movement between the first support and the second support wherein indicia located on each of the film segments is moved into and out of view by the relative movement of the first and second supports.

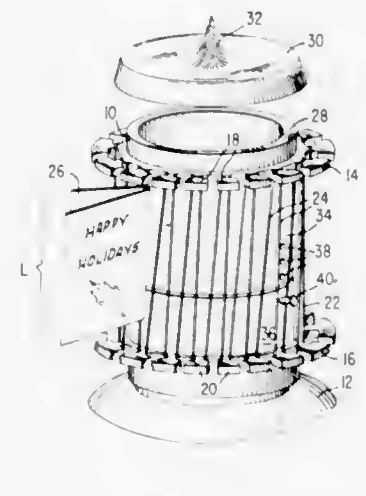
3,789,526
CARD HOLDER

Barry N. Lavinson, 127 W. Farrell Ave., Trenton, N.J.

Filed Dec. 27, 1971, Ser. No. 212,577

Int. Cl. G09f *1/10*

U.S. Cl. 40—124 **6 Claims**



A greeting card holder is herein provided which may present an upright cylindrical body supported on a base platform. A series of protuberances may be formed on the body for holding a cord in a laced configuration so that segments of the cord extend generally vertically when the cylindrical body is properly mounted on a horizontal surface. The cord may be spaced from the outer surface of the body by means of horizontally extending ledges and the protuberances may be formed on the ledges, if desired.

The body may be rotatably mounted on the base to rotate about a vertical axis and the upper portion of the body may be formed to receive a cover which may be decorated to symbolize the occasion for which the displayed greeting cards have been received.

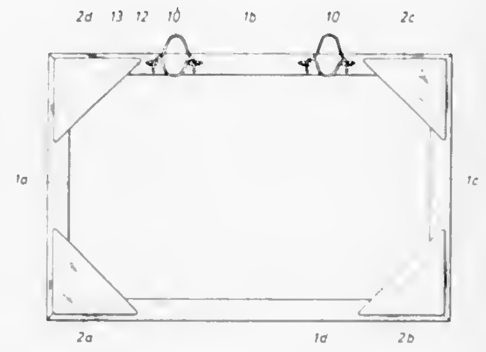
3,789,527
FRAME FOR ART PRINTS

Werner Johan Mohr, Strandladsvej 42, 2300, Kobenhavn S., Denmark

Filed Jan. 21, 1972, Ser. No. 219,763

Int. Cl. G09f *1/12*

U.S. Cl. 40—152 **1 Claim**



A frame consisting of four frame components, each having U-section, the side walls of said U pressing against each other. The frame components are assembled in pairs by a corner unit having a number of projections, said projections being squeezed into corresponding holes in the side walls of said U. In certain cases the projections are secured by a press-stud effect.

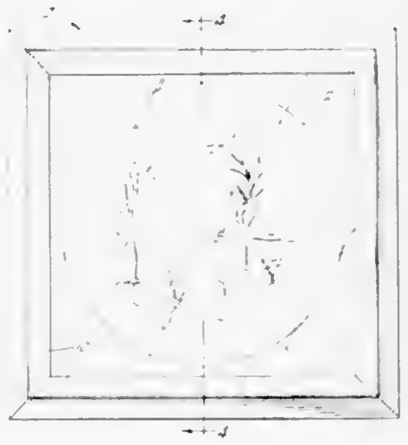
3,789,528
DISPLAY CASE

John Knoell, Buckingham, and Eric Siren, Chalfont, both of Pa., assignors to John Knoell & Son, Inc., New Britain, Pa.

Filed May 18, 1972, Ser. No. 254,673

Int. Cl. G09f *1/12*

U.S. Cl. 40—152 **9 Claims**



A case for displaying art objects such as plates or the like is constructed in such a manner as to permit the art object to be readily removed for cleaning or handling. The case has a frame in which is mounted a transparent front panel and a removable rear panel spaced therefrom to define a display chamber. A removable one-piece wire form engages in a groove in the frame and has a series of fingers which engage the rear panel at selected locations. The art object is centered in the display chamber by means of a retainer which surrounds the periphery of the object.

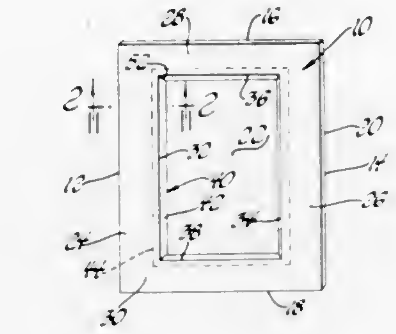
3,789,529
PICTURE FRAMING MAT AND EDGE MOLDING

Robert A. Thom, 6160 W. Surrey, Birmingham, Mich.

Filed Sept. 27, 1971, Ser. No. 183,889

Int. Cl. G09f *1/10*

U.S. Cl. 40—158 R **2 Claims**



A picture framing mat and edge molding for photographs, paintings, graphic arts, etc. which includes a mat board provided with an opening and which has a molding edge about the edges of the opening that has a shoulder wall of substantially the thickness of the mat board, in order to lie relatively flush with it, and a thin walled flange extending from its underside for adhesive engagement to the underside of the mat board to hold the molding edge in close fitted engagement with the mat edges that frame the opening.

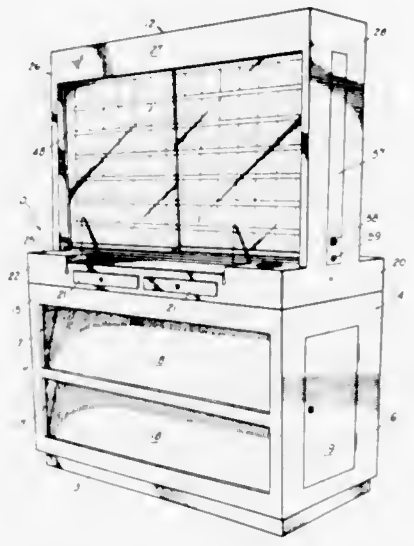
3,789,530
INVENTORY CONTROL APPARATUS

Joe W. Brooks, 1909 Country Club Dr., P.O. Box 1266; Delma C. Waters, East Hiway 44, Drive A.W., both of Eustis, Fla., and Paul J. Ciener, 1560 S. Clayton St., Mount Dora, Fla.

Filed Aug. 7, 1972, Ser. No. 278,537

Int. Cl. G09f *7/02*

U.S. Cl. 40—124 **5 Claims**



An inventory control apparatus for an automobile dealer including a housing, a display area on the housing, a means of releasably displaying in assembled relationship within the display area a plurality of cards having information thereon relative to each automobile in the dealer's inventory and a means slidably received in the housing for releasably maintaining keys to the ignitions of each automobile in relative alignment with each respective card. The displaying means comprises a support surface, a resilient covering on the surface, support members transversely disposed on the covering in spaced, parallel relationship and spacer means arranged in spaced, parallel relationship on the covering in perpendicular alignment with the support members. A transparent covering over the display area provides a surface onto which, over each card, removable labels may be placed which contain information relative to the current status of the automobile listed on the particular card.

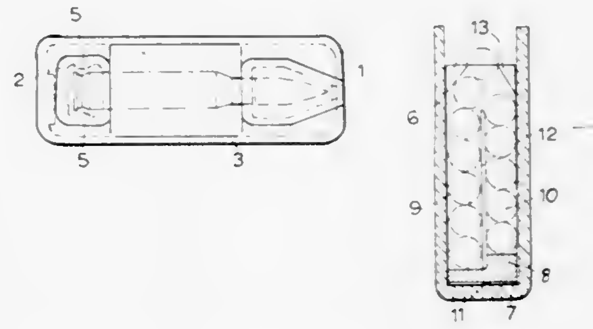
3,789,531
METHODS AND DEVICES FOR PACKING AND LOADING AMMUNITION

George Paul Franz Kersten, 179, Ridge St., Muckleneuk, Pretoria, Republic of South Africa

Filed Mar. 13, 1972, Ser. No. 233,880

Int. Cl. F41c *25/02*

U.S. Cl. 42—87 **5 Claims**



An ammunition container, in particular for small arms, such as rifles, sub-machine guns and machine guns is provided which combines features adapted for protective packaging and for loading the ammunition into magazines or the like. The container is usually made of plastics and is disposable. It eliminates special loading funnels for weapons which required such loading funnels for loading the magazines.

Some embodiments are waterproofed by a plastics foil. Those embodiments which are designed for transferring the ammunition from the package into a magazine comprise formations which either fit around the outside or into the inside of the magazine for proper alignment. Luminous indicating means may be provided to facilitate loading in the dark. The containers can be made so that they will float on water.

The invention improves the firing power of troops, reduces the weight per round of ammunition to be carried by troops, and saves costs.

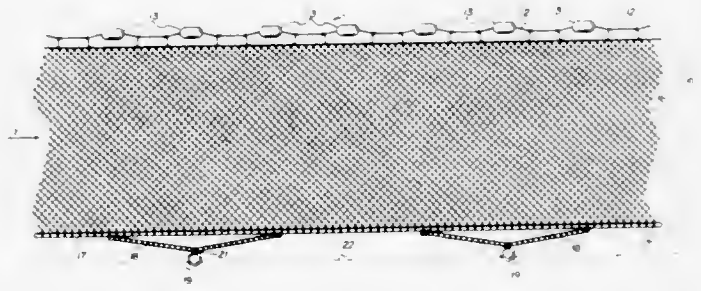
3,789,532
PURSE SEINE CABLE RING

Emery J. Ferguson, 3654 Kingsley, San Diego, Calif.

Filed Dec. 15, 1972, Ser. No. 315,625

Int. Cl. A01k *73/12*

U.S. Cl. 43—14 **1 Claim**



A purse seine cable ring of the type utilized with purse seine nets for anchoring and guiding a draw cable in which the rings have recesses or corners on the inner surface thereof to form a plurality of natural orientation points for minimizing the tendency of the prior art cable rings to orient in one position thereby encouraging excessive wear along one specific area of the ring due to the friction of the draw cable thereon.

3,789,533

tabs projecting downwardly to be fitted over the railing or a

deformed portions of the electrode rods are then press fitted

weeping device for causing the doll to weep when placed in a

3,789,533

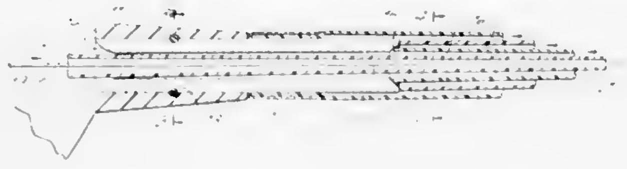
FISHING LINE THREADING MEANS FOR TELESCOPIC RODS

Albert L. Bowerfind, East Paterson, N.J., and Zvi Aviezer, New York, N.Y., assignors to Daggeem, Inc., New York, N.Y.

Filed Sept. 8, 1971, Ser. No. 178,759

Int. Cl. A01k *87/00*

U.S. Cl. 43—18 R **3 Claims**



A sectional tubular telescopic rod for fishing or other uses has its innermost section of smallest diameter sufficiently long or lengthened so that when the telescopic sections are fully collapsed, the inner end of the innermost section lies close to the point where the fishing line is fed from a reel thus making it readily possible to thread a fishing line through a tubular rod in a simple and effective manner.

3,789,534

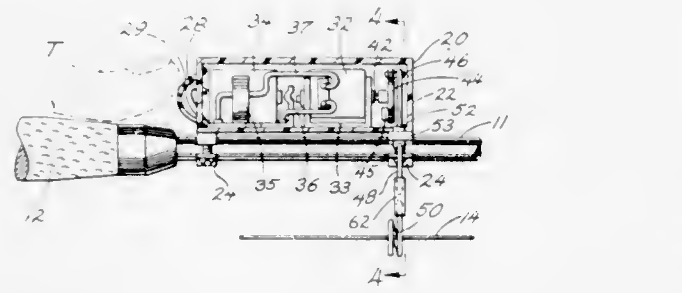
ELECTRICAL ATTACHMENT FOR A FISHING ROD

Thomas J. Yankaitis, 1223 Harlem Blvd., Rockford, Ill.

Filed Feb. 16, 1973, Ser. No. 333,197

Int. Cl. A01k *87/00*

U.S. Cl. 43—19.2 **10 Claims**



A DC motor is mounted on a fishing rod for selectively driving a reciprocating arm which operates in a plane perpendicular to the fishline. The motor and a battery are contained in a housing which is clamped onto the fishing rod at a point adjacent the handle so that a switch can be easily manipulated by the handle-gripping hand of the fisherman. The reciprocating arm passes through a pivotally mounted connecting block which allows the arm to reciprocate therethrough. The reciprocating arm terminates in an eye circumjacent the fishline and this eye is moved in an ovoid path to vibrate the fishline.

3,789,535

FISHING POLE AND REEL ASSEMBLY

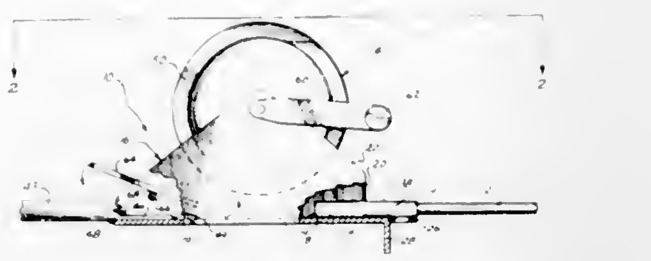
William E. Esplin, 15445 Labrador St., Sepulveda, Calif.

Filed May 24, 1972, Ser. No. 256,305

Int. Cl. A01k *87/06, 89/02*

U.S. Cl. 43—22 **8 Claims**

A fishing pole and reel assembly includes an elongated tapered fishing pole having a butt end and a tip end, a reel support frame made from substantially rigid sheet material shaped to form a flat central base having a pair of laterally spaced apart flat side plates extending upwardly from opposite sides of the base, and a spool carrying a fishing line and secured to an axle rotatably mounted in bearings between the side plates. Separate crank arms, for use in turning the spool, are rigidly secured to the ends of the axle adjacent the outer edges of the side plates, and extend in opposite directions from the axis of the axle. The butt end of the fishing pole is secured to the front of the base, and a handle is secured to the rear of the base. The front edge of the base has a pair of angle tabs projecting downwardly to be fitted over the railing or a boat to support the reel frame. A thumb-operated fishing line brake arm is pivotally mounted between the side plates to engage the line on the spool to slow the line release rate.



3,789,536

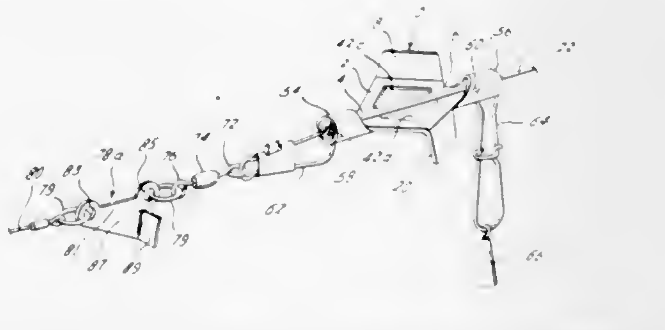
ACTIVATOR FOR FISHING LURES

Joseph Parmeson, 4821 Linden, Bellaire, Tex.

Filed Mar. 27, 1972, Ser. No. 238,106

Int. Cl. A01k *85/00*

U.S. Cl. 43—42.05 **9 Claims**



An activator to be utilized by fishermen to give lifelike action to fishing lures as they are moved through the water. The activator is freely movable along a leader that is fastened at one end to a swivel and at the other end to a clasp. The activator automatically meshes with the clasp connection of the leader and is comprised of a flat plate, a turning blade assembly formed of or secured to the flat plate, and a leader guide means at at least one end of the plate to receive the leader. In a tackle combination, the swivel is secured not only to the leader but also to a stabilizer which in turn is fastened to a fishing line to prevent twisting of the line.

3,789,537

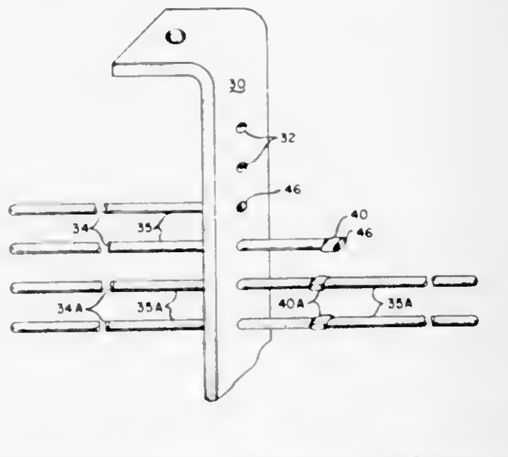
MULTIPLE ROD ELECTRODES

Clinton Rule, Beverly Farms, and Peter Adrian Rubel, Concord, both of Mass., assignors to Rule Industries, Inc., Gloucester, Mass.

Filed Nov. 22, 1971, Ser. No. 200,677

Int. Cl. A01m *1/22*

U.S. Cl. 43—112 **8 Claims**



Fabrication of the multiple rod electrode involves a particular deformation of a portion of each electrode rod. The deformed portions of the electrode rods are then press fitted into receiving apertures provided therefor in a bus bar.

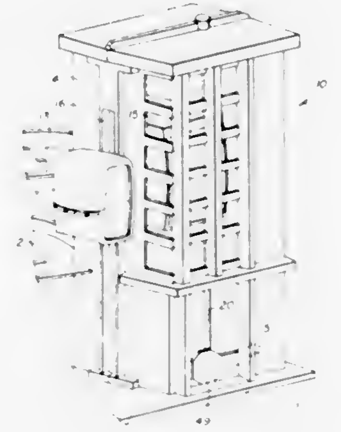
3,789,538

ELEVATOR FOR TOY PARKING GARAGE

Duane E. Spengler, and Charles O. Bartoo, both of West Falk, N.Y., assignors to The Quaker Oats Company, Chicago, Ill. Continuation of Ser. No. 119,654, March 1, 1971, abandoned. This application Aug. 9, 1972, Ser. No. 278,945

Int. Cl. A63h *33/00*

U.S. Cl. 46—12 **11 Claims**



A vehicle elevator for a toy parking garage includes a vertically movable car guided in a shaft, and an endless drive means for moving the car up and down in the shaft. A hand crank is rotatable in either direction for moving the endless drive means, and a coupling arm is pivotally coupled to the car and to the endless drive means to follow the full course of the endless drive means so that rotation of the hand crank in either direction can move the car either up or down. The toy also includes a bell, stop signs raised by the vehicle car, a simulated passenger car, and a vehicle car floor that tilts to roll a vehicle out of the car.

3,789,539

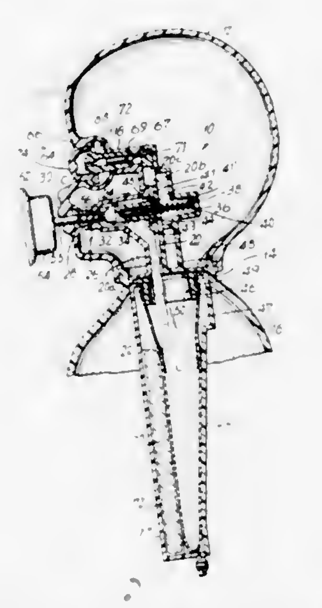
DOLL TEARING MECHANISM

George Cagen, Brooklyn, N.Y., assignor to Ideal Toy Corporation, Hollis, N.Y.

Filed Dec. 22, 1971, Ser. No. 211,029. The portion of the term of this patent subsequent to Sept. 12, 1990, has been disclaimed.

Int. Cl. A63h *13/02*

U.S. Cl. 46—135 A **18 Claims**



A weeping doll, having a head with eye sockets and an open mouth formed therein, is provided with a gravity influenced weeping device for causing the doll to weep when placed in a generally horizontal position. The weeping device includes a liquid inlet tube located adjacent the open mouth and a flexible reservoir tank in liquid communication with the inlet tube. A selectively operable valve is located in the inlet tube for opening the inlet to permit liquid to flow through the mouth to the reservoir. The inlet tube is provided by a rigid housing which defines a liquid flow conduit between the flexible reservoir and the eye sockets of the doll and means is provided for compressing the flexible reservoir when the doll is in a generally horizontal position to force liquid from the reservoir through the conduit to the eye sockets, in order to simulate weeping or tearing.

3,789,540

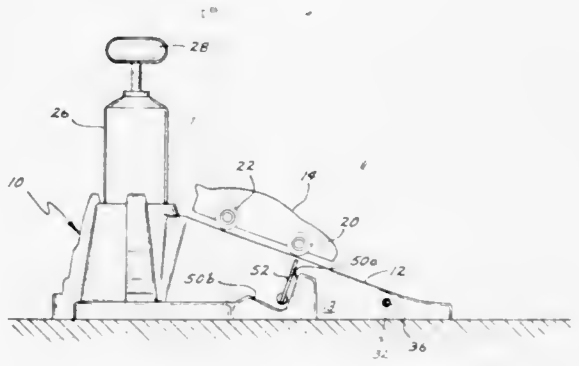
COMPRESSED AIR PROPELLED TOY VEHICLE AND LAUNCHING SYSTEM

Frank J. Convertine, and Charles G. Ganance, both of Cincinnati, Ohio, assignors to General Mills Fun Group, Inc., Minneapolis, Minn.

Filed Feb. 20, 1973, Ser. No. 333,924

Int. Cl. A63h *29/16*

U.S. Cl. 46—202 **5 Claims**



A toy vehicle is provided with a motor. The motor has a turbine which is operated by compressed air. The motor is connected through a gear train to the driving wheel of the vehicle. A launching structure having an air pump, an air hose for connecting the air pump to the vehicle motor, and a latching system to hold the vehicle in place while air from the pump is directed at the turbine, and to release the vehicle when it is ready to go.

3,789,541

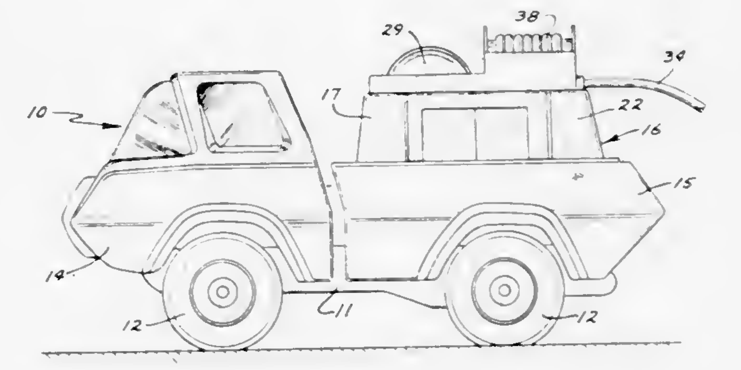
TOY VEHICLE PUMPER

Thomas W. Good, Excelsior, and Theodore H. Zbikowski, Plymouth, both of Minn., assignors to Tonka Corporation, Minneapolis, Minn.

Filed Dec. 4, 1972, Ser. No. 311,916

Int. Cl. A63h *17/08*

U.S. Cl. 46—215 **4 Claims**

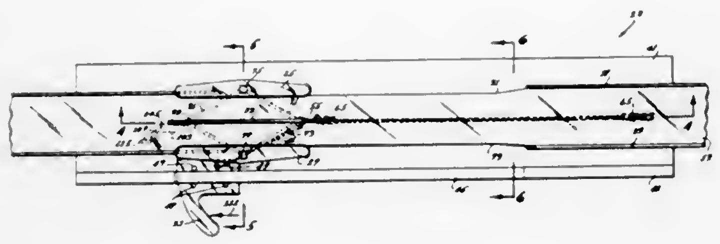


A miniature toy vehicle having a tank for holding a quantity of water and a hose leading from the tank and a pumping device for pumping the water from the tank through the hose.

3,789,542
MECHANICAL ACCELERATOR FOR A VEHICLE TOY

Anson Sims, Redondo Beach, Calif.; Edwin O. Stastny, Hong Kong, British Crown Colony, Hong Kong, and Janos Beny, Manhattan Beach, Calif., assignors to Mattel, Inc., Hawthorne, Calif.

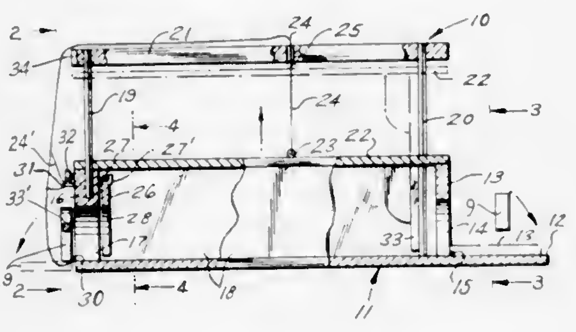
Division of Ser. No. 752,232, Aug. 13, 1968, Pat. No. 3,641,704. This application Jan. 11, 1971, Ser. No. 105,197
Int. Cl. A63h *33/00*
U.S. Cl. 46—1 K **5 Claims**



An action toy wherein the sides of small unpowered toy vehicles traveling along a track or roadway are engaged by a pair of gripping members disposed adjacent opposite sides of the roadway and wherein the toy vehicles are accelerated by the rectilinear movement of the gripping members before being released by these members.

3,789,543
TOY AUTOMOBILE SPEED TRAP DEVICE

Russell F. Kirby, 295 Centre Ave., Abington, Mass.
Filed Apr. 26, 1972, Ser. No. 247,589
Int. Cl. A63h *33/00*
U.S. Cl. 46—1 R **8 Claims**

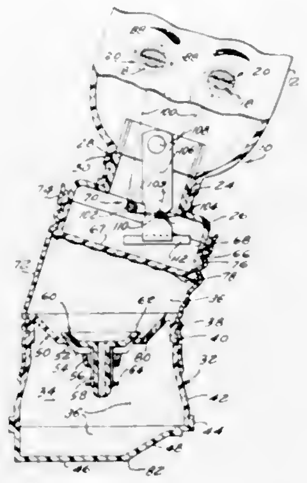


A toy trap device for toy cars consists primarily of a hollow box like affair to which toy automobiles may be propelled. The device includes a ramp adjacent to a door with a pair of archways for the entrance of the cars and at the opposite end is a swing type door which is struck by a car passing through, will trigger to trap doors.

3,789,544
DOLL HAVING COLLAPSIBLE TORSO AND MEANS FOR CLOSING DOLL'S EYES UPON TILTING

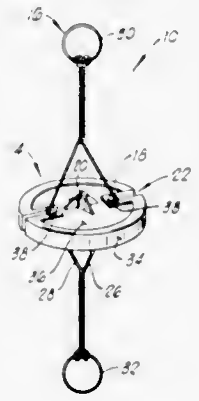
Herbert Thorn, Jamaica, N.Y., assignor to Ideal Toy Corporation, Hollis, N.Y.
Filed May 30, 1972, Ser. No. 257,567
Int. Cl. A63h *29/12, 3/40*
U.S. Cl. 46—41 **15 Claims**

A toy doll adapted to simulate the motions of a child falling asleep has a head and a torso which includes upper and lower portions; the upper torso portion being formed of a flexible material and adapted to collapse relative to the lower torso portion. Fluent material is contained within the torso which is constructed to permit passage of this material between its upper and lower portions. When the fluent material is in the upper torso portion the doll is supported in an erect configuration and as the fluent material flows into the lower torso portion, the upper torso portion collapses, causing the doll to simulate the action of a child going to sleep. Simulated eye units are mounted in eye sockets formed in the doll's head and include rotatable eye members which are adapted to move between opened and closed positions. The eye members are separately controlled by means which selectively moves them towards their closed positions in response to collapse of the torso and by means which moves them towards their closed positions, independently of the collapse of the torso, when the doll is moved towards an inclined or generally horizontal position.



3,789,545
TOY TOP AND RELEASE MEANS THEREFOR

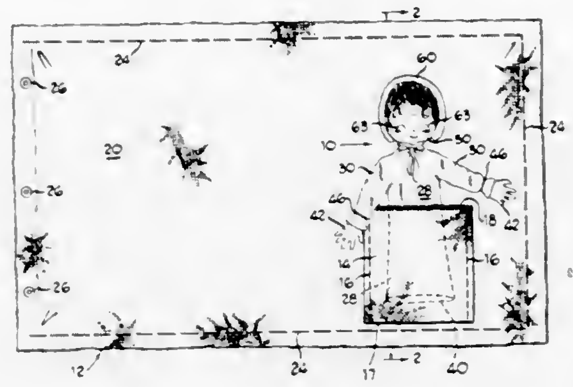
Frederick W. Mann, P.O. Box 444, Waterville, Kans.
Continuation-in-part of Ser. No. 158,246, June 30, 1971, abandoned. This application Dec. 6, 1972, Ser. No. 312,565
Int. Cl. A63h *1/32*
U.S. Cl. 46—62 **4 Claims**



A toy top has a body with spinning points extending oppositely therefrom. Opposed slotted apertures in the body open to the outer surface. Release apparatus has a pair of cords with members secured to their mid portions that are removably engagable with the slots. The release apparatus supports in use the top in spinning by twisting the cords in an opposite winding and unwinding action, and releases the top in spinning when the cords are unwound.

3,789,546
PILLOW WITH HAND PUPPET RECEIVABLE IN A POCKET THEREOF AND MANIPULABLE WHILE THEREIN

Howard J. Morrison, Deerfield, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.
Filed Apr. 28, 1972, Ser. No. 248,429
Int. Cl. A63h *3/14*
U.S. Cl. 46—116 **4 Claims**



A doll and pillow combination wherein a baby doll is removably received on one side of the pillow in a pocket secured to a pillow case. The body portion of the doll is hollow so that a child may place a hand inside the doll and manipulate the same in a manner as a puppet.

3,789,547
MANUFACTURING PROCESS FOR DOLLS, PUPPETS, PLUSH ANIMALS, CONSISTING IN THE USE OF TWO FABRICS ADHERENT ONE TO THE OTHER

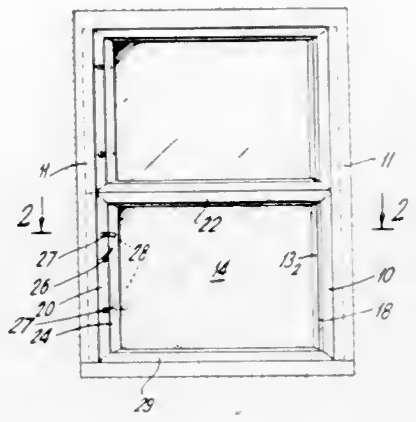
Maurice Roger Francois Chemarin, 83, Rue de Maubeuge, Paris, France
Continuation of Ser. No. 883,878, Dec. 10, 1969, abandoned. This application Mar. 16, 1972, Ser. No. 235,428
Int. Cl. A63h *3/02*
U.S. Cl. 46—158 **3 Claims**

Improved construction for children's toys such as dolls, animals and the like incorporating selectively located gripping areas on the surface of displaceable body elements thereof that are releasably engageable with grip receptor surfaces on the body portion thereof to permit selective body element displacement and releasable maintenance of displaced positioning thereof.

3,789,548
WINDOW ARRANGEMENT

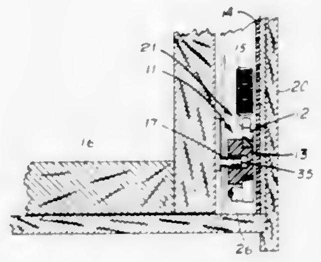
Fred M. Campisano, 136 Jefferson Ct., Yorktown Heights, N.Y.
Continuation-in-part of Ser. No. 882,231, Dec. 4, 1969, abandoned. This application Mar. 30, 1972, Ser. No. 239,648
Int. Cl. E06b *7/16*
U.S. Cl. 49—162 **5 Claims**

An improved window arrangement employs one or more window sashes for sliding vertically within an associated, dedicated track of a window frame. The glass in each window sash is rotatably secured to the sash peripheral mechanical members. The glass and its attendant supporting assembly may be rotated into the enclosure containing the window to provide ready, convenient and safe access to the glass for maintenance or other purposes. The composite window includes hinge, latch and like appurtenances for preferred operation.



3,789,549
ROTATABLE LOCKING SUPPORTS FOR SASHES OF WINDOWS

James K. Yip, Rock Island, Ill., assignor to Rodman Industries, Inc., St. Paul, Minn.
Filed May 30, 1972, Ser. No. 258,053
Int. Cl. E05d *13/10*
U.S. Cl. 49—181 **4 Claims**



A sliding, window-supporting assembly has a rotary locking member in a sliding, supporting block contained within a channel of each vertical weather strip. The circumferential surface of the rotary locking member has diametrical portions like a cylinder and alternate cutoff portions. The diameter of the locking member between the cylindrical portions is somewhat greater than the normal width between those sides of the channel that are perpendicular to the jamb of the window, and when the sash that is keyed to the rotary locking member is rotated to a horizontal position, the cylindrical edges press against the sides of the channel to deform small portions of the sides to hold the sliding, supporting assembly stationary. While the sash is vertical, the cutoff portions of the rotary locking member are adjacent the respective sides of the channel, and the sliding supporting block is free to slide for raising or lowering the sash. A flat spring with a screw adjustment cooperates with a pair of strips along respective sides of the sliding, supporting block to provide a controlled amount of constant friction.

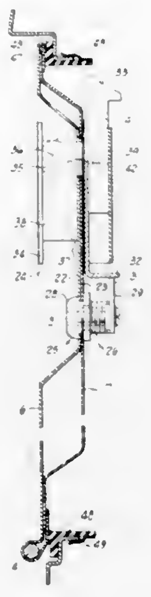
3,789,550
CORROSION-RESISTANT, DOUBLE-PANEL, LOCKABLE DOOR

Robert C. Seiwert, Wooster, Ohio, assignor to Stahl Metal Products Division, Cleveland, Ohio

Filed June 12, 1972, Ser. No. 261,912

Int. Cl. E06b *3/00*

U.S. Cl. 49—503 **4 Claims**



A corrosion-resistant, double-panel, lockable door for automotive utility bodies is provided in which the portion of the panels for receiving a lock and paddle latch mechanism is formed into a drawn recess so that this portion of the panels is integral with the remainder of the panel Consequently, no seams or openings, which would tend to receive water or moisture, are necessary in order to mount the latch handle and lock assembly on the door without protruding parts. The lock extends through the sheet material forming the panels, and the parts forming the paddle handle and latch mechanism are secured to the sheet material on either side thereof by rivets extending through the material. Nevertheless, the arrangement is such that the lock opening may be sealed, and a slot, provided to permit the paddle handle mechanism to engage the latch, is protected from exposure to the weather to guard against entry of moisture into the space between the panels, thus preventing accumulation of water between the panels and eliminating the cause of rust or corrosion.

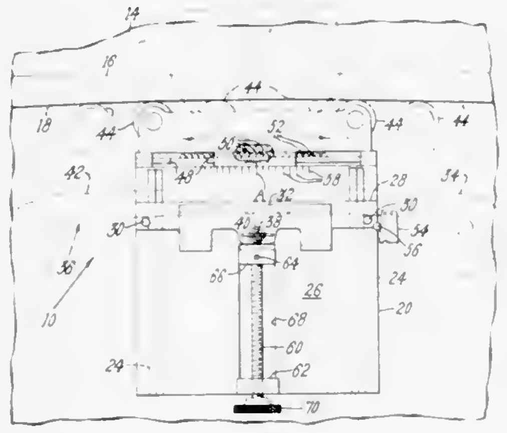
3,789,551
SKATE SHARPENING DEVICES

John F. Norris, Braintree, and Donald R. Humphreys, Topsfield, both of Mass., assignors to Custom Radius Corp., Topsfield, Mass.

Filed Feb. 28, 1972, Ser. No. 229,700

Int. Cl. B24h *1/00, 9/04*

U.S. Cl. 51—92 R **8 Claims**



A device to establish and control the desired longitudinal contour of an ice skating blade during sharpening thereof. Included is a skate blade holder which is mounted for movement on a carriage such that the holder follows an arcuate template as it is moved past a rotary grinder. An indexing mechanism is provided for adjusting the position of the skate blade on the holder such that a predetermined ice tangency point may be established on the blade.

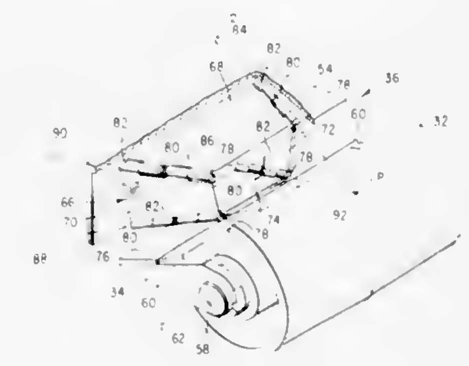
3,789,552
TRACKING MECHANISM FOR BELT SANDERS

Douglas W. Bradbury, and Cecil O. Huey, Jr., both of Clemson, S.C., assignors to The Singer Company, New York, N.Y.

Filed Sept. 12, 1972, Ser. No. 288,456

Int. Cl. B24b *21/18,* **F16h** *7/18*

U.S. Cl. 51—135 BT **9 Claims**



A tracking mechanism for centering a sanding belt of a belt sander, wherein a linkage means is connected to the frame of the sander. The linkage means carries a mounting bracket to which an idler pulley is rotatively connected. The linkage means has a plurality of links pivotally interconnected to each other to form a frusto-polyhedron whose vertex defines a pivot point disposed forwardly of the idler pulley, so that when unbalanced forces act on one side of the idler pulley, the linkage means will be caused to rotate about the pivot point to produce a turning movement thereabout, and cause the opposite side of the idler pulley to counteract the initial forces by shifting and restoring the idler pulley to a balanced position. The pivot center line intersects a plane passing through the center line of the sanding belt, which plane is substantially perpendicular to the axis of the pulley. This location of the pivot point also will serve to aid tracking of, and limit runoff of the sanding belt from the pulley.

3,789,553
DEVICE FOR HOLDING A RING-FORMED WORKPIECE INTENDED TO BE MACHINED ON ITS INNER ENVELOPE SURFACE

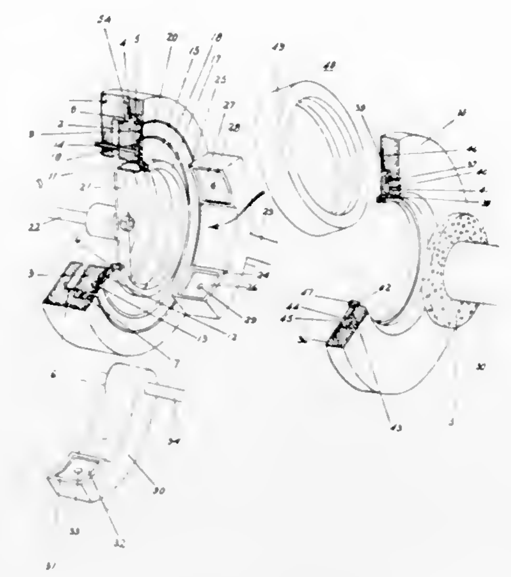
Erik Lennart Waldemar Johansson, Gotabergsgatan 34, Goteborg, Sweden

Filed June 15, 1971, Ser. No. 153,387

Int. Cl. B24b *41/04*

U.S. Cl. 51—237 R **4 Claims**

Device for holding a ring-formed workpiece with an inner and outer envelope surface and with transversal end surfaces which particularly are flat, which workpiece which for instance can consist of a ball race or any other conventional type of ring, when set up is to be subjected to machinging such as grinding or polishing and the like of the inner envelope surface, characterized by two holding members for holding the workpiece axially, each of which with one of its sides acts upon a transversal surface each and has one side provided with a circular surface, each of which surfaces are in contact with its opposite surface via a pressure-medium cushion or film for securing of the workpiece., one of the holding members then being capable of being driven, and by a number of transversal clamping jaws, which jaws are arranged at a distance from each other and can be put into contact with the outer envelope surface of the workpiece via a pressure-medium cushion or film whereby pressure medium cushions limit movements of the ring-formed workpiece axially in both directions as well as transversely in all directions.



3,789,554
ROTARY GUARD FOR SURFACE TREATING MACHINES

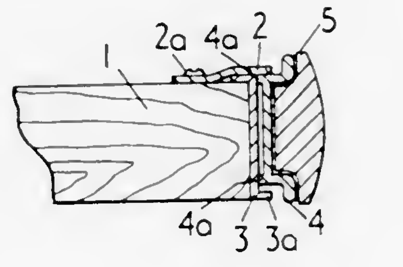
John Lyndon Robbins, London, and Samuel Douglas Bridge, Marlborough, both of England, assignors to R. G. Dixon & Company Limited, Wembley, England

Filed Mar. 28, 1972, Ser. No. 238,796

Claims priority, application Great Britain, Mar. 29, 1971, 8,096/71; June 28, 1971, 30,210/71; July 20, 1971, 33,909/71

Int. Cl. B24b *55/04*

U.S. Cl. 51—274 **3 Claims**



According to the invention, there is provided, in or for a surface treating machine, such as a floor polisher or a handheld sander, a shield for preventing damage to obstructions adjacent the surface being treated. This shield may consist of a ring of soft material mounted for relative rotation on a rotatable attachment so as to remain stationary if the rotating attachment encounters an obstruction.

3,789,555
SANDING ARTICLE

John R. Means, 5424 Brook Farm Pl., Fort Wayne, Ind.

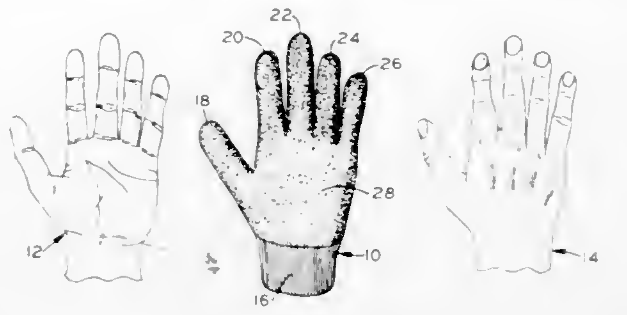
Filed Jan. 25, 1971, Ser. No. 109,150

Int. Cl. B24d *15/04*

U.S. Cl. 51—391 **3 Claims**

A glove, which may consist of paper, cotton twill or the like, is first impregnated with an adhesive taken from the epoxy resin class and an abrasive is then coated over the adhesive lamination on each of the opposite sides of the glove including the digital, palm and back side sections. The glove is configured so that it can be worn on both the right and left hands making the palm and digital sections reversible. Thus, all portions of the glove contain working surfaces. Opposite sides of the glove can be coated with different grades and density of abrasive so that one side of the glove can serve as coarse and the other as fine finishing. either side can be brought into use by simply reversing the glove from one hand to the other, to present the proper working surface.

The abrasive can be applied by means of a cut-out form applied onto a pressure-sensitive surface of the glove; or the abrasive can be applied to an unpolymerized lamination of plastic material which is soaked into the surface of the glove; or the abrasive surface can form a part of a liner which is slipped over the glove.



The glove may either be dipped into the binder and the abrasive applied by spray coating or passing an impregnated glove through a suspension of particles.

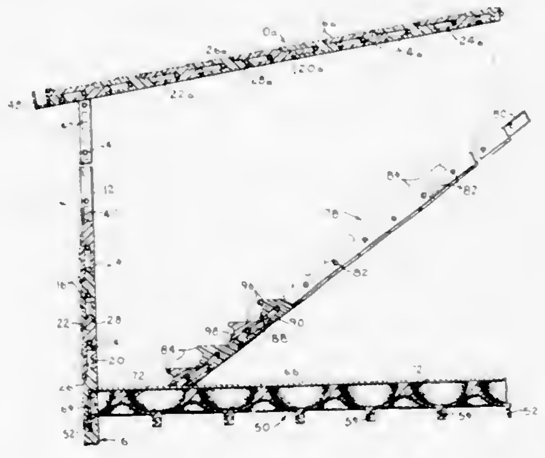
3,789,556
INTERLOCKING STRUCTURAL UNITS

Jerald Paul Skinner, 220 W. 33rd St., Topeka, Kans.

Filed July 13, 1971, Ser. No. 162,219

Int. Cl. E04b *7/12;* **E04f** *11/00*

U.S. Cl. 52—93 **29 Claims**



A structural assembly is formed by a frame having a pair of spaced, parallel support components spanned by a series of spaced, parallel members orthogonal to said components, and a series of elongated structural units each longitudinally slotted to receive a corresponding member for support thereby. The frame would normally be positioned with the support components either upright for a wall or inclined for a roof or stairway, with the series of members being horizontally disposed. The structural units are successively installed on the members, each unit as it is installed interlocking with the previously installed unit to lock the series of units together in a rigid assembly. The interlocking units are monolithic bodies of structurally strong, rigid, synthetic resin foam material such as polyurethane, and thus possess superior insulating properties as well as being quite strong in compression. In constructing walls and roofs, panels of assembled frames and units are arranged in abutting, side-by-side relationship to form a multiple-panel wall or roof area. Several mechanical raceways are available and extend throughout the entire area. The individual interlocking units are molded panel sections having opposed, prefinished surfaces that become the interior and exterior of the structure. For stairway construction, a single frame is employed with the interlocking units thereon being shaped to provide treads and risers.

3,789,557

RAISED FLOORING

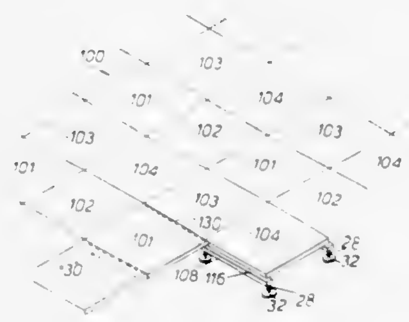
Ronald William S. Harvey, High Acres, Rollswood Rd., Welwyn, England

Filed June 1, 1971, Ser. No. 148,713

Claims priority, application Great Britain, June 8, 1970, 27,700/70

Int. Cl. E04f *13/08*

U.S. Cl. 52—126 19 Claims



This invention relates to raised flooring made of a number of flooring panels assembled side by side and to the flooring panels themselves. In the raised flooring according to the invention at least some of the panels are supported on their underfaces by spaced substantially parallel battens, one or more of which have parts which project beyond at least one of the edges of these panels. The battens themselves are supported at these projecting parts on props which are adjustable for length so supporting the panels above the actual floor of the building. The invention also extends to these panels themselves.

3,789,558

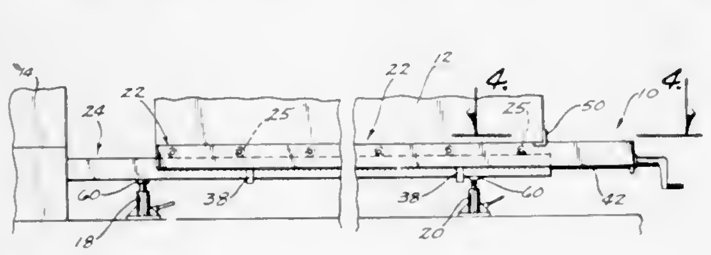
TRAILER HOME JACK AND METHOD OF OPERATING THE SAME

Herbert E. Spencer, and Tommy S. Mitchell, both of Rt. 4, Hot Springs, Ark.

Filed Nov. 26, 1971, Ser. No. 202,090

Int. Cl. E04h *1/12*; **E04g** *1/24*; **B65g** *7/02*

U.S. Cl. 52—143 3 Claims



A trailer home is moved into side by side contiguous relationship with another trailer home by placing two pairs of telescopically extendable members transversely under the first trailer home. A pair of vertically disposed ground engaging jacks engage the lower member of each pair of telescoping members and the top member engages the bottom of the first trailer home. A horizontally disposed jack connected between each of the telescoping members allows the first trailer home to be moved toward the second trailer home after the vertical jacks have been operated to raise the trailer home such that the transport wheels are out of ground engagement. A stationary support is then placed under the first trailer home and the jack structure is lowered and removed.

3,789,559

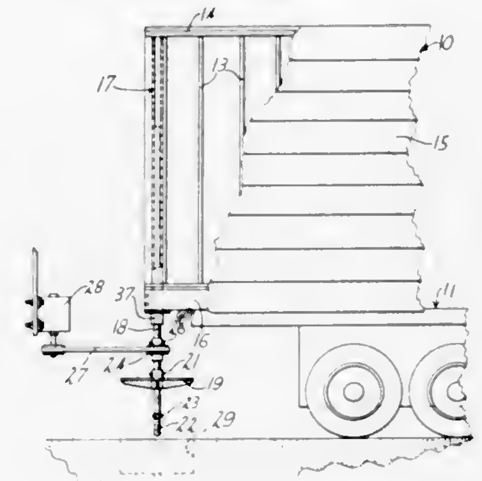
PROCESS AND APPARATUS FOR CONSTRUCTING FOUNDATIONS AND SETTING PREFABRICATED BUILDINGS THEREON

William O. Kirkes, 1052 Sharp Dr., Birmingham, Ala.

Filed Nov. 17, 1971, Ser. No. 199,577

Int. Cl. E04c *3/00*; **E02d** *27/00*

U.S. Cl. 52—169 4 Claims



A prefabricated building is provided with a plurality of vertically extending guides located about its periphery. In each of the guides is a rotatable and vertically movable column. The building is carried to the site and while still on the transport vehicle an earth auger is attached to the support members, power is applied and foundation holes are drilled under each of the vertical guides. The auger is removed and permanent load supporting members are installed on the lower ends of the columns, the building is slightly raised, the vehicle removed, and the building is lowered down onto collars which are made fast to the columns, thus supporting the building. The foundation holes are then filled with cement.

3,789,560

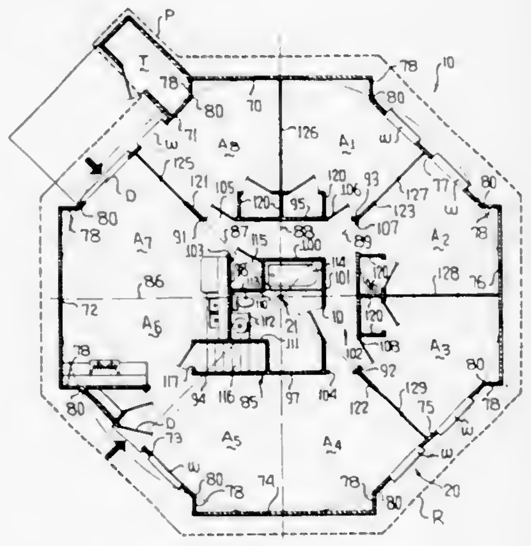
SQUARE CIRCLE HOUSE OR LIKE BUILDING STRUCTURE

Robert F. Wood, Oak Hill, W. Va., assignor to Round-Eight Corporation, Oak Hill, W. Va.

Filed Aug. 20, 1971, Ser. No. 173,526

Int. Cl. E04h *1/00*

U.S. Cl. 52—236 6 Claims



This disclosure relates to a house or like building structure in which the unique feature dictating the very foundation of the entire system is the geometrical pattern of a structural load-bearing shell which within a basic 40 foot diameter circle includes a central square cover, the square core being in direct relation to and parallel with walls of the perimeter forming tangents to the common 40 foot circle whereby the center square core now becomes, structurally speaking, the recipient box for load-carrying needed to support all members extending outward to the tangent walls which additionally results in the formation of a floor composed of five rectangular areas. A chordal wall is disposed between adjacent pairs of tangential walls thus resulting in the "squaring" of the 40 foot diameter circle and permitting the construction of the building of a limited number of different size pieces of lumber (only 2 × 4 × 16 and 2 × 6 × 12 required) in an extremely short period of time by unskilled labor, and at a low cost.

3,789,561

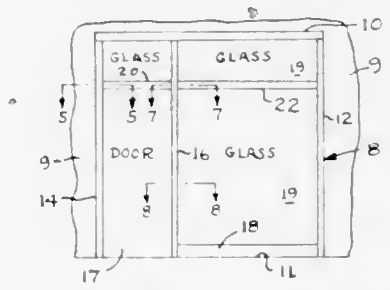
KNOCKDOWN FRAMING

Michael B. Herbert, Cincinnati, Ohio, assignor to American Standard Inc., New York, N.Y.

Filed Feb. 14, 1972, Ser. No. 226,086

Int. Cl. E04c *2/38*

U.S. Cl. 52—456 3 Claims



Improved knockdown framing for erection and installation in an access opening of a building for supporting one or more movable panels and one or more fixed panels. The various knockdowned frame elements (such as the header, jamb members, mullions and sill members) are packaged into a compact shipping bundle or package; at the job site the various frame elements are connected together by special connectors which are concealed during the process of erecting and installing the frame. The installed frame thus has the same appearances as a welded frame.

3,789,562

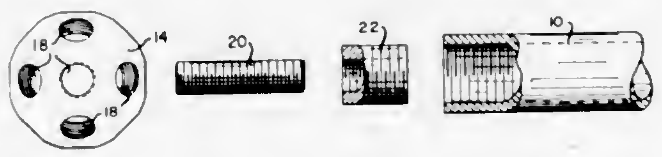
BUILDING STRUCTURE

Antoni De Chicchis; Harry C. Fennell, Jr., and David M. Schwartz, all of Pittsburgh, Pa., assignors to ARK-Environmental Research, Inc., Pittsburgh, Pa.

Filed Aug. 10, 1972, Ser. No. 279,635

Int. Cl. E04h *12/10*

U.S. Cl. 52—648 2 Claims



A building structure with a plurality of strut members forming a geometric configuration having a plurality of vertices. A joint member joins the strut members at each of the vertices and a plurality of panel members bridge the strut members. Each of the panels is connected at its edge to a strut member under spring-like action providing frictional engagement with the strut member.

3,789,563

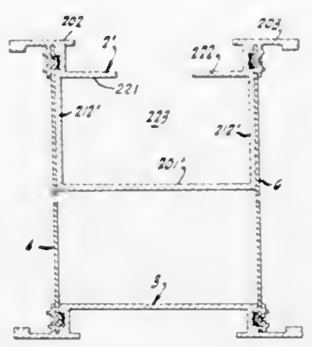
STRUCTURAL UNIT

Andrew J. Toti, 311 W. River Rd., Modesto, Calif.

Division of Ser. No. 888,717, Dec. 29, 1969. This application Sept. 9, 1971, Ser. No. 179,220

Int. Cl. E04c *3/07*

U.S. Cl. 52—731 12 Claims



A structural beam comprised of a pair of opposed metal extrusions having preformed slot structures extending therealong in which edge portions of a pair of opposed sheet metal side wall members are secured by deforming certain of such members relative to the others so that secure interconnection is effected without requiring separate fasteners. The assembly machine and method disclosed employ predetermined lengths of the metal extrusions which are joined with substantially continuous lengths of sheet metal side wall panels into a unitary assembly which is subsequently cut to a predetermined length determined generally in accordance with the length of the extrusions employed.

3,789,564

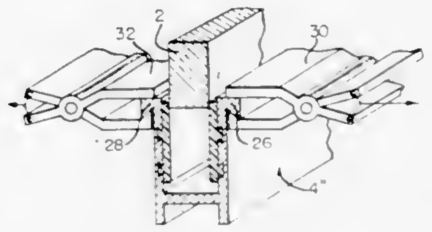
UNITARY RIGID EDGE CHANNEL FOR WINDOWS

Gerald Kessler, 388 Cranberry Rd., Boardman, Ohio

Filed Jan. 18, 1972, Ser. No. 218,754

Int. Cl. E04b *1/62*; **E06b** *3/62*

U.S. Cl. 52—127 3 Claims



Windows for modern housing are usually supplied as one-piece glass panes having the edges set into a channel-shaped frame of relatively rigid material, usually of aluminum or rigid plastic. A simple channel construction for this purpose is described, together with a method of assembling it to the window pane, which greatly reduces the cost of both parts and assembly labor over the previous practice.

3,789,565

METHOD AND SYSTEM OF ERECTING TOWER BUILDINGS

Ragnar O. Lindholm, Valberg, Sweden, assignor to Ragnar O. Lindholm AB, Karlstadt, Sweden

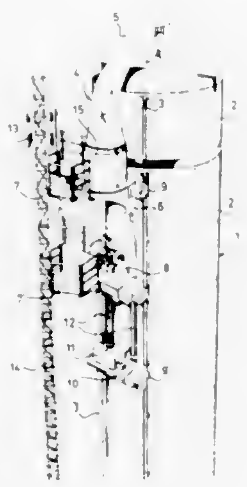
Filed Sept. 24, 1971, Ser. No. 183,342

Claims priority, application Sweden, Sept. 25, 1970, 13079/70

Int. Cl. E04b *1/00*

U.S. Cl. 52—747 1 Claim

A method and a system of erecting tower buildings from segments of optional cross-sectional shapes to be mounted on top of each other. The object of the method is to facilitate the erection of tall buildings, such as pulp digesters, silos, chimneys and the like, in which mobile cranes cannot be utilized. This object is realized in that each segment is provided with at least one beam or profile member which serves as a guide for the crane used for the mounting of the segments, the beam or profile members on erection of the building are caused to form for the crane a continuous track which is extended as each further segment is mounted, and the crane is so adapted that it can perform a continuous upward climbing movement on the outer side of the building. The systm for carrying out the method includes the crane which is adapted to climb upward along the guides on the outer side of the building as the erection of the building progresses. The crane has a bracket structure which is coupled over jack units adjustable in length to a further bracket structure which serves as a movable abutment. Further, latch means are arranged at the two bracket structures to permit the alternate latching thereof to the guides.



3,789,566

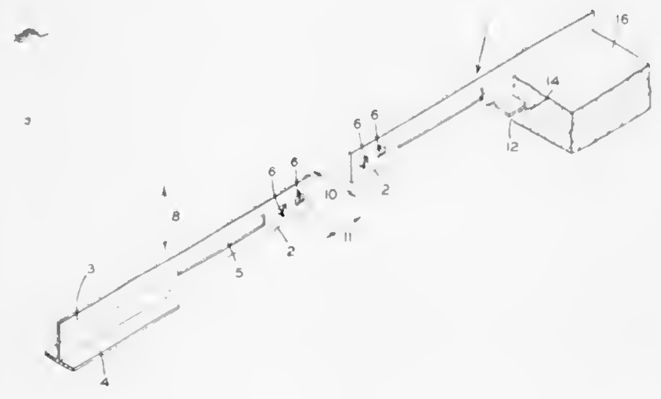
JOINT STRUCTURE FOR SUSPENDED CEILING SYSTEM MEMBER

Joseph W. Boylan, Cincinnati, Ohio, and John W. Shenk, Columbia, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Dec. 23, 1971, Ser. No. 211,316

Int. Cl. E04b *5/58*

U.S. Cl. 52—573 **2 Claims**



A cross member is provided with a flange which is placed in the edge kerf of ceiling boards. The cross member supports the ceiling boards in position. A joint structure is provided to connect together two adjacent cross members. The joint structure is so arranged with a slot and tab that the two cross members can be somewhat adjustable in length.

3,789,567

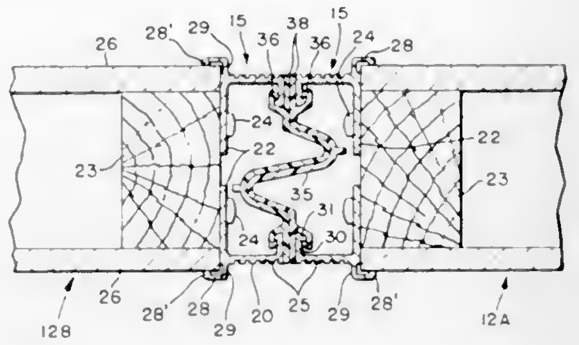
EDGE SEALS FOR MULTIPLE-INTERFITTING PARTITIONS

Jerry W. Rae, and Dean S. White, both of New Castle, Ind., assignors to American Standard Inc., New York, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,730

Int. Cl. E04h *2/74*

U.S. Cl. 52—582 **3 Claims**



Multiple-use partitions, which may be positioned in a plurality of intersecting arrangements, are provided with vertical edge seals which permit the panels to be positioned in transverse aligned relationship and which also provide for the mutual, right-angle nesting of two, three or four of the panels. The edge seals are formed with seal supports which provide abutting surfaces when the panels are nested in right-angular relationship and which form a light seal to prevent the passage of light across two or more of the panels.

3,789,568

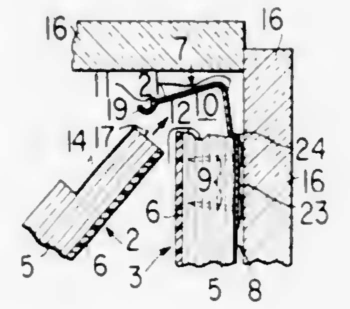
METHOD OF APPLYING A PANEL SYSTEM UTILIZING A CONCEALED CORNER LOCKING CLIP

Jacob M. Mattix, 341 Hennessy, New Orleans, La.

Division of Ser. No. 61,194, Aug. 5, 1970, Pat. No. 3,688,459. This application Sept. 1, 1972, Ser. No. 285,619

Int. Cl. E04b *1/40*

U.S. Cl. 52—747 **2 Claims**



A concealed corner lock clip system for installing and securing sheet material such as laminated plastic wall-boards, plywood and the like for finishing off bathtub and/or shower walls and the like; the locking system includes a vertically extending resilient clip attached to one wallboard and into which the other, adjacent wallboard can be easily and quickly inserted and locked into place; the clip is unobstructive and compact and is completely invisible after installation.

3,789,569

METHOD AND APPARATUS FOR THE STERILE PACKAGING OF SUBSTANCES

Hermann Egger, Ursen, Switzerland

Filed May 18, 1972, Ser. No. 254,565

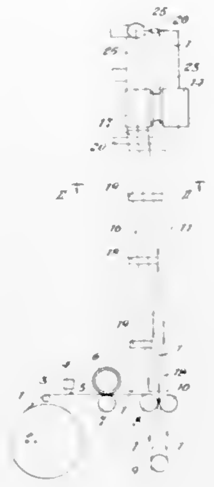
Claims priority, application Italy, May 21, 1971, 50471/71; Nov. 25, 1971, 54336/71

Int. Cl. B65b *9/12, 55/10*

U.S. Cl. 53—28 **13 Claims**

In producing and filling packages made from a web of packaging material, the web is sterilized and folded lengthwise

in a sterilizing station, a filling hose is introduced which extends to the filling station, the margins of the folded web are sealed together longitudinally and at desired intervals with partial transverse seals from side of the tube to the filling hose and after the filling station bridging the transverse seals to complete the transverse seals.



3,789,570

BAGGING APPARATUS AND METHOD

James N. Mullins, Jr., P.O. Box 4340, Forth Worth, Tex.

Filed Nov. 15, 1972, Ser. No. 306,676

Int. Cl. B65b *43/28*

U.S. Cl. 53—29 **16 Claims**

This invention relates to an apparatus and method for automatically bagging material, especially ice cubes, and is particularly adapted to be coin operated. The apparatus includes a carrier having a measuring cavity therein with the carrier being reciprocable between a rearward position where the cavity is filled by the material to be bagged and a forward discharge position where the measured quantity of material is dumped into an open bag. A supply of flattened plastic bags is provided below the carrier and are supported by rods passing through openings in an upward extension of the rear side of the bag. The bags are supported in a bag storage section in such a way that a portion of the rearward wall extension of the bag is inclined upwardly and rearwardly away from the remainder of the bag. When it is desired to open the bag, a rod having a thin lower end is released to engage the inclined surface of the first bag and then is moved along this surface to drop inside the bag and then to partially open the bag. After the bag has been partially opened, a bag supporting means is clamped to the forward side of the bag to move it to a more fully open position and to move the lower end of the bag away from the remaining bags so that a door can be slid between the bag in the filling section and the other bags in the storage section. After the bag has been filled, the bag supporting means is released from the bag and a heat sealing means is actuated to form a heat seal across the upper portion of the bag. The bag can then be pulled from the supporting rods and removed from the machine.

3,789,571

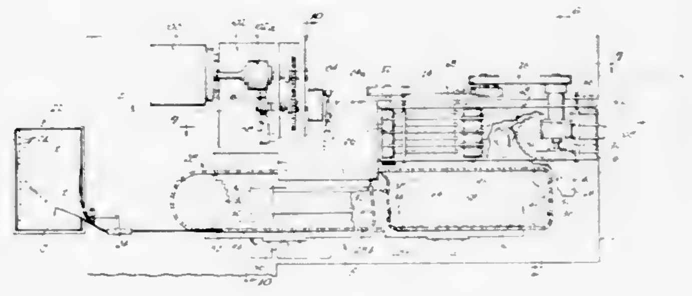
PROCESSOR'S PHOTOGRAPHIC PRINT SORTING AND PACKAGING MACHINE AND METHOD

Leonard H. Tall, Mercer Island; Paul A. Carlstedt, and Arlen J. Erickson, both of Seattle, all of Wash., assignors to CX Processing Laboratories, Inc., Seattle, Wash.

Filed Apr. 14, 1971, Ser. No. 133,885

Int. Cl. B65b *43/26, 57/14*, **B65h** *35/10*

U.S. Cl. 53—54 **18 Claims**



A processor's method and apparatus is disclosed by which previously inspected and quality-marked prints of a customer's order are fed successively past a photoelectrically controlled sorting diverter which directs individual prints either into a reject chute or into selected storage compartments of a tilting loader for reprinting or customer delivery, respectively, such loader having an additional compartment to receive the associated cut films of an individual customer's order. Thereupon the loader, by a decelerating motion, dumps the contents of its respective compartments downwardly with the help of gravity and momentum into the open pockets formed between leaves of a carrier stock section positioned at the loading station and thereafter fed beyond the loading station for detachment from the body of carrier stock by tearing. A first stretch of feed chain advances the carrier stock to the loading station and a second stretch advances the loaded section of carrier stock beyond the loading station where it is torn from the body of the carrier by effecting relatively longitudinal movement between the chain stretches preferably along a preformed score line. Positive engagement of pins on the feed chain with holes in the carrier stock permits feeding and tearing off the sections successively. Separator mechanism coordinated with the tearing mechanism thereafter frees the severed section from the body of stock. Guides progressively spread apart the leaves of the carrier stock on approaching the loading station. Inspection grade marks of a color, contrasting with that of the control marks customarily applied to the print roll margins to time the cutting and the end-of-order stopping of a print cutter, are applied by an inspector and are sensed photoelectrically to control operation of the diverter and a pricing computer.

3,789,572

APPARATUS FOR TEMPORARILY CLOSING CYLINDRICAL CONTAINERS

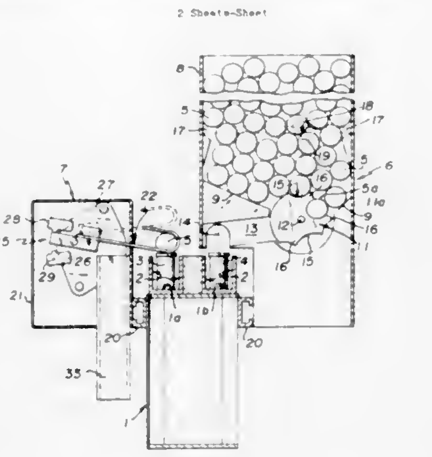
Hansjorg Tschirky, Ettingen, Switzerland, assignor to Hoffman-La Roche Inc., Nutley, N.J.

Filed June 30, 1972, Ser. No. 267,807

Int. Cl. B65b *61/22, 43/40;* **B67b** *5/00*

U.S. Cl. 53—381 A **6 Claims**

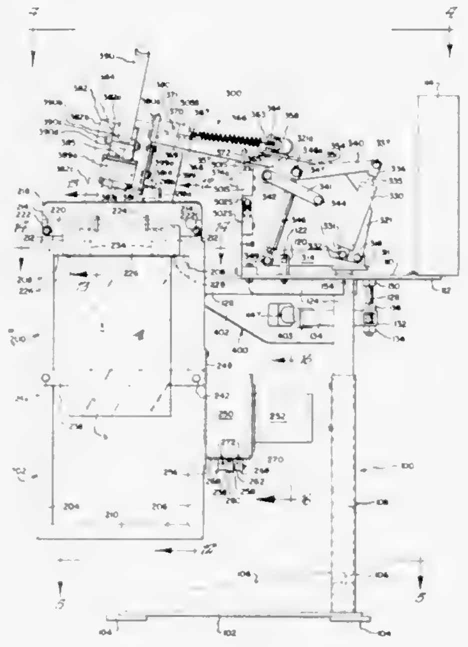
A device is disclosed in which spherical closure members, for example, glass balls, are caused to pass from a reservoir via a transfer track to a position on the top of cylindrical containers being continuously or intermittently advanced on a moving conveyor. The closure members are singly removed at a point subsequent on the conveyor by being elastically grasped by a transfer track which is then actuated by driving means to become inclined away from the conveyor thus causing the closure member to roll on the track away from the cylindrical container and pass through an aperture in the track to a collection device where from they may again be returned to the reservoir.



3,789,573
AUTOMATIC BAGGING MACHINE

Jasper R. Crabb, Yakima, Wash., assignor to Lobee Pump and Manufacturing Co., Gasport, N.Y.

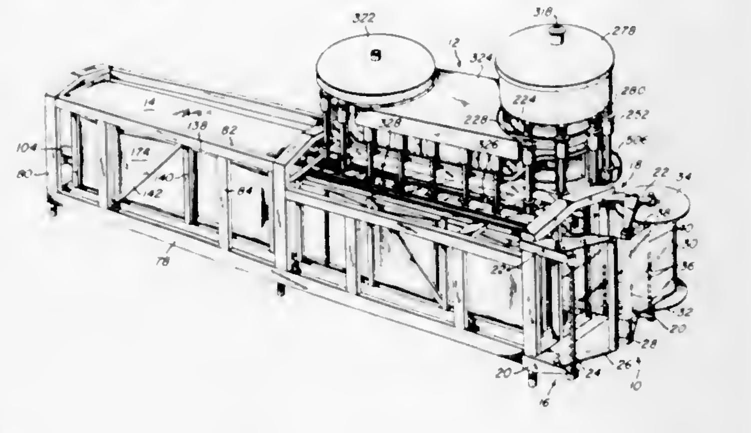
Continuation of Ser. No. 78,672, Oct. 7, 1970, abandoned.
This application Sept. 25, 1972, Ser. No. 291,969
Int. Cl. B65b *43/30, 57/12, 57/04*
U.S. Cl. 53—55 **44 Claims**



An automatic bagging machine for produce or the like includes bag feeding, holding and tying devices and an electropneumatic control system for actuating and deactuating such devices in timed sequence wherein the bag feeding device feeds and partially opens each empty bag in series, the bag tying device ties each filled bag, and the bag holding devices enters, spreads and clamps each bag fully open for the bag filling operation, closes and swings each filled bag to the tying device for the tying operation, exits from and releases each tied filled bag and returns to the bag holding device for entering the next empty bag in series. In combination with an automatic weighing machine, the two machines are especially adapted to operate together and thereby form an automatic weighing and bagging system, with each machine controlling the operation of the other.

3,789,574
PACKAGING MACHINE

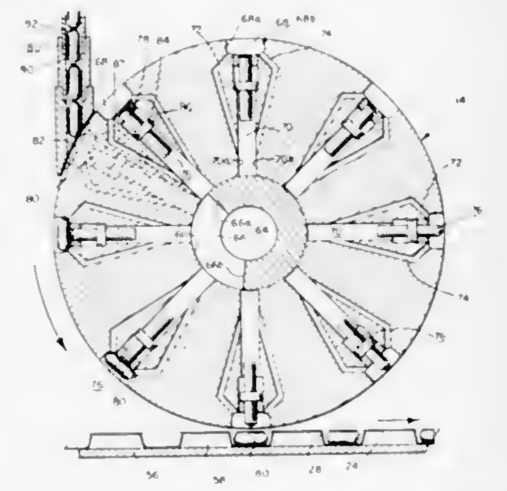
Roy J. Weikert, c/o General Films, Inc., Covington, Ohio
Filed Apr. 12, 1971, Ser. No. 133,308
Int. Cl. B65b *1/00, 57/06*
U.S. Cl. 53—63 **26 Claims**



A machine for filling and sealing each bag in a web of bags on a continuous, non-intermittent basis. The web of bags is formed with the bag side seams extending from the centerfold bottom of the web of the bags to a point short of the top to provide a pair of continuous free upper edges. This permits the bags to be opened by a plow-like device which spreads the free upper edges as the bags are fed into the machine and directs them onto closely spaced teeth carried by a pair of parallel, endless carrier chains. Adjustably spaced, side support belts and a vertically adjustable center belt are also provided to support the bags as they are carried through the machine by the carrier chains. An endless track having one branch extending co-extensively with a portion of the bags' path through the machine carries a series of transfer cans which pick up a desired amount of the product to be packaged from a hopper and transfer it into the bags as they continue to move through the machine with a continuous, non-interrupted motion. After filling the bags the cans are recycled to pick up another charge, while the free edges of the filled bags are sealed and trimmed of excess bag material above the seal.

3,789,575
ARTICLE PACKAGING MACHINE

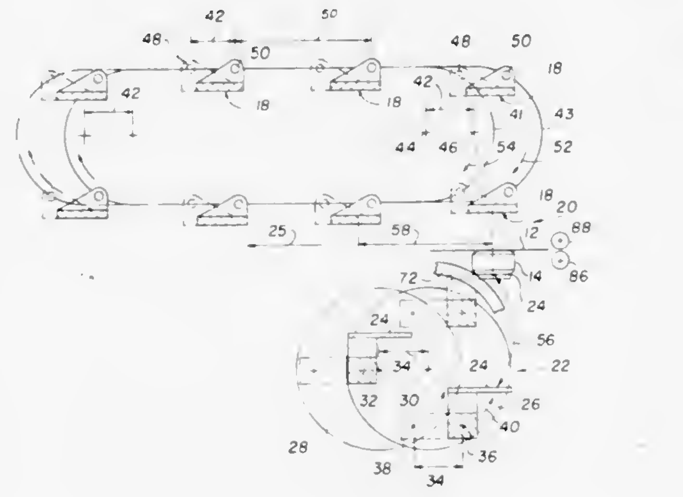
Charles Frederick Bross, Chicago, Ill., assignor to Pennwalt Corporation, Philadelphia, Pa.
Filed Oct. 4, 1971, Ser. No. 186,134
Int. Cl. B65b *5/00, 5/04, 19/34*
U.S. Cl. 53—160 **10 Claims**



A packaging machine utilizes a rotary drum having a circumferential row of pockets formed in the peripheral surface thereof for picking up articles from a pick-up zone, and discharging the articles in a discharge zone. The drum contains a plurality of pistons reciprocably confined therein; a single piston is associated with each pocket and includes a plunger which reciprocates into and out of its associated pocket during rotation of the drum about a horizontal axis. A vacuum is applied to each pocket and to the interior surfaces of its associated piston as the pocket traverses the pick-up zone to pick up an article in the pocket and at the same time, hold the plunger inwardly out of the pocket; this vacuum is terminated as the pocket traverses the discharge zone, thus allowing the article therein to be discharged, and the plunger to descend by gravity into the pocket to assist in the discharge if necessary.

3,789,576
WRAPPING APPARATUS WITH ROTARY HORIZONTAL LIFT

William H. Giles, Westbury, N.Y., assignor to Van Buren Industries, Inc., Westbury, N.Y.
Filed June 5, 1972, Ser. No. 259,450
Int. Cl. B65b *11/36*
U.S. Cl. 53—234 2 Claims



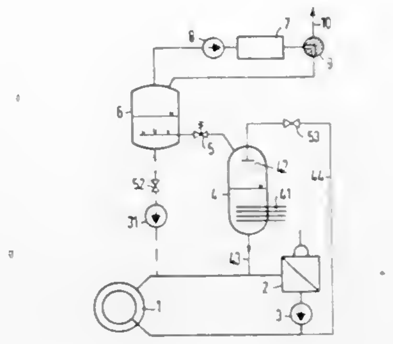
A wrapping apparatus for soap bars and the like having a significantly increased production capacity. Product handling in a typical known wrapping device usually contemplates the feed movement of the product into the wrapping station incident to a cranking cycle, and thus a correspondingly restrictive production capability of a single product wrapping per operative cycle. In contrast, the apparatus hereof processes plural products for wrapping per operative cycle, thereby significantly increasing productivity.

Increased productivity is attributable, in large measure, to a horizontal lift mechanism which during a single rotation of its rotary drive engages and transports plural soap bars to a wrapping station. In a noteworthy manner, the lifting surface of this mechanism is maintained in a necessary horizontal orientation throughout its 360° rotative traverse.

3,789,577
THERMAL DEGASSING OF THE PRIMARY COOLANT OF NUCLEAR REACTORS

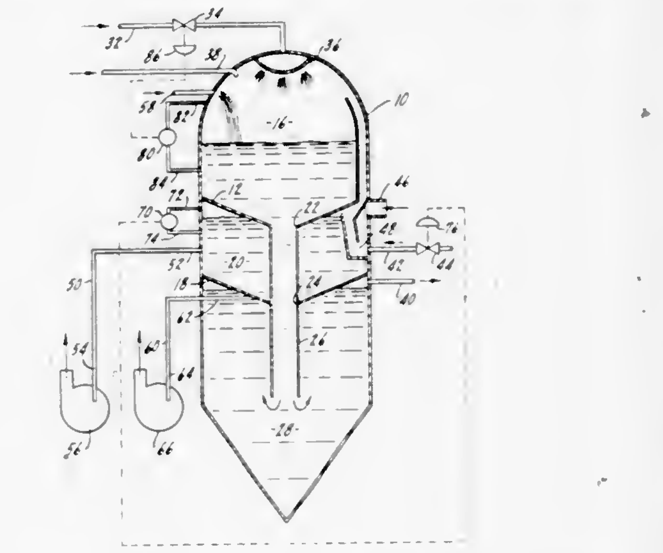
Gottfried Gramer, Furth, and Roland Korn, Nurnberg, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Jan. 28, 1972, Ser. No. 221,727
Claims priority, application Germany, Jan. 30, 1971, P 21 04 356.1
Int. Cl. B01d *19/00, 53/02*
U.S. Cl. 55—42 **6 Claims**

Part of the primary coolant to be degased is fed through the pressure maintenance device wherein the primary coolant is further heated and partially evaporated. The vaporized coolant is withdrawn from the pressure maintenance device together with the gases released from the coolant and is condensed while the released gases are removed by the adsorption device.



3,789,578
HOT PROCESS UNIT

Anthony A. Askew, Cornwells Heights, Pa., assignor to Ecodyne Corporation, Chicago, Ill.
Filed May 15, 1972, Ser. No. 253,089
Int. Cl. B01d *19/00*
U.S. Cl. 55—39 14 Claims



A hot process water softener vessel having a combined treated water storage compartment which is sized to store service water and filter backwash water. The treated water from the zeolite filters enters this compartment through a level control valve which has a limit stop associated therewith to limit the flow rate thereinto to the maximum service flow rate plus the backwash refill rate. When a filter is backwashed the level in the compartment falls regardless of service flow and the level control valve opens up to its limit so that the vessel maximum flow cannot be exceeded. The dirty backwash water is returned to a spray space adjacent the vessel inlet having a level controller to close the raw water inlet valve if the returns are greater than the maximum flow set on the level control valve, such that the level in the spray space rises at the rate of bachwash flow minus the maximum flow set on the level control valve.

3,789,579
REMOVAL OF AIR AND WATER FROM OIL

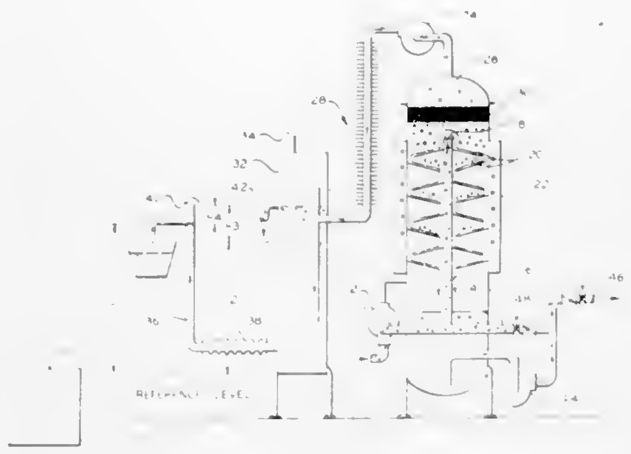
Ahmad M. El-Hindi, Fabius, N.Y., assignor to Filter Tech, Inc., Manlius, N.Y.
Filed Jan. 10, 1972, Ser. No. 216,422
Int. Cl. B01d *19/00*
U.S. Cl. 55—50 8 Claims

A method and system for removing air and/or water vapor from a lubricating oil after use in a process such as aluminum wire drawing. The contaminated oil is discharged within a

through escape ports with some air from a pressured air flow

3,789,584

from a fixed nozzle is passed radially outwardly through the wire drawing. The contaminated oil is discharged within a container at less than atmospheric pressure, caused to flow in a thin layer over an elongated path, and the escaping air and vapors removed through the top of the container, preferably



after passing through a coalescing element. The vapors are condensed and any oil fractions which may have been removed with the water vapor is separated by automatic gravity flow

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3,789,580
REMOVAL OF PHOSGENE FROM AN ESSENTIALLY ANHYDROUS GAS STREAM

Arnold A. Allemang, Stade, Germany, and Howard J. Bachtel, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 17, 1972, Ser. No. 281,527

Int. Cl. B01d *53/04*

U.S. Cl. 55—71 **4 Claims**

A method for removing phosgene from an essentially anhydrous gas stream which involves contacting such a stream with activated alumina at a temperature of from 110°C to 200°C under essentially anhydrous conditions. This method is particularly useful in removing phosgene from chlorinated hydrocarbon gas streams also containing acid gas impurities.

3,789,581
PROCESS FOR INITIAL REMOVAL OF SULFUR COMPOUNDS FROM GASEOUS HYDROCARBON FEEDSTOCKS BEFORE REMOVAL OF ARSENIC THEREFROM

Norman L. Carr, The Hague, Netherlands, and Donald L. Stahlfeld, Glenshaw, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Apr. 27, 1972, Ser. No. 247,981

Int. Cl. B01d *53/04, 47/06*

U.S. Cl. 55—73 **15 Claims**

In a process for reducing the arsenic content of a gaseous hydrocarbon stream by contacting the stream with a metal oxide sorbent dispersed upon a supporting material, the improvement comprising first removing sulfur compounds, particularly hydrogen sulfide, from the stream to render it substantially free of sulfur compounds.

3,789,582
AIR RECTIFIER APPARATUS WITH PROCESS

Paul J. Graybill, 61 Sunset Hill Dr., Pine Orchard, Conn.

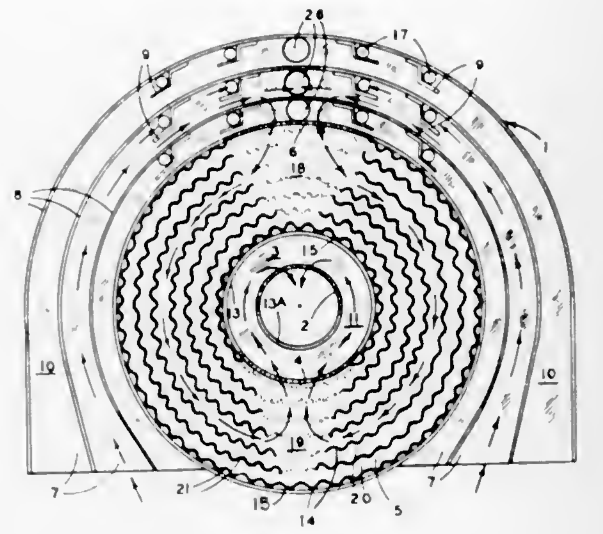
Filed Apr. 21, 1971, Ser. No. 135,847

Int. Cl. B01d *45/12*

U.S. Cl. 55—92 **9 Claims**

This application discloses a permanent Air Rectifier with Process which centrifugally separates coarse contaminants through escape ports with some air from a pressured air flow passing through at least one confined narrow curved channel having windward vertical sidewall baffles therein.

This cleaner air being then radically reversed, inertially dislodging additional particles, before passing through en-



closed narrow oil soaked corrugated walled channels where extreme turbulance removes finer contaminants by contact cohesion or electrostatic attraction to said corrugated walls, which walls are capillarily oil soaked from an oil filled porous sump, said air being again reversed into a turbulance chamber completing the process.

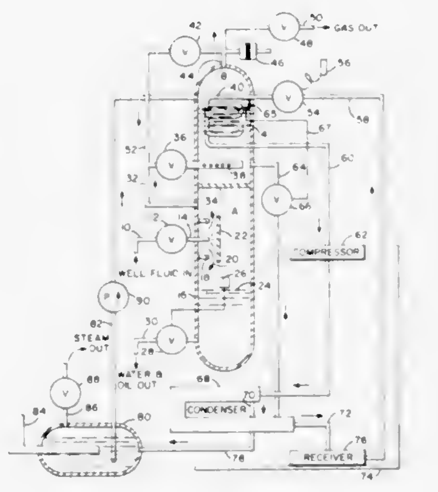
3,789,583
WELL FLUID SEPARATION METHOD AND APPARATUS

James B. Smith, 2605 Fox St., Farmington, N. Mex.

Filed May 7, 1969, Ser. No. 822,396

Int. Cl. B01d *53/14*

U.S. Cl. 55—171 **4 Claims**



An apparatus for separating liquids and gases in well fluids under pressure wherein the separated gas is passed through a chilled water absorber fluid that creates a temperature barrier to the inclusion of water vapor with the gas leaving the absorber fluid, by condensing the water vapor in the chilled absorber fluid.

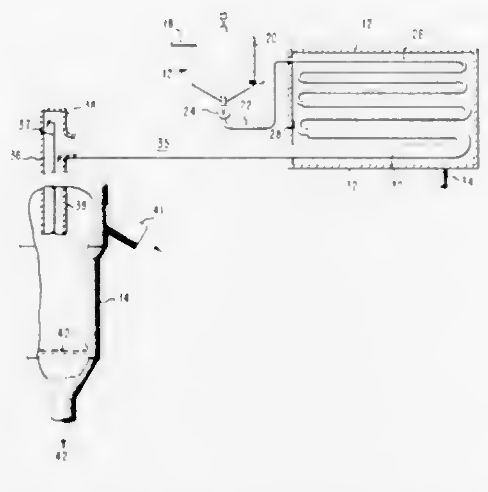
3,789,584
APPARATUS FOR SEPARATING VAPOR FROM A VISCOUS LIQUID

John M. Iwasyk, Wilmington, and David W. Rodeffer, New Castle, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 19, 1972, Ser. No. 299,094

Int. Cl. B01d *57/00*

U.S. Cl. 55—201 **4 Claims**



An apparatus is provided for separating vapor from a viscous liquid flowing through a horizontal conduit to the top of an enclosed upright cylindrical vessel and distributing the liquid uniformly to a melt pool centrally rotating about the axis of the vessel. The apparatus comprises a tee-shaped conduit connected to the horizontal conduit so that the through passage of the tee is vertically aligned and enters the vessel. The tee is capped at its upper end. A plate is diametrically positioned in the through passage with one end spaced from the capped end of the tee. The plate extends downwardly beyond the horizontal conduit into the lower end of the tee. A nozzle having a plurality of orifices there-through is connected to the lower end of the tee. The nozzle is in the shape of a sector of a circle with its tip located on the axis of the vessel and has a radius approximately equal to that of the melt pool.

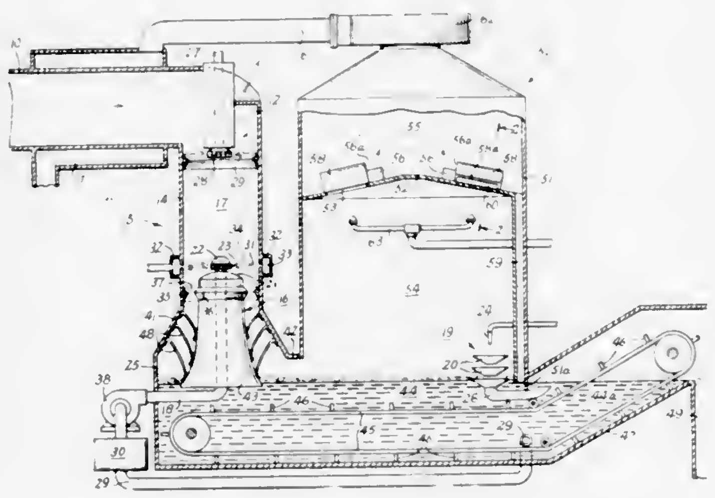
3,789,585
APPARATUS FOR CLEANING GASES

Orlan M. Arnold, Grosse Pointe Park, Mich., and Carlo A. Vancini, Stamford, Conn., assignors to Peabody Engineering Corporation, New York, N.Y.

Filed June 23, 1971, Ser. No. 155,916

Int. Cl. B01d *47/06*

U.S. Cl. 55—222 **36 Claims**



A gas cleaning and drying apparatus wherein a gas stream is passed through an annular gas washing zone, a liquid spray from a fixed nozzle is passed radially outwardly through the gas stream in advance of said throat to remove suspended matter, a reservoir collects the droplets and suspended matter and a dryer unit receives the gas from which the matter has been so removed. The drying unit includes a slotted plate having baffles and deflectors for collecting and removing the liquid droplets.

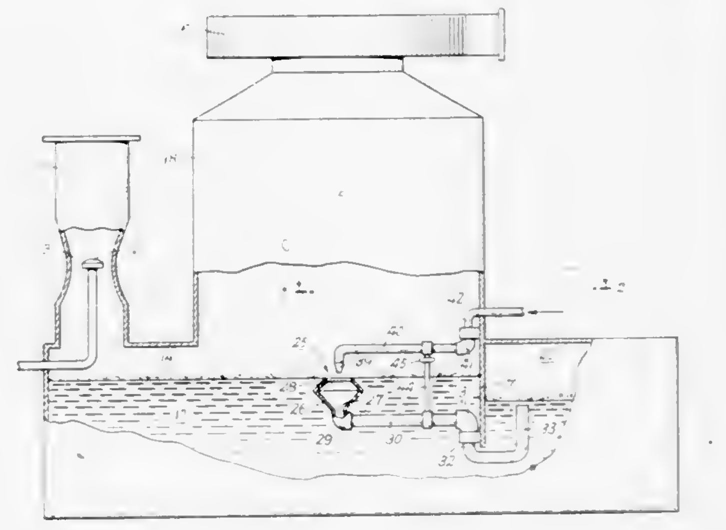
3,789,586
APPARATUS FOR REMOVING SURFACE FILMS FROM LIQUIDS

Orlan M. Arnold, Grosse Pointe Park, Mich., and Carlo A. Vancini, Stamford, Conn., assignors to Peabody Engineering Corporation, New York, N.Y.

Filed Jan. 7, 1972, Ser. No. 216,184

Int. Cl. B01d *50/00*

U.S. Cl. 55—228 **6 Claims**



In a reservoir carrying a liquid, a funnel disposed below the surface and movable across the reservoir and a liquid jet disposed to cause the surface film or foam to flow into the funnel from which it is discharged to the outside.

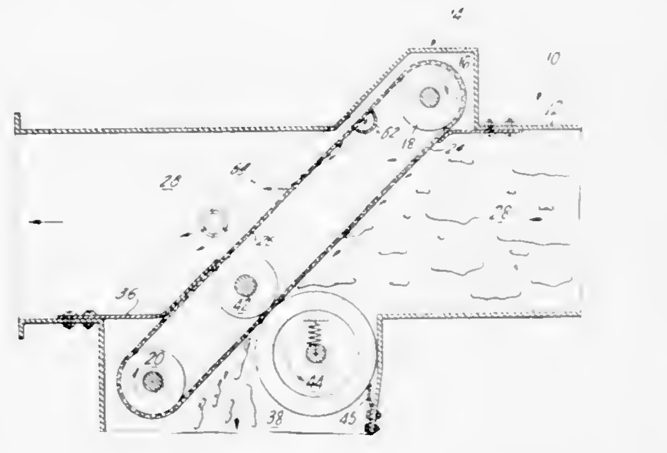
3,789,587
APPARATUS FOR SEPARATING MATERIAL FROM A PNEUMATIC CONVEYOR

James F. Moorefield, II, Blairs, Va., assignor to Loew's Theaters, Inc., New York, N.Y.

Filed May 10, 1971, Ser. No. 141,802

Int. Cl. B01d *46/22*

U.S. Cl. 55—290 **16 Claims**



A device for separating material from a pneumatic conveyor. The pneumatic conveyor includes a duct, which is preferably rectangular in cross-section, for conveying material entrained on a stream of air. The material separator device is interposed in a straight section of the conveyor duct and operates to remove the material conveyed in the duct while permitting the passage of air. The separator device comprises an air-permeable endless belt arranged to traverse the passageway through the duct and drive means for continuously moving the endless belt across the passageway.

3,789,588
LIQUID SEPARATOR FOR A STEAM-WATER MIXTURE

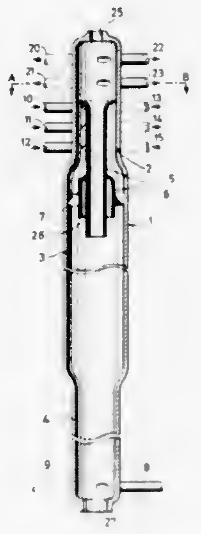
Fritz Laubli, Einterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed June 2, 1971, Ser. No. 149,231

Claims priority, application Switzerland, June 5, 1970, 8445/70

Int. Cl. B01d *45/12*

U.S. Cl. 55—419 **5 Claims**



The spigots are tangentially connected to the vertical vessel with the steam-water mixture supply spigots and steam discharge spigots both connected to the upper tube portion. The flow path for the mixture is of constant cross-section between the first and second tube portions while the central tube permits the separated steam to pass upwardly to the discharge spigots.

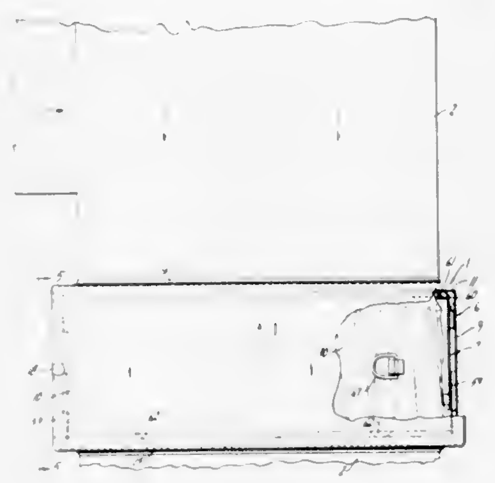
3,789,589
HIGH PERFORMANCE FILTER ASSEMBLY

John J. Delany, and John M. Liebmann, both of Madison, Wis., assignors to Research Products Corporation, Madison, Wis.

Filed Feb. 28, 1973, Ser. No. 336,405

Int. Cl. B01d *46/52*

U.S. Cl. 55—481 **22 Claims**



A high performance filter assembly includes an outer casing adapted for insertion in the ductwork or plenum of an air treating system. A drawer is removably secured within the casing and contains an improved pleated filter media of the high efficiency type. The upstream portion of the drawer is sealed to the casing by a cam arrangement, and double blankets are disposed at the drawer ends and casing ends to further prevent air leakage. The pleated filter itself is collapsible for easy storage, and expands to a fixed position when installed. Reinforcements on the outermost walls of the pleated filter prevent possible tearing of the filter during its installation and also support said walls during filter expansion. The elongated filter edges are sealed to the drawer by a member which also functions to secure a plurality of filter-supporting fingers.

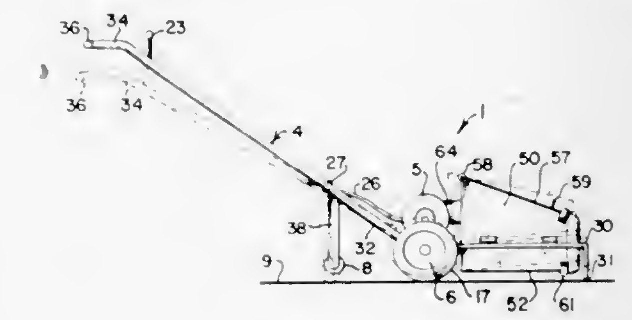
3,789,590
POWER RAKE

Elinor M. Wilson, 4137 Holmes, Kansas City, Mo.

Filed Aug. 7, 1972, Ser. No. 278,563

Int. Cl. A01d *51/00*

U.S. Cl. 56—14.7 **5 Claims**



A mobile power rake for use in lawns, gardens, and the like comprises a frame having a rake portion extending forwardly therefrom and a handle portion extending rearwardly from said frame and power driven ground engaging wheels rotatably mounted on the frame and in vertical spaced relation below the rake portion and a roller mounted on and in depending relation to the handle portion and spaced rearwardly from the wheels and in vertical spaced relation above the wheels whereby the rake portion is spaced above a ground surface when the roller is in engagement with the ground surface. A material receiving receptacle is mounted on the frame and has an entrance adjacent the rake portion for receiving debris from the rake portion.

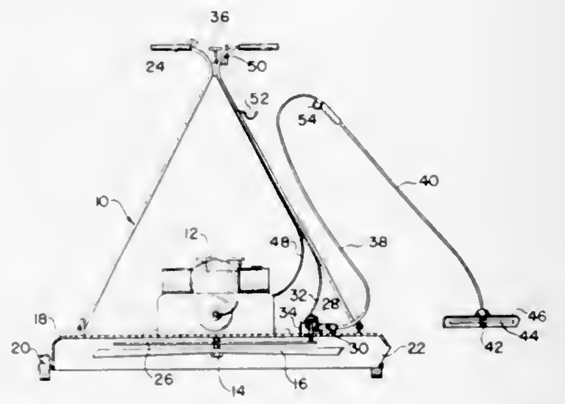
3,789,591
POWER LAWNMOWER WITH AUXILIARY FLEXIBLE DRIVE SHAFT FOR EDGER HEAD

Norman B. Emery, Rt. No. 2, Box 263, Punta Gorda, Fla.

Filed Apr. 11, 1973, Ser. No. 350,191

Int. Cl. A01d *35/20*

U.S. Cl. 56—16.9 **1 Claim**



The lawnmower is of the type that has a flat cylindrical housing over a set of rotating blades mounted on a vertical shaft which is driven by a motor carried on the housing. As the mower is moved over the grass, holding the cutter blades at a controlled clearance above the ground, the blades cut the grass to the corresponding height. The vertical shaft is provided with a friction disc mounted thereon for rotation in the housing space above the cutter blades, and a friction wheel is mounted on a horizontal shaft in a pivotal bearing sleeve supported on top of the housing so that the wheel may be spring pressed, through an opening in the housing, to hold the wheel in friction drive relation against said disc. A flexible drive shaft extends from the end of said horizontal shaft through a flexible casing having a rigid tubular handle portion at its outer end to serve as a handle for cutter head.

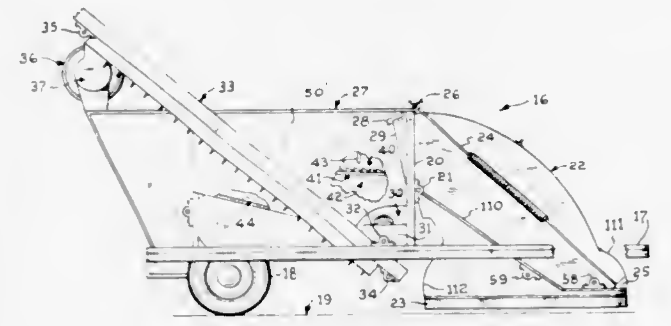
3,789,592
PECAN HARVESTING MACHINE

W. Jack Croft, Wichita Falls, Tex., assignor to Wichita Engineering Co., Inc., Wichita Falls, Tex.

Filed Oct. 12, 1971, Ser. No. 188,188

Int. Cl. A01g *19/00*

U.S. Cl. 56—328 R **7 Claims**



A self propelled harvesting machine for picking up nuts along with debris from the surface of the ground and separating the nuts from the debris so as to enable one person to mechanically harvest an entire crop of nuts such as pecans. The machine has a special pick-up device which utilizes spaced apart sweepers which mechanically urges material to travel through a floating head with the aid of a current of air. This action transfers the nuts into a separator where the nuts and debris are separated from one another by utilization of both air and mechanical separation means. A squirrel cage type separator finally removes the remaining debris from the nuts.

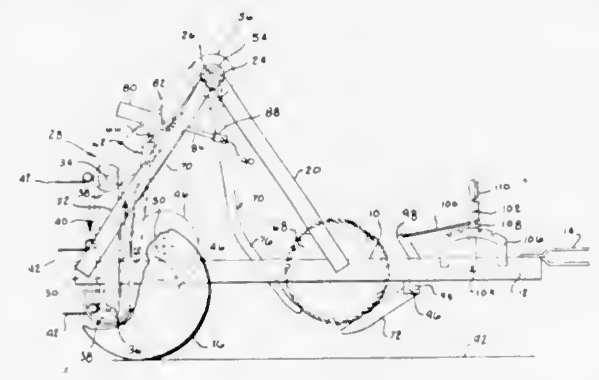
3,789,593
HAY ROLLING MACHINE WITH PICKUP MEANS

Albert M. Best, New Holland, and Robert M. Alverson, Lancaster, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Dec. 7, 1972, Ser. No. 313,037

Int. Cl. A01d *39/00*

U.S. Cl. 56—341 **13 Claims**



A hay rolling machine adapted to form rolls of hay from a swath or windrow thereof in partially cured condition while lying on a field to form a roll of hay of substanial size and weight as the machine is moved along the field by a tractor or otherwise. The machine as provided with roll pickup means respectively adjacent the forward and rearward ends of the machine and including sets of fingers respectively movable toward each other in a manner to raise a roll of hay a sufficient distance to enable the machine to move the roll of hay while the roll is suspended upon said fingers.

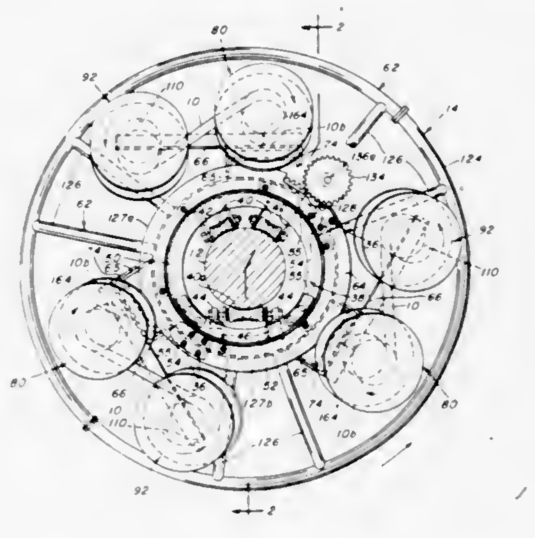
3,789,594
WRAPPING APPARATUS

David B. Rees, Ben Avon Borough, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed June 6, 1972, Ser. No. 260,157

Int. Cl. B65h *81/06*

U.S. Cl. 57—10 **15 Claims**



A wrapping apparatus for wrapping a strip material about an elongated member on a suspension type bridge having a guide member mounted above said elongated member is disclosed.

The wrapping apparatus has a torque stay frame depending from the guide member and movable on the guide member. A frame is secured to the torque stay frame and is movable on the elongated member. A flyer is rotatable with respect to the frame and the elongated member. A strip material feeding means is rotatably mounted on the flyer and has the free end of the strip material attached to the elongated member so that rotation of the flyer relative to the elongated member wraps the strip material about the elongated member.

A longitudinal drive means has a drum rotatable on the frame and a rope member is connected to the drum and to the elongated member. Connecting means are between the longitudinal drive means and the flyer so that rotation of the flyer causes rotation of the drum with attendant winding of the rope member on the drum and resultant predetermined linear movement of the wrapping apparatus with respect to the elongated member for each revolution of the flyer with respect to the elongated member.

3,789,595
AUTOMATIC CONTROL SYSTEM FOR CORRECTING TEXTILE MACHINERY MALFUNCTIONS FROM SENSED AND STORED MALFUNCTION DATA

Barry E. Bernstein, Warwick; Robert S. Erbstein, Coventry, and Thomas Pazis, North Kingstown, all of R.I., assignors to Leesone Corporation, Warwick, R.I.

Filed Dec. 20, 1971, Ser. No. 209,774

Int. Cl. D01h *13/32*

U.S. Cl. 57—34 R **40 Claims**

A spinning frame having a plurality of spindles with bobbins thereon being wound simultaneously with yarn has a travelling service tender that monitors each spindle work station over a

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trip through all spindle positions to determine and correct

rangement may provide uniform adjustment between the ad-

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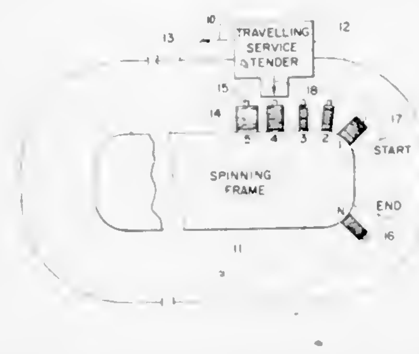
the spindle assembly when the assembly is operating at rela-

1,000 Hz, for measuring time in increments such as tenths, trip through all spindle positions to determine and correct malfunctions performed by an automatic service cycle performed at each spindle location work station requiring attention. Thus, full bobbins are detected and doffed, roll wraps are detected and stations disabled, flag down spindles are bypassed, and improper yarn feed is sensed and corrected by the service tender for each station encountered on a trip requiring such service.

Stored data is retained to indicate the position and type of malfunctions and various indications of the machine performance and efficiency. Counters store data individually for each spindle and accumulate data for all spindles traversed. Provision is made to control the machine operation from either the detected or stored data by modifying the service cycles, the service trips, or shutting down operations if the danger of machine damage occurs. Alarms or other controls are operated from the stored data if the machine efficiency indicates the need for service outside the automatic tender operation, and the data is retained for indication of machine performance, efficiency and for trouble shooting analysis.



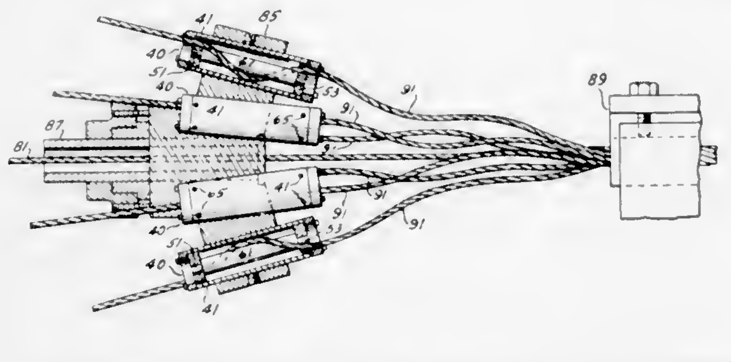
3,789,596
ADJUSTABLE QUILL AND QUILL HEAD MOUNTING THEREFOR

Joseph L. Richley, Williamsport, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed June 14, 1972, Ser. No. 262,813

Int. Cl. D07b *3/00;* D01h *13/04*

U.S. Cl. 57—55 **14 Claims**



An adjustable quill has a tubular housing, in both ends of which semicircular disks are adjustably mounted. The relative positions of the edges of the said disks serve to define opposite ends of a spiral preforming path for a wire strand being drawn through the tubular housing. The spiral preforming path within the housing between the adjustable end disks follows the outer circumference of a cylindrical structure extending between the two end disks and comprised, in a preferred embodiment for some purposes, of a series of rotatable disks, or, alternatively, for other purposes, of an extended rod or tubular member.

In some embodiments the tubular housing for the adjustable quill may be omitted if a specially designed quill head is used to mount the quills.

A quill head for adjustably mounting the adjustable quills is also disclosed to be formed from a series of circular plates mounted upon a shaft. The plates have apertures into which the adjustable quills are mounted. A chain and sprocket arrangement may provide uniform adjustment between the adjustable end disks of a series of adjustable quills mounted in the plates of the quill head.

3,789,597
APPARATUS FOR THE SPINDLELESS SPINNING OF TEXTILE FIBERS

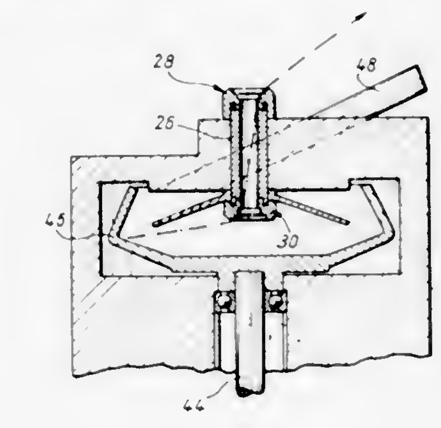
Rudolf Schon, Stuttgart, Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Germany

Filed June 20, 1972, Ser. No. 264,529

Claims priority, application Germany, June 21, 1971, P 21 30 722.2

Int. Cl. D01h *7/00, 1/12*

U.S. Cl. 57—58.89 **10 Claims**



Spindleless twisting apparatus employing a rotating open face spinning chamber provided with a coaxially arranged outlet through which the spun thread is pulled from its binding or splicing point on the wall of the chamber. The outlet is provided at, at least its end, adjacent the chamber and arranged sequentially in the direction of travel of the thread, at first deflecting zone, with a frictional contact or rubbing zone, followed immediately thereafter with at least one additional deflecting zone.

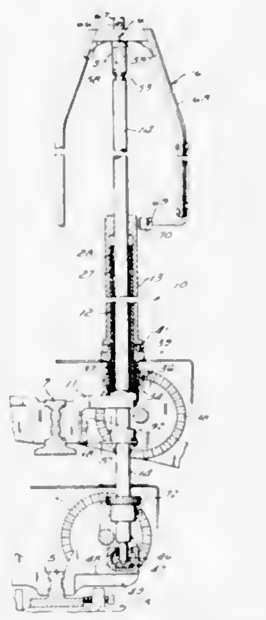
3,789,598
ROVING FRAME BOLSTER

John P. Kieronski, Charlotte, N.C., assignor to Whitin Machine Works, Inc., Charlotte, N.C.

Filed Oct. 26, 1971, Ser. No. 192,074

Int. Cl. D01h *7/12, 7/42*

U.S. Cl. 57—71 **18 Claims**



A vibration free mounting arrangement for a spindle assembly in a roving frame wherein the spindle shaft is softly suspended to produce a natural frequency of vibration substantially below the frequency of vibration inducing forces on the spindle assembly when the assembly is operating at relatively high speed. The mounting arrangement, preferably, includes a resiliently mounted bolster tube for pivotally supporting the spindle assembly and a stabilizer assembly which dampens residual oscillatory motion of the spindle assembly.

3,789,599
CORRECTION OF ERRORS OCCURRING IN ELECTRONIC TIMEPIECES

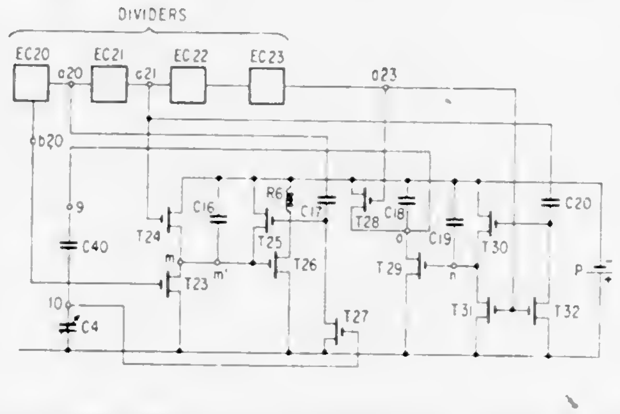
Peter Dome, Brugg Bei Biel, Switzerland, assignor to Societe Suisse Pour L'Industrie Horlogere SA, Geneva, Switzerland

Filed Oct. 20, 1972, Ser. No. 299,327

Claims priority, application Switzerland, Oct. 25, 1971, 15484/71

Int. Cl. G04c *3/00*

U.S. Cl. 58—23 R **17 Claims**



The indicator gear train of a timepiece is driven in dependence upon periodic signals derived from a time base. The gear train includes a rotatable element which can periodically separate the electrodes of a variable capacitor comprising two electrodes biased one against the other with the interposition between them of a dielectric layer. An error detector circuit can be used to detect errors in the gear train position by comparing signals derived from the time base with signals dependent upon the value of the variable capacitor.

3,789,600
ELECTRONIC TIME MEASUREMENT

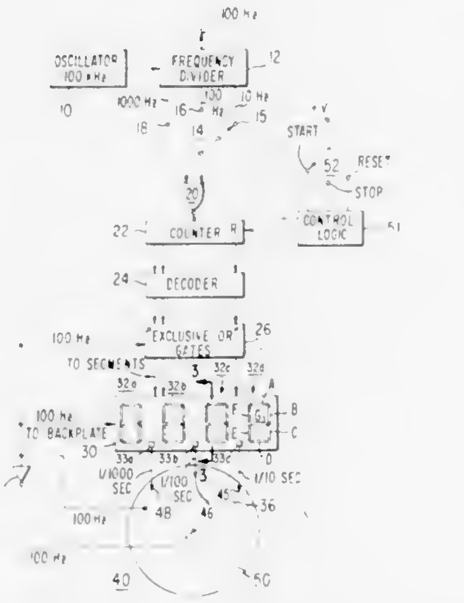
Paul Leonard Champan, Mortlake, London, England, assignor to RCA Corporation, Princeton, N.J.

Filed Sept. 22, 1972, Ser. No. 291,314

Claims priority, application Great Britain, June 2, 1972, 25,790/72

Int. Cl. G04f *3/06, 7/04*

U.S. Cl. 58—39.5 **9 Claims**



A display which includes a plurality of numeric indicators is driven at one of a number of frequencies such as 10, 100 and 1,000 Hz, for measuring time in increments such as tenths, hundredths or thousandths of a second. A switch is provided for enabling the user to change from one frequency to another. The switch also is connected to decimal point indicators on the display for automatically selecting the decimal point appropriate to the frequency selected.

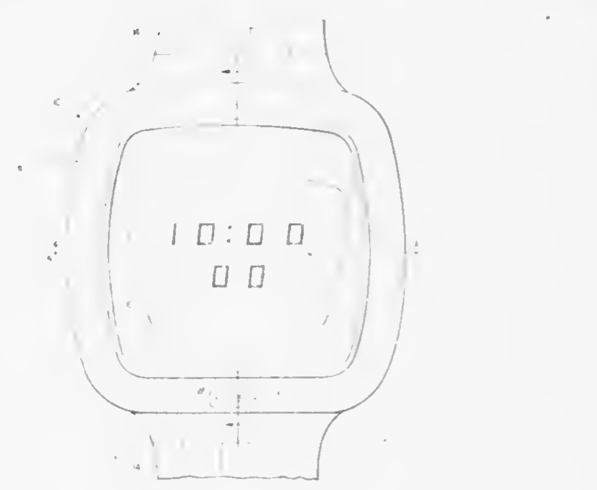
3,789,601
SOLID STATE WATCH WITH MAGNETIC SETTING

John M. Bergey, Lancaster, Pa., assignor to Time Computer, Inc., Lancaster, Pa.

Division of Ser. No. 138,557, April 29, 1971. This application July 15, 1971, Ser. No. 162,813

Int. Cl. G04b *19/30, 27/00*

U.S. Cl. 58—50 R **5 Claims**



Disclosed is a solid state electronic wristwatch with no moving parts. The watch electronics are hermetically sealed in the watch case to be free of dust and moisture and the sealed components are resiliently mounted for improved shock resistance. Two setting switches and a demand switch within the casing are operated from outside the watch by permanent magnets; the demand magnet operating with a demand pushbutton. The setting magnet may be stored in the watch bracelet.

3,789,602
DAY-DATE ADVANCING STRUCTURE FOR A TIMEPIECE

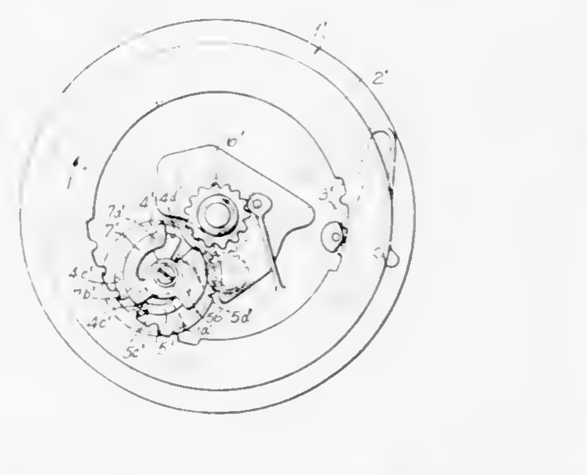
Isao Nemoto, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Oct. 6, 1972, Ser. No. 295,628

Claims priority, application Japan, Oct. 7, 1971, 46-79048

Int. Cl. G04b *19/24*

U.S. Cl. 58—58 **3 Claims**



An improved calendar advancing member for a calendar timepiece includes a calendar advancing wheel and at least one resilient finger mounted thereon and driven thereby through an intermittent indexing sequence whereby the calendar display is indexed to a next successive day and date position each 24 hours. The one or more resilient fingers are resilient and spring-like in a first position whereby the calendar display may be driven through a calendar correcting sequence without effecting damage thereto. However, they are rigid as driven by the calendar advancing wheel through intermeshing engagement with the calendar display member for indexing thereof.

3,789,603
DAY CALENDAR TIMEPIECE WITH MULTIPLE LANGUAGE DISPLAYS

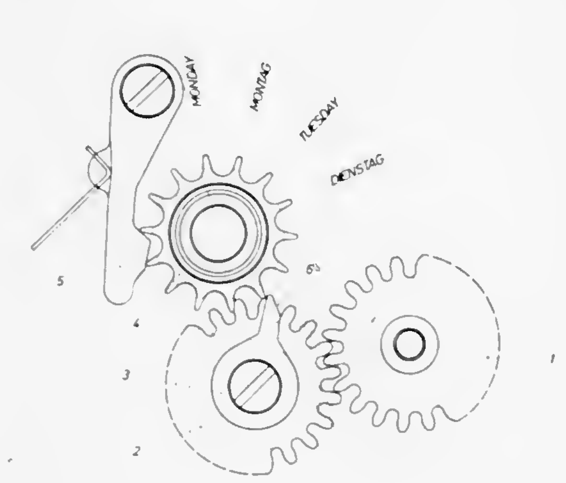
Alfred Eisele Uhrentechniker, Pforzheim, Germany, assignor to Pforzheimer Uhren-Rohwerke Inh. Rudplf Wehner, Pforzheim, Germany

Filed June 29, 1973, Ser. No. 375,155

Claims priority, application Germany, July 31, 1972, 2237645

Int. Cl. G04b *19/24*

U.S. Cl. 58—58 **5 Claims**



A day-indicating disc bears inscriptions of the names of the days of the week in a plurality of languages. Said insciptions have a uniform angular spacing. The inscriptions of the names of each day in all said languages are disposed adjacent to each other in a regular succession. The inscriptions of the names of the days of the week are arranged in a chronological succession in a given sense. A day-shifting wheel is coupled to said disc and has an annular series of teeth which have the same angular spacing as said inscriptions. A rotatably mounted day-shifting finger is provided, which has an inclined back. Timing means are provided, which serve to rotate said finger in a forward sense through one revolution in 24 hours. Setting means are provided, which are manually operable to rotate said finger in a reverse sense. Said finger is arranged to engage said teeth with the side of said finger opposite to said back to a relatively large depth and to rotate said wheel in said given sense through a predetermined plurality of said angular spacings during each revolution of said finger in said forward sense. Said predetermined plurality is equal to said plurality of languages. Said finger is also arranged to engage said teeth with the back of said finger to a relatively small depth and to rotate said wheel opposite to said given sense through said angular spacing during each revolution of said finger in said reverse sense.

3,789,604
DIGITAL WATCH

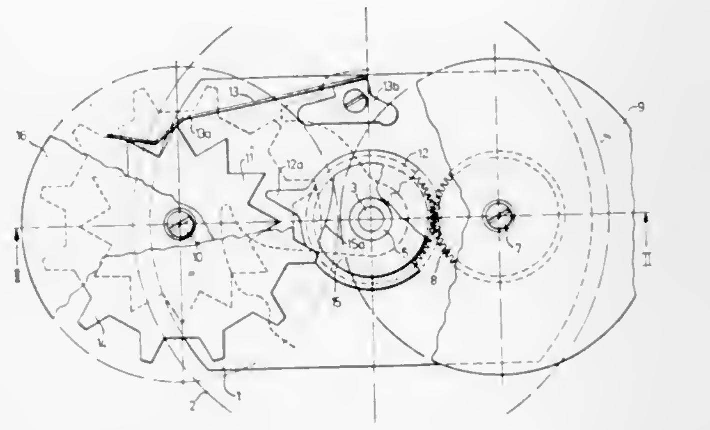
Zeno Hurt, Mohlin, Switzerland, assignor to Agon Uhrenfabrik Robert Triebold AG Mumpf, Switzerland, Germany

Filed Feb. 20, 1973, Ser. No. 333,456

Claims priority, application Switzerland, Feb. 29, 1972, 2838/72

Int. Cl. G04b *33/00, 19/06*

U.S. Cl. 58—59 **4 Claims**



A digital watch or timepiece with a cam disk seated upon a cannon pinion and provided with an indexing or switching cam for the stepwise indexing or rotation of an hour dial equipped with an indexing or pillar wheel. A security gear is rigidly connected with the pillar wheel, the security gear having teeth which are offset by one half of a tooth spacing with respect to the teeth of the pillar wheel. A circular security disk is rigidly connected for rotation with the cam disk, the security disk being provided with a recess which is symmetrical with respect to a radius directed towards the indexing cam. The recess possesses a size which is just sufficient to insure that in each instance only then, when the cam disk further rotates the pillar wheel, a single tooth of the security gear can pass the security disk.

3,789,605
GOLD PLATED CASES FOR TIME-KEEPING INSTRUMENTS

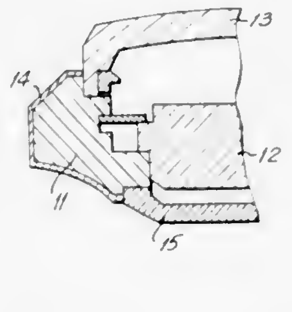
Motoki Kishida, Okaya, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed July 22, 1971, Ser. No. 165,008

Claims priority, application Japan, July 23, 1970, 45-63972

Int. Cl. G04b *37/00*

U.S. Cl. 58—88 R **3 Claims**



Water proof watches with gold exterior comprise heavily gold-plated stainless steel case bodies.

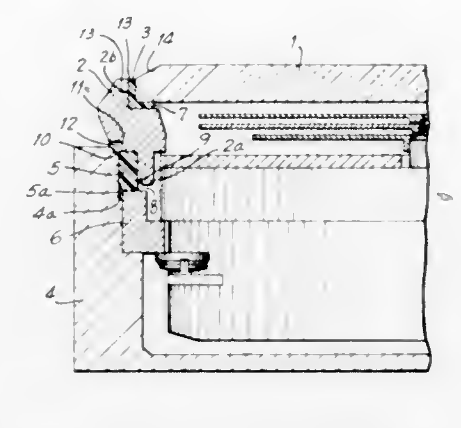
3,789,606
WATERTIGHT WATCH CASE

Syoji Isono, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Nov. 20, 1972, Ser. No. 308,046

Int. Cl. G04b *37/08*

U.S. Cl. 58—90 R **9 Claims**



A watertight watch case wherein a glass is fixed to a bezel by interposing an L-shaped plastic ring in interference manner in a space formed by the glass and bezel, and wherein the bezel is fixed to a case body by interposing a plastic ring in interference manner in a space formed by a peripheral projection extending downwardly from the bezel and case body. This construction of the watch case provides excellent waterproof qualities even after the watch case is subjected to several assembling or disassembling operations.

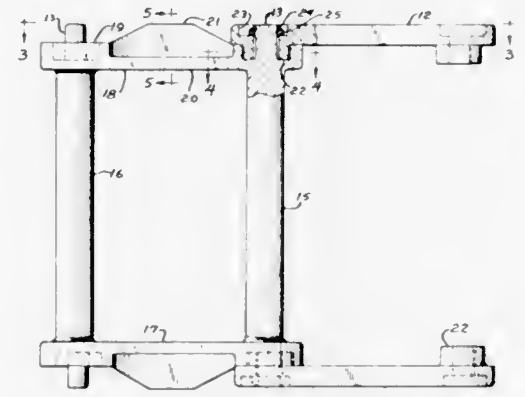
3,789,607
INTEGRAL CAST PIN TYPE CHAIN

Dennis A. Cranor, Milwaukie, Oreg., assignor to Esco Corporation, Portland, Oreg.

Filed May 30, 1972, Ser. No. 257,618

Int. Cl. F16g *15/12*

U.S. Cl. 59—84 **6 Claims**



A drag chain is disclosed having a series of rectangular block links with a laterally projecting integral connection pin at each corner. Side bars are rotatably secured to the connecting pins.

3,789,608
TYPE OF COLLOID PROPULSION

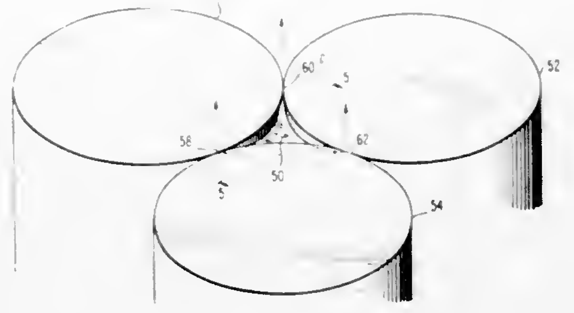
Bernard A. Free, Derwood, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Oct. 14, 1971, Ser. No. 189,279

Int. Cl. F03h *5/00*

U.S. Cl. 60—202 **5 Claims**

In a colloidal thruster, electrically conductive liquid propellant passes through passages having precisely defined sharp angles at specific points at the exit opening of the passages. Sharp cusps of the liquid propellant are formed at the specific points and due to a stronger electric field gradient near the cusps, caused by an electrode in the vicinity of the exit openings which is charged oppositely to the liquid propellant and by the sharpness of the cusps, the colloidal droplets will be formed at and will be ejected from the cusps. The droplets will be more uniform in size and will be ejected in a more uniform direction than in prior art devices.



3,789,609
PROPULSION METHOD USING 1-ISOPROPENYL-2-FERROCENOYL-CARBORANE BURNING RATE CATALYST

William E. Hill, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 805,385, March 7, 1969. This application Oct. 30, 1970, Ser. No. 85,826

Int. Cl. F23r *1/18*

U.S. Cl. 60—219 **2 Claims**

1-isopropenyl-2-ferrocenoylcarborane. This compound may be employed as an acceleration burning rate catalyst in order to promote the burning rates of propellant compositions such as solid composite propellant compositions.

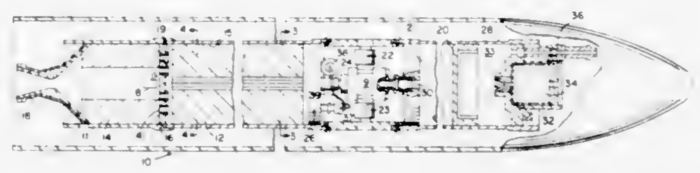
3,789,610
TANDEM SOLID-HYBRID ROCKET MOTOR

William C. Stone, Huntsville, Ala., assignor to The United States of America, as represented by the Secretary of the Army, Washington, D.C.

Filed June 21, 1967, Ser. No. 649,420

Int. Cl. F02k *3/00*

U.S. Cl. 60—245 **9 Claims**



A single-chamber rocket motor containing both a hybrid fuel charge (with associated oxidizer) and a solid propellant charge. Termination of the hybrid motor at the time desired provides accurate missile range zoning. The hybrid fuel charge is in tandem with and forward of the solid propellant charge which provides the minimum impulse of the rocket motor and the minimum missile range. The volume vacated by the solid propellant charge serves as a mixing chamber for more efficient hybrid fuel charge combustion. A gas mixer baffle plate separates the two charges and provides additional mixing.

3,789,611

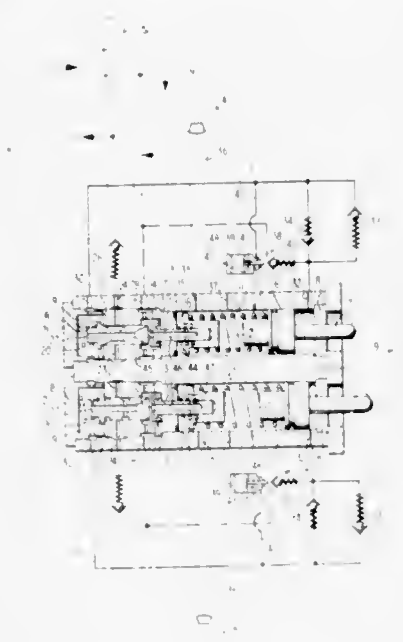
form, the wave generator is a buoyant plunger mounted for

to the bottom of the trench thus formed. The front of the

liquefied gas arranged to produce a layer of cold dense gas to

3,789,611
BRAKE VALVE FOR A HYDRAULIC BRAKE INSTALLATION

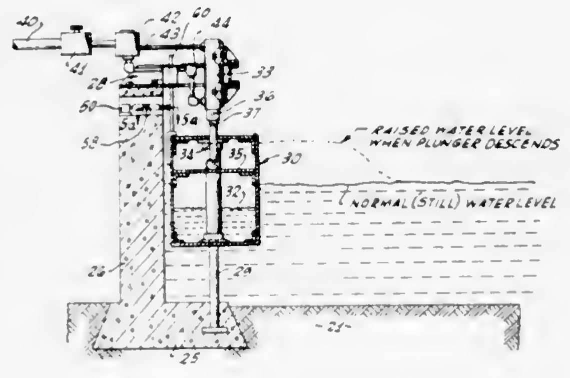
Friedbert Marquardt, Korb, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Feb. 17, 1972, Ser. No. 227,038
Claims priority, application Germany, Feb. 17, 1971, 2107478
Int. Cl. F15b *7/08*; B60t *15/04*
U.S. Cl. 60—566 **31 Claims**



A brake valve for a hydraulic brake system especially of a motor vehicle which includes a master cylinder with a master piston that is actuatable by way of a piston rod; the pressure space of the master cylinder is connected with the brakes while its backside is adapted to be actuated by an additional regulated servo pressure; the pressure space of the master piston is provided with a valve which is kept open by the regulated servo pressure when the brake is actuated and thereby connects the pressure space with the pressure control valve; the latter is constituted by a displaceable piston guided within a valve bushing.

3,789,612
METHOD OF SURF GENERATION

George E. Richard, 207 42nd St., Manhattan Beach, Calif., and Eugene D. Richard, 11570 Victory Blvd., North Hollywood, Calif.
Division of Ser. No. 56,314, July 20, 1970. This application Mar. 27, 1972, Ser. No. 238,080
Int. Cl. E02b *3/00*
U.S. Cl. 61—1 **7 Claims**


RAISED WATER LEVEL WHEN PLUNGER DESCENDS
NORMAL (STILL) WATER LEVEL

A tapered enclosure for a body of water has a wave generator positioned in a relatively narrow and deeper end. In one form, the wave generator is a buoyant plunger mounted for vertical reciprocation within a chamber having a shorewardly facing opening. Through a cyclic control system, the plunger is driven in phase with the forces of gravity and buoyancy acting thereon, starting from a rest position through strokes of increasing amplitude until a desired steady state is attained to sequentially produce waves of a desired energy. Provision is made for varying the mass of the plunger and varying the input from a prime mover as a means of adjusting wave energy and frequency.

An alternative single-wave generator comprises an open bottom water-tight enclosure having air purge valves on its upper face and connected to a prime mover for raising the tank. Upon lowering, the purge valves open, allowing air to escape from the tank while the open lower end of the tank enters the water for filling to a predetermined level. Upon the tank being pulled upwardly, with the purge valves closed, a volume of water contained within the tank is upwardly displaced, above still water level, and released when the hydrostatic equilibrium between the contained water and the outer water is upset, as when the open lower end of the tank breaks the surface of the water.

The tapered planform and sloping floor of the enclosure provide a wave energy conserving contour, so oriented with respect to the generator as to provide a primary wave break trajectory of optimum length for the area utilized by the system. A compound floor curvature may be provided to define a wave regenerating cavity to form a secondary wave out of the energy of a previously broken primary wave. A water inlet is disposed adjacent the wave generator and an outlet or outlets are disposed adjacent a point or points of wave dissipation, along the shallow end of the enclosure, to provide a circulatory system adapted for convenient monitoring and maintaining of optimum water quality.

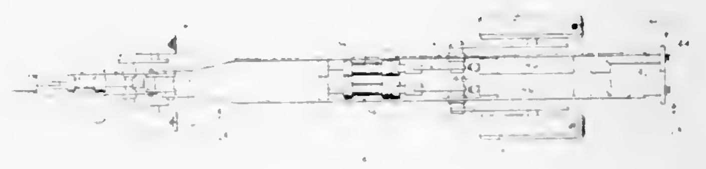
3,789,613
COMPOSITION AND METHOD FOR DIMINISHING THE FLOW OF WATER INTO PERMEABLE STRATA

Willis G. Routson, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of Ser. No. 44,609, June 8, 1970, Pat. No. 3,687,200. This application Aug. 3, 1972, Ser. No. 277,764
Int. Cl. E02b *3/00*
U.S. Cl. 61—1 R **10 Claims**

A method and composition for treating porous formations through which water is escaping from ponds, canals, etc., said method utilizing a stable colloidal dispersion of a water-soluble, synthetic organic polymeric polyelectrolyte and a water-insoluble inorganic solid.

3,789,614
COMPLETE PIPELAYER

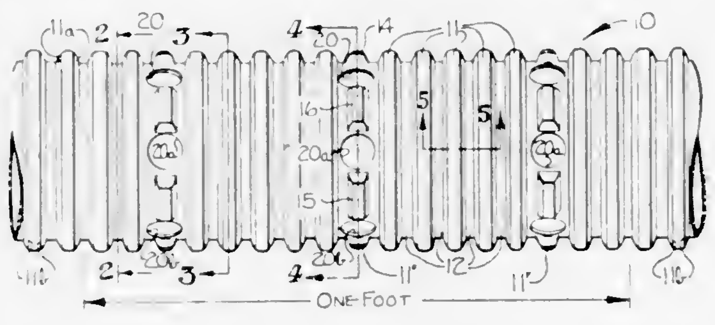
Thelmer A. Rogers, P.O. Drawer 1589, Lubbock, Tex.
Filed Aug. 29, 1972, Ser. No. 284,562
Int. Cl. A01b *3/64*; F16l *1/00*
U.S. Cl. 61—72.6 **25 Claims**



Pipe to be laid underground is laid on the ground connected. Vibrating rippers straddle the pipe and shatter the ground on either side of the path where the pipe is to be laid. The rippers are tied together so they have no resultant horizontal vibration, but each is free to vibrate vertically. The rippers are vertically vibrated out of phase. A chute behind the rippers push the shattered soil laterally and guide the pipe to the bottom of the trench thus formed. The front of the chute has doors which open to permit the chute to be pushed down over the pipe and to be picked up from the pipe, but which are closed during operation.

3,789,615
LIGHTWEIGHT HIGH COMPRESSIVE STRENGTH DRAINAGE PIPE

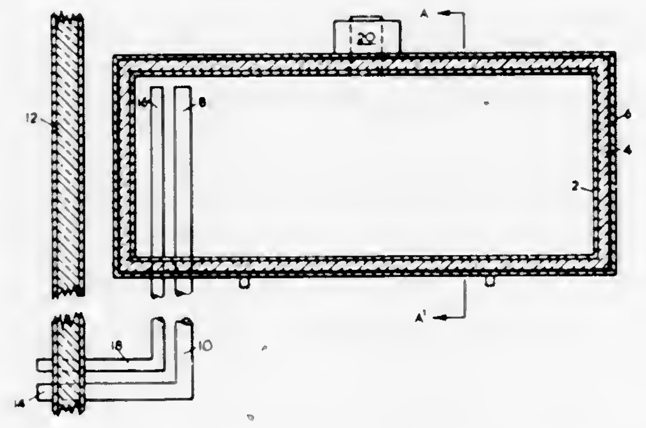
Ernest J. Maroschak, Roseboro, N.C., assignor to Plastic Tubing, Inc., Roseboro, N.C.
Continuation-in-part of Ser. No. 228,508, Feb. 23, 1972. This application June 12, 1972, Ser. No. 261,781
Int. Cl. E02b *11/00*; F16l *11/12*
U.S. Cl. 61—11 **14 Claims**



A corrugated plastic drainage pipe having a compressive strength of at least 1,000 pounds per linear foot and being of lightweight construction with a wall thickness no greater than about one-sixteenth inch and wherein spaced apart successively arranged annular ribs with interconnecting annular valley portions therebetween define corrugations along the periphery of the pipe, the ribs and valley portions per foot each being about seventeen in number, the majority of the annular ribs being uninterrupted and arranged in spaced groups with an interrupted rib between adjacent groups, and each interrupted rib comprising a set of three interconnected circularly arranged spaced apart arcuate rib segments correspondingly arranged throughout the pipe, and one of the rib segments of each set being substantially longer than the other two rib segments and having an arcuate extent of at least 180 degrees.

3,789,616
EVAPORATION SYSTEM

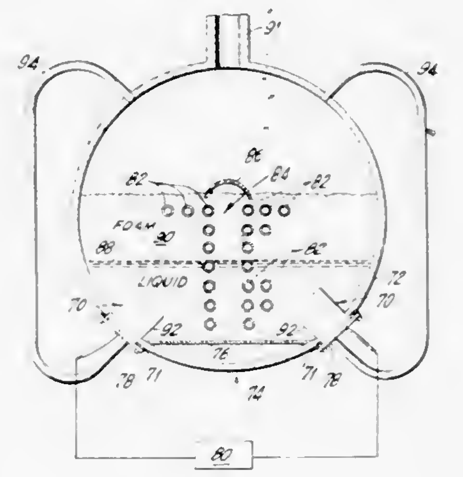
Harold Davidge, London, England, assignor to The British Oxygen Company Limited, London, England
Filed June 23, 1971, Ser. No. 156,018
Claims priority, application Great Britain, June 24, 1970, 30577/70; Apr. 16, 1971, 9586/71
Int. Cl. F17c *7/04*
U.S. Cl. 62—50 **21 Claims**



A system for preserving perishable goods in an enclosed transport container including an insulated evaporator for liquefied gas arranged to produce a layer of cold dense gas to envelop the goods and to maintain them at a temperature below ambient.

3,789,617
THERMODYNAMIC SYSTEM

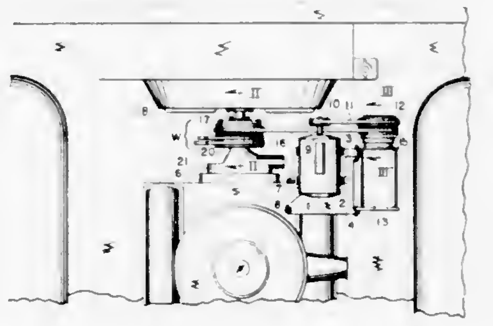
Robert L. Rannow, Jamaica, Vt., assignor to Thermocycle, Inc., Brooklyn, N.Y.
Filed Jan. 13, 1972, Ser. No. 217,467
Int. Cl. F25b *1/00*
U.S. Cl. 62—115 **18 Claims**



Transducers are utilized to produce vibrations within a thermodynamic system including an evaporator, a condenser, and a plurality of pipes connecting the evaporator and condenser so that the refrigerant can circulate therethrough. Other conventional cooling system components such as a compressor and a cooling tower may be included. Preferably one or more transducers are attached to the evaporator and may be enclosed within it. The vibrations reduce the refrigerant and water film coefficients, inhibit the formation of a film of bubbles on the tubes of the evaporator, increase foaming, and generally improve heat transfer throughout the system.

3,789,618
AUXILIARY DRIVE FOR ENGINE DRIVEN AIR CONDITIONER

Jack M. Feliz, 34-808 Via Echo, Palm Springs, Calif.
Filed Aug. 14, 1972, Ser. No. 280,671
Int. Cl. F25b *27/00*
U.S. Cl. 62—236 **3 Claims**



An auxiliary electrical drive means is provided to alternately operate the components of a conventional internal combustion engine driven air conditioner, thus eliminating the need for the secondary roof mounted air conditioner, which is normally provided on recreational vehicles or the like. The dual operation of the aforementioned engine driven air conditioner is accomplished by the means of a pair of self-contained centrifugal clutch assemblies, suitable mounted to the conventional water pump and the air conditioner compressor, thereby automatically disconnecting the power train of the drive means that is not running

3,789,619

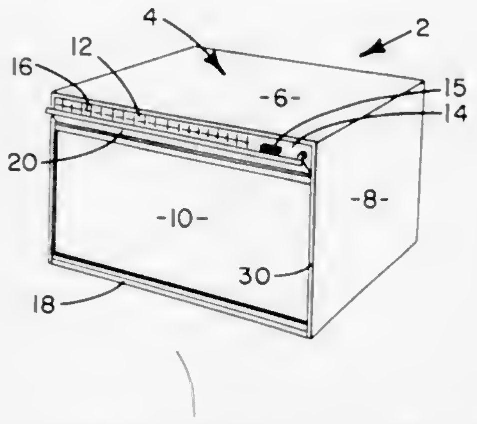
APPARATUS FOR HINGING A DISCHARGE DOOR TO AN AIR CONDITIONING UNIT

James F. Kincaid, Fayetteville, and David E. MacLeod, Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 5, 1973, Ser. No. 338,126

Int. Cl. F25d *23/12*

U.S. Cl. 62—262 **6 Claims**



Apparatus for hinging a discharge door to an air conditioning unit to control the flow of conditioned air from the discharge port of the unit, comprises a pair of coaxially disposed hinge pins, the hinge pins having cylindrical body portions which are frictionally engaged by the door and noncylindrical end portions which are mounted for limited rotation in the housing. The discharge door rotates with the hinge pins to the limited extent the hinge pins are rotatable in the housing, and the door rotates about the hinge pins when the hinge pins are blocked against further rotation. The discharge door opens to the limited extent from its closed position in response to the discharge of air from the discharge port, and is thereafter manually adjustable to control the opening of the discharge port.

3,789,620

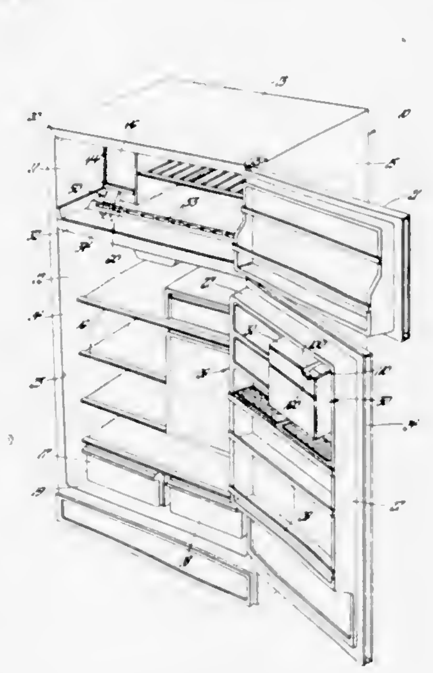
ICE DOOR MECHANISM

Louis D. Benasutti, Fairborn, and Jost S. Sucro, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 27, 1972, Ser. No. 309,935

Int. Cl. F25c *5/18*

U.S. Cl. 62—344 **6 Claims**



A refrigerator cabinet having a dividing partition with the top freezer compartment having an ice piece dispenser in communication with an upper passageway normally closed by a counterweighted ramp closure on the underside of the partition while the lower compartment door has an enclosure including a lower ice piece passageway forwardly offset from the upper passageway communicating with an exterior ice service area in the lower door. The lower passageway is closed by a closure member which when actuated to an upwardly and rearwardly inclined position engages a follower to pivot the ramp closure to downwardly and forwardly inclined position defining a connecting channel between the passageways. The closure member has delay means to allow all the dispensed ice pieces time to enter the lower passageway before closing thereof.

3,789,621

AIR CONDITIONING APPARATUS

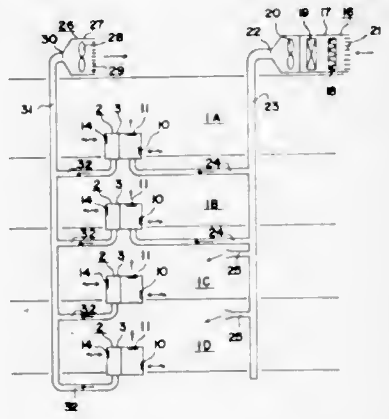
Keizo Inuzuka, Yokohama City, Japan, assignor to A. P. Engineering Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 23, 1971, Ser. No. 183,013

Claims priority, application Japan, June 3, 1971, 46-38911

Int. Cl. F25b *13/00*

U.S. Cl. 62—324 **7 Claims**



An air conditioning unit divided air-tight into a first section and a second section and installed in a room, comprising an evaporator mounted in the first section, a compressor mounted in the second section and a condenser mounted in the second section, said first section being formed with a fresh air supply port and an air ejection port and said second section being formed with a room air inlet port and an air outlet port.

3,789,622

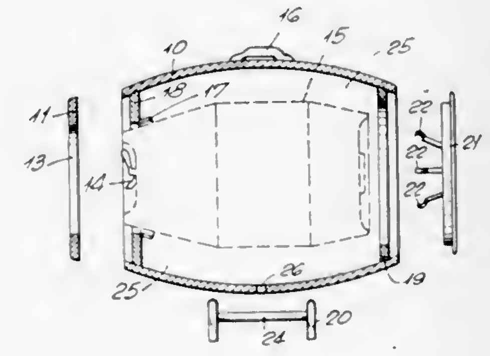
ICE BOX FOR BEER BARREL

Ralph S. Yanes, Burbank, Calif., assignor to The Raymond Lee Organization, New York, N.Y., a part interest

Filed July 31, 1972, Ser. No. 276,838

Int. Cl. B67d *5/62*

U.S. Cl. 62—396 **1 Claim**



An insulated barrel shape structure for housing and suspending a beer barrel in the horizontal position surrounded by ice. The rear circular cover of the device is removable for the installation and replacement of the beer barrel and surrounding ice. The circular front cover bears a circular opening for the spigot of the beer barrel. The structure provides for an air-seal between the sides and bottom of the housed beer barrel and the iced refrigerated area of the structure.

3,789,623

CENTRIFUGE MACHINE

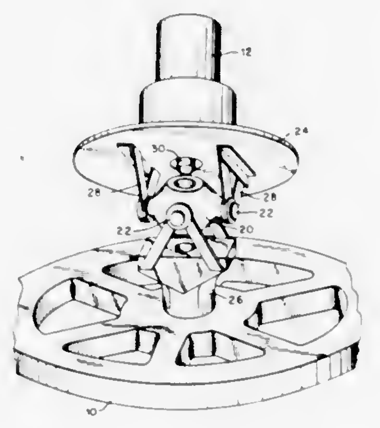
Roger Retali, Saint Cloud, France, assignor to Fives Lille-Cail, Paris, France

Filed May 4, 1972, Ser. No. 250,361

Claims priority, application France, May 4, 1971, 71.15935

Int. Cl. F16d *3/26*

U.S. Cl. 64—17 **11 Claims**



A centrifuge machine has a universal joint mounting the rotor on the rotor shaft for yielding displacement transversely of the rotor and shaft axes.

3,789,624

HOMOKINETIC JOINTS

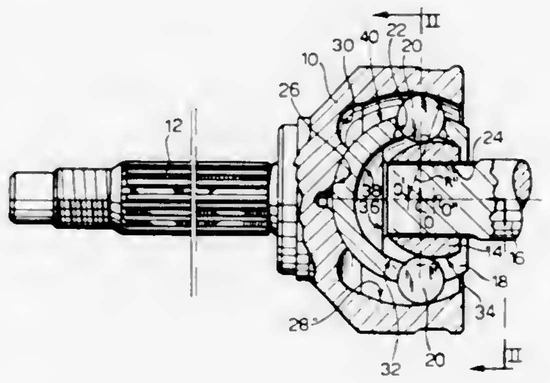
Domenico Camosso, Turin, Italy, assignor to Riv-Skf Officine Di Villar Perosa S.p.A., Turin, Italy

Filed Mar. 15, 1972, Ser. No. 234,753

Claims priority, application Italy, Apr. 23, 1971, 68357/71

Int. Cl. F16d *3/30*

U.S. Cl. 64—21 **10 Claims**



A homokinetic or constant velocity coupling joint having an outer member having a spherical inner surface, an inner member having a spherical outer surface, and a cage locating a plurality of rolling elements between the inner and outer elements. The inner member has a number of longitudinal tracks for the rolling elements and the tracks are shaped so that when a torque tending to rotate the inner member with respect to the outer member is applied the rolling elements are caused to rock across the tracks and to jam against the outer member, the inner surface of which is completely smooth with no tracks, to transmit the torque from one member to the other. Either member can be the driving member.

3,789,625

BISECTING PLANE ROTARY MOTION TRANSMISSION DEVICE

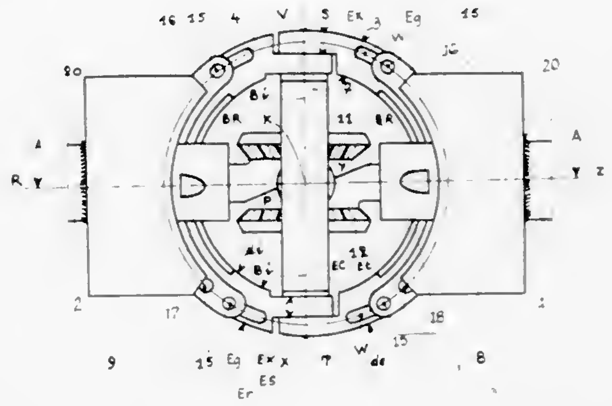
Andre Rene Rey, 93, Rue de la Curveillere, Albi, France

Filed Apr. 20, 1972, Ser. No. 245,874

Claims priority, application France, May 4, 1971, 71.16717

Int. Cl. F16d *3/30*

U.S. Cl. 64—21 **1 Claim**



This invention relates to a constant velocity universal joint including a drive shaft, a driven shaft and means interconnecting the shafts for relative swinging movement of the axes of said shafts from 0° to more than 90°. Said means comprising two semi circular forks, a yoke carried on the adjacent end of each of said shafts, a bevel gear carried by each shaft within said fork, a ring mounted for rotation about a diameter of said ring that coincides with the diameter of an articulation of said forks, and pinion gears mounted to rotate on said ring and mesh with said bevel gears.

3,789,626

CONSTANT VELOCITY UNIVERSAL JOINT

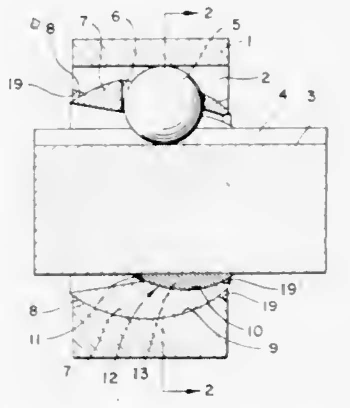
Sobhy Labib Girguis, Troisdorf, Germany, assignor to Uni-Cardan AG, Lohmar/Reinl, Germany

Filed Mar. 21, 1972, Ser. No. 236,602

Claims priority, application Germany, Mar. 25, 1971, 2114536; Dec. 24, 1971, 2164432; Dec. 24, 1971, 2164433; Dec. 24, 1971, 2164431

Int. Cl. F16d *3/30*

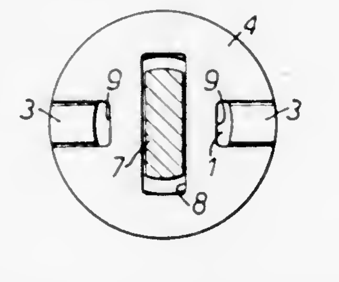
U.S. Cl. 64—21 **46 Claims**



A constant velocity universal joint comprises an annular outer joint element having grooves on its inner surface parallel with the axis of the joint. An inner joint element is positioned within the outer joint element and is provided with grooves on its outer surface to form pairs of opposed grooves with the grooves on the outer joint element. A ball is positioned in every pair of opposed grooves and a cage disposed between the two joint elements retains the balls in a plane perpendicular to the axis of the cage. The cage is guided within the outer joint element by a spherical surface on the outer face of the cage and is guided with respect to the inner joint element by a spherical surface on the inner face of the cage. The centers of the inner and outer spherical surfaces of the cage are equidistant on opposite sides of the plane passing through the centers of the balls. A control device as a separate element or elements is mounted on the inner joint element and is provided with a spherical or cylindrical surface for coaction with the inner spherical surface of the cage.

3,789,627
ROTARY COUPLINGS

John Cambridge Smith, Cheltenham, England, assignor to Hydro-Mite Limited, Cheltenham, England
Filed Oct. 6, 1971, Ser. No. 187,123
Int. Cl. F16d *3/04*
U.S. Cl. 64—31 3 Claims



A rotary shaft coupling of the so called Oldham coupling type including a flat metal coupling disc with grooves or slots on two perpendicular transverse axes to engage respectively with teeth or dogs attached to drive discs or flanges attached to the two drive shafts. Two surfaces of the slots or grooves on the coupling disc lie in a common transverse plane to avoid tilting moments on the disc and the disc is formed by a simple punching or stamping operation.

3,789,628
METHOD FOR CONTROLLING FURNACE EMISSIONS

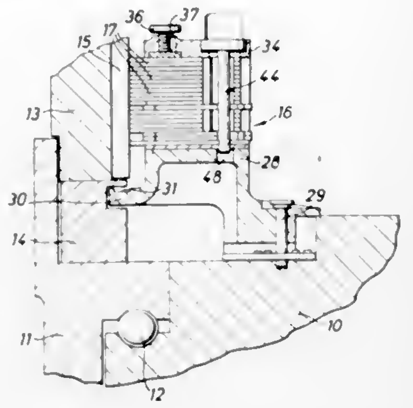
William P. Mahoney, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.
Filed Dec. 23, 1971, Ser. No. 211,761
Int. Cl. C03b *5/16*
U.S. Cl. 65—27 5 Claims

Method for scrubbing furnace emissions, and particularly glass furnace emissions, from furnace exhausts, by spraying an aqueous solution of sodium silicate into the hot exhaust gases as the exhaust gases are being exhausted through the glass furnace exhaust stack, collecting the precipitated prill and recycling the precipitate back into the glass batch materials.

3,789,629
PATTERN DEVICE FOR KNITTING MACHINES

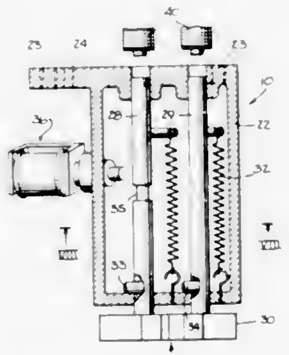
Frederick Henry Carrotte, Leicester, and John Ernest Ellis, Queniborough, both of England, assignors to A. Kirkland & Company Limited, Syston, Leicester, England
Filed Apr. 5, 1971, Ser. No. 131,373
Int. Cl. D04b *15/68*
U.S. Cl. 66—50 R 4 Claims

A pattern device for controlling a circular knitting machine comprises a frame, a set of selector elements mounted in the frame and adapted to locate knitting elements in the machine to knit a desired pattern at a feeder, means operable to lock the selector elements in the frame and to release them for movement in the frame between effective and non-effective positions, and a pattern member insertable in the frame, a surface on each selector element being adapted for cooperation with the pattern member, and the pattern member having parts for engagement with said surfaces, said parts serving to position said selector elements so that they will locate the knitting elements to produce a desired pattern.



3,789,630
LOCK OR CAM ARRANGEMENT FOR KNITTING MACHINES

Hans Schieber, and Erich Krause, both of Bopfingen, Germany, assignors to Universal Maschinenfabrik Dr. Rudolf Schieber G.m.b.H., Westhausen, Germany
Filed Oct. 22, 1971, Ser. No. 191,620
Claims priority, application Germany, Mar. 10, 1971, 2111514
Int. Cl. D04b *7/00, 15/36, 35/00*
U.S. Cl. 66—78 12 Claims

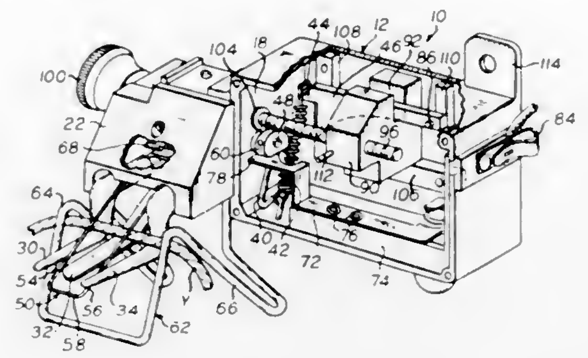


A knitting machine is made to be adaptable to a wide range of knitting patterns and knitting conditions by providing of a carriage, individual cam control structural units or modules which may be individually replaced. Each module has a standard mounting arrangement, but has individual cam and cam control arrangements.

3,789,631
YARN TENSION CONTROL DEVICE

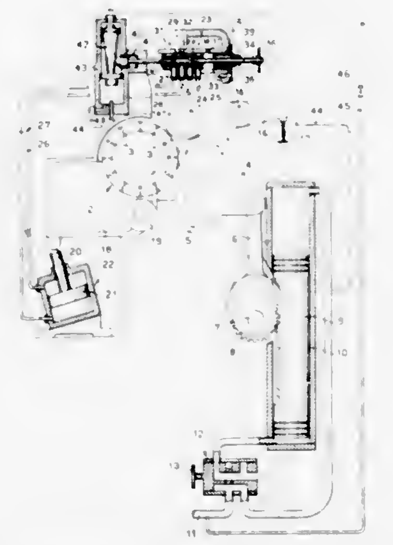
Jose Castillo Deniega, Elmhurst, N.Y., assignor to Stop-Motion Devices Corporation, Plainview, N.Y.
Filed Feb. 8, 1972, Ser. No. 224,424
Int. Cl. D04b *35/14*
U.S. Cl. 66—163 9 Claims

A yarn tension control device having yarn tension sensing means adapted to support the travelling yarn, which sensing means is secured to a shaft which terminates in a crank portion. Spring means connected at one end thereof to the crank portion urge the yarn tension sensing means into a normal yarn supporting position against the resistance of the yarn tension. The other end of the spring is secured to the free end of a tension control lever whose opposite end is mounted for pivotal movement. The lever is straddled by a channeled block and has a bottom curved surface which defines a cam follower and cam combination with the block, whereby longitudinal movement of the block causes pivotal movement of the lever for varying the tension on the spring.



3,789,632
AUTOMATIC THICKNESS REGULATOR FOR SKIN-SHAVING MACHINES

Silvio Repetto, Modena, Italy, assignor to S.p.A. Luigi Rizzi & C., Modena, Italy
Filed Sept. 25, 1972, Ser. No. 292,095
Claims priority, application Italy, Dec. 15, 1971, 32432/71
Int. Cl. C14b *17/00*
U.S. Cl. 69—42 10 Claims

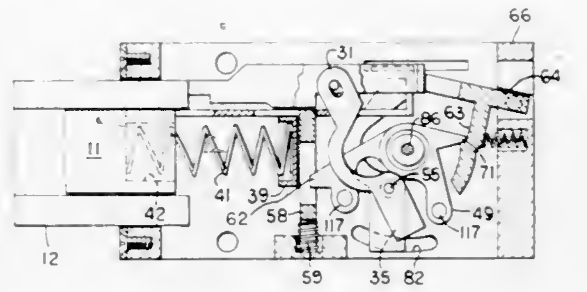


In a skin shaving machine, a mechanism is provided for automatically regulating the thickness of the skin being processed. A shaped surface of a governing piston, shaped so as to present zones of different surface area cooperates with a feeler. The surface area variation of the core keeps into account the thickness trend of the several portions of a skin, viz. head, neck, trunk, hindquarters. By the mechanism so provided a perfectly even thickness of the shaved skin is automatically obtained without requiring the intervention of an operator, the latter being enabled to attend to other machine operations.

3,789,633
PREASSEMBLED LOCK OF THE UNIT TYPE

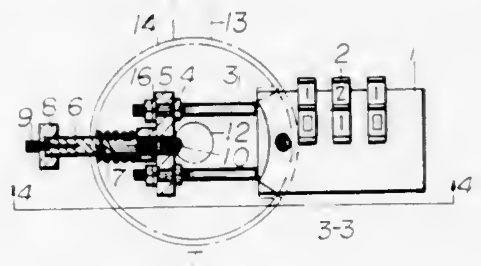
Alois Crepinsek, San Jose, Calif., assignor to Security Technology Corporation, San Jose, Calif.
Filed Jan. 17, 1972, Ser. No. 218,365
Int. Cl. E05b *59/00*
U.S. Cl. 70—110 16 Claims

A preassembled lock of the unit type is shown having a lock casing and latch-bolt and dead-bolt assemblies slidably mounted in the lock casing. Push lever means is centrically mounted within the lock casing on an axis normal to the direction of travel of the latch-bolt and dead-bolt assemblies. Bolt-moving lever means is eccentrically mounted with respect to the push lever means and operatively engages the dead-bolt assembly. Releasable blocking means retains the dead-bolt assembly in its locked position and rotation of the push lever means releases the blocking means and moves the bolt-moving lever means to thereby retract the dead-bolt assembly from its locked to its unlocked position. The rotation of the push lever means is over only a few degrees and can be accomplished in a fraction of a second. The dead-bolt assembly extends an appreciable distance out of the lock casing in its locked position, yet can be retracted in the aforementioned fraction of a second.



3,789,634
SECURITY STEER-GEAR CYCLELOCK

Roland Clough Brown, 425 Stratford Ct., Del Mar, Calif.
Filed Oct. 20, 1972, Ser. No. 299,403
Int. Cl. B62b *5/06, 5/10*
U.S. Cl. 70—186 10 Claims



A combination lock is placed on the side of the fork or crank assemblies of a bicycle and inserted far enough to insure that the lock remains locked even when the exposed portion of the lock is sawed off. The sliding lock bolts and pin extend through the fork or crank assemblies and end in a fingergrasp cap to permit the operator to unlock the mechanism when the correct combination is set on the lock dials. The pin has at its inner end a crosshead holding a bolt stud that fits into a hole in the crankshaft or into a hole in the stem of the fork when the bicycle is locked. When the combination lock is unlocked, the stud bolt is pulled back out of connection with the hole in the crank or fork, pinned in this position by the operator during use, and returned to the locked position when not in use, as desired. A spring holds the pin in the locked position at all times unless the combination lock is dialed to open it. If the fingergrasp cap end is sawed off the spring inside the crankcase or fork section continues to hold the pin and bolt stud in the locked position. If the lock end is sawed off the fixed,inserted portion of the lock inside the crankcase or fork assembly continues to hold the sliding bolts in the locked position.

3,789,635
STUD LOCK

John Van Brunt, and Donald Tringali, both of 222 Hudson St., Copiague, N.Y.
Filed Mar. 17, 1972, Ser. No. 235,593
Int. Cl. F16h *41/00*
U.S. Cl. 70—232 **10 Claims**

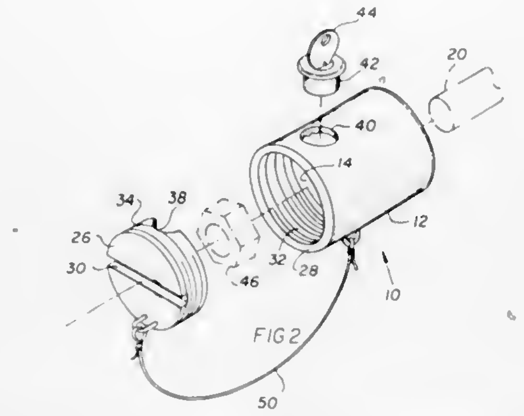
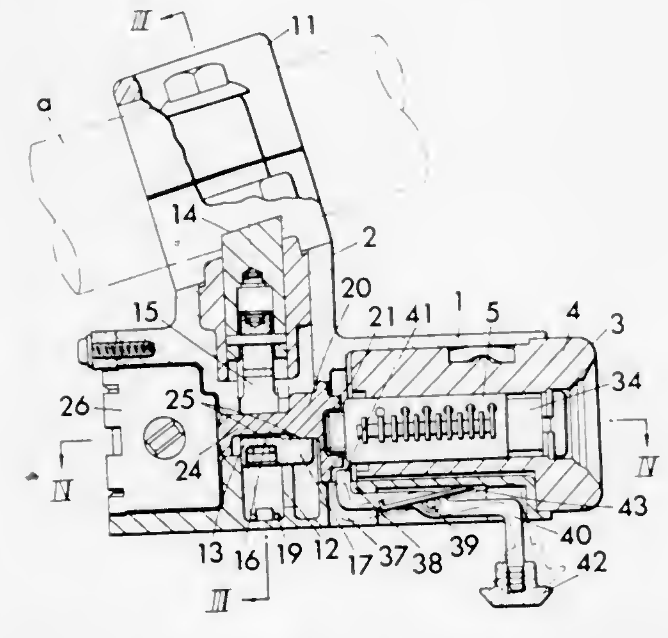


FIG 2

A stud lock for preventing access to the stud of an automobile wheel and the like by enclosing the stud and its securing nut in a housing, the access to which is closed and opened by a cover that is prevented from accidental displacement by a lockable element.

3,789,636
DEVICE IN AN AUTOMOBILE FOR PREVENTING AN ACCIDENTAL LOCKING OF A STEERING SHAFT

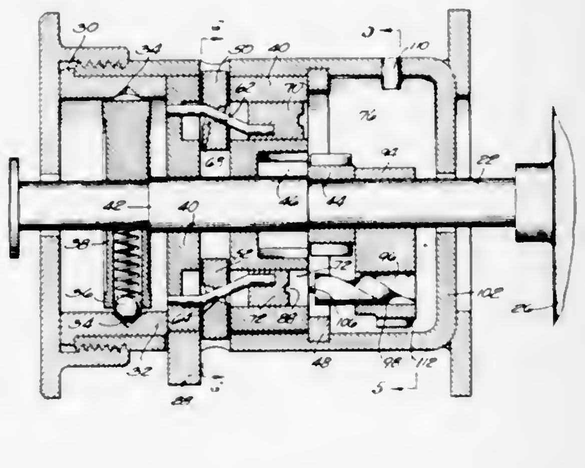
Yoshikatsu Nakashima, Nagoya, Japan, assignor to Kabushiki Kaisha Tokai Rika Denke Seisakusho, Mishikasugai-gun, Aichi Pref., Japan
Filed Mar. 15, 1972, Ser. No. 234,791
Claims priority, application Japan, Mar. 16, 1971, 46-14527
Int. Cl. B60r *25/02*
U.S. Cl. 70—252 **3 Claims**



Device in an automobile for preventing an accidental locking of a steering shaft in such a type of a locking system as a rotor of a cylinder lock is provided with a lock position of the steering shaft. The device comprises a stop provided in said rotor or in an associating locking bolt and a manually-operable means usually urged by a spring means to engage with said stop thereby to check a further rotation of the rotor from an OFF position of an ignition switch further to said lock position. For turning the rotor from the OFF position to the lock position, two manipulations, first, shifting said-manually operable means against the spring means to release it from an engagement with said stop and, second, turning the rotor with a key must be performed simultaneously. Thus constructed, the device can well prevent a danger of an accidental locking of the steering shaft while driving and assure a safety driving of the automobile.

3,789,637
PERMUTATION LOCK

Pieter W. Schipper, 975 Lone Tree Rd., Elm Grove, Wis.
Filed Dec. 23, 1971, Ser. No. 211,428
Int. Cl. E05b *37/00*
U.S. Cl. 70—299 **20 Claims**

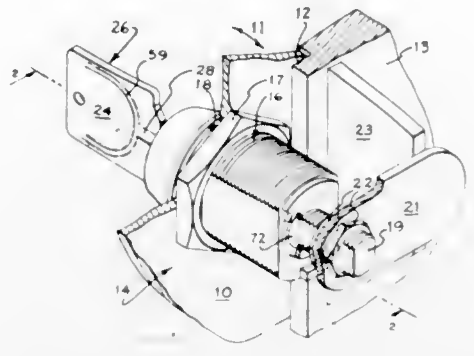


Lock handles and spindle have rotative and axial movements, without any exposed dial which might become polished to indicate the combination, one such movement making cam selection and the other effecting cam actuation, selection being made when the actuating parts are completely disengaged to eliminate any possibility of betraying the combination to a person having a sensitive touch. Tumblers readily interchangeable to vary the combination are entirely out of sight. Tumbler actuating cams are operated by an actuator selectively engageable therewith and which shortens progressively in each step of operation to determine its proper sequential functioning. In the instant device the cam heads successively engaged by the actuator are of successively increased length so that in proper functioning the combined length of the actuator and the cam head is always the same. Engagement with an incorrect cam will preclude correct operation and make it necessary for the operator to return to the starting point. Three tumblers are shown; any number within the physical capacity of the device may be used.

3,789,638
ROTARY DISC TUMBLER LOCK CONSTRUCTION

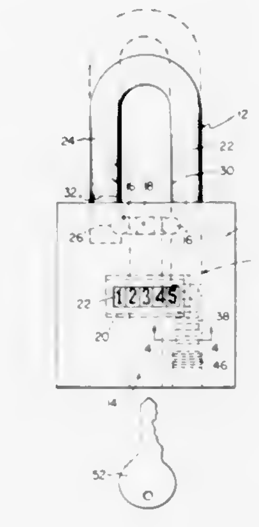
Marvin E. Roberts; Reuben J. Cohn, both of Reno, Nev., and James E. Ward, Atherton, Calif., assignors to Locking Systems, Inc., Reno, Nev.
Filed July 28, 1972, Ser. No. 276,146
Int. Cl. E05b *29/02*
U.S. Cl. 70—366 **17 Claims**

A rotary disc tumbler lock construction of the type having a generally cylindrical body includes a core characterized by a tumbler assembly wherein a plurality of rotary disc tumbler elements are formed with two sets of gate openings in their outer peripheries so that one or the other of the two sets of gate openings can be aligned to accommodate entry of a side bar in response to clockwise and counterclockwise rotation of the tumblers. A key formed with bits for operating the tumblers both clockwise and counterclockwise accommodates the maximum removal of key material at any given bit position for both clockwise and counterclockwise operation of the key without substantially weakening the shank of the key and in a manner to avoid telltale "footprinting" in the lock when operated.



3,789,639
LOCK WITH SECURITY COUNTER

Richard S. Canter, 20 Clent Rd., Great Neck, N.Y.
Filed July 10, 1972, Ser. No. 270,313
Int. Cl. E05b *39/04, 67/22*
U.S. Cl. 70—437 **14 Claims**

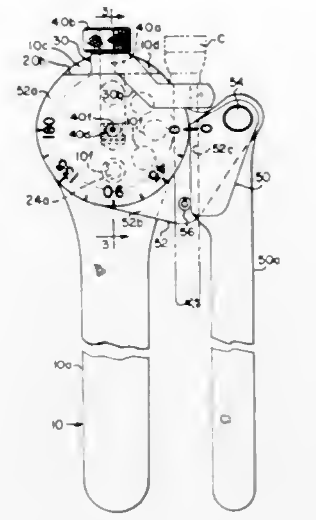


A lock such as a padlock in combination with a registering counter operated by the shackle of the lock for counting and registering the number of times the shackle is moved from unlocked to locked position, in which the acuating link between the shackle and the counter comprises rack and pinion means.

3,789,640
HAND HELD TUBE BENDER

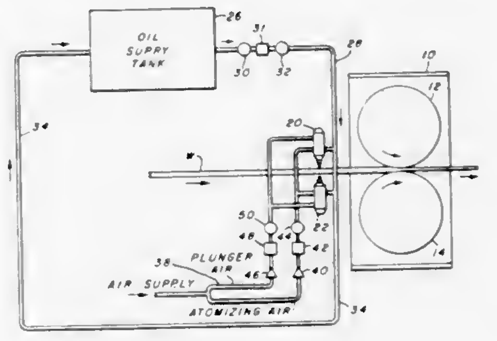
Heinrich H. Frank, Amherst, Ohio, assignor to Emerson Electric Co., St. Louis, Mo.
Filed Aug. 4, 1972, Ser. No. 278,077
Int. Cl. B21d *9/05*
U.S. Cl. 72—36 **18 Claims**

A tube bender is shown which has a handle on which is rotatably mounted a bending mandrel with a tube engaging hook swivably carried by the mandrel and with the mounting for the hook being a crank or eccentric so that when the mounting is rotated the hook is moved toward or away from the groove of the mandrel. The hook is also offset so that it may engage a tube close to the start of the bend point on the mandrel. The mandrel is rotatable on the handle and held in different positions thereon by a detent means. The bending shoe is on the end of a second handle and is pivotably connected to a link plate which is rotatably journalled on an annular bearing surface on the mandrel between the mandrel and the first handle.



3,789,641
METHOD OF LUBRICATING A HOT STEEL WORKPIECE PRIOR TO HOT ROLLING

William G. Miller, Penn Hills Township, Allegheny County, and Raymond E. Polinski, Duquesne, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.
Continuation-in-part of Ser. No. 75,394, Sept. 25, 1970, abandoned. This application Nov. 13, 1972, Ser. No. 306,076
Int. Cl. B21b *45/02*
U.S. Cl. 72—45 **1 Claim**

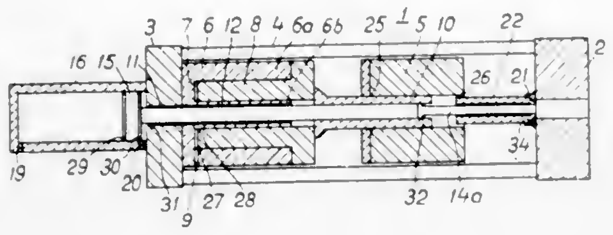


A method of lubricating a hot steel workpiece in the process of hot rolling wherein an undiluted lubricating oil is atomized and sprayed onto the hot steel surface. In order to prevent the oil from flashing and burning upon contact with the hot steel surface, the atomized oil particles are maintained within the range of about 150 to 250 microns in size.

3,789,642
METHOD FOR HYDROSTATIC EXTRUSION OF TUBES

Jan Nilsson, Robertsfors, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed June 5, 1973, Ser. No. 367,104
Claims priority, application Sweden, June 12, 1972, 7689/72
Int. Cl. B21c *25/04*
U.S. Cl. 72—60 **1 Claim**

A press for hydrostatic extrusion of tubes includes a high pressure cylinder axially displaceable in a press stand with a die insertable into the cylinder and a pressure generating punch insertable into the cylinder to generate the pressure for extrusion. A mandrel is carried by a rod which passes through the pressure-generating punch. A hollow billet is inserted into such a structure which has the central opening therethrough at the point adjacent the die of smaller cross-section than that of the mandrel. When the mandrel is advanced towards the die, it engages the narrowed portion of the bore of the billet and presses it against the die, holding it there while the pressure chamber is advanced around the billet and the extrusion takes place.



3,789,643

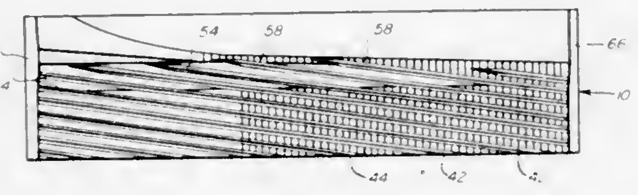
DOUBLE ANGLE CUTOFF DIE AND METHOD FOR ROLLING SCREWS

Joseph F. Dickson, Oxford, Mass., assignor to Reed Rolled Thread Die Company, Holden, Mass.

Filed Feb. 10, 1972, Ser. No. 225,242

Int. Cl. B21h *3/06*

U.S. Cl. 72—469 **12 Claims**



This invention relates to gimlet point screws and thread rolling dies for making such screws. A full precisely formed gimlet point is achieved by means of an extruding cutoff ramp having a high rate of penetration initially followed by a more gradual penetration to remove the extrusion slug.

3,789,644

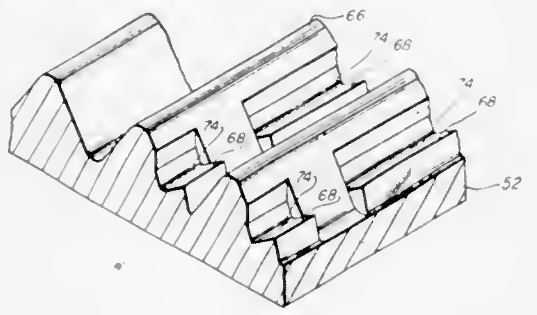
SELF-LOCKING DIES FOR MAKING THREADS

Roger W. Orlomoski, North Brookfield, Mass., assignor to Litton Industrial Products, Inc., Halden, Mass.

Filed Nov. 22, 1971, Ser. No. 200,933

Int. Cl. B21h *3/06*

U.S. Cl. 72—469 **5 Claims**



This invention relates to self-locking screws and thread rolling dies for making such screws. The self-locking result is achieved by a rib which may be continuous or discontinuous in the flank or flanks of one or more turns of the threads over a selective length of the screw. The outermost face of the rib is generally parallel to the mating threads so that with standard threads it is disposed at approximately 60° with respect to the oppositely disposed flank on the same thread to provide initial compression and subsequent resilient bending of the rib without scoring the mating thread despite variations in fit. The screw threads and ribs therein may be made by the use of conventional flat or circular thread rolling dies in which certain selective threads in at least one of the dies, preferably the movable die, have been reformed over a suitable length in a corresponding manner.

3,789,645

CONTROL DEVICE FOR THE SLIDING ROOFS OF VEHICLES

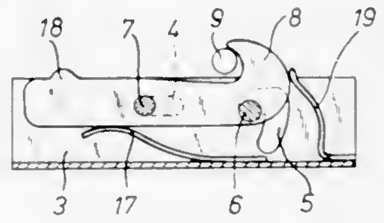
Alfred Schmid, Edgewater, Md., assignor to Webasto-Werk W. Baier KG, Stockdorf, Germany

Filed July 27, 1972, Ser. No. 275,718

Claims priority, application Austria, July 27, 1971, 6529/71

Int. Cl. G05g *1/00*

U.S. Cl. 74—491 **10 Claims**



A device for stopping the motion of a vehicle sliding roof panel when it reaches the intermediate closed position from one of two opposite open positions, where a moving pivotable catch hook is engaged by a fixed catching pin, thereby de-activating a hook retaining means and allowing the hook to be retracted by a spring when it is disengaged from the catching pin to permit overriding of the closed position.

3,789,646

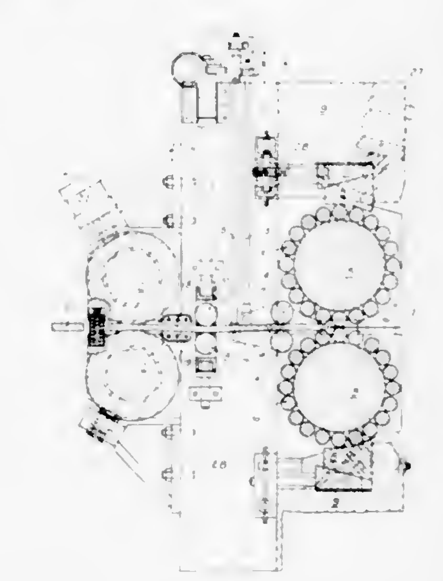
PLANETARY MILL FOR PRODUCING SCALLOP-FREE STRIP

Tadeusz Sendzimir, P.O. Box 1350, Waterbury, Conn.

Filed Oct. 5, 1972, Ser. No. 295,345

Int. Cl. B21h *13/20, 29/00*

U.S. Cl. 72—190 **8 Claims**



This application discloses an improvement in planetary rolling mills, making possible a rolling of flat strip, free from scallop, without the need for a planishing mill to smooth out the scallops which are normally produced by a planetary mill. There is also disclosed how the angle of entry of the work rolls into the slab may be reduced, thus reducing the likelihood of surface defects, or alternatively, making it possible to roll thicker slabs than was possible heretofore on a given size planetary mill. The disclosure teaches that as a particular work roll enters the roll bite, its diametrically opposite work roll engages a cam. The cam has a surface corresponding generally to the circular orbit of the work roll, but is modified so as to deviate from such orbit by a very small amount. An initial deviation may cause the work roll diametrically opposite the rolls which are in engagement with the cam to engage the slab at a more acute angle to the passline, and a final deviation may cause the work rolls which are diametrically opposite rolls in contact with the cam, to follow a path parallel to the passline as they leave the roll bite.

3,789,647

METHOD OF SURFACE-CONDITIONING HEAT-TREATING-FURNACE HEARTH ROLLS HAVING SLEEVES OF REBONDED FUSED SILICA THEREON BY PROCESSING SILICON STEEL STRIP

Jack L. Hamilton, Monroeville Borough; John W. Jenks, Franklin Twp., and John F. Milberger, Washington Twp., all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Oct. 20, 1972, Ser. No. 299,533

Int. Cl. B21h *27/04*

U.S. Cl. 72—236 **7 Claims**

Generally, the method of the invention involves surface-conditioning new and used rebonded fused silica sleeved hearth rolls of a continuous silicon steel strip heat-treating furnace while the furnace is in production operation. Method consists of scheduling the furnace, when new rolls are to be conditioned, to process silicon steel strip product requiring dry annealing in an atmosphere having a maximum dew point of 30°F at a temperature the range of approximately 1,400° to 2,000°F (preferably 1,500°F) and processing such silicon steel strip through the furnace with the strip applying a sustained force normal to the peripheral surfaces of the rolls for a period of 24 to 72 hours. In a modified embodiment of the invention, used rolls are surface-conditioned to remove oxide roll-pickup by scheduling the processing of silicon strip product having rough surfaces through the furnace which requires a dry anneal in an atmosphere having a maximum dew point of 30°F at a temperature ranging from 1,400° to 2,000°F (preferably 1,500°F) and processing such strip through the furnace for approximately 16 hours.

3,789,648

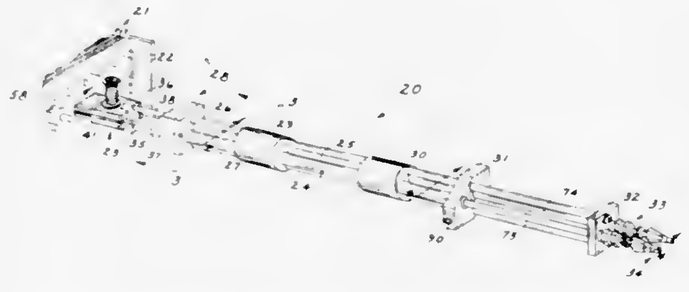
PORTABLE TUBE EXPANDER

Ward A. Ames, Danville, Ill., assignor to Tridan Tool & Machine, Inc., Danville, Ill.

Continuation-in-part of Ser. No. 179,060, Sept. 9, 1971, abandoned. This application Dec. 27, 1972, Ser. No. 318,927

Int. Cl. B21d *53/00*

U.S. Cl. 72—316 **18 Claims**



A portable device for expanding tubes. In one embodiment, a pair of movable jaws are pivotally mounted to a block and are spring biased together so as to engage the periphery of the tubes to be expanded. A pair of pistons with rods are slidable within hollow cylinders attached to the block. Each piston rod has a ball-shaped end which is positioned between the movable jaws in the retracted position with each end extendable therefrom into the tubes. A pair of shafts extend sealingly into the pair of hollow cylinders. By moving the shafts further into the hollow cylinders the length of travel of each piston is decreased. The pistons and headed ends are movable in unison together by the application of hydraulic pressure on either side of the pistons. In the preferred embodiment, the rods used to expand the tubes are driven by wheels with aligned peripheral grooves which engage the outer surfaces of the rods. In one version, a pair of wheels are coupled by gears to a hydraulic motor whereas in another version two pairs of wheels are coupled by a gear and chain combination to a hydraulic motor. In the preferred embodiment, the rods extend through a housing in which the wheels are rotatably mounted with the length of travel controlled by stop blocks mounted to the rods which contact the housing when the rods are extended the desired length.

3,789,649

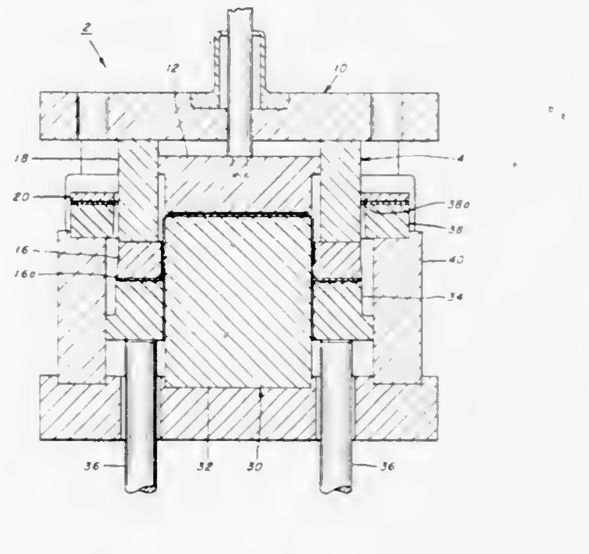
DRAW RING FOR CANS

Ernest J. Clowes, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 16, 1973, Ser. No. 324,162

Int. Cl. B21d *24/04*

U.S. Cl. 72—350 **5 Claims**



An improved die means for sheet metal drawing is provided which permits lower pad pressures and mitigates the problem of earring by the provisions of concentric depressions in at least one of the draw rings.

3,789,650

METHOD FOR FORMING REDUCED DIAMETER ENDS ON ELONGATED WORKPIECES

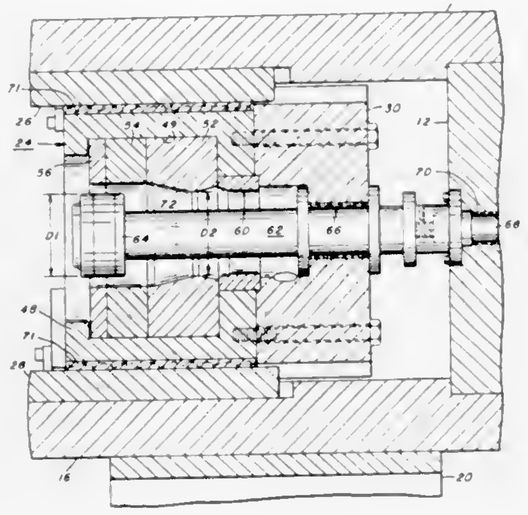
Peter Alexoff, Poland, Ohio, assignor to George A. Mitchell Company, Youngstown, Ohio

Filed July 28, 1972, Ser. No. 275,923

Int. Cl. B21d *41/04*

U.S. Cl. 72—360 **10 Claims**

Method for forming reduced diameter ends on elongated workpieces, particularly tubing, characterized in that a tube is positioned between opposed dies aligned with the tube, one die being movable toward and away from a tube end while the other die is preferably fixed. Forcing the movable die against one end of the tube forces the other end into the fixed die and



also forces the movable die over the first end, resulting in a reduction in diameter at both ends of the tube during a single power stroke of the movable die. Also described is a novel means for extracting a tube end from a reducing die after the die is forced over the tube end.

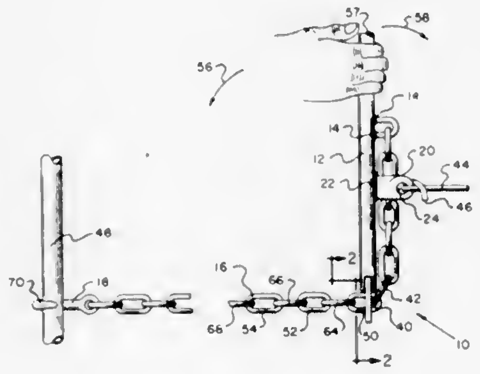
3,789,651
SOFT TUBE STRETCHER

James C. Dickerson, Rt. 5, Box 181, West Monroe, La.

Filed Oct. 5, 1972, Ser. No. 295,105

Int. Cl. B21d *3/12*

U.S. Cl. 72—367 **6 Claims**



A stretcher device for use with soft tubing of the type used on control systems having tubing such as hydraulic or pneumatic tubing or the like. The stretcher may be easily carried by the pipe fitter and may be quickly and easily used to stretch the soft tubing to the desired degree of straightness and length. The stretcher has a means for holding the soft tubing and also means for anchoring the stretcher to a chain which is incorporated with the stretcher. Also disclosed is a method for stretching the soft tubing using the stretcher disclosed.

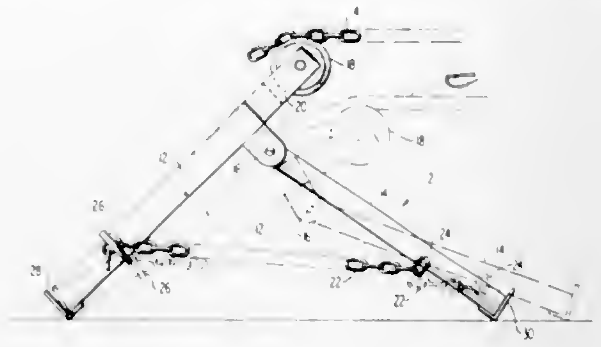
3,789,652
LEVEL TIE-DOWN

Ervin Buske, P.O. Box 190, Gowrie, Iowa

Filed July 18, 1972, Ser. No. 272,991

Int. Cl. B21d *1/14*

U.S. Cl. 72—457 **5 Claims**



A support for a pulley or plate is vertically adjustable so that when a chain is anchored at one end to a floor and led over the pulley or plate to a vehicle, the angle of the lead of the chain can be adjustably predetermined.

ERRATUM

For Class 72—407 see:
Patent No. 3,789,689

3,789,653
SYSTEM FOR MEASURING TIME DIFFERENCES BETWEEN REMOTE CLOCKS AND FOR SYNCHRONIZING THE SAME

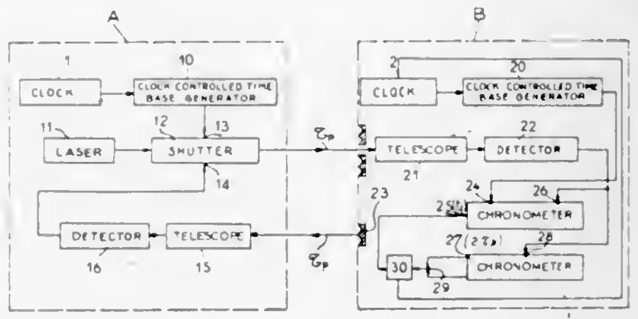
Hubert P. Brejaud, Sarcelles, France, assignor to Office National d'Etudes et de Recherches Aeropatiales, Chatillon, France

Filed May 30, 1972, Ser. No. 257,740

Claims priority, application France, June 8, 1971, 7120636

Int. Cl. G04b *17/12;* **G04c** *11/00;* **H04b** *9/00*

U.S. Cl. 73—6 **5 Claims**



System for measuring the time difference between a master clock and a slave clock located respectively in two remote stations and synchronizing these clocks. It comprises, in the master clock station, a time base generator controlled by the master clock, a source of light, an electro-optical detector, control means depending upon the time base generator for switching on the light source and control means depending upon the electro-optical detector for switching off the light source. The slave clock station comprises a time base generator controlled by the slave clock, an electro-optical detector detecting light from the master clock station, a chronometer switched on by the time base generator and switched off by the electro-optical detector and another chronometer switched on and off respectively by the first and second output signal of the electro-optical detector. Means are provided in the slave clock station for partially receiving and partially reflecting the light to the electro-optical detector at the master clock station causing the light source to produce a luminous signal whose start and end are split by a duration equal to twice the light propagation round trip time between the two stations.

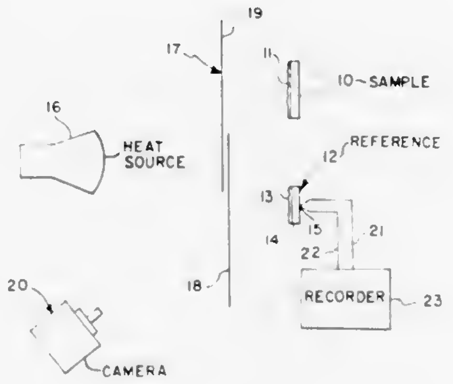
3,789,654
METHOD FOR DETERMINING THERMO-PHYSICAL PROPERTIES OF SPECIMENS

Robert A. Jones, Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 18, 1972, Ser. No. 281,875

Int. Cl. G01n *25/18*

U.S. Cl. 73—15 R **9 Claims**



The square root of the product of thermophysical properties ρ, c and k, where ρ is density, c is specific heat and k is thermal conductivity, is determined directly on a test specimen such as a wind tunnel model. The test specimen and a reference specimen of known specific heat are positioned a given distance from a heat source. The specimens are provided with a coating, such as a phase change coating, to visually indicate that a given temperature has been reached as well as to ensure that both specimens have the same absorbtivity and thus receive the same heat rate. A shutter interposed between the heat source and the specimens is opened and a motion picture camera is actuated to provide a time record of the heating step. The temperature of the reference specimen is recorded as a function of time. The heat rate to which both the test and reference specimens have been subjected is determined from the temperature time response of the reference specimen by the conventional thin-skin calorimeter equation. This heat rate is then used to determine $\sqrt{\rho\, ck}$ of the test specimen from the transient one dimensional heat conduction equation for a semi-infinite solid subjected to a step heat input at a constant heat rate. A model, such as a wind tunnel model, can be tested directly thus eliminating the costly and inaccurate method of making test models solely for the purpose of determining $\sqrt{\rho\, ck}$.

3,789,655
FLUID ANALYZER

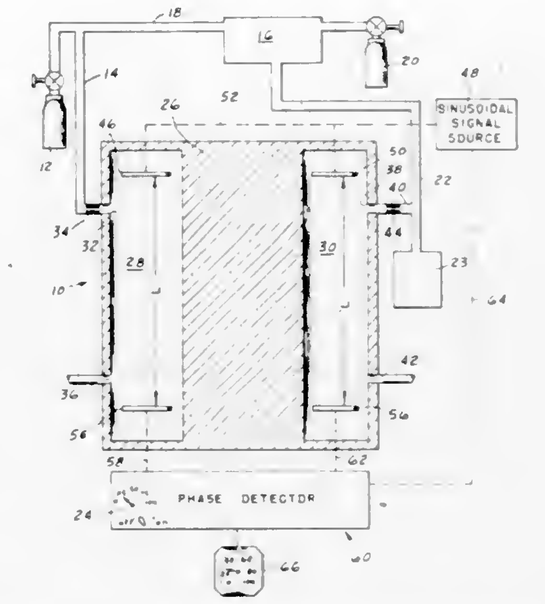
David P. Passeri, Davenport, Iowa, assignor to The Bendix Corporation, South Bend, Ind.

Filed Mar. 20, 1972, Ser. No. 236,279

Int. Cl. G01n *29/02*

U.S. Cl. 73—24 **1 Claim**

A rapid fluid analyzer for determining the percentage of a first fluid in a fluid mixture. A portion of the first fluid which is supplied to a mixing chamber is bled to a first chamber. The first fluid is also blended with a second fluid in the mixing chamber to form a fluid mixture. This fluid mixture is communicated to a storage chamber. A portion of the fluid mixture is bled to a second chamber. An identical energy wave is dispatched through the first fluid and the fluid mixture. A first receiver in the first chamber accepts the energy wave that passes through the first fluid. A second receiver in the second chamber accepts the energy wave that passes through the fluid mixture. The first receiver communicates a reference signal indicative of the accepted energy wave in the first fluid to an electronic detector. The second receiver likewise communicates a corresponding signal indicative of the accepted energy wave in the fluid mixture to the electronic detector. The electronic detector compares the corresponding signal with the reference signal to determine if a phase differential exists



therebetween. The phase differential which is directly proportional to the percentage of the first fluid in the fluid mixture will permit instant monitoring by the analyzer.

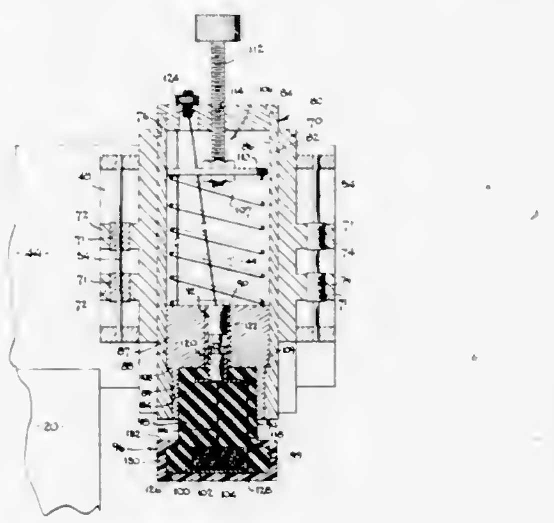
3,789,656
RECTILINEAR ACOUSTICAL TRANSDUCER INSPECTION APPARATUS

Darrow L. Miller, Los Angeles, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed July 7, 1972, Ser. No. 269,660

Int. Cl. G01n *29/00*

U.S. Cl. 73—71.5 U **13 Claims**



A rectilinear acoustical transducer and inspection apparatus for use as a non-destructive testing device, whereby workpieces such as structural stiffeners relating to aircraft and the like are inspected for defects or flaws. The apparatus comprises a carriage having rollers mounted therein for direct vehicular contact with the rib portion of the workpiece, whereby the carriage can transverse rectilinearly thereon and including an acoustical transducer pivotably mounted to the carriage having a locomotive means attached thereto by which the transducer is oscillated about its pivot point effecting a walking action to be imparted along the rib, thereby providing the necessary rectilinear motion throughout the length of the rib for the total rapid inspection of the workpiece. The transducer is adapted to removably receive a dry adhesive couplant, which forms a driving mechanical bond and acoustical couple between the piezo-electrical element of the transducer and the workpiece surface.

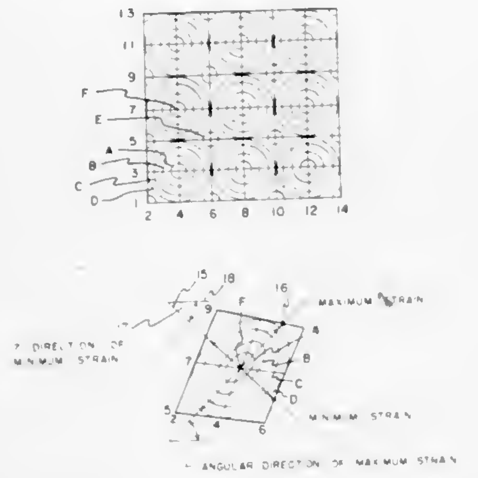
3,789,657
GRID FOR STRAIN MEASUREMENTS

Larry K. W. Ching, Jr., Littleton, and Carl E. Shafter, Englewood, both of Colo., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 27, 1971, Ser. No. 193,125

Int. Cl. G01b *5/30*

U.S. Cl. 73—88 R **1 Claim**



In stress analysis work a grid system may be affixed to a sheet of metal or other object that undergoes distortion or deformation due to a force being applied thereto. The present grid system of circles and squares (or rectangles) enables easy measurement of maximum and minimum strains and their respective directions and reduces computation time in stress analysis work.

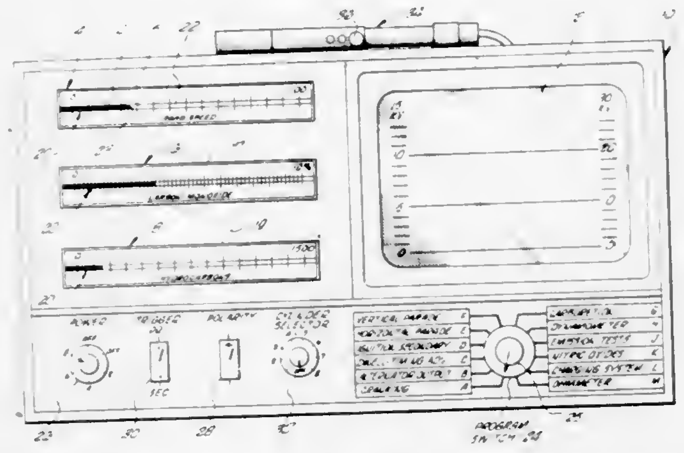
3,789,658
ENGINE PERFORMANCE ANALYZER

Dick Merlin Olsen, Pasadena, Calif., assignor to Clayton Manufacturing Company, El Monte, Calif.

Filed Jan. 28, 1972, Ser. No. 221,613

Int. Cl. G01m *15/00*

U.S. Cl. 73—117.3 **28 Claims**



An internal combustion engine performance analyzer is described for simultaneously displaying certain operating characteristics, such as ignition waveform, horsepower output, etc., under controlled operating conditions. A plurality of probes are coupled to the engine to provide output signals representative of engine performance characteristics such as cylinder ignition, generator output, starter current, etc.. To provide output signals representative of additional operating characteristics, a dynamometer and an exhaust analyzer may also be coupled to the engine.

The analyzer includes an oscilloscope and at least one selectable scale test meter in which a rotatable drum positions one of six possible scales adjacent the meter indicator or pointer at a time. A multiple position program switch controls the drum position to provide the proper scale and couples selected output signals from the engine, dynamometer or exhaust analyzer to the meters and the oscilloscope for a selected test procedure. The program switch also couples one of several sweep signals to the oscilloscope so that signals, for example, representing the spark plug voltages of the cylinders may be displayed in a superimposed pattern or separated in a vertical or horizontal pattern on the oscilloscope. The program switch enables the operator to diagnosis an engine by simply rotating the switch through each of its positions and reading the values of the parameters under test on the scales positioned adjacent the meter indicators. The waveforms of a selected parameter such as ignition voltages, starter current, etc., are simultaneously displayed on the oscilloscope for each switch position.

3,789,659
ELECTROMECHANICAL DYNAMOMETER SYSTEM

Charles W. Haldeman, Lexington, Mass., assignor to Megatech Corporation, Belmont, Mass.

Filed Nov. 2, 1971, Ser. No. 194,953

Int. Cl. G01l *3/10*

U.S. Cl. 73—134 **11 Claims**

An electromechanical dynamometer instrument system especially suitable as a laboratory and educational tool may be used selectively as engine starter motor, highly stable dynamic loader dynamometer, and electrical machine demonstrator and comprises a rotating electrical machine with a direct current power supply, field coil polarity reversing switch, armature range switch, engine speed measurement device, cylinder peak pressure measurement device, and manifold peak suction measurement device when the instrument is used with a compression type engine such as a reciprocating internal combustion engine.

3,789,660
PROCESS, MACHINE AND CHART FOR TENSILE TESTING

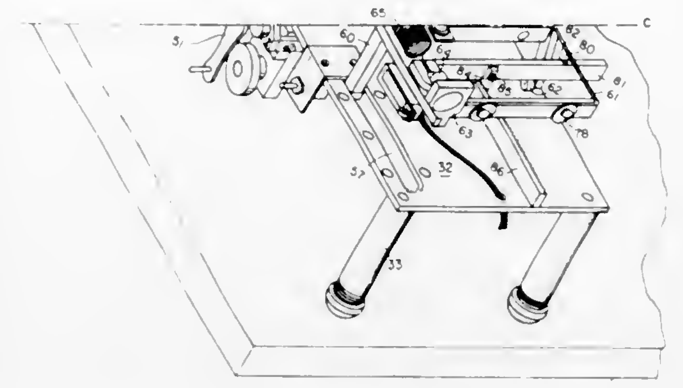
Manuel Jesus Rubio, Bridgeport, Conn., and Victor Mario Leal, Monterrey, Nueno Leon, Mexico, assignors to Roberto Gonzalez Barrera, Vista Hermosa, Monterrey, Mexico

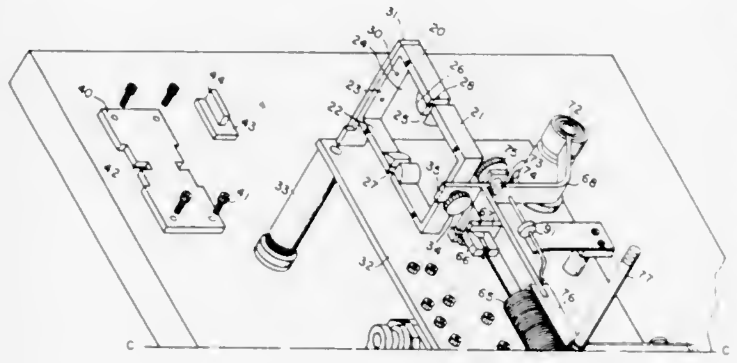
Filed Nov. 3, 1971, Ser. No. 195,313

Int. Cl. G01n *3/14, 33/10*

U.S. Cl. 73—169 **12 Claims**

Processes of testing and a testing machine especially suited to tensile testing of dough-like materials. In the invention the test specimen is pressed into jaws whose sides do not move relative to one another but grip it because the test specimen converges at the mouths of the jaws, and while one of the jaws is fixed, the other jaw is pulled to elongate the specimen to a tension means. In the preferred embodiment the tension is applied to the specimen through the agency of a spiral spring. Force application is plotted on a chart which moves with the force application means, and a pencil or other marking means plots on the chart transverse to the direction of force application the elongation of the moving jaw. In the preferred embodiment also a zig-zag motion is imparted to the line plotted in proportion to time. The invention contemplates making the jaws into a mold by attaching a removable mold bottom, and by notches in the mold sides defining a path of a cutter so that the portion of the specimen under test is the same cross section as the mouths of the jaws. The invention also includes a special chart which has isochronic zig-zags.





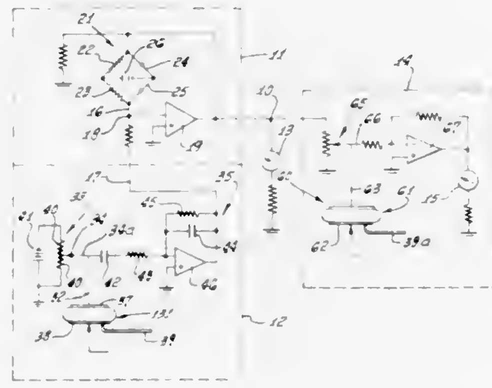
3,789,661
AIRCRAFT GLIDE ANGLE AND RATE OF CHANGE OF TOTAL ENERGY INDICATION MEANS

Frank M. Melsheimer, 124 Wilson St., Albany, Calif.

Filed June 25, 1970, Ser. No. 49,875

Int. Cl. G01c *21/00*

U.S. Cl. 73—178 T **11 Claims**



Aircraft instrumentation includes means for producing a signal indicative of the time rate of change of the kinetic and potential energy characteristic of the aircraft in flight; and other means responsive to the first means for producing an indication of the glide angle characteristic of the aircraft in flight.

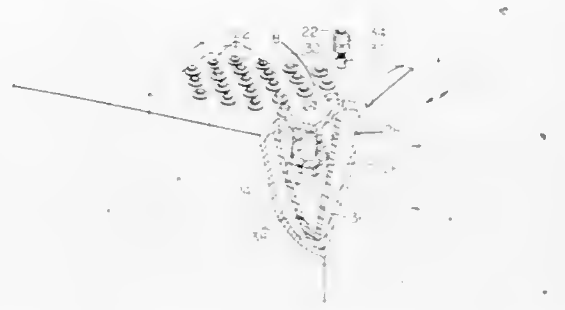
3,789,662
CALORIMETRY

John F. Zettler, Ashland, and Walter A. Lazar, Needham, both of Mass., assignors to Instrumentation Laboratory, Inc., Lexington, Mass.

Filed Oct. 26, 1971, Ser. No. 192,111

Int. Cl. G01k *17/00*

U.S. Cl. 73—190 R **16 Claims**



Microcalorimetry apparatus that includes structure defining a chamber, thermal insulation enclosing the chamber, and a plurality of sample support structures in the chamber. Each sample support structure includes a thermally insulated receptacle for receiving a sample to be analyzed, a sensor for sensing a sample container disposed therein and providing an output signal indicative thereof, and a temperature sensor disposed for sensing a change in temperature of the sample in the receptacle. One wall of the chamber has a plurality of spaced ports therein, each port being aligned with a corresponding sample support structure and permitting introduction and removal therethrough of a sample from the receptacle of the corresponding sample support structure. The apparatus also includes a plurality of sample container handling structures, each such structure including sealing structure for sealing a port in the wall and coupling structure for detachable connection to a sample container for inserting the sample container through the port for positioning in the receptacle with the sealing structure concurrently sealing the port. Each sample container includes a cylindrical body portion and a radially projecting cylindrical surface above the body portion which actuates the sensor when the container is disposed in the receptacle.

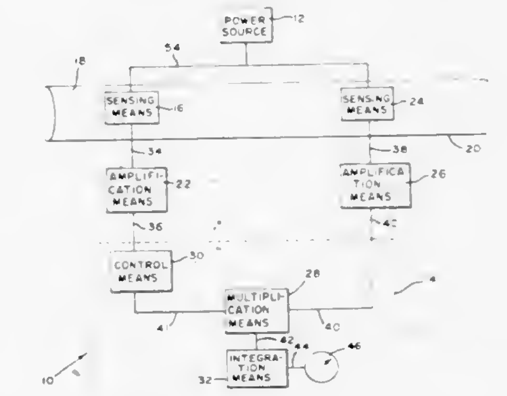
3,789,663
APPARATUS FOR MEASURING THE FLOW VELOCITY OF FLUID WITHIN A CONDUIT

Stephen J. Gold, 148 Fernhill Ave., Lafayette, La.

Filed May 11, 1972, Ser. No. 252,440

Int. Cl. G01f *1/00*

U.S. Cl. 73—194 C **10 Claims**



Apparatus for measuring the flow velocity of fluid within a conduit. Sensing means external to the conduit and responsive to changes in the configuration of the conduit surface upon passage of a vortex and associated with electrical means measure the time interval during which the detectable property of the fluid passes between a plurality of preselected locations on the conduit. Fluid flow is not obstructed by installation of the sensing means. Thus, flow measurements, at a plurality of locations along the conduit can be economically obtained.

3,789,664

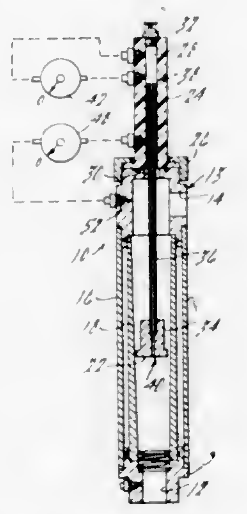
FLUID FLOW RANGE INDICATING APPARATUS

John W. Bozek, 6093 Waterfront Dr., Waterford, Mich.

Filed Aug. 27, 1971, Ser. No. 175,638

Int. Cl. G01f *1/00*

U.S. Cl. 73—209 **8 Claims**



A device utilizing a variable area flowmeter combined with a vertical concentric cylinder having a piston therein which is rigidly attached to the plummet of the variable area flowmeter. Fluid pressure upstream of the plummet is ported to the top of the piston and fluid pressure downstream from the plummet is ported to the bottom of the piston. Ports selectively placed in the cylinder wall feed pressurized fluid to indicating gauges as means of sensing the relative position of the piston, thereby indicating the flow rate range.

3,789,665

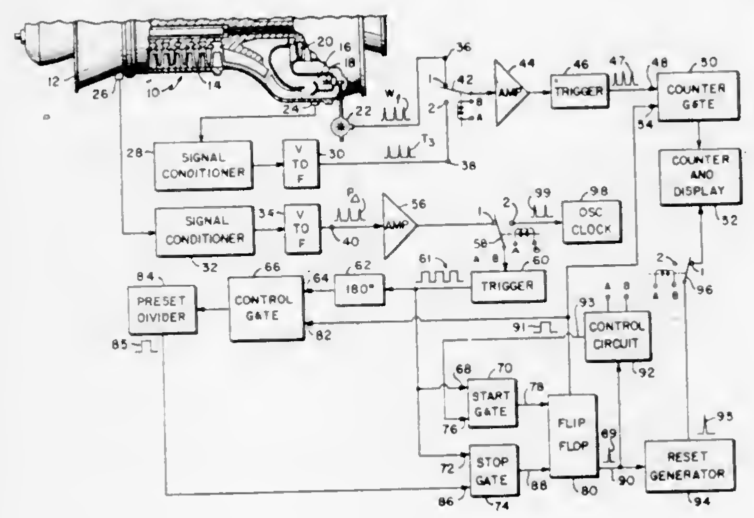
INFERRED MEASUREMENT OF THE TURBINE INLET TEMPERATURE OF A GAS TURBINE ENGINE

Rudolph Hohenberg, Trumbull, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Feb. 22, 1972, Ser. No. 227,620

Int. Cl. G01k *7/02*

U.S. Cl. 73—343 R **9 Claims**



Turbine inlet temperature of a gas turbine engine is determined by solving the equation $T_5 = C'W_f/P\Delta + T_3$, where T_5 is the gas producer turbine inlet temperature, W_f is the fuel flow, C' is essentially a constant determined by the type of fuel (but varying slowly with changes in ambient pressure). $P\Delta$ is the difference between the static pressure in the bellmouth inlet to the compressor and the ambient pressure, and T_3 is the compressor outlet temperature. T_5 is computed by developing three analog frequencies representing W_f, $P\Delta$, and T_3, respectively. The division $W_f/P\Delta$ is accomplished by counting the number of pulses generated by W_f during the occurrence of a given number of pulses representing $P\Delta$. Thereafter the system counts and adds the number of pulses representing T_3 generated during a clocked period.

3,789,666

GAS-PRESSURE SENSOR

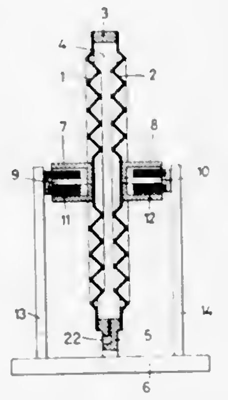
Robert Favre, 5, Chemin du Levant, Lausanne, Switzerland

Filed July 31, 1972, Ser. No. 276,435

Claims priority, application Switzerland, Aug. 5, 1971, 11580/71; July 19, 1972, 10781/72

Int. Cl. B21d *41/00*

U.S. Cl. 73—398 R **12 Claims**



A gas-pressure sensor comprising a mechanical resonator, the resonance frequency of which is closely bound to the pressure to be measured, and an oscillator controlled by the resonator. The mechanical resonator is preferably constructed of two elastic membranes joined together which oscillate in phase opposition and also enclose a hollow interior compartment which communicates with the space whose gas pressure is to be measured. Each membrane is provided with an armature and a permanent magnet of an associated transducer, the transducer includes a stationary coil which is arranged at an electrical current circuit which self-sustains the oscillations with the resonance frequency of the resonator.

3,789,667

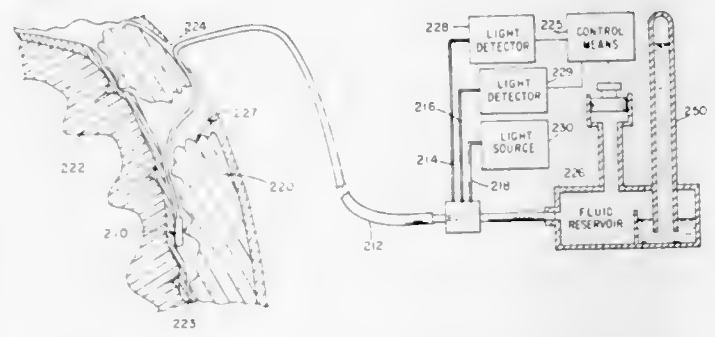
FIBER OPTIC PRESSURE DETECTOR

John H. Porter, Colchester Point, and David B. Murray, Cambridge, both of Vt., assignors to Ladd Research Industries, Inc., Burlington, Vt.

Filed Feb. 14, 1972, Ser. No. 225,881

Int. Cl. G01l *7/08;* **G01d** *5/30;* **A61b** *5/02*

U.S. Cl. 73—406 **4 Claims**



A differential sensor unit precisely monitors ambient pressure within a confined space, such as intracranial pressure of a human patient, utilizing fiber optic light guides. Three light guides pass within a pneumatic line into a flexible envelope which is implanted in the skull. Of the external ends of the guides, one faces a light source and each of the others faces a light detector. Within the envelope the guide ends are so arranged with respect to light beam modulating mechanism responsive to envelope distortion due to change in relative pressure that motion of the mechanism relative to the internal ends varies the light transmitted from the first light guide internal end to each remaining light guide internal end, and consequently varies the light intensity sensed by each of the detectors. The detectors can be arranged to actuate pressure display means and pneumatic controls acting through the pneumatic line to adjust the internal pressure of the envelope.

3,789,668

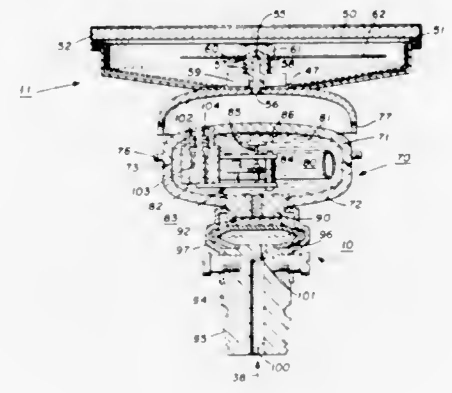
OVERLOAD PROTECTED BOURDON TUBE

Robert D. Bissell, Orange, Conn., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Aug. 23, 1972, Ser. No. 283,003

Int. Cl. G01l *7/04*

U.S. Cl. 73—418 **10 Claims**



A sealed Bourdon tube responsive to externally applied pressures for effecting displacement within operating ranges correlated to the magnitude of pressure being applied. Preconditioning of the Bourdon tube includes a permanent fluid fill with an incompressible liquid of controlled volume corresponding to the decreased internal tube volume when the tube is subject to application of a predetermined overpressure. The confined fluid thereafter presets an overload limit beyond which the tube cannot subsequently be further displaced irrespective of the increasing magnitude of pressure being applied.

3,789,669

SHIRT POCKET REFRIGERATION GAUGE

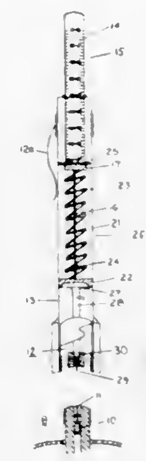
John W. Passman, Rt. 2, Immokalee Rd., Naples, Fla.

Filed June 5, 1972, Ser. No. 259,970

Int. Cl. G01l *7/16*

U.S. Cl. 73—419 **5 Claims**

Briefly stated, the present invention contemplates a pocket instrument useful in a refrigerator compressor system. This instrument measures the pressure on the high and low sides or stages of the compressor by using the service valve located on the compressor. Generally speaking, the instrument has an elongated chamber, a reciprocating plunger in the chamber with an indicator with a lower end having a rod connected to said lower end. The rod in turn has a connecting boss at the lower end. In the chamber there is a reciprocating piston with



an upper socket for receiving said boss when the boss is pushed by hand into the socket. Spring means urge the piston downwards and connecting means connect the compressor to the said service valve so that when the boss engages the socket, changes in pressure are indicated on the indicator, and when said boss is not so engaged, the highest pressure will be indicated on the indicator.

3,789,670

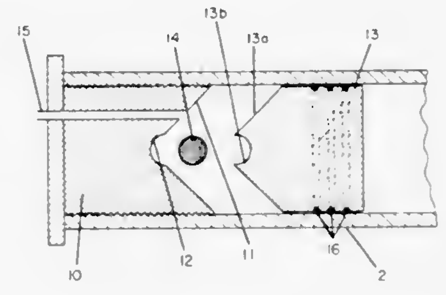
CELL FOR COLLECTING AND MIXING FLUIDS

Gary W. Rosenwald, Tulsa, Okla., assignor to Cities Service Oil Company, Tulsa, Okla.

Filed Aug. 2, 1972, Ser. No. 277,440

Int. Cl. G01n *1/14*

U.S. Cl. 73—421 R **7 Claims**



Apparatus for collecting a sample of fluids which includes a piston slidable in a cylinder displacable by the sample. A mixing element is provided within the cylinder. The piston and end wall of the cylinder are of such configuration that when the piston and end wall are in contact a small space of the proper size and shape is left to just enclose the mixing element leaving substantially no dead space within the sampling chamber.

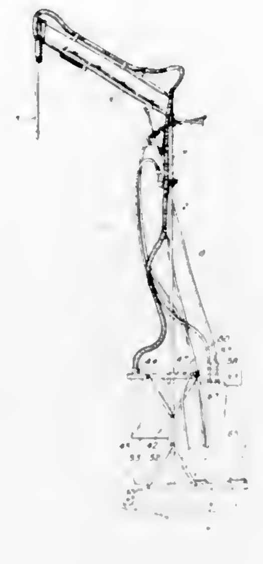
3,789,671
PARTICULATE MATERIAL SAMPLING DEVICE

Henry B. Larson, R.R. 1, Bement, Ill.

Filed Oct. 29, 1971, Ser. No. 193,925

Int. Cl. G01n *1/14*

U.S. Cl. 73—423 R **1 Claim**



This invention is a device for removing a sample of particulate material from predetermined locations in the mass of said material.

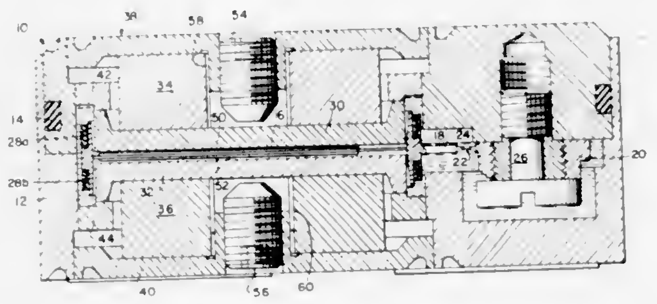
3,789,672
ACCELEROMETER

James W. Davies, Wayne, N.J., assignor to Singer-General Precision, Inc., Little Falls, N.J.

Filed Nov. 12, 1970, Ser. No. 88,593

Int. Cl. G01p *15/08*

U.S. Cl. 73—497 **2 Claims**



An accelerometer wherein a proof mass is adapted for movement with respect to a coordinate axis in response to acceleration along the axis. A signal is generated in response to the movement for providing a readout proportional to acceleration, and a force is generated on said proof mass in response to the signal in a manner to realign the proof mass. The amount of force can be regulated per unit of signal, and the alignment of the movable member may be adjusted.

3,789,673
PICKUP OF THE ANGULAR SPEED OF A ROTATING OBJECT

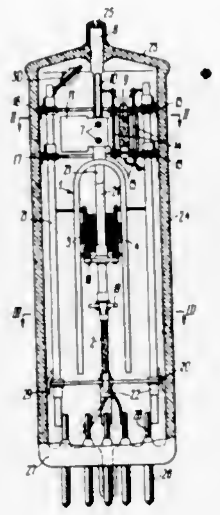
German Semenovich Berlin, 5 Parkovaya ulitsa, 42, kv. 95; Dmitry Dmitrievich Shenker, Profsojuznaya ulitsa, 31, kv. 223, and Valery Germanovich Serebrenny, ulitsa akademika Koroleva, 3a, kv. 49, all of Moscow, U.S.S.R.

Filed Oct. 27, 1971, Ser. No. 192,913

Int. Cl. G01c *19/56*

U.S. Cl. 73—505 **7 Claims**

The essence of the invention is that the pickup of the angular speed of a rotating object includes a housing receiving therein a fork of the tuning fork kind. The pickup also comprises a device for exciting oscillation of the prongs of this fork and a device for measuring the torsional oscillation of this fork, developed upon said pickup being rotated together with the associated object about the axis of symmetry thereof, the last-mentioned device being disposed adjacent to the stem of the fork. At least one of these two devices is in the form of an electronic-mechanical transducer with a mechanically controlled electrode. For example, when it is the device for exciting oscillation of the prongs of the fork that is made in the form of the electronic-mechanical transducer, then the mechanically controlled electrode thereof can be formed by the prongs of the fork, acting as the anode of this transducer. Directly adjacent to the prongs of the fork there is mounted a winding about a core, adapted to excite oscillation of the fork, the cathode of this device being positioned intermediate of the prongs of the fork.



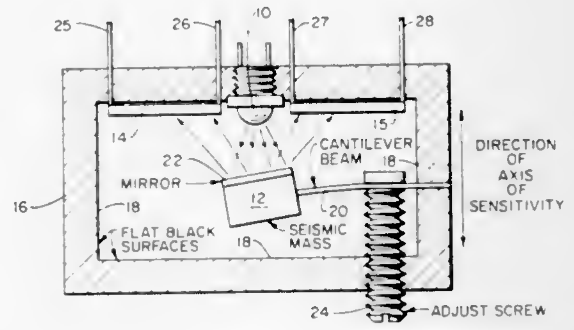
3,789,674
OPTICAL ACCELEROMETER

Matthew E. Anderson, and James E. Means, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 27, 1972, Ser. No. 301,541

Int. Cl. G01p *15/08*

U.S. Cl. 73—517 R **9 Claims**



A miniature device including a light source, a suspended mass, and a photocell system is employed as an optical accelerometer which serves as a transducer to provide an electrical signal proportional to the magnitude of acceleration and converts inertial forces into an electrical signal.

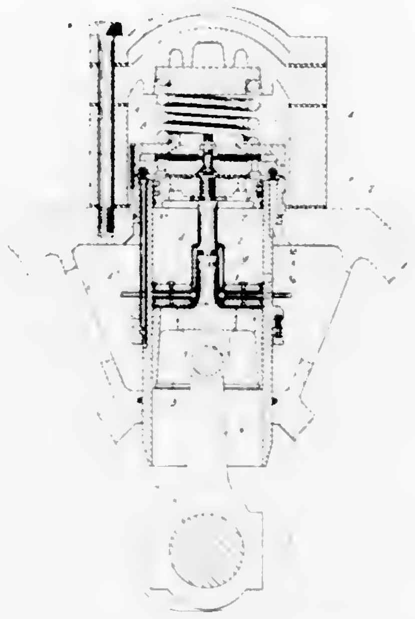
3,789,675
GAS COMPRESSOR HAVING ROLLING TYPE SEALING DIAPHRAGM

Erich J. Kocher, Milwaukee, Wis., assignor to Vilter Manufacturing Corporation, Milwaukee, Wis.

Filed May 30, 1972, Ser. No. 257,662

Int. Cl. F01b *19/00*

U.S. Cl. 74—18.2 **1 Claim**



Oil leakage from the crankcase into the compression chamber of a reciprocating gas compressor is positively prevented by a rolling diaphragm within the compression cylinder. A fixed mounting ring for the diaphragm surrounds a piston rod within the cylinder, and a flexible hollow sealing sleeve has a radially inner connection with the piston rod and a radially outer connection with the mounting ring. During axial movement of the piston rod the sealing sleeve rolls at one side of its connections with the mounting ring and piston rod radially inward upon the latter and simultaneously, at the other side of said connections, it rolls radially outward away from the piston rod. The interior hollow space of the sealing sleeve communicates with cooling fluid inlet and outlet openings in the axial cylinder wall.

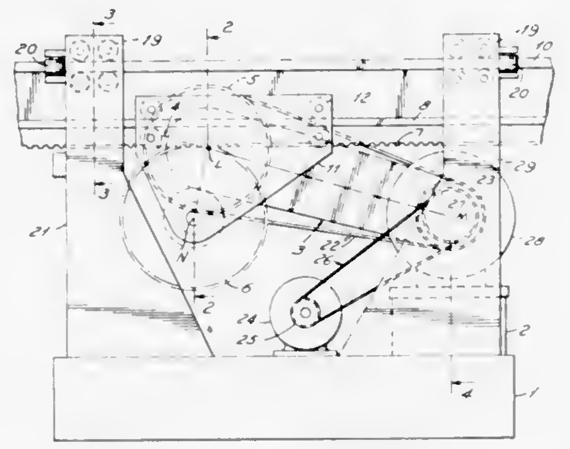
3,789,676
RECIPROCATING DRIVE MECHANISM

John Henry Brems, 32867 White Oaks Tr., Birmingham, Mich.

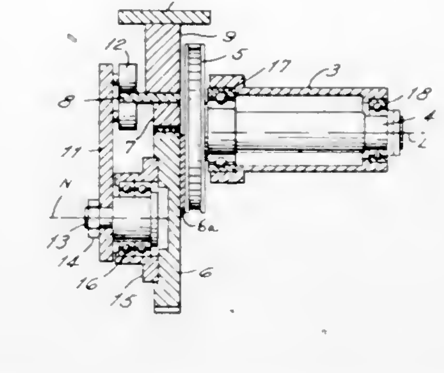
Continuation-in-part of Ser. No. 80,841, Oct. 15, 1970, abandoned. This application June 15, 1972, Ser. No. 262,957

Int. Cl. F16h *21/02*

U.S. Cl. 74—27 **22 Claims**



An apparatus for transmitting rotary motion to an output motion with predetermined acceleration and velocity which includes an output member such as a lineally movable or rotary rack driven by a rotary member drivingly associated therewith, the rotary member being mounted for movement in a path generally parallel to the output member rotating about a first axis and driven by a connected rotative member mounted on a second axis spaced from the first axis to move in a path generally transverse of the direction of movement of the output member with means to control the relative positions of the output member and the rotary member to maintain the driving relationship and means to guide the rotative member in the path of movement transverse to output motion.



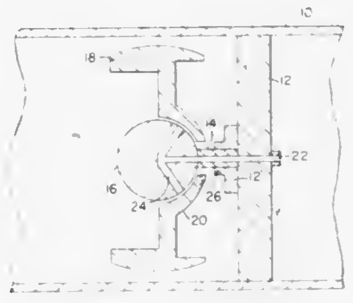
3,789,677
POLARIZED AIR BEARING ASSEMBLY

William W. Stripling, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 19, 1972, Ser. No. 290,289

Int. Cl. G01c *19/20*

U.S. Cl. 74—5.7 **2 Claims**



A bearing assembly for use in supporting a gyro rotor in a missile during flight in a missile trajectory. During acceleration the outer bearing support is supported by a mounting plate. Air under pressure is utilized to provide an air bearing film to support a hemispherical outer bearing support of the rotor for rotation around the stator during deceleration. A pin secures the rotor in place during shipment or storage and is sheared during missile acceleration.

3,789,678
SCREW DRIVE MEANS USING AUXILIARY MESHING ROLLERS

Robert Gartner, Freherr von Stein Strasse 8, Butzbach/Hessen, Germany

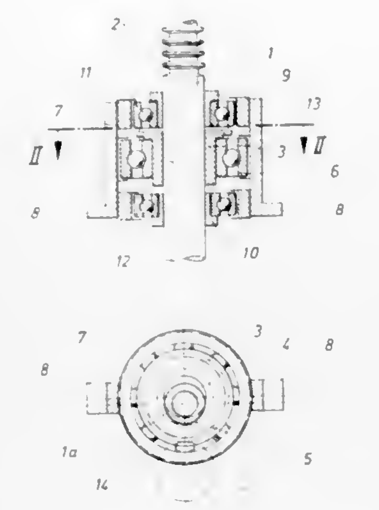
Filed July 26, 1972, Ser. No. 275,146

Claims priority, application Germany, July 28, 1971, P 21 37 636.3

Int. Cl. F16h *27/02*

U.S. Cl. 74—89 **9 Claims**

A means for mechanically moving a spindle in a longitudinal direction by operating one or a plurality of meshing rollers positioned around the spindle axis. In one form the spindle is formed with annular grooves and the rollers are threaded. In a second form the spindle is threaded and the rollers are formed with annular grooves. Since the rollers are free to rotate, this type of transmission has less friction than the usual bolt and nut combination.



3,789,679
PUMPING UNIT SAFETY GUARD

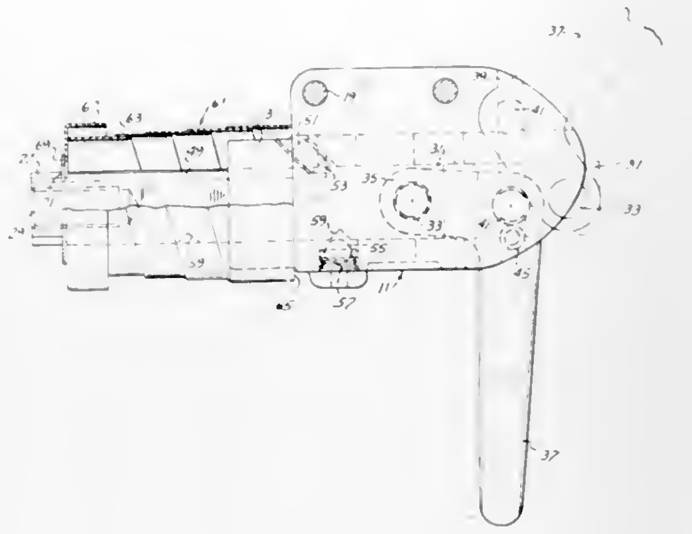
Virgil H. Westbrook, P.O. Box 2264, Hobbs, N. Mex.
Filed Apr. 12, 1973, Ser. No. 343,929
Int. Cl. F16h *21/32*
U.S. Cl. 74—41 **3 Claims**

A brace bar is placed between pitmans of a pump jack to maintain the crossbeam in proper position in the event one of the wrist pins holding one of the pitmans to the crank arm comes loose.

3,789,680
CAM PIN PLUNGER CLAMP

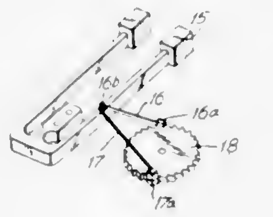
Leland F. Blatt, 31915 Groesbeck Hwy., Fraser, Mich.
Continuation-in-part of Ser. No. 284,409, Aug. 28, 1972. This application Jan. 26, 1973, Ser. No. 326,797
Int. Cl. F16h *21/44*
U.S. Cl. 74—102 **5 Claims**

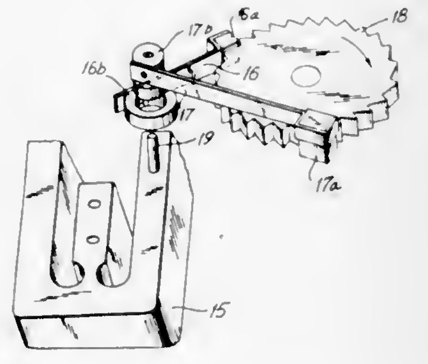
A cam pin plunger clamp has a body mountable on a support having a first longitudinal bore of a polygonal cross section and a second intersecting bore defining internal handle guide walls. Opposed cam guide slots are formed in said walls and are adapted to guidably receive the ends of a cam pin projected through the handle. The handle is nested within the body and at one end is pivotally connected to the plunger whereby, on pivotal movements of the handle with respect to the body, the plunger is projected and alternately retracted therein. A spring biased detent retainingly engages the plunger in retracted release position. A spring plunger cover is anchored at one end to the body and at its other end secured to the plunger.



3,789,681
APPARATUS FOR TRANSFORMING RECIPROCATING MOTION INTO UNIDIRECTIONAL ROTATION

Hiromitsu Mitsui; Kenichi Koike, both of Suwa-Gun, and Yoshikazu Kawamura, Suwa-Shi, all of Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Apr. 6, 1971, Ser. No. 131,747
Int. Cl. 74 *575*
U.S. Cl. 74—143 **7 Claims**

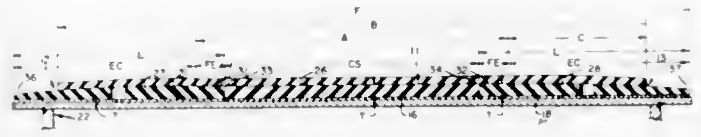




Reciprocating motion of a vibrator vibrating at several tens of Hz, such as is used in an electric watch, activates fingers which rotate a ratchet wheel in a single direction. The linkage between the vibrator and the wheel is such that the wheel is advanced during both halves of each cycle of vibration. The fingers can be driven either by one or by both arms of the vibrator.

3,789,682
CROWN-SHAPED PULLEY LAGGING

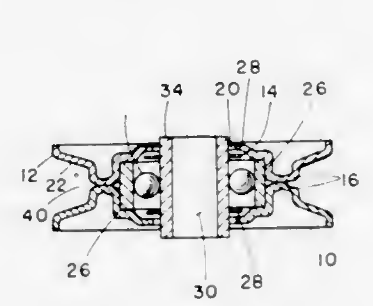
William G. Holz, 207 W. Vine St., Lodi, Calif.
Filed Mar. 27, 1972, Ser. No. 238,185
Int. Cl. F16h *55/48*
U.S. Cl. 74—230.7 **5 Claims**



Pulley lagging comprising center and end members formed for mounting in end-to-end relation on and across the peripheral surface of a pulley parallel to the pulley axis. The members are formed with belt traction material having a constant thickness over the length of the center member and having an equal thickness at the abutting ends of the end members but tapering over the lengthwise dimension of the end members to a lesser thickness at the outer ends thereof.

3,789,683
ROTATABLE MEMBER ASSEMBLY AND METHOD FOR MAKING SAME

Charles C. Frost, Kentwood, and Siegfried Weis, Grand Rapids, both of Mich., assignors to C. L. Frost & Son Inc., Grand Rapids, Mich.
Filed Nov. 18, 1971, Ser. No. 199,983
Int. Cl. F16h *55/34*
U.S. Cl. 74—230.8 **7 Claims**

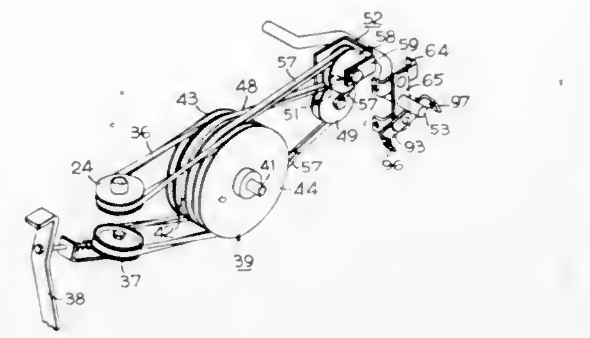


The present invention relates to a rotatable member assembly such as a pulley wheel, a sheave or drive pulley or the like fabricated from a pair of metal disks stamped from sheet metal stock and welded together in a novel manner. The disk members are each provided with an outer peripheral rim, a web portion having an annular laterally extending weld projection formed thereon, and a central hub-engaging section. To assembled the member, a bearing, bushing, or hub is positioned in the central hub-engaging section and the disks are placed together and subjected to heat and pressure at the web portion so that the weld projection of one of the disks fuses with the weld projection of the other disk to form an integral assembly.

3,789,684
AIR COOLED SHUTTLE CLUTCH TRANSMISSION

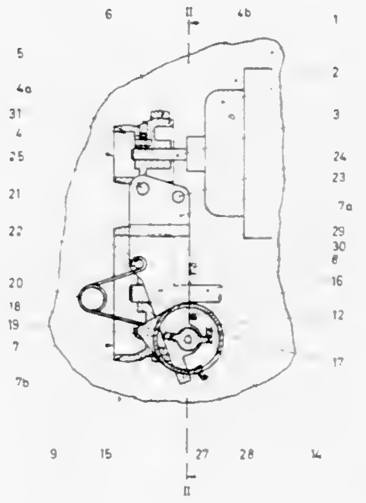
Edward Freier, Jr., Port Washington, Wis., assignor to Simplicity Manufacturing Company, Inc., Port Washington, Wis.
Filed Nov. 7, 1972, Ser. No. 304,498
Int. Cl. F16h *55/22*
U.S. Cl. 74—230.17 D **1 Claim**

A cooling arrangement for a V-belt clutching and reversing transmission including a central pulley section flanked by pulleys on either side and wherein said flanking pulleys are provided with fan elements for moving air axially towards said central pulley section and the latter is provided with ribs for moving such air radially outward toward the periphery of said central pulley section for cooling such central pulley section, such flanking pulleys and the V-belts connected therewith.



3,789,685
VARIABLE-SPEED BELT GEAR

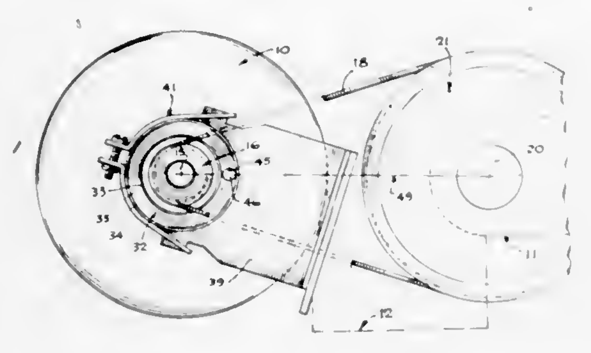
Fritz Krumbein, Stuttgart-Mohringen, Germany, assignor to Robert Bosch Photokino GmbH, Stuttgart, Germany
Filed June 28, 1972, Ser. No. 267,173
Claims priority, application Germany, July 7, 1971, 2133691
Int. Cl. F16h *7/08*
U.S. Cl. 74—242.3 **11 Claims**



A belt gear wherein a first two-step pulley receives torque from a motor and drives a second two-step pulley by way of an endless belt. The mechanism for changing the speed of the second pulley has a selector knob which is rotatable between first and second angular positions and is coaxial with a shifter lever having a fork which straddles a portion of the belt between the two pulleys. One leg of a torsion spring is coupled to an eccentric pin of the knob and the other leg of the torsion spring is coupled to the shifter lever. The spring biases the knob to the second angular position as soon as the knob is rotated, either by hand or by remote control, beyond an intermediate dead-center position on its way from the first angular position, and vice versa. In the first angular position of the knob, the spring biases the shifter lever toward a position in which the lever tends to maintain the belt in engagement with the larger rim portion of one of the pulleys and the smaller rim portion of the other pulley. In the second angular position of the knob, the spring tends to move the shifter lever to a position in which the belt is trained over the smaller rim portion of the one pulley and the larger rim portion of the other pulley. The spring is capable of shifting the belt by way of the lever only when the belt is driven by the first pulley.

3,789,686
DEVICE FOR MAINTAINING A CONSTANT CENTER DISTANCE BETWEEN THE OUTPUT SHAFT OF A RESILIENTLY MOUNTED MOTOR AND A DRIVEN MECHANISM

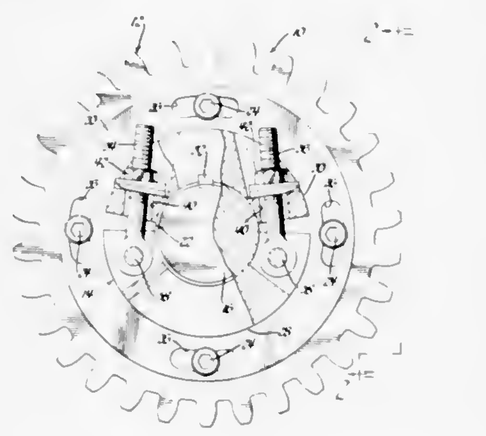
Francis H. Vogelsang, Laporte, Ind., assignor to Maatschappij Van Berkel's Patent N.V., Rottendam, Netherlands
Filed Oct. 16, 1972, Ser. No. 297,983
Int. Cl. F16h *7/10, 55/14*
U.S. Cl. 74—242.13 A **18 Claims**



The device of the invention maintains constant spacing between the centers of an output shaft of a resiliently mounted motor and the input shaft of a mechanism that is drivingly connected to the output shaft by a transmission assembly where the transmission assembly exerts a force along a line extending through the shaft centers.

3,789,687
SPROCKET ASSEMBLY

Delbert M. Cutter, Swartz Creek, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 20, 1972, Ser. No. 308,240
Int. Cl. F16h *55/12, 55/52*
U.S. Cl. 74—243 DR **2 Claims**

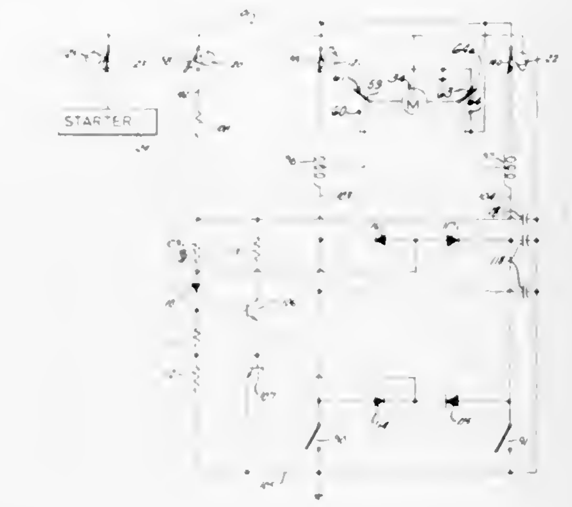


A sprocket assembly having a two-piece hub supporting a sprocket wheel on a shaft. One part of the hub is circumferentially spaced from the other and both hub parts are interconnected by a pair of threaded studs each of which is pivotally supported at one end and carries a nut at the other end for adjusting the angular position of the sprocket wheel relative to the shaft.

3,789,688
INTERRELATED SHIFT, STARTER AND CLUTCH CONTROLS

Floyd M. Minks, Rt. 1, Box 41, Kissimmee, Fla.
Filed Jan. 18, 1971, Ser. No. 107,050
Int. Cl. B60k *29/00, 23/02, 23/04*
U.S. Cl. 74—365 **15 Claims**

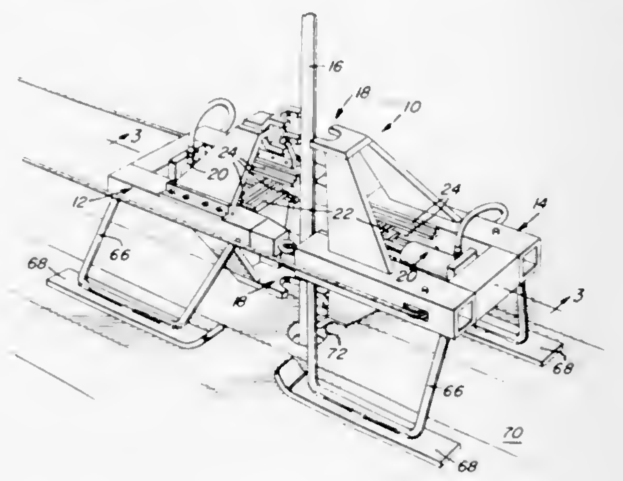
A marine engine is coupled to a propeller by a clutch unit and a shift unit. A d.c. permanent magnet motor is coupled to the shift unit and the clutch unit. The motor is energized in a servo loop to selectively establish a forward drive, a reverse drive, or a neutral shift position. The motor is connected to the power supply through a pair of relays to ground both sides and to selectively connect one side to the power supply. A forward relay line is opened by a motor operated cam switch responsive to a full shift position. The reverse relay line is similarly controlled. A neutral line is connected to both of the cam switches and includes a similar cam switch which is actuated in the neutral position.



A three-position selection switch connects power to the several relay lines and the neutral line. An electronic interlock circuit interconnects the neutral line to the forward and reverse relay lines.

3,789,689
SHUTOFF DEVICE FOR WELLS

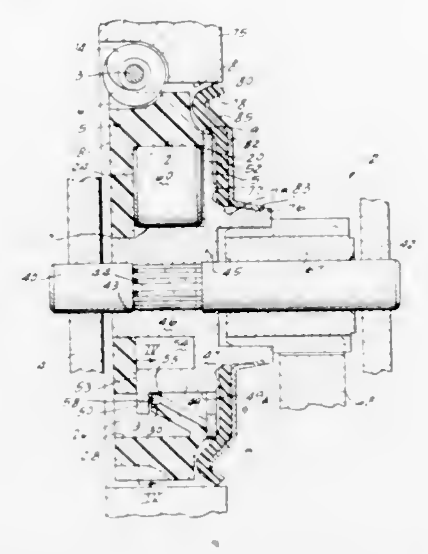
Orville F. Mace, Rt. 3, Afton, Okla.
Filed Apr. 20, 1972, Ser. No. 245,955
Int. Cl. B21d *22/04*
U.S. Cl. 72—407 **19 Claims**



A device for shutting-off well drilling and pipe strings and the like has a pair of opposed frame members arranged with a string between them and displaceable with respect to one another. Two pairs of jaws are mounted on the frame members for guidingly engaging the string when the frame members are displaced toward one another. Each frame member is provided with a fluid motor having an I-beam mounted on the piston thereof and arranged for movement with respect to the I-beam of the opposed frame member. These I-beams move relatively to the respective frame member for flattening a portion of the string to shut off same. Locking devices are provided on the frame members for locking themselves together after displacement toward one another, thus preventing the frame members from moving away from one another while the string is being flattened by the fluid motors and I-beams.

3,789,690
OVERLOAD RELEASE DEVICE FOR A MOTOR DRIVE

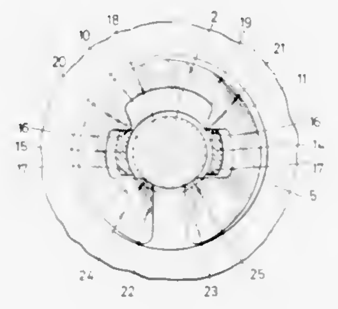
Donald J. Droske, Monroe, Mich., assignor to Dura Corporation, Southfield, Mich.
Filed Nov. 17, 1972, Ser. No. 307,617
Int. Cl. F16h *57/00, 1/16;* **F16d** *3/14*
U.S. Cl. 74—411 **26 Claims**



An overload release device for an electric motor drive of the type wherein a driving gear is connected to a driven gear through an overload release having compressible cylinders received in a cavity in the driving gear and contacting adjoining lands on a hub member has the hub member formed as an integral die casting around a knurled or splined portion of the pin or shaft. The assembly has a resilient washer forming a primary seal with a raised axial ridge on a flange of the hub and a secondary lip peripheral seal against an adjoining housing wall. A plastic driving gear has a plurality of inwardly directed angular resilient tongues which snap over abutment lands on the hub to limit axial separation of the driving and driven gears with respect to one another. Further, the tongues are wider than the abutment lands and provide radial walls engageable with the abutment lands to limit angular movement between the hub and the driving gear.

3,789,691
FRICTIONAL COUPLING DEVICE FOR WATCH MOVEMENT

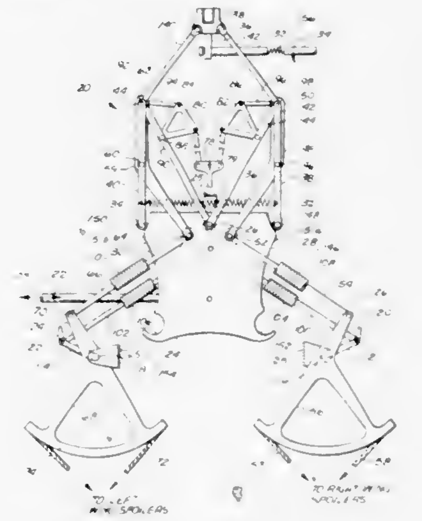
Roland Zaugg, Grenchen, Switzerland, assignor to A. Schild S.A., Grenchen (Canton of Soleure), Switzerland
Filed July 12, 1972, Ser. No. 271,131
Claims priority, application Switzerland, July 12, 1971, 10225/71
Int. Cl. F16h *55/00;* **F16d** *7/02*
U.S. Cl. 74—432 **8 Claims**



A frictional coupling device for two rotating, coaxial components of a watch movement comprising an arbor, a pinion on that arbor which is freely engaged and which is provided with two gripping elements located on either side of the arbor, and a connecting member that is elastically deformable. The connecting member fits around the arbor and the two gripping elements of the pinion. The connecting member presses against the arbor and becomes frictionally interlocked with the arbor such that when the arbor rotates, the connecting member rotates and causes the encompassed pinion to also rotate.

3,789,692
SPOILER CONTROLLING MIXER

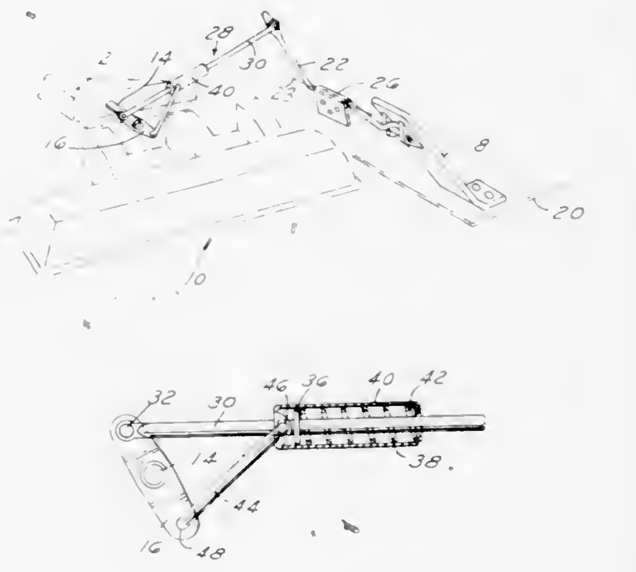
Alton E. Farr, Rolling Hills Estates, and Lorin A. Wood, Lakewood, both of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.
Filed May 4, 1972, Ser. No. 250,116
Int. Cl. G05g *11/00*
U.S. Cl. 74—480 R **10 Claims**



A mechanical mixer for producing a spoiler controlling output by predeterminately combining lateral, speed brake, ground spoiler and direct lift control inputs. The mixer accomplishes this through the use of cams, followers, summing linkage, and override devices.

3,789,693
RESILIENTLY BIASED CONTROL LINKAGE

John R. Baker, Livonia, and George Fox, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed July 17, 1972, Ser. No. 272,505
Int. Cl. G05g *1/14*
U.S. Cl. 74—513 **7 Claims**



A control linkage or mechanism suitable for interconnecting a motor vehicle carburetor throttle and an accelerator pedal. The linkage includes a throttle lever, an accelerator lever and a connecting link joining the levers. A compression spring and a second link cooperate with the throttle lever and the connecting link to resiliently urge the throttle lever toward a closed position without the need for reaction brackets or spring connections external to the linkage.

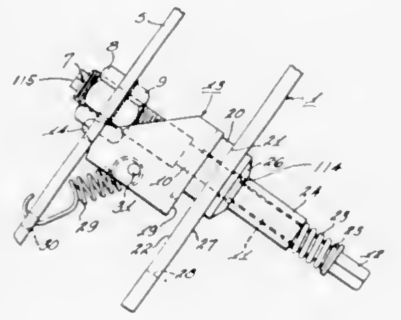
3,789,694
FRICTION BLOCK FOR LEVER

Robert C. Haupt, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jan. 2, 1973, Ser. No. 320,293

Int. Cl. G05g *5/06*

U.S. Cl. 74—531 **6 Claims**



A friction lock on a quadrant lever for providing heavy frictional resistance to pivotal movement in the first direction and light frictional resistance to pivotal movement in the second direction.

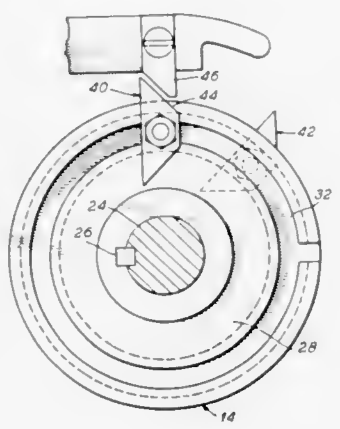
3,789,695
LEFT AND RIGHT TRIP DOGS FOR CARRIER TRACKS

Clarence Anderson, 7813 W. Carmen Ave., Chicago, Ill.

Filed July 3, 1972, Ser. No. 268,715

Int. Cl. F16h *53/00*

U.S. Cl. 74—568 R **9 Claims**



A universal trip dog in the sense that it may be mounted to either the right or left side of a carrier track and still position a lever contact face for engaging a trip lever during relative movement between the carrier and the trip lever. The dog is preferably in the configuration of a truncated pyramid in which the angular sides correspond to two trip contact faces, one of the sides having locking keys which flank a mounting passageway through the body of the trip dog. The locking keys have top and bottom rectilinear sides so that such keys can be inserted into a track or groove which is either on the right or left side of a carrier. The same side of the trip dog is abutted against the carrier, but said trip dog is simply rotated 180° so that one contact face is always correctly oriented for actuating a trip lever during relative movement.

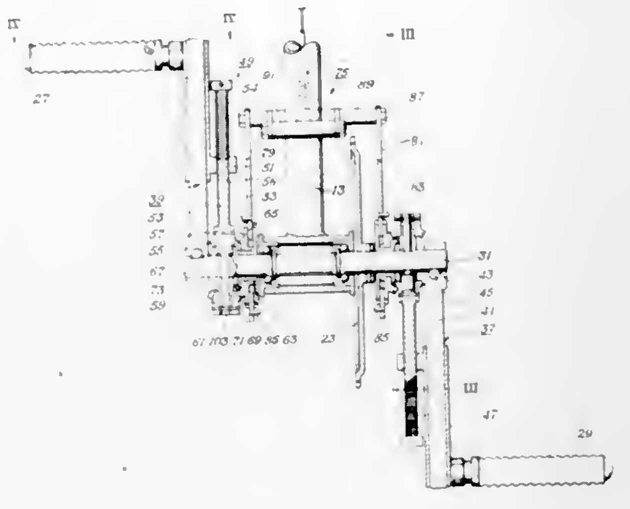
3,789,696
PEDAL EXTENDERS FOR BICYCLE

William S. Beam, III, P.O. Box 14, Haslet, Tex.

Filed Jan. 10, 1973, Ser. No. 322,527

Int. Cl. B62m *3/02*

U.S. Cl. 74—594.1 **6 Claims**



An improvement in pedal extenders for bicycles or the like characterized by a pair of extensible crank arms having an outer portion carrying the pedal and movable longitudinally of an inner portion; radially extending screws and nuts connected with respective outer portions for moving them in the appropriate direction; first and second gears for effecting rotation of the screws in respective directions; respective sets of idler gears and sprockets that normally rotate with the crank arms during pedaling of the bicycle; and a positive engaging means for positively engaging a respective set of idler gears and sprockets to stop rotation thereof for effecting movement of the pedals and the outer portions in a respective direction radially. The positive engaging means has a handle movable in two directions with respect to its neutral position for moving the pedals radially; for example, inwardly for greater speed or outwardly for delivering greater torque to the powered wheel of the bicycle. The specific details of the apparatus are also disclosed.

3,789,697
TORQUE CONVERTERS

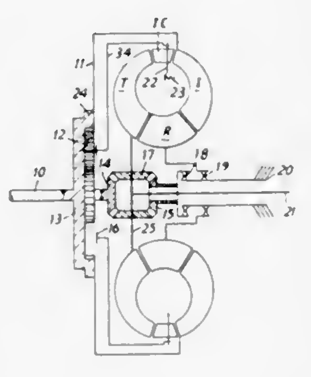
Howard Frederick Hobbs, Rose Cottage Pillory Green, Napton, Rugby, England

Filed May 8, 1972, Ser. No. 251,375

Claims priority, application Great Britain, May 19, 1971, 15812/71

Int. Cl. F16h *47/00*

U.S. Cl. 74—677 **6 Claims**



The invention comprises a torque converter coupling having an input impeller, an output turbine, a power circulatory turbine, a first gearing connecting the circulatory turbine with the impeller and input shaft and the second gearing connecting the first gearing with the output shaft and a stationary part so that the circulatory turbine rotates at a speed less than that

of the impeller at low output speeds and greater than that of the impeller at higher output speeds.

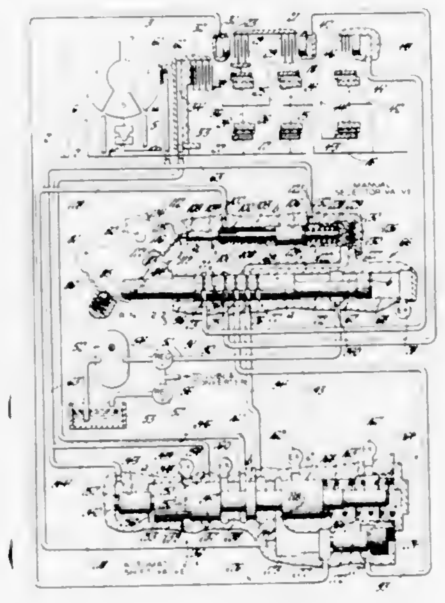
3,789,698
AUTOMATIC SHIFT FOR A TRANSMISSION

Richard H. Williams, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed May 12, 1972, Ser. No. 252,858

Int. Cl. B60k *21/00;* **F16h** *3/74*

U.S. Cl. 74—752 C **9 Claims**



The transmission shown has a gear set providing three forward ratio drives and a reverse drive each established by a fluid motor operated friction device, a brake or clutch. The power shift control system has a manual selector valve operative to connect main line fluid pressure in reverse position to a reverse brake line to establish reverse, in first position to a first ratio drive brake line to establish low drive, in second position to a manual second ratio drive feed line connected to a shuttle valve and in second third position to a second-third ratio drive feed line connected to an input governor controlled automatic second-third shift valve. On a first-second manual valve shift or a third-second manual valve shift, when permitted by the inhibitor, the second drive feed pressure moves the shuttle valve and feeds the second brake line to engage second ratio drive. The manual valve in second-third position provides the second-third feed pressure which is connected by the downshifted automatic shift valve to an automatic second feed line to act on the shuttle valve to feed the second brake line to establish second drive and by the input speed upshifted automatic shift valve to the third drive clutch line to establish high drive. The inhibitor permits upshifts but prevents manual valve downshifts at speeds which would cause excessive input speeds after the downshift. Downshifting from the second-third position to second position is inhibited while the automatic valve is upshifted. The inhibitor is directly controlled by governor pressure to inhibit second position to first position downshifts.

3,789,699
INFINITELY VARIABLE-SPEED FRICTION TRANSMISSION

Louis Guichard, 10 Impasse Henri Bouchard 21, Dijon, France

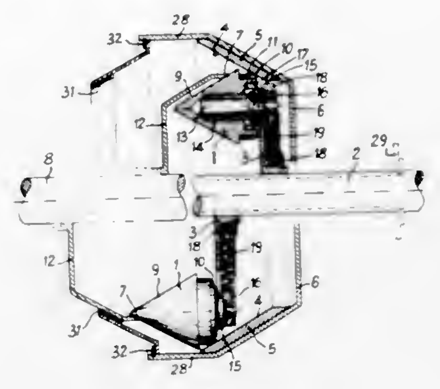
Filed Mar. 10, 1972, Ser. No. 233,701

Claims priority, application France, Mar. 11, 1971, 7108449

Int. Cl. F16h *15/50, 55/32*

U.S. Cl. 74—796 **11 Claims**

This transmission mechanism adapted to provide an infinitely variable range of reduction ratios comprises radially supported tapered rollers of elongated configuration comprising on one side a relatively large driven cone having a rectilinear generatrix and a moderate inclination, adapted to roll inside a driven race also of tapered configuration and moderate width, and on the other side a very narrow bearing cone adapted to roll inside a tapered bearing race of greater



width, having a rectilinear generatrix and a moderate inclination.

The contact pressure between the rollers and races, which is necessary for transmitting the torques, is obtained through the combined actions of the centrifugal forces generated by the rotation of said rollers about the main axis of the device, by self-clamping devices responsive to the driving torques and by radial thrust spring each acting upon a separate roller.

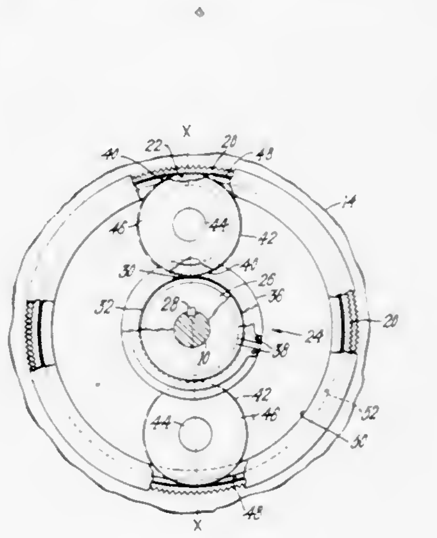
3,789,700
POSITIVE DRIVE ROLLER PLANETARY WAVE GENERATOR

Alex P. Cotreau, Burlington, and John F. Jacobs, North Billerica, both of Mass., assignors to USM Corporation, Boston, Mass.

Filed Apr. 4, 1972, Ser. No. 240,979

Int. Cl. F16h *37/00, 1/28*

U.S. Cl. 74—801 **5 Claims**



In harmonic drive actuators a wave generator imparts circumferential rotation of a wave of radial deflection to a wave carrying member often termed a strain gear. The present planetary wave generator transmits such motion positively to provide constant speed ratio, and affords an economic planetary roller structure insuring good bearing life. The usage of ball-bearings is omitted, and tendency to skewing is minimized.

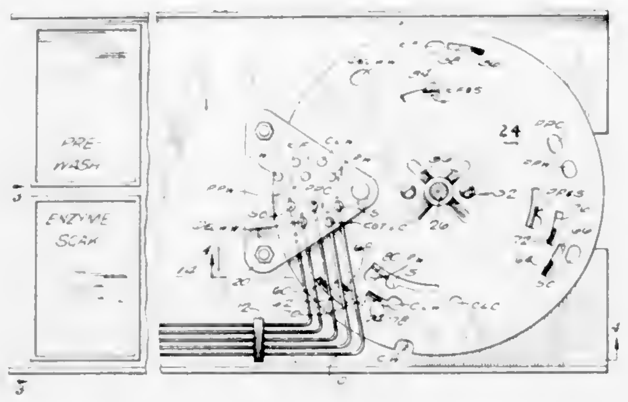
3,789,701
TIMER POSITIONING MECHANISM

Albert F. Ditzig, Hoffman Estates, Ill., assignor to Controls Company of America, Schiller Park, Ill.

Filed Nov. 16, 1972, Ser. No. 307,179

Int. Cl. F16h *35/18*

U.S. Cl. 74—813 R **10 Claims**



When a cycle selection button is depressed, it causes a selected wire to be torsionally stressed to cause the selected pin to be biased downwardly against the surface of the rotary disc. The disc is carried by the timer shaft which is moved outwardly during the selection/positioning operation. The disc has various radially and circumferentially positioned holes into one of which a selected pin may drop to thereby correctly position the timer at the start of the selected cycle. Three holes are provided in the disc on the radius of the "soak" pin and a masking arrangement covers or uncovers, as the case may be, the "soak" holes so only that hole which properly combines with the selected cycle is operative. The masking arrangement is actuated by one of the possible cycle pins. Therefore, a "soak" period may be selected to precede any of a number of cycles while employing only one "soak" button and one "soak" pin.

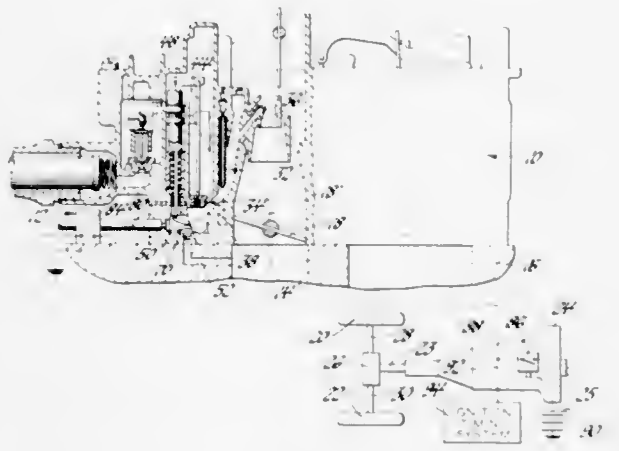
3,789,702
VACUUM CONTROL FOR CARBURETOR POWER ENRICHMENT APPARATUS

Robert T. Price, Berkley, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 15, 1972, Ser. No. 234,897

Int. Cl. B60k *21/00;* **F02b** *33/00;* **F02m** *7/00*

U.S. Cl. 74—859 **3 Claims**



A solenoid valve is normally opened to bleed a part of the engine vacuum applied to operate the power enrichment system of an internal combustion engine carburetor. A transmission controlled switch closes the solenoid valve when the transmission shifts to a high drive ratio from a lower drive ratio. Since the power system varies the flow of enriched fuel inversely with engine vacuum, closure of the valve delays the commencement of fuel enrichment until the engine vacuum falls below a level lower than that at which enrichment is normally commenced with the valve open.

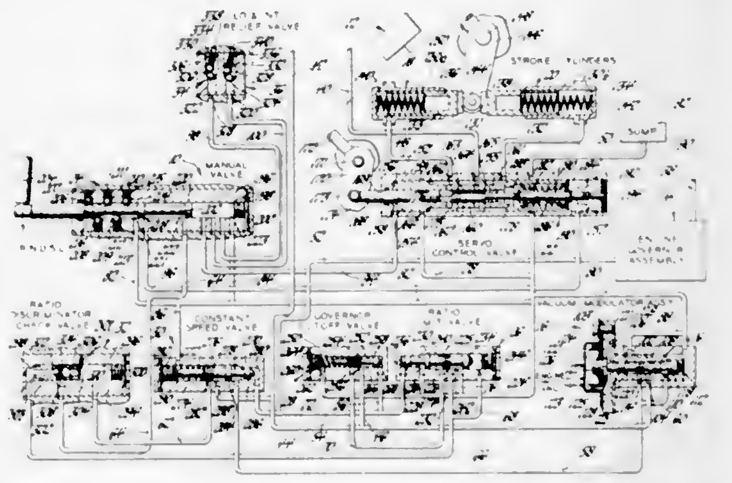
3,789,703
HYDRAULIC CONTROL SYSTEM

Carl E. Shellman, Livonia, and Nils P. Week, Allen Park, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 2, 1972, Ser. No. 294,085

Int. Cl. B60k *21/00*

U.S. Cl. 74—860 **7 Claims**



The drawings illustrate an improved, simplified hydraulic control system for use with a continuously variable drive ratio transmission, the system being responsive to engine governor pressure and engine vacuum to provide constant speed or part-throttle operation and full-throttle operation, the latter producing results comparable to the speed rise curve obtained in a transmission embodying a hydrokinetic torque converter.

ERRATUM

For Class 74—491 see:
Patent No. 3,789,645

3,789,704
MEZZOTINT ROCKER

Andy B. Noestheden, 817 Chatham St. East, Windsor, Ontario, Canada

Filed Apr. 28, 1972, Ser. No. 248,458

Int. Cl. B41b *1/06*

U.S. Cl. 81—9.2 **4 Claims**

This invention consists of a mezzotint rocker which is used in fine art etching and engraving for rendering black or gray areas. It differs from the existing old style rocker in that its cutting teeth are cut on a beveled surface which is at an angle to the face of the rocker, rather than on a surface which is at rightangles to the face of the rocker as is the case in rockers used prior to this invention.

3,789,705
TOOL FOR MOUNTING AND DISMOUNTING A BOLTED UNION

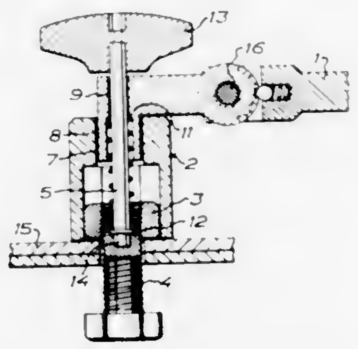
Bengt Roland Naslund, Snappvagen 16, 190 60 Balsta, Sweden

Filed Mar. 24, 1972, Ser. No. 237,624

Claims priority, application Sweden, Mar. 29, 1971, 4017/71

Int. Cl. B25b *23/08*

U.S. Cl. 81—13 **3 Claims**



A tool for mounting and dismounting a bolted union comprising a nut and a bolt consists of a spanner which serves to screw the nut onto the bolt and unscrew it therefrom, and of a pin of unround cross section mounted for rotation in the spanner and adapted to engage in a central bore of conforming cross section formed in the free bolt end which cooperates with the nut. The pin mounted for rotation in the spanner and having unround cross section is longitudinally movable within broad limits in the spanner and the pin which has a handle for permitting rotation thereof in relation to the spanner cooperates with a spring mechanism which tends to urge the pin downwards to the position to be occupied by the nut in the spanner.

A bolt which is for use in the bolted union and adapted to be operated by the tool has a central hexagon bore formed in its free end.

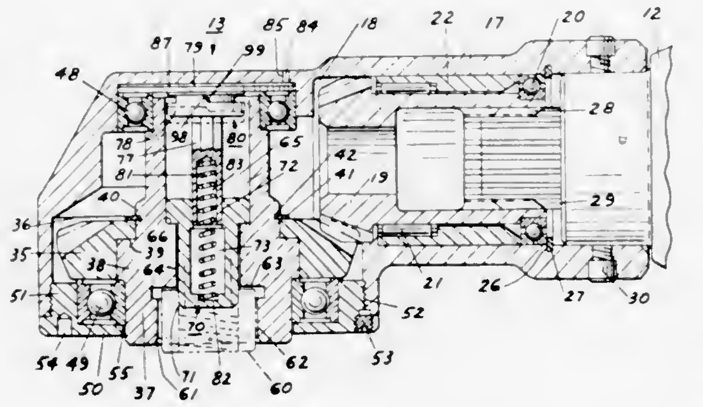
3,789,706
NUT COLLECTING AND RETAINING SOCKET FOR POWER TOOLS

William Stephens Smith, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed June 26, 1972, Ser. No. 266,171

Int. Cl. B25b *21/00*

U.S. Cl. 81—57.29 **10 Claims**



A nut socket attachment for a power driven nut fastener. An elongated housing encloses a central drive operably attachable to the output of a powered nut fastener. A wrench socket is rotatably driven by the central drive and includes a hexagonal socket recess in which to collect and retain a received nut. Spring biased to project axially inward of the socket recess, is a peripherally threaded relatively stationary cylindrical nut collecting and retaining member. Rotating the socket initially in a reverse direction draws or collects the received nut onto the retainer inwardly of the socket. Subsequently, rotating the socket in a forward direction forces the collected nut off the retainer outwardly of the socket onto its fastening bolt or stud.

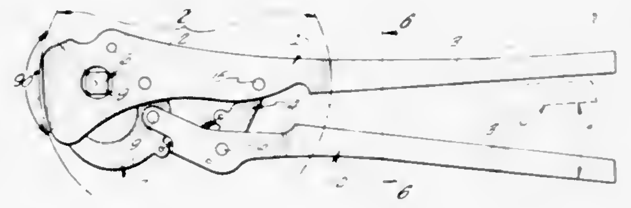
3,789,707
TWO SPEED WRENCH

James R. Belknap, 1188 Coast Village Rd., Santa Barbara, Calif.

Filed Oct. 24, 1972, Ser. No. 299,762

Int. Cl. B25b *13/46*

U.S. Cl. 81—57.39 **7 Claims**



A wrench having a first handle in which a rotatable drive member surrounded by a drive ratchet is journalled, and a second handle is pivotally connected to the first handle. A linkage assembly including a drive pawl connects the second handle to the ratchet so as to cause rotation of the drive member at a faster rate than the rate of pivotal movement of the second handle relative to the first handle. The linkage also connects the second handle to the drive member so as to lock the drive member with respect to the first handle, when the second handle is held in fixed relation to the first handle, so that the two handles and drive member may be turned in unison.

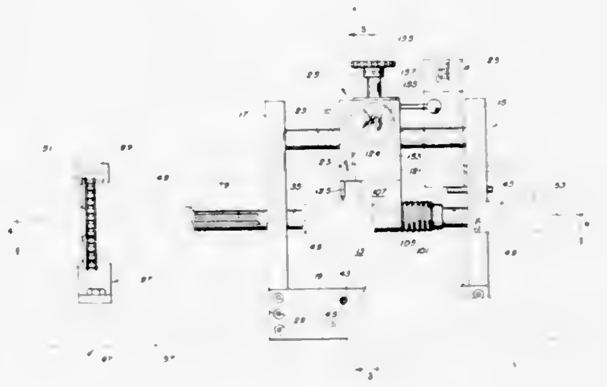
3,789,708
THREAD CUTTING DEVICE

Peter H. Schwarzbach, San Pablo, and Robert L. Perrin, Martinez, both of Calif., assignors to Ernest H. McCoy, Berkeley, Calif., a part interest

Filed Oct. 18, 1971, Ser. No. 189,934

Int. Cl. B23b *5/46*

U.S. Cl. 82—5.5 **7 Claims**

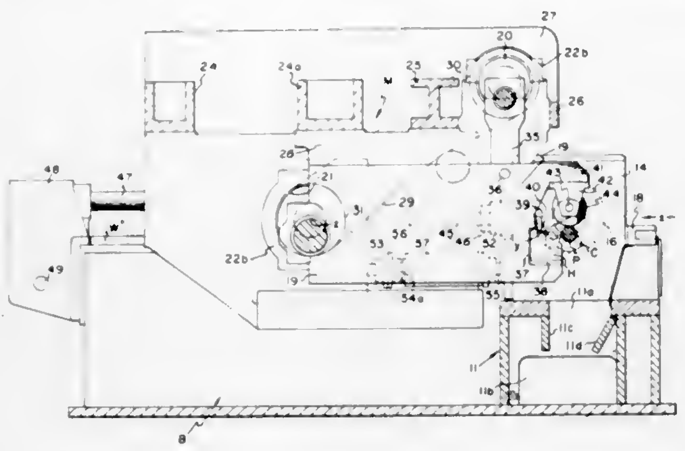


A thread cutting device for attachment to a lathe comprising a frame supporting a rotatable and slidable head and means for moving the head with controlled movement along a workpiece mounted in the lathe. The head includes a cutting tool which can be rotated into and out of engagement with the workpiece for forming threads thereon.

3,789,709

ORBITAL CRANKSHAFT LATHE

George A. Kendall, and Donald E. Roseberry, both of Saginaw, Mich., assignors to The Wickes Corporation, Saginaw, Mich.
Filed May 22, 1972, Ser. No. 255,445
Int. Cl. B23b *5/18*
U.S. Cl. 82—9 **7 Claims**

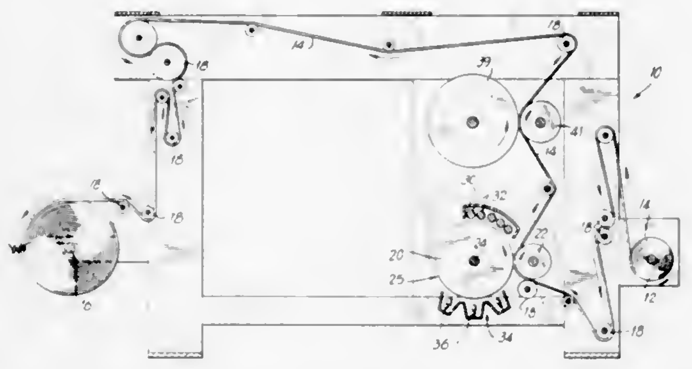


A crankshaft lathe having orbiting girts mounting tool holders which have tools for simultaneously machining the crank pins of a multiple throw crankshaft. The girts and master crankshaft assembly on which they are mounted are moved in a tool feeding stroke by a draw member which is in axial alignment with the resultant horizontal component of thrust exerted by the tools on the workpiece. Moreover, the ways, on which the master crankshaft and tool girt assembly move, are substantially in alignment with this resultant force component, the ways being split to accommodate the lower master crankshaft between them and permit this.

3,789,710

METHOD AND APPARATUS FOR PRODUCING A POROUS PLASTIC FILM

Paul Silverstein, Creve Coeur, Mo., assignor to Applied Synthetics Corp., Washington Park, E. St. Louis, Ill.
Filed Sept. 10, 1971, Ser. No. 179,478
Int. Cl. B26f *1/24, 3/08*
U.S. Cl. 83—16 **19 Claims**

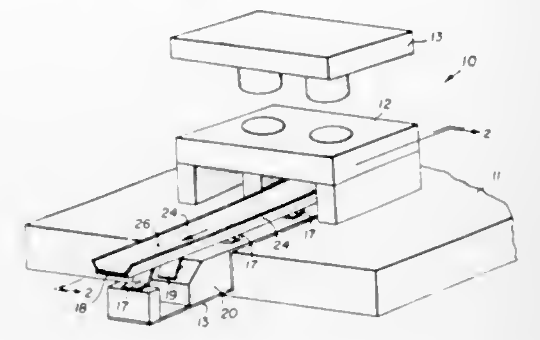


The present invention provides a method and apparatus for producing a porous plastic film and contemplates, in a preferred embodiment, feeding a continuous web of plastic film material by feed means, such as rollers, past a drum having a plurality of outwardly extending projections or tips mounted on the eternal surface thereof, whereby the tips are heated to a predetermined temperature and the plastic film is brought in contact with said tips to cause minute, microscopic reinforced apertures to be burned in said plastic film to form pores or apertures therein. Thereafter, if necessary, the tips are then heated to a higher temperature to burn off any residue of plastic material remaining thereon and then cooled to the desired predetermined temperature before again being brought into contact with the continuously fed plastic film.

3,789,711

PUNCH PRESS DISCHARGE FEEDER

Dennis E. Mead, Cazenovia, N.Y., assignor to Lipe Rollway Corporation, Liverpool, N.Y.
Continuation-in-part of Ser. No. 136,386, April 22, 1971, abandoned. This application Nov. 14, 1972, Ser. No. 306,292
Int. Cl. B26d *5/26*
U.S. Cl. 83—61 **10 Claims**

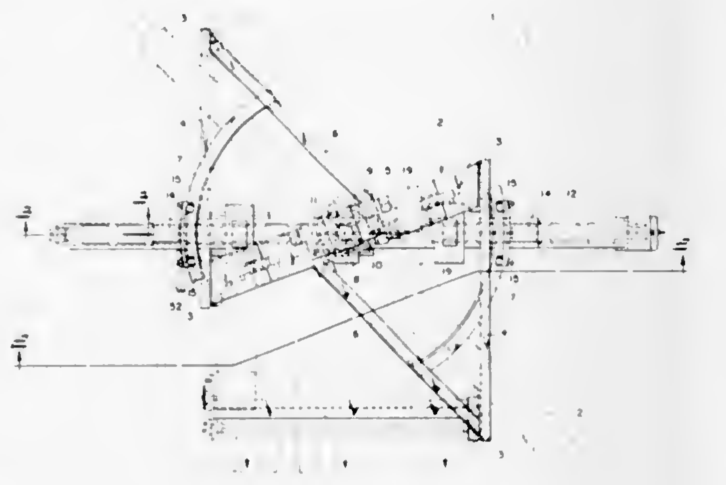


A feed strip extends under the female die of a punch press above the bolster plate and leads to a discharge region. The feed strip is vibrated in a motion that includes a rise and fall, and the upper surface of the feed strip is covered with a pile material having flexible filaments uniformly inclined from the vertical toward the direction of feed so that objects discharged from the female die are fed along the strip to the discharge region.

3,789,712

APPARATUS FOR SEVERING TIRE PLY STOCK AND THE LIKE

George E. Enders, Salem, Ohio, assignor to NRM Corporation, Cleveland, Ohio
Filed Oct. 16, 1972, Ser. No. 298,021
Int. Cl. B26d *7/10*
U.S. Cl. 83—171 **8 Claims**

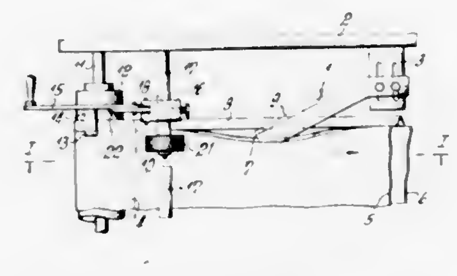


Apparatus for use as with a tire building machine servicer having a conveyor on which tire building materials such as corded ply stock and cordless gum ply or liner stock are intermittently advanced lengthwise for cutting to predetermined length at desired bias angle, said apparatus being characterized in that it has lifting means for lifting a portion of the stock from the conveyor on either side of the line of the desired cut up against a stock support, and a knife blade guided by the apparatus for movement above the conveyor and across the width of the lifted portion of the stock at the desired bias angle, said knife blade having an inclined cutting edge to provide an upward force component to retain the stock against the support during the cutting operation and being heated to facilitate the cutting operation of the uncured rubber-like material of cordless gum liner stock or of the uncured rubber-like material between adjacent cords of corded ply stock. In the case of cutting of corded ply stock, the knife blade is additionally vibrated to facilitate the finding of the desired cut line between adjacent cords thereof.

3,789,713

APPARATUS FOR SLITTING SEAMLESS FLATTENED TUBES OF PLASTICS FILM

Rudolf Peters, Lengerich of Westphalia, Germany, assignor to Windmolter & Holscher, Lengerich of Westphalia, Germany
Filed May 30, 1972, Ser. No. 257,546
Claims priority, application Germany, June 8, 1971, P 21 28 534.7
Int. Cl. B26d *3/12*
U.S. Cl. 83—184 **8 Claims**

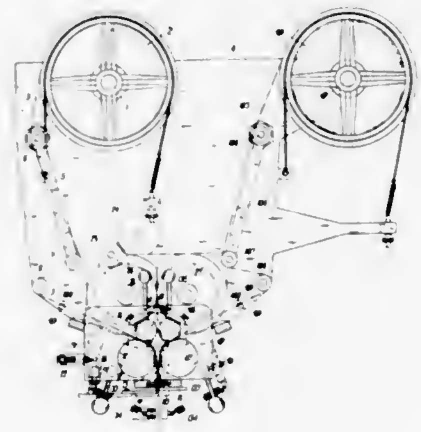


An apparatus for slitting a longitudinally fed flattened tube of plastics film comprises a cutting device for forming longitudinal incisions in both walls of the tube near one longitudinal edge thereof, temporarily operative means downstream of the cutting device for separating the tube walls at the longitudinal incisions, and a slitting knife which is disposed downstream of the cutting device in the medial plane of the tube, is adapted to enter the tube through the separation brought about by the separating means, and is thereafter adapted to slit the tube along said longitudinal edge.

3,789,714

WEB FEEDING AND CUTTING ARRANGEMENTS

Helmut Demny, Gevelsberg/Westfalen, Germany, assignor to Maschinenfabrik Alfred Schmermund, Gevelsberg, Germany
Continuation-in-part of Ser. No. 838,963, Aug. 12, 1971, abandoned. This application Aug. 12, 1971, Ser. No. 173,707
Claims priority, application Great Britain, July 19, 1968, 34,599/68
Int. Cl. B26d *5/20;* **B65h** *25/10*
U.S. Cl. 83—272 **4 Claims**

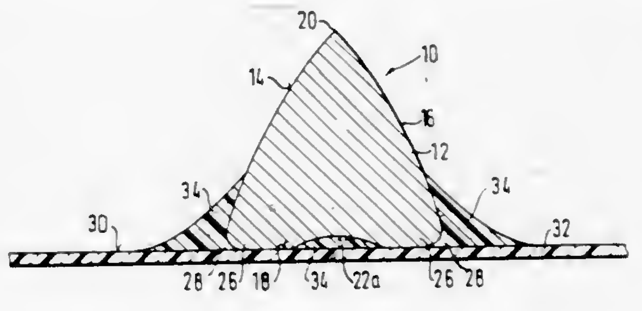


This invention relates to an arrangement for feeding a web of material through a cutting device. Independently operable withdrawing and guiding means for drawing two webs of material from respective bobbins are provided. Both webs are brought into the vicinity of the cutting device. One web remains at rest, while the other, in an intermittent motion, travels further into the cutting device and is transversely cut by this device during stop periods of this travel. When the trailing end of the first web is detected, indicating that the supply of web from the first bobbin is exhausted, the other web is traversed through the cutting device whilst the first bobbin is replenished.

3,789,715

ROTARY CUTTING APPARATUS

Rudolf Schuchardt, and Hans George Schuchardt, both of Pastfach 510 Hemer, Germany
Filed Jan. 4, 1972, Ser. No. 215,309
Int. Cl. B26d *1/12*
U.S. Cl. 83—663 **12 Claims**

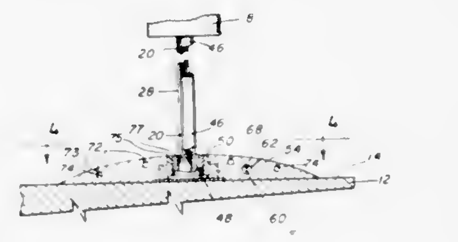


For rotary cutting apparatus strip-like cutting blades are provided that can be easily handled in a universal manner. The cutting blades are of a cross-section so that they may be bent about an axis perpendicular to their longitudinal axis. A flat back-surface permits stable connection to a supporting surface. Longitudinal grooves may receive cement securing the blades to the supporting surface. Preferably, the supporting surface confines a support member made of transparent foil material that can be placed above a respective drawing indicating the desired pattern for the cutting blades.

3,789,716

DEVICE FOR CUTTING SHEET MATERIAL

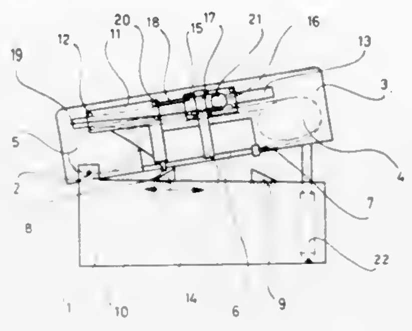
David R. Pearl, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., East Hartford, Conn.
Division of Ser. No. 59,899, July 31, 1970, Pat. No. 3,735,660. This application Dec. 11, 1972, Ser. No. 314,129
Int. Cl. B26d *1/10;* **A41h** *43/00*
U.S. Cl. 83—747 **9 Claims**



A device for cutting sheet material, such as a layup of fabric sheets spread on a cutting table, includes a cutter head movable over the table and having a vertically reciprocating knife or other similar cutting tool. The cutter head is moved by numeric control relative to the table to cause its tool to follow a desired line of cut, and associated therewith is a guide or receiver which moves both longitudinally and transversely of the table in unison with the tool, between the supporting surface of the table and the bottom layer of the material, and receives the lower or distal end of the cutting tool to provide additional support for the tool and to inhibit tool deflection.

3,789,717
BANDSAW MACHINE

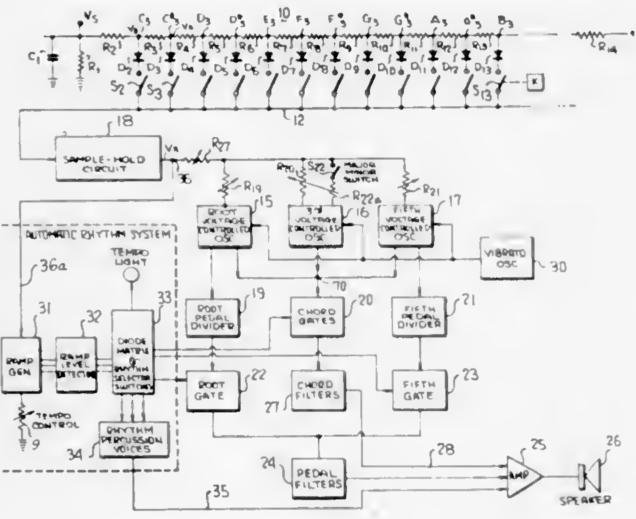
Paul Stolzer, Achen, Germany, assignor to Keuro Maschinenbau Gesellschaft mit beschrankter Haftung & Co., KG., Achen, Germany
Filed Nov. 28, 1972, Ser. No. 310,073
Claims priority, application Germany, Dec. 1, 1971, P 21 59 580.2
Int. Cl. B23d *55/04, 55/08*
U.S. Cl. 83—796 12 Claims



A bandsaw machine with a base on which a workpiece table is mounted and a member pivotally mounted to the machine base. The base includes a pair of clamping jaws for the workpiece with the jaw closest to the pivotal mounting being adjustable and with the other jaw being fixed. The pivotally mounted member includes at least two reversibly driven pulleys, an endless saw band extending partially around and between the pulleys and a pair of guides for the saw band with the guide closest to the pivotal mounting being adjustable and with the other guide being fixed in the running direction of the saw band. Both guides are mounted to the pivotally mounted member so that in those instances where the plane of rotation of the reversibly driven pulleys is inclined to a feed plane defined by the pivotal movement of the pivotally mounted member, they will direct a portion of the saw band between the pulleys into the feed plane for cutting the workpiece. A control arrangement is provided for automatically and simultaneously adjusting both the adjustable clamping jaw and the adjustable guide.

3,789,718
VOLTAGE CONTROLLED CHORD ORGAN

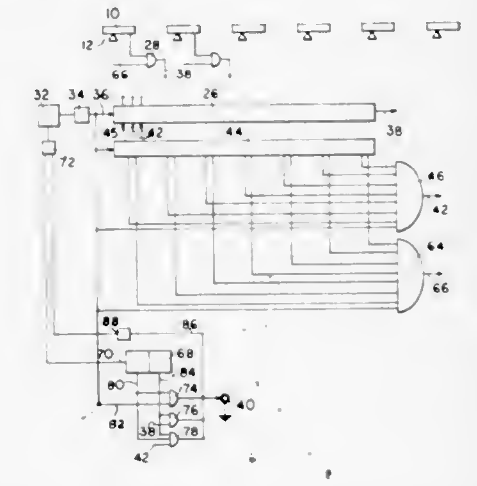
David A. Bunger, Cincinnati, Ohio, assignor to D. H. Baldwin Company, Cincinnati, Ohio
Filed Dec. 30, 1971, Ser. No. 213,939
Int. Cl. G10h *1/00*
U.S. Cl. 84—1.01 26 Claims



An electronic chord organ, in which voltage controlled oscillators are each supplied with the same voltage, the voltage being selected by actuation of keys of an organ keyboard, and the currents supplied to the individual oscillators being selected to sound a musical chord. The voltage controlled oscillators each receive voltages from a resistive voltage divider via a voltage sample and hold circuit, key switches applying voltage from selected points along the voltage divider via diodes to a common bus, the bus controlling the frequencies of all the oscillators, and the diodes serving to render only one key switch operable to apply voltage to the bus when plural ones of the key switches are simultaneously closed.

3,789,719
TAPE ACTIVATED PIANO AND ORGAN PLAYER

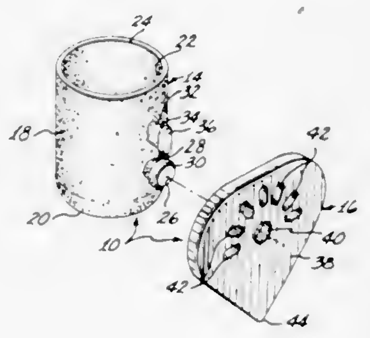
Joseph Maillet, Hammonton, N.J.
Filed Aug. 28, 1972, Ser. No. 284,352
Int. Cl. G10f *5/00*
U.S. Cl. 84—115 5 Claims



A system for recording piano or organ music on a recording tape and replaying the tape to actuate a reproduction of the music on a playback piano or organ, the system including electrical means to sample, store and transmit signals from the individual keys of the first instrument to a recording tape, means to count a predetermined number of these signals and to continuously reset the system to sample, store and transmit a further predetermined number of signals after each predetermined number has been transmitted, and means to receive the transmitted signals from the tape, and reproduce these signals on the second instrument by means of causing each signal to actuate a means to play a corresponding key on the second instrument.

3,789,720
GUITAR PICK DEVICE

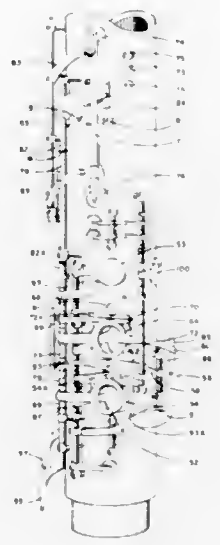
Thomas M. McIntyre, 2562 W. Monterey Way, Phoenix, Ariz.
Filed July 11, 1973, Ser. No. 378,214
Int. Cl. G10d *3/16*
U.S. Cl. 84—322 7 Claims



A device for plucking a stringed instrument having a deformably resilient thimble for wearing on the finger of a player and to which a guitar pick is demountably attached and lockably movable into several angular positions relative to the thimble as dictated by the personal preference of the player.

3,789,721
OBOE FINGERING SYSTEM AND MOUTHPIECE

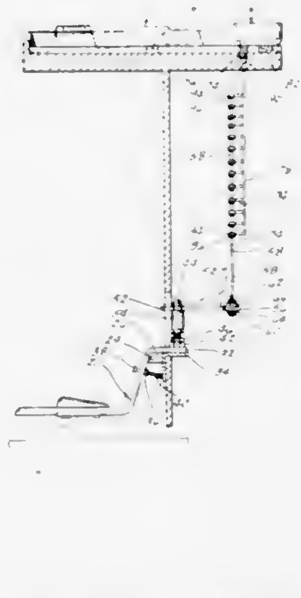
Dick Paladino, 4221 San Bernardino Ave., Las Vegas, Nev.
Continuation-in-part of Ser. No. 234,481, May 15, 1972. This application Apr. 9, 1973, Ser. No. 349,625
Int. Cl. G10d *7/00*
U.S. Cl. 84—380 A 5 Claims



The new oboe or English horn fingering system of the invention comprises a series of new keys added to the instrument and rearrangement of a number of existing keys which cooperate to achieve a new and more versatile fingering system.

3,789,722
FOOT OPERATED PIANO PLAYING DEVICE

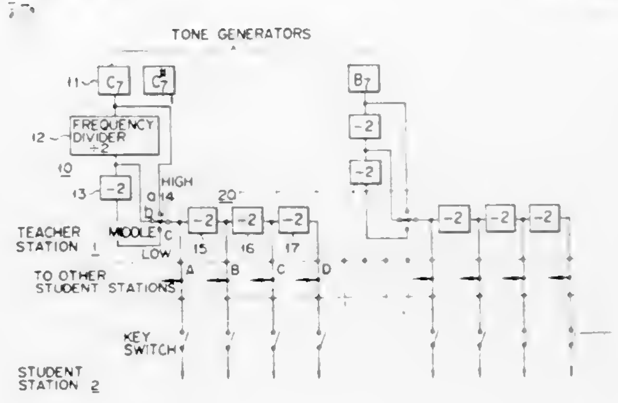
Roger A. Hanes, 327 S. 10th St., Fort Dodge, Iowa
Filed Mar. 22, 1973, Ser. No. 343,939
Int. Cl. G10c *3/12*
U.S. Cl. 84—426 7 Claims



A foot operated piano playing device comprising 13 foot pedals which are operatively connected to the bass keys of the piano. Each of the foot pedals are operatively connected to a pair of bass keys so that the depression of the pedal will cause the keys to vibrate two piano strings to sound a given octave. The linkage connecting the foot pedal to the keys is designed so that all of the key actuator rods are positioned in the same vertical plane. The design of the linkage permits the keys to be actuated with equal amounts of "push" pressure.

3,789,723
GROUP TRAINING SYSTEM FOR ELECTRONIC MUSICAL INSTRUMENTS

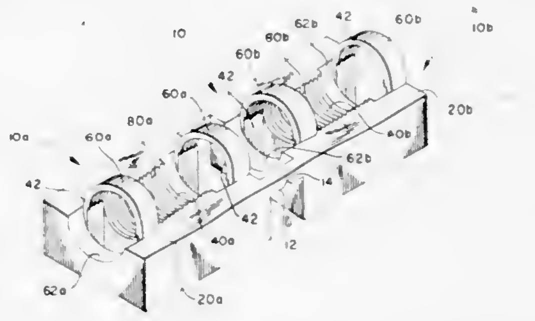
Eisaku Okamoto, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan
Filed Aug. 8, 1972, Ser. No. 278,823
Claims priority, application Japan, Aug. 9, 1971, 46/70440; Mar. 21, 1972, 47/32301; Mar. 21, 1972, 47/32302
Int. Cl. G09b *15/00*
U.S. Cl. 84—470 11 Claims



A group training system for electronic musical instruments including a teacher station and a plurality of student keyboard instrument stations wherein the teacher station has a plurality of tone generators corresponding to one octave of musical notes. Each tone generator is connected to a first divider chain including a plurality of cascade connected frequency dividers. The outputs of the tone generator and the frequency dividers are selectively supplied through a multithrow switch operable by the teacher to a second divider chain similarly including a plurality of cascade connected frequency dividers. The signals successively frequency-divided by the dividers of the second chain, as well as the input signal thereto, are all fed to each student station to provide a certain range of musical notes. Where the teacher operates the multithrow switch, the frequency of the input signal impressed on the second divider chain varies, resulting in a change in the performance compass of the student stations. The input signals impressed on the second divider chain may be varied for groups of the student stations to enable ensemble performance.

3,789,724
FASTENER

Thomas M. Moran, Cleveland, Ohio, assignor to Eaton Corporation, Cleveland, Ohio
Filed July 12, 1972, Ser. No. 270,901
Int. Cl. F16b *37/00*
U.S. Cl. 85—32 V 14 Claims



A molded, internally threaded fastening device adapted for receipt of a threaded member. The fastening device is molded in a generally flat position with two preferably joined complementary sections adapted to be manually folded over upon one another, in face-to-face relationship, to form the fastener. Each complementary section defines a generally concave cavity extending along the complementary face which will cooperate with the concave cavity in the complementary face of the other complementary section to define a generally axially extending threaded member receiving bore when the two complementary sections are folded over upon one another. Each concave cavity includes molded internal thread portions on the concave surface thereof which are adapted to cooperate and register with the molded thread portions in the other cavity to form a continuous internal thread along at least a part of the threaded member receiving bore. Each complementary section also includes at least one convexly extending loop which in connection with the concave cavity defines a substantially circular aperture. When the complementary sections are folded over upon one another, or are in the preassembled position, the apertures will form a portion of the threaded member receiving bore through which the threaded member must pass.

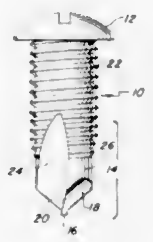
3,789,725
SELF-DRILLING AND SELF-TAPPING FASTENER AND METHOD OF MANUFACTURE THEREOF

Bert A. Lindstrom, 1311 Williamsburg Rd., Rockford, Ill.

Filed Oct. 6, 1971, Ser. No. 186,928

Int. Cl. F16b *25/00*

U.S. Cl. 85—47 **5 Claims**



This improved non-walking, non-skittering self-drilling and self-tapping screw fastener is manufactured by a simplified, versatile method comprising pointing and fluting steps involving axial movement of end mill cutters. The resulting threaded fastener features a pair of oppositely-disposed, substantially longitudinally extending milled flutes at the entering end, each of the flutes having a uniformly-concavely-curved flute side including the cutting edge, a plane tangent to the concavely curved surface at the cutting edge extremity being inclined at an angle to and traversing the axis of the screw at an intermediate point of the shank. In a preferred embodiment having enhanced chip-breaking characteristics, the curvature and disposition of the flutes are such that they redirect the normal chip flow and thereby fragment the chips by flexure.

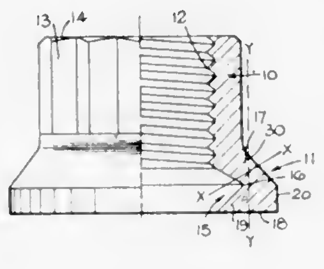
3,789,726
LOAD-INDICATING MEANS FOR A NUT AND BOLT ASSEMBLY

Peter John Gill, Wolverhampton, and Dennis Joseph O'Donnell, Walsall, both of England, assignors to GKN Screws & Fasteners Limited, Smethwick, Warley, England

Filed May 22, 1972, Ser. No. 255,679

Int. Cl. F16h *31/02*

U.S. Cl. 85—62 **5 Claims**



A load-indicating nut in which the nut body has at one end a radially extending flange and wherein the cross section of the flange taken in a radial plane is such that there is provided an internal surface to the annular flange which takes the form of an annular groove of generally V-section with the apex thereof directed radially outwardly and the one leg of this V-section which is joined to the body being constructed and arranged so that when the axial tensile load in the bolt shank reaches or exceeds a predetermined minimum value, plastic deformation of the metal of the flange takes place in shear in this one leg and the body moves in a direction towards the abutment against which it is being tightened so that there occurs a measurable reduction in the overall axial dimension of the nut.

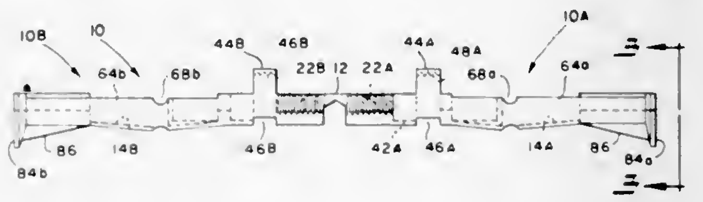
3,789,727
FASTENER

Thomas M. Moran, Cleveland, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed June 5, 1972, Ser. No. 259,422

Int. Cl. F16b *13/10*

U.S. Cl. 85—71 **22 Claims**



A molded, one-piece, self-anchoring fastening device adapted for receipt of a threaded member and being self-anchored in an apertured panel or the like. The fastening device is molded in a generally flat position with two joined, substantially cross-sectionally semicircular or C-shaped complementary sections adapted to be manually folded over upon one another, concave-side-to-concave-side in a preassembled position, to form an axially extending, substantially hollow, cross-sectionally circular device. Each semicircular section carries a loop projecting convexly outwardly from opposed ends of C-shaped section which, in connection with the concave surface, form a substantially circular aperture and which are adapted to coact with the concave surface of the other section upon folding to releasably maintain the sections in a folded position. The apertures defined by the loops partially define the axial passage through the preassembled axially extending hollow body through which the received threaded member must pass.

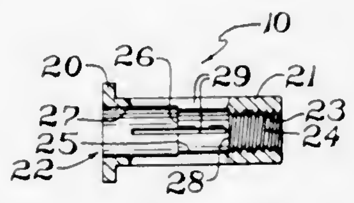
3,789,728
BLIND FASTENER

James R. Shackelford, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Continuation-in-part of Ser. No. 95,824, Dec. 7, 1970, abandoned. This application July 25, 1972, Ser. No. 274,853

Int. Cl. F16b *13/04*

U.S. Cl. 85—71 **5 Claims**



A one-piece blind fastener, of the kind which serves as a nut plate, has a head to bear against the exposed face of a structural member having a hole in it, and a cylindrical hollow body to pass through the hole and expand in a flower petal shape against the blind face of the structural member when shortened by pulling up a threaded draw rod. The head and the internally threaded far end are circumferentially continuous, and are integral with the body. The intermediate portion of the body which protrudes through the hole is longitudinally divided into strips and has an internal shallow step or offset about midway of its length.

3,789,729
APPARATUS AND METHOD FOR THE STORAGE AND LAUNCHING OF A MISSILE

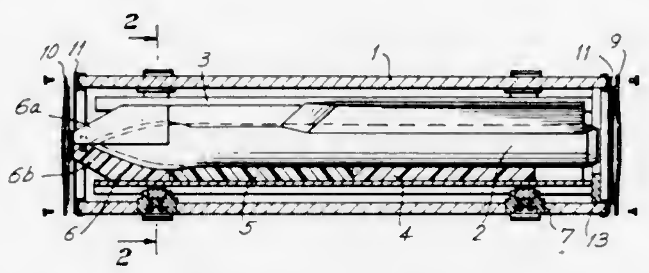
Roland Rolland Aupy, Ruelle-sur-Trouvre, France, assignor to Etat Francais represente par le Ministre d'Etat charge de la Defense Nationale Delegation, Paris, France

Filed Feb. 23, 1972, Ser. No. 228,577

Claims priority, application France, Feb. 24, 1971, 71.06207

Int. Cl. F41f *3/04*

U.S. Cl. 89—1.8 **8 Claims**



A container of square or rectangular sections receives two slide rails which are fixed therein, the missile being held in the rails by means of front, central and rear shoes composed of polyurethane foam blocks. The missile, rails, rear shoes and central shoes are assembled outside the container and then inserted inside the container whereupon the rails are secured to the container. Covers at the rear and front of the container are made of plastic, the front cover having a central weak zone which is destroyed under the thrust of the front shoes when the missile is launched.

3,789,730
AUTOMATIC WEAPON WITH SELF LOCKING BOLT BREECH BLOCK

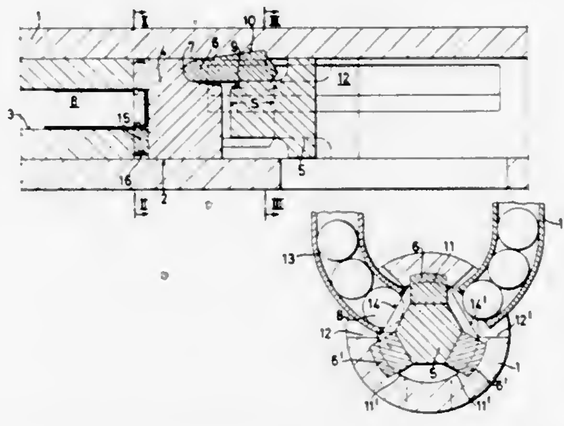
Alfred Helmes, Willich, Germany, assignor to Rheinmetall GmbH, Dusseldorf, Germany

Filed Aug. 24, 1971, Ser. No. 174,369

Claims priority, application Germany, Sept. 11, 1970, 2044964

Int. Cl. F41d *3/00, 9/02*

U.S. Cl. 89—183 **2 Claims**



An automatic weapon including a self locking bolt which comprises a weapon casing defining a loading chamber. A breech block moves forwards and back and is adapted to insert a cartridge into the loading chamber during the forward movement of the breech block. At least three laterally pivotable locking bolts are provided symmetrically to the longitudinal central axis of the breech block, for complete locking of the breech block against the weapon casing.

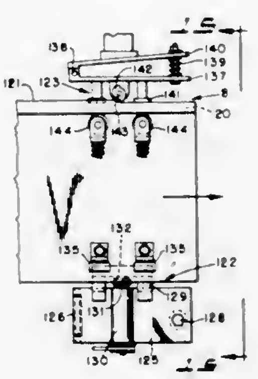
3,789,731
EDGE TRIMMING APPARATUS

George W. Loy, Scio, Ohio, assignor to Scio Cabinet Company, Inc., Scio, Ohio

Division of Ser. No. 114,290, Feb. 10, 1971, Pat. No. 3,690,955, which is a division of Ser. No. 885,014, Dec. 15, 1969, Pat. No. 3,580,787. This application July 7, 1972, Ser. No. 269,592

Int. Cl. B23b *3/12*

U.S. Cl. 90—11 R **4 Claims**



A plastic laminating apparatus for laminating plastic sheet material to a countertop core having a backsplash attached at right angles thereto during a single pass through the apparatus. The apparatus consists of a plurality of longitudinally spaced work stations through which the work is successively moved for progressively shaping and adhering the plastic laminate to the work, such work being guided through the apparatus by receipt of a downwardly projecting portion from the work in a guide track extending the entire length of the apparatus. A back die bends the laminate to conform to the general shape of the backsplash and countertop after heating, and fingers and pressure rolls are used to progressively bend and press the projecting edges of the laminate into firm contact with the edges of the countertop and backsplash. Floating cutters are also used to trim the excess laminate material extending beyond the countertop and backsplash edges, and such excess material may be picked up by a suction blower or removed by a rotary brush prior to passage through final pressure rolls.

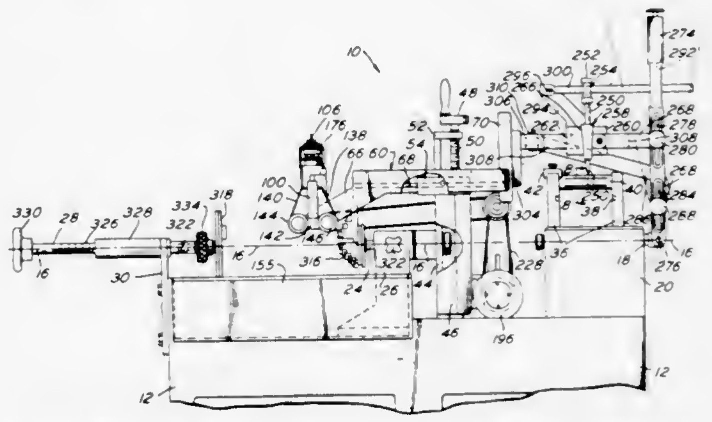
3,789,732
MACHINE FOR ENGRAVING CURVED SURFACES

Jack W. Levine, Levittown, N.Y., assignor to New Hermes Company, New York, N.Y.

Filed May 16, 1972, Ser. No. 253,724

Int. Cl. B23b *1/18*

U.S. Cl. 90—13.6 **18 Claims**



A machine for engraving surfaces which are cylindrical, tapered or curved. The machine includes pattern tracing means and an engraving tool connected thereto by a mechanism which causes the movement of the tracing means in the pattern to be reproduced by the engraving tool. Means are provided for always maintaining the engraving tool perpendicular to the surface which is being engraved.

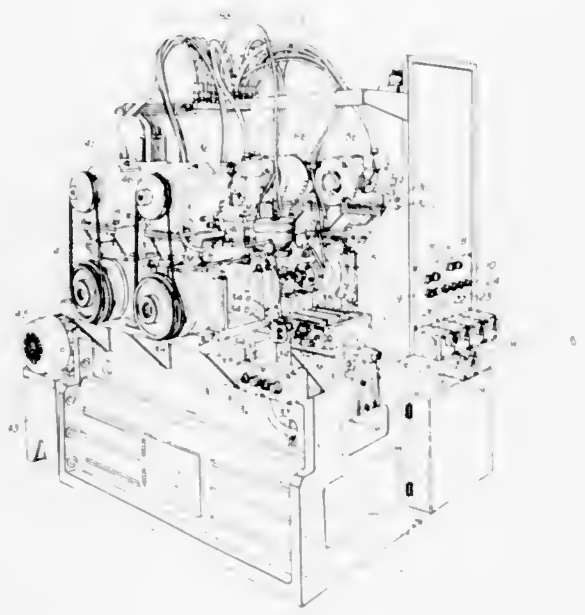
3,789,733
KEYWAY CUTTING AND MILLING MACHINE

Lee E. Thompson, and William W. Ramsey, both of Tulsa, Okla., assignors to Ramsey Winch Co., Tulsa, Okla.

Continuation-in-part of Ser. No. 139,503, May 5, 1971, abandoned. This application Nov. 7, 1972, Ser. No. 304,334

Int. Cl. B23c *3/30*

U.S. Cl. 90—14 **5 Claims**



A new and improved automatic Keyway Cutting and Milling Machine for cutting one or more keyways in stock material simultaneously, the said machine being electrically programmed to clamp the movement of stock material being processed and to automatically control the operation of the hydraulic system which operates the milling head assemblies, the said milling head assemblies and the clamping of material being all coordinated to work as a unit.

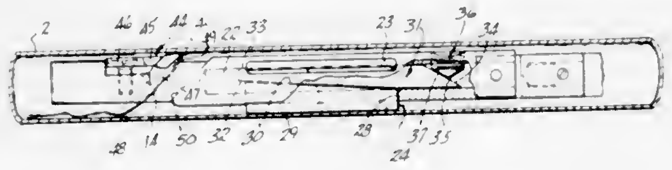
3,789,734
ADJUSTABLE SCARFING TOOL

Denis R. Boston, Livingston, Ill., assignor to Olin Corporation, New Haven, Conn.

Filed Apr. 21, 1972, Ser. No. 246,307

Int. Cl. B23d *1/24*

U.S. Cl. 90—24 B **7 Claims**



An adjustable scarfing apparatus comprising an elongated body member supporting a cutting tool within a welded tube. In accordance with one embodiment, a plurality of slides are dispersed radially about the body and at least one of the slides is made continuously adjustable inwardly or outwardly from the body. In accordance with another embodiment, a cutting tool having a circular cutting edge which may be indexed is employed with the plane of the cutting edge. The plane of the cutting edge is inclined at an angle of from about 30° to about 60° to the longitudinal axis of the tube. Alternatively, the apparatus may include both of these embodiments.

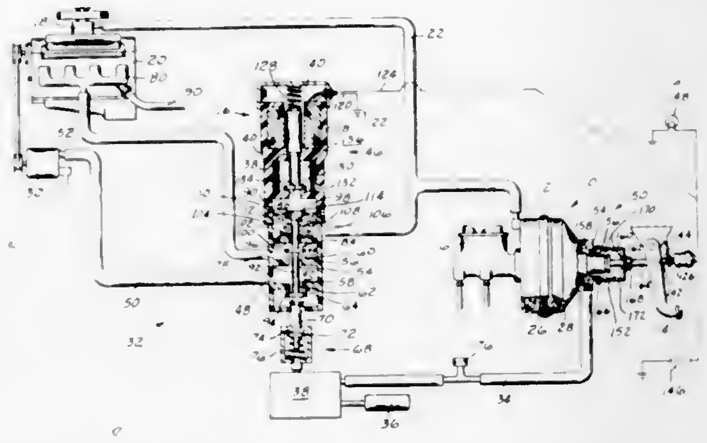
3,789,735
DIVERTER VALVE MEANS FOR PRESSURE DIFFERENTIALLY OPERATED SERVOMOTOR

George M. Tam; Delbert J. Gardner; Frederick G. Grabb; James B. Putt; Carl D. Owens, and William C. Sisco, all of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed Feb. 15, 1973, Ser. No. 332,857

Int. Cl. F01b *31/12;* **F15b** *21/00*

U.S. Cl. 91—1 **10 Claims**



A diverter valve for use in a vehicle having a power braking system operated by a pressure differential servomotor. The diverter valve directs air under pressure from an emission control pump to the servomotor in response to a signal generated upon actuation of the brake pedal to supply a first fluid under pressure which in conjunction with a second fluid creates the desired pressure differential in the servomotor.

3,789,736
MULTIPLE HYDRAULIC ACTUATOR

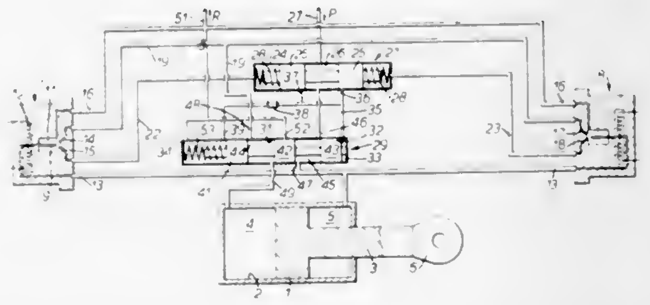
John Hall Williams, Wolverhampton, England, assignor to Dowty Boulton Paul Limited, Wolverhampton, England

Filed Dec. 13, 1971, Ser. No. 207,302

Claims priority, application Great Britain, Dec. 11, 1970, 58885/70

Int. Cl. F15b *13/02, 15/17*

U.S. Cl. 91—3 **10 Claims**



An electro-hydraulic control system in which two similarly signalled electro-hydraulic servo-valves are provided to control a hydraulic actuator. In order to detect failure or inaccuracy of operation of either servo-valve the present invention provides an actuator having a working space, connections from the working space to a port of one servo-valve and the corresponding port of the other servo-valve whereby the actuator is under the simultaneous control of both servo-valves, biassing means urging the actuator in a direction opposite to the hydraulic force generated in the working space and an error means connected between the other two ports of the servo-valves to generate an error signal when there is a substantial pressure difference between the said ports. The error signal may be used to take any safety action appropriate to the use of the actuator.

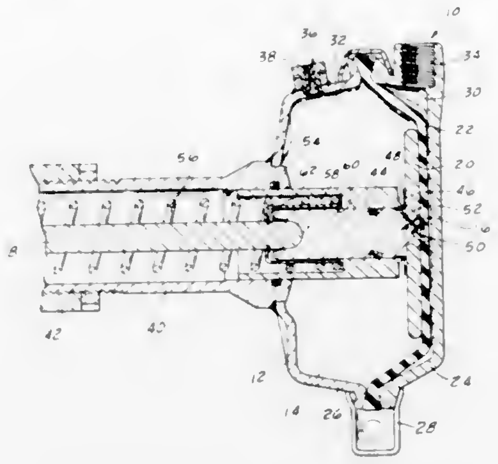
3,789,737
SELF-PURGING BRAKE ACTUATOR

Richard T. Burnett, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Mar. 27, 1972, Ser. No. 238,547

Int. Cl. F15b *15/17, 11/08, 13/042*

U.S. Cl. 91—416 **3 Claims**



A brake actuator is disclosed for fluid pressure actuating braking system. The actuator includes an actuating piston slidably mounted within a housing and defining a pair of pressure chambers between opposite ends of the piston and corresponding ends of the housing. High pressure fluid is communicated into one of the chambers where it acts upon the end of the piston to drive the latter in a brake actuating direction. A check valve permits air to exhaust from the other chamber, but prevents atmospheric air from being drawn into the latter when the piston is returned upon release of the brake. A sleeve is slidable relative to the piston and moves relative to the latter when the piston is actuated to prevent communication between the chambers during a brake actuation, but opens the passage upon return movement of the piston upon release of the brakes to permit fluid in the one chamber to communicate into the other chamber, thereby preventing contamination of the latter by atmospheric air.

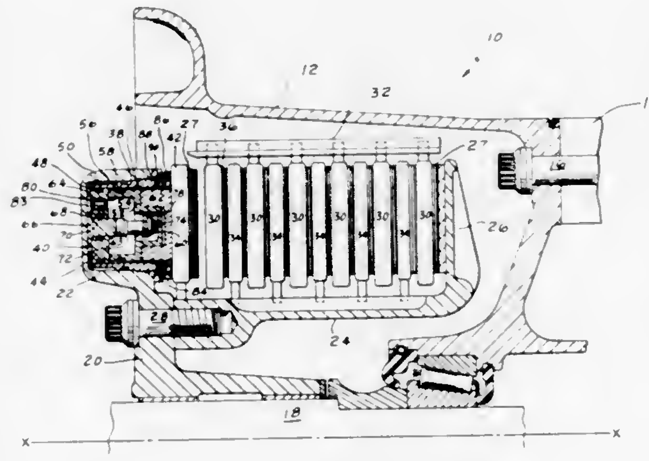
3,789,738
EXTENSIBLE PISTON

Richard F. Horner, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Mar. 24, 1972, Ser. No. 237,777

Int. Cl. F15b *11/18;* **B60t** *11/00*

U.S. Cl. 91—168 **5 Claims**



A fluid pressure actuated piston having an outer piston member and an inner piston member slidable therein which pistons have equivalent areas exposed to said fluid pressure and are sequentially pressurized thereby providing extended piston travel. The outer piston is operatively connected to a normally closed fluid vent which is opened to vent the pressurized fluid to the inner piston substantially simultaneously with engagement of the outer piston with a fixed stop whereupon the inner piston continues to move.

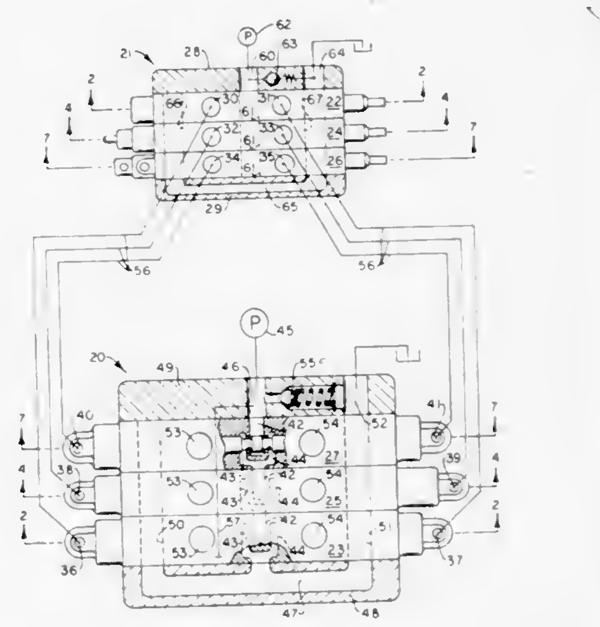
3,789,739
REMOTE HYDRAULIC CONTROL

Robert D. Krehbiel, Hutchinson, and Homer R. Graber, Pretty Prairie, both of Kans., assignors to The Cessna Aircraft Company, Wichita, Kans.

Filed Aug. 2, 1971, Ser. No. 168,002

Int. Cl. F15b *13/16*

U.S. Cl. 91—358 A **13 Claims**



A closed center remote control system selectively modulating pressure at either end of a reciprocal spool control valve so as to incrementally position the valve spool with such precision to attain spool metering and speed control. The various embodiments include diverse special operating modes such as float and automatic return-to-neutral. The remote system is equally useful in conventional closed center and open center spool valves essentially identical to manually operated valves.

3,789,740
ROTARY DEVICE WITH ADJUSTABLE AXIAL BEARING

Jean-Jacques Boyer, 95 Quai Winston Churchill, Val De Marne, France

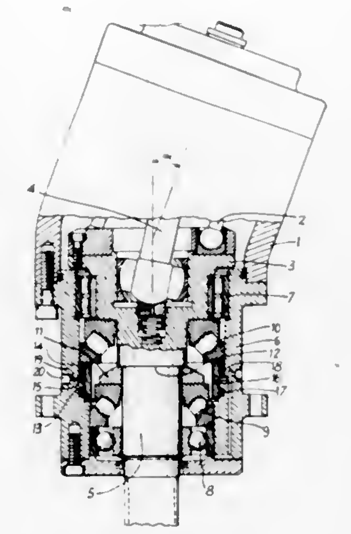
Continuation of Ser. No. 126,075, March 19, 1971, abandoned. This application Mar. 28, 1973, Ser. No. 345,908

Claims priority, application France, Mar. 20, 1970, 7010098

Int. Cl. F04b *13/04*

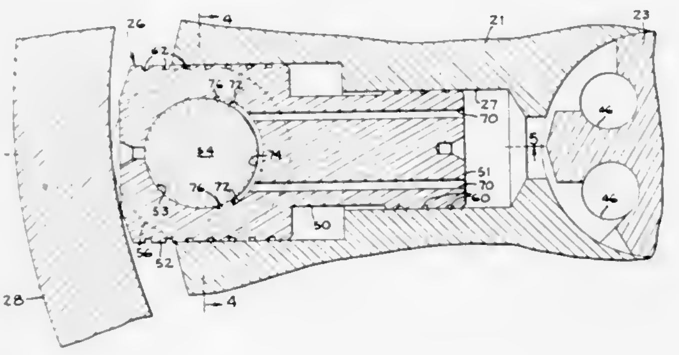
U.S. Cl. 91—486 **1 Claim**

A swash plate pump or motor has roller bearing means to receive the axial thrust of the swash plate, in the form of a plurality of axially spaced roller bearing assemblies one of which is fixed and the other or others of which bear axially against a stepped ring piston that defines an annular piston chamber with a stepped portion of the inner side wall of the pump casing. The pressure of the working fluid is supplied to this annular chamber to urge the axially adjustable bearing or bearings in a direction to resist the thrust of the swash plate, with a force that varies as the working pressure.



3,789,741
HYDROSTATIC BEARING FOR RADIAL PISTON PUMP

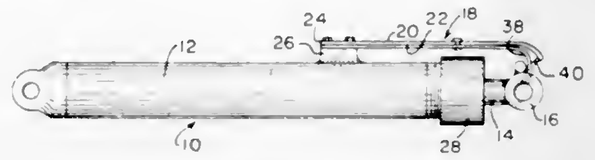
Daniel F. Hallberg, Minneapolis, Minn., assignor to FMC Corporation, San Jose, Calif.
Filed July 26, 1971, Ser. No. 166,157
Int. Cl. F01b *1/00*
U.S. Cl. 91—488 **3 Claims**



A radial piston pump is provided with pistons which utilize a hydrostatic bearing between the body of the piston and the crosshead rollers, i.e., the thrust accommodating elements that contact the rotor reaction ring in the pump assembly. In order to provide for this bearing, holes are drilled longitudinally through the piston into the bore in the head of the piston where a crosshead pin is mounted. The crosshead pin extends transversely through the body of the piston, and the crosshead rollers are keyed to the ends of the pin which project laterally from the head of the piston. Interconnected grooves are provided about the bore in the piston body which grooves are in communication with the holes through the piston to receive the lubricating medium being pumped, and the area circumscribed by the grooves is such that the pressure load on the piston is generally balanced, i.e., the hydrostatic loading on the rearward end of the piston is balanced by the hydrostatic loading on the crosshead pin.

3,789,742
HYDRAULIC CYLINDER LATCH

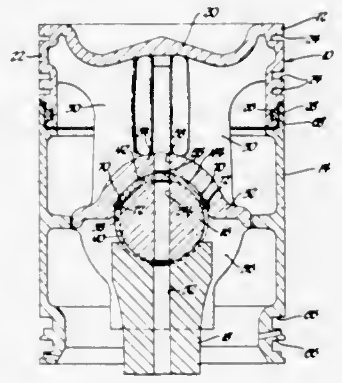
Gordon L. Hershman, La Grange, and Wilbur E. Schwerdtfeger, Western Springs, both of Ill., assignors to Internationl Harvester Company, Chicago, Ill.
Filed Nov. 16, 1972, Ser. No. 307,307
Int. Cl. F15b *15/26*
U.S. Cl. 92—26 **6 Claims**



Elongated resilient member comprised of materials having different spring rates. One end thereof is fixed to the cylinder, and the other extends out over the rod such that an arcuated portion is capable of engaging the rod.

3,789,743
ECCENTRIC PIN BEARING

Tanas M. Sihon, Ypsilanti, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 28, 1972, Ser. No. 229,695
Int. Cl. F16j *1/16;* **F16c** *11/00*
U.S. Cl. 92—187 **5 Claims**

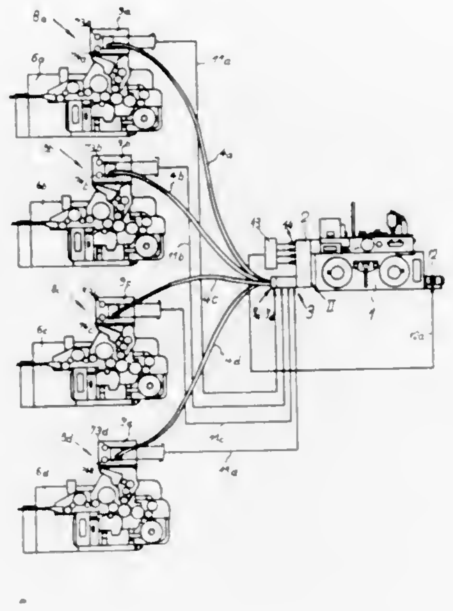


In a preferred embodiment, a trunnion-type piston pin is eccentrically received in the cylindrical bore of a piston member having bifurcated arms encircling and engaging the lower side of the piston pin. An arcuate bearing segment is received in a saddle portion of the piston member bore between it and the piston pin to transfer combustion loads therebetween. The bearing segment is of varying thickness having arcuate inner and outer surfaces formed on the centers of and engaging the surfaces of the piston pin and piston member bore, respectively. The arrangement permits provision for a partial insert bearing using a cylindrical piston pin bore and piston pin for simplicity of manufacture. Simple means for securing the bearing segments in the saddle portion and other features are provided.

3,789,744
TRANSPORTING APPARATUS FOR FILTER ROD SECTIONS OR THE LIKE

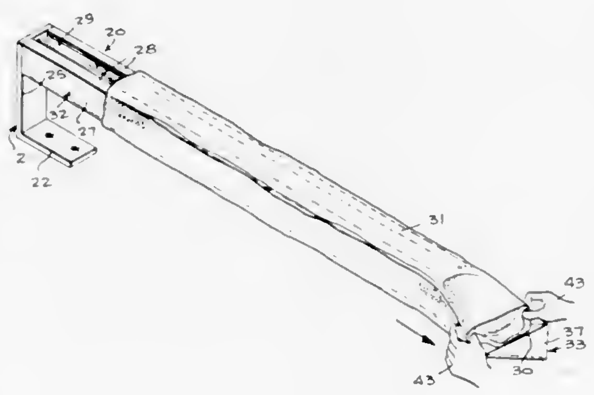
Gunter Wahle, Reinbek, Germany, assignor to Hauni-Werke Korber & Co. KG, Hamburg, Germany
Filed May 6, 1971, Ser. No. 140,727
Claims priority, application Germany, May 6, 1970, P 20 22 175.4
Int. Cl. A24c *5/48;* **B65g** *51/02, 65/30*
U.S. Cl. 93—1 C **15 Claims**

The outlet of a filter rod making machine is directly or indirectly connectable with the magazines of several filter cigarette making machines by means of pneumatic conduits. The inlets of the conduits receive filter rod sections by way of discrete transfer units which form part of a distributor system serving to permit entry of filter rod sections into a selected transfer unit in response to signals from detectors which are mounted in the magazines of the filter cigarette making machines. When the requirements of the filter cigarette making machines do not match the output of the filter rod making machine, the latter machine is caused to operate at a reduced speed or delivers filter rod sections into an auxiliary magazine which can supply filter rod sections to the distributor system if the filter rod making machine is idle or if the requirements of the filter cigarette making machines exceed the output of the filter rod making machine.



3,789,745
MEANS FOR INSERTING LINERS IN BAGS

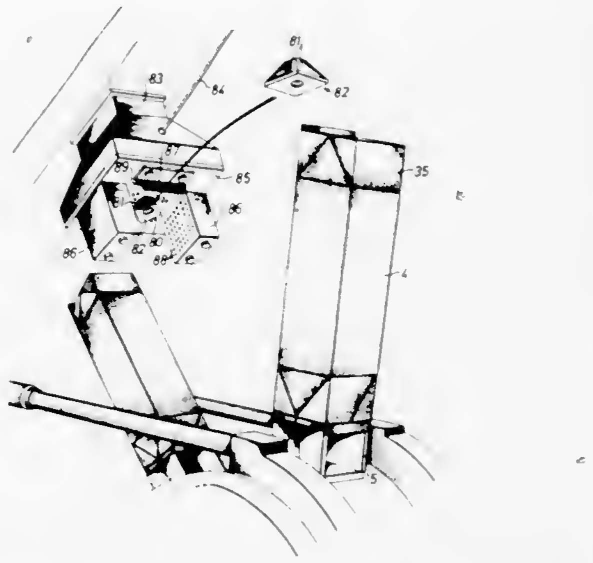
Harold Leader, P.O. Box 325, Helena, Ala.
Filed May 22, 1972, Ser. No. 255,429
Int. Cl. B31b *1/00, 11/00*
U.S. Cl. 93—8 R **5 Claims**



A method and apparatus for inserting liners in outer bags, whereby the bags can subsequently be filled with any desired material.

3,789,746
PACKAGING MACHINE

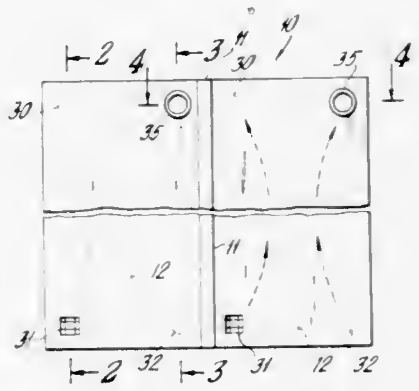
Kjell Halvard Martensson; Bjorn H:son Linde, both of Malmo; Jan Frederik Palsson, and Sven Torsten Jerre, both of Lund, all of Sweden, assignors to Tetra Pak International AB, Lund, Sweden
Division of Ser. No. 227,812, Feb. 22, 1972. This application July 17, 1972, Ser. No. 272,214
Claims priority, application Sweden, Mar. 25, 1971, 3864/71
Int. Cl. B65b *3/02, 51/20*
U.S. Cl. 93—39.2 **5 Claims**



A packaging machine in which packages are erected on mandrels of a rotating wheel and the crease lines of the bottom elements of the packages are successively creased, heated, folded and sealed; the heating being carried out by a heated gas which is directed by deflector means against the thermoplastic lining of the package and into the corners of the erected package.

3,789,747
VENTILATED ACOUSTIC STRUCTURAL PANEL

Seymour Wasserman, Plainview; Albert Cirulli, and Edward A. Farrar, both of Bronx, all of N.Y., assignors to Industrial Acoustics Company, Inc., Bronx, N.Y.
Filed Dec. 15, 1972, Ser. No. 315,291
Int. Cl. F24f *13/00*
U.S. Cl. 98—33 **6 Claims**



A prefabricated structural wall panel for the modular construction of soundproof enclosures containing layered compartments of shallow depth with the central compartment divided longitudinally into a pair of intake and exhaust ventilation ducts located edge to edge, and these ducts are separated by perforate sheet metal walls from the adjoining interior and exterior compartments of the panel which contain sound absorbing thermal insulation. An air inlet is installed near the lower end of each duct and an air outlet near its upper end;

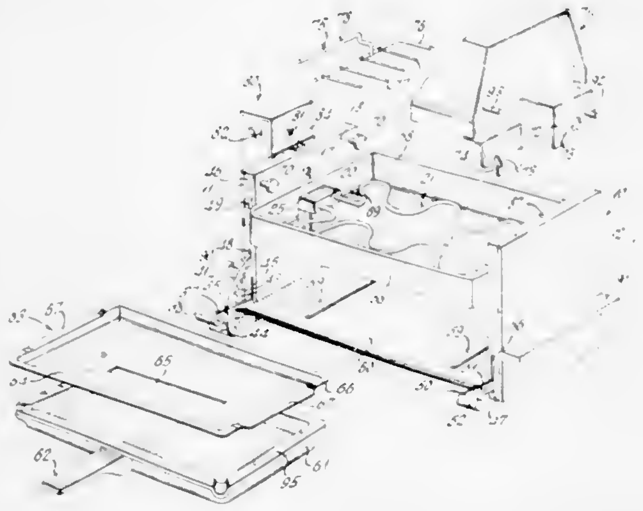
and a fan is enclosed within the air intake system. Fresh air enters near the lower end of the exterior of the panel and is forced upwardly through the intake duct by the fan to the upper part of the panel from which it is discharged into the enclosure, while the air being exhausted from the enclosure enters a conduit near the bottom of the interior face of the panel and passes up through the exhaust duct for discharge through a conduit communicating with the upper exterior face of the panel.

3,789,748
MULTI-PURPOSE ROTISSERIE-BROILER COMBINATION

Seymour Rappoport, Rumson, and William J. Rakocy, Clifton, both of N.J., assignors to Ronson Corporation, Woodbridge, N.J.

Filed Feb. 24, 1972, Ser. No. 228,809
Int. Cl. A47j *37/06*

U.S. Cl. 99—340 **6 Claims**



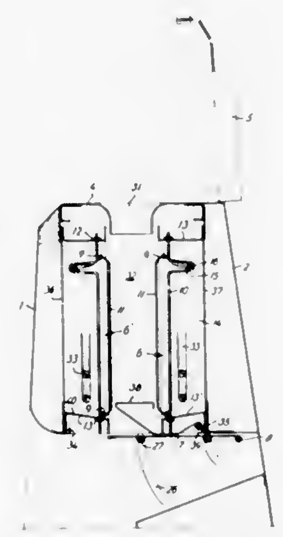
A combined rotisserie-broiler having a movable heating element which can be placed adjacent or remote from food to be cooked. The rotisserie-broiler is a multi-purpose unit having a removable hood, reflector and fry pan which can be arranged in a plurality of positions to permit the user to selectively fry, grill, broil, sear and bake foods.

3,789,749
TOASTER

Julius Barclay Estrup Paaskesen, 17-19, Naverland, Glostrup, Denmark

Filed Aug. 24, 1972, Ser. No. 283,377
Int. Cl. A47j *37/08*

U.S. Cl. 99—391 **6 Claims**



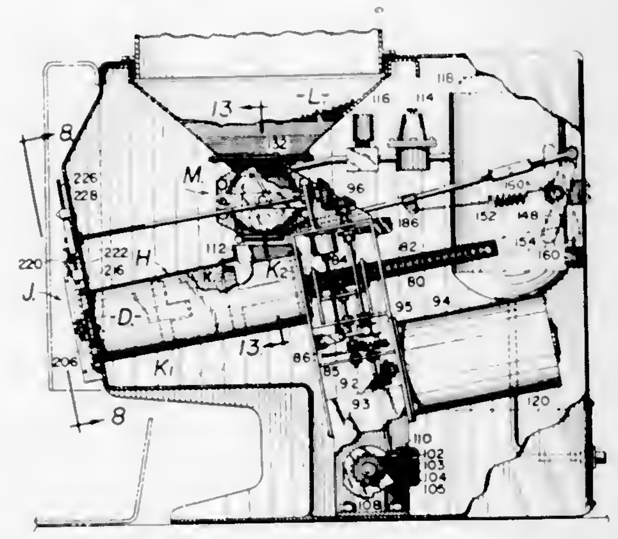
A toaster in which a vertical toasting compartment is closed during a toasting operation by means of a movable bottom wall. After termination of the toasting operation the bottom wall is retracted so as to permit the toasted bread to be discharged from the compartment. The retraction of the bottom wall may be automatically controlled by a timing device and it may be effected by swinging the bottom wall downwardly on a horizontal pivot axis. The opposed side walls of the toasting compartment are movable in vertical direction and are coupled to the bottom wall in such a way that the side walls are lifted slightly when the bottom wall is retracted to its discharge position. A lost-motion coupling may be provided between the side and bottom walls so that the movement of the side walls is considerably smaller than that of the bottom wall and is effected in a jerky manner.

3,789,750
APPARATUS FOR RECONSTITUTING DRY POTATO AGGLOMERATES INTO POTATO DOUGH

Roderick Beck, 1065 York Dr.; James F. Harman, 750 Wootton Way; Mounir A. Shatila, 241 Jefferson, all of Blackfoot, Idaho; David A. Richins, 4122 S. Orchard, Bountiful, Utah, and John Lack, 81 Alexander Blvd., Blackfoot, Idaho

Division of Ser. No. 816,675, April 16, 1969, Pat. No. 3,605,647. This application Sept. 4, 1970, Ser. No. 69,884
Int. Cl. A23n *15/00*

U.S. Cl. 99—536 **7 Claims**



A machine for forming from potato dough elongate bodies that resemble potato pieces suitable for french frying. The machine is arranged to move the dough through spaces between a set of parallel wires, which wires are spaced from one another by amount corresponding to the width of the piece. The length of the spaces determines the length of the potato piece. A second set of parallel wires is supported in registry with the first mentioned set during dough movement; after the dough is moved by an amount corresponding to the thickness of a french fry body, the wires of the second set are moved across the dough to separate potato pieces suitable for french frying. A machine for automatically synchronizing the movement of the dough and the movement of the second set of wires. A french fry potato piece formed by the apparatus which piece is characterized by an uncompressed surface.

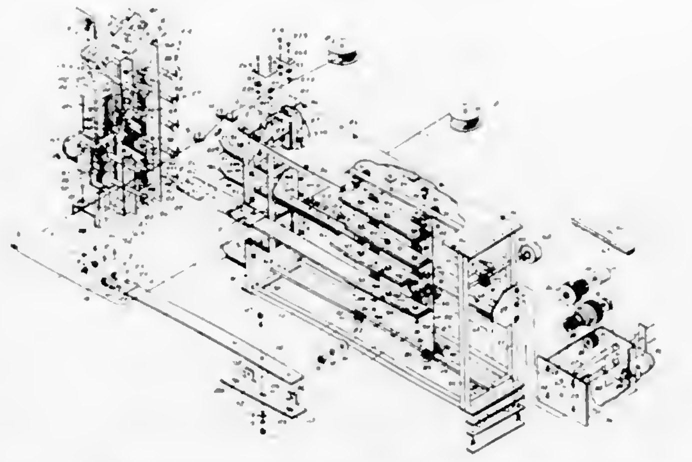
3,789,751
BALE TYING DEVICE

Charles E. Burford, 1414 Frito Lay Tower, Exchange Park, Dallas, Tex.

Filed Sept. 15, 1971, Ser. No. 180,592
Int. Cl. B65b *13/04, 13/28*

U.S. Cl. 100—19 R **18 Claims**

A bale tying device comprising a twister assembly positioned adjacent one side of the compaction chamber of bale forming apparatus and a needle carriage assembly positioned adjacent the opposite side of the compaction chamber such that material is moved between the twister assembly and the needle carriage assembly as a high density bale is formed. The needle carriage assembly moves intermediate portions of a plurality of strands of wire across the rear end of the compaction chamber to join each of the strands with an intermediate portion of another strand adjacent twister hooks of the twister assembly. The joined portions of the strands of wire are locked into V-shaped grooves on spaced twister hooks and intermediate portions of the joined strands are cut allowing twisting of the severed portions to form a tie around the bale while simultaneously preparing the unused wire for tying a subsequently formed bale.

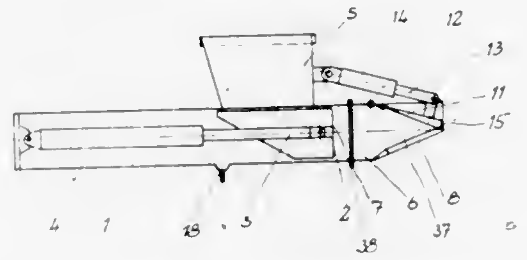


3,789,752
APPARATUS FOR COMPRESSING REFUSE

Herbert A. Wirz, CH-8707, Uetikon am See, Switzerland

Filed Sept. 23, 1971, Ser. No. 183,055
Claims priority, application Switzeriand, Dec. 29, 1970, 14370/70
Int. Cl. B30b *1/08, 15/16*

U.S. Cl. 100—98 R **7 Claims**



Apparatus for compressing refuse having a hydraulic ram which receives refuse from a hopper and presses it into a tapered nozzle. The nozzle has a hydraulically biassed flap which is deflected by the refuse to vary the nozzle discharge opening.

In a modification, the nozzle is formed by an S-shaped tube and has a hinged wall portion biassed into the tube.

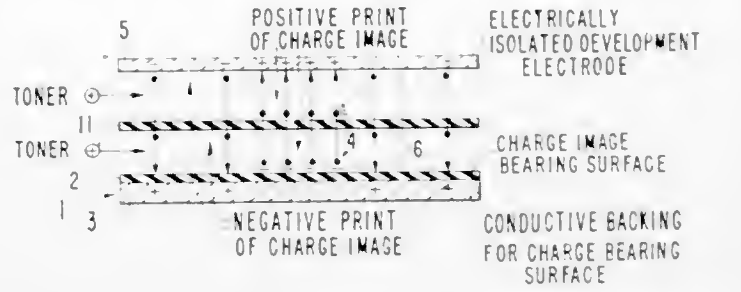
3,789,753
APPARATUS FOR PRINTING OF CHARGE IMAGES

Sherman L. Rutherford, Palo Alto, Calif., assignor to Variar Associates, Palo Alto, Calif.

Continuation of Ser. No. 135,294, April 19, 1971, abandoned. This application May 29, 1973, Ser. No. 364,455
Int. Cl. B41j *27/16*

U.S. Cl. 101—1 **1 Claim**

An electrically isolated development electrode is disposed immediately adjacent a charge image bearing surface of a charge image bearing structure having a conductive backing. The charge image induces a second charge image in the development electrode and produces an image electric field in the development gap between the first and second charge images. The second charge image further induces a background charge distribution in the backing member of opposite sign to that of the first charge image. An insulative web is disposed in the development gap to receive electroscopic pigment particles for printing either a positive or a negative print of the first charge image. Additional copies may be printed on successively introduced insulative webs without dissipating the first charge image.

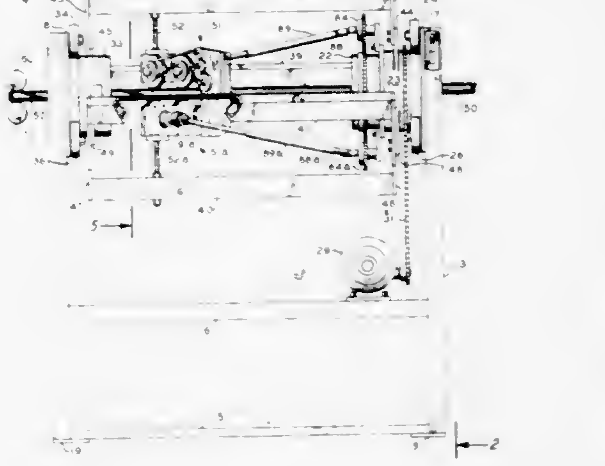

5
POSITIVE PRINT OF CHARGE IMAGE
ELECTRICALLY ISOLATED DEVELOPMENT ELECTRODE
TONER ⊕
11
TONER ⊕
4
6
CHARGE IMAGE BEARING SURFACE
2
1
3
NEGATIVE PRINT OF CHARGE IMAGE
CONDUCTIVE BACKING FOR CHARGE BEARING SURFACE

3,789,754
PRINTING IN A HELICAL PATTERN ON ELONGATED CYLINDRICAL ARTICLES

Don L. Shofner; Leroy E. Robinson, and Robert J. Martinovich, all of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Sept. 22, 1972, Ser. No. 291,173
Int. Cl. B41f *17/10*

U.S. Cl. 101—37 **9 Claims**



A machine for printing indicia on cylindrical articles, for example plastic pipe, in a helical pattern is provided with at least one printing unit mounted on a frame rotatable about the pipe, motor driven means for rotating the frame, and motor driven means for rotating the roll of each printing unit which contacts the pipe. Preferably, there are two printing units mounted in opposition to each other. Each printing unit includes an inking system which prevents loss of ink during the rotation of the frame.

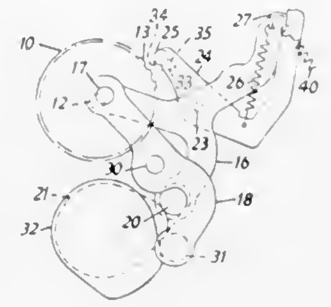
3,789,755
PRINTING DEVICES FOR CALCULATING APPARATUS

Henry Gross, London, England, assignor to Gross Cash Registers Limited, London, England

Filed May 2, 1972, Ser. No. 249,519
Claims priority, application Great Britain, May 13, 1971, 14725/71; Dec. 22, 1971, 59527/71
Int. Cl. B41j *25/32*

U.S. Cl. 101—95 **3 Claims**

A printing device comprising a row of printing elements each carrying a plurality of printing characters, a plurality of pressure members for pressing a print medium against the printing elements, and so arranged that each pressure member presses said medium against at least one and not more than three of said printing elements, carrier members carrying said pressure members, each carrier member being associated with at least one and not more than three printing elements, resilient means arranged so as to urge said pressure members independently of each other towards the printing elements, stop means limiting the movement of the carrier members towards the printing elements, and actuating means for moving the carrier member to bring the pressure members to the printing surfaces of the characters until the carrier members move off said stop means and the pressure members are then urged against the printing characters by said resilient means, then moving the pressure members over the characters and finally disengaging the pressure members from the characters.



3,789,756

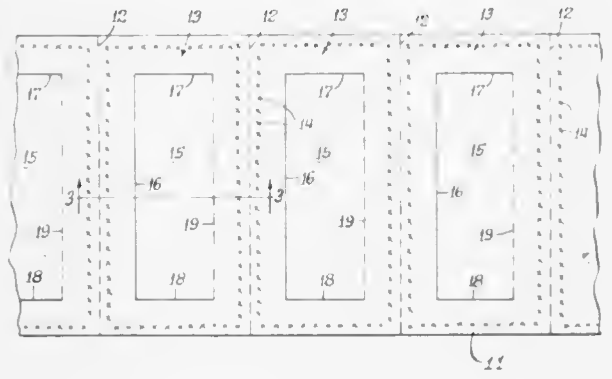
STENCIL CONSTRUCTION

Joseph A. Weber, Prospect Heights, Ill., assignor to Weber Marking Systems, Inc., Arlington Heights, Ill.

Filed July 20, 1972, Ser. No. 273,613

Int. Cl. B41n *1/24;* B41l *13/02*

U.S. Cl. 101—128.2 **1 Claim**



A stencil construction in which a generally rectangularly shaped stencil is adhesively secured along its peripheral edges to a backing sheet. The stencil and backing sheet have a generally rectangularly shaped central copy portion in which no adhesive is used therebetween. The central portion of the backing sheet is cut through on selected portions of its periphery and at least one side edge of the central portion of the backing sheet is perforated therealong so that it may optionally be used as a hinge for the remainder of the central portion or the central portion of the backing sheet may be torn off after the stencil has been cut with desired legends. During cutting of the stencil the backing sheet is in abutting position behind the central copy portion of the stencil. It is only during use of the stencil as a reproducing tool that the central portion of the backing sheet is either swung out of the way about its perforated hinge or torn off.

3,789,757

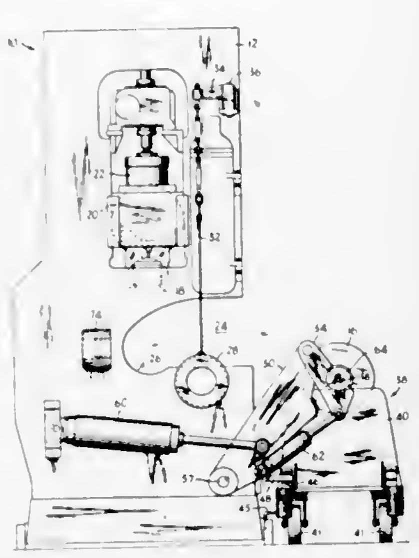
PRINTING PRESS HAVING AUTOMATIC PRINTING CYLINDER LOADING AND UNLOADING APPARATUS

John C. Motter; John C. Motter, Jr., and Dean R. Swagert, all of York, Pa., assignors to John C. Motter Printing Press Co., York, Pa.

Filed Mar. 26, 1971, Ser. No. 128,442

Int. Cl. B41f *9/18*

U.S. Cl. 101—153 **10 Claims**



Apparatus for automatically loading and unloading printing cylinders from a rotogravure printing press. The printing press, which is of itself conventional, includes two upright frame members having horizontal openings for lateral insertion of the journals of a printing cylinder. According to the invention, a transport arm is pivoted at one end on each of the frame members and provided at the other with a device for supporting and lifting a journal of the printing cylinder. Means are also provided for separately moving the two transport arms and lifting devices so that the printing cylinder can be lifted by the lifting devices from a dolly or hoist adjacent the printing press, transported into the press by the transport arms with the cylinder journals passing into the horizontal openings in the frame members and lowered into position in the press.

3,789,758

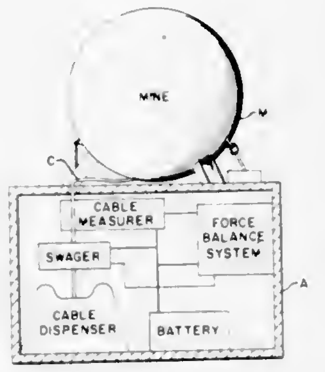
FORCE BALANCE PRESSURE DEVICE

William A. Plice, Hopkins, Minn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 12, 1957, Ser. No. 639,837

Int. Cl. B63f *3/02*

U.S. Cl. 102—13 **8 Claims**



1. In a moored mine and mine anchor having a mooring cable, a force balancing system, said system comprises a pivoted bar, means for applying to one end of said bar a force proportional to the depth of the water in which the anchor rests when on the bottom, means responsive only to the pay out of the mooring cable for applying a force to said bar for counterbalancing the force applied to the one end of said bar, means actuated by said bar when the counterbalancing force exceeds the applied force to cause the pay out of the cable to stop.

3,789,759

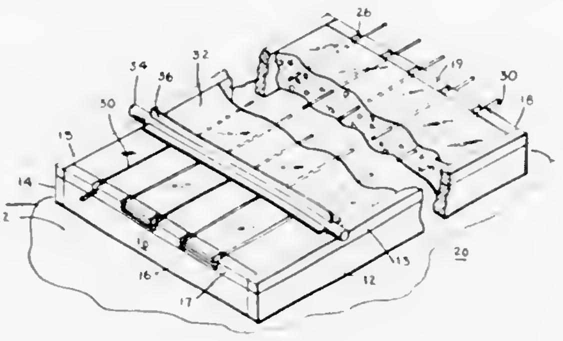
SURFACE RELIEF OF CONCRETE AND METHOD THEREFOR

Robert L. Jones, 30292 Grande Vista, Laguna Niguel, Calif.

Filed Aug. 30, 1972, Ser. No. 285,001

Int. Cl. F42d *1/00*

U.S. Cl. 102—23 **11 Claims**



Surface relief of concrete shapes is described wherein an explosive composition is embedded a shallow depth in the concrete shape and is thereafter detonated after the concrete has acquired a permanent set. The detonation removes the over burden of concrete and relieves the surface of the concrete in an aesthetically pleasing manner. The preferred explosive composition is a detonating cord which can be embedded in the concrete in a regular and orderly pattern and at a uniform depth, e.g., about 1/2 to 1 inch beneath the surface of the concrete shape when the concrete is poured into its containing form.

3,789,760

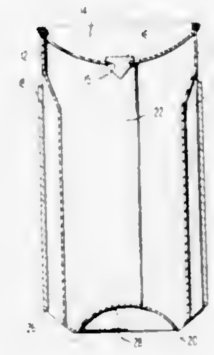
ENCLOSURE FOR EXPLOSIVE MATERIAL

George L. Griffith, Coopersburg, Pa., assignor to Commercial Solvents Corporation, Terre Haute, Ind.

Filed Apr. 13, 1972, Ser. No. 243,651

Int. Cl. F42b *3/08*

U.S. Cl. 102—24 HC **11 Claims**



An enclosure for explosive material providing a safe, easily handled explosive booster or primer which can utilize liquid, slurry or solid explosive and which includes recesses to receive detonators. The explosive material is completely enclosed in a container, which illustratively might be an aluminum can including a sealed cover. A sleeve encircles the container. The sleeve and the container cooperate to form recesses for receiving detonators. One type of recess is open on only one end to retain a detonator such as a blasting cap. Another type of recess is open on two opposite ends to permit threading of a detonating cord on which the primer is suspended. The recesses might be formed by indentations in the container sidewall or by furrows in the sleeve. The sleeve can include explosive material to add to the explosive force of the detonator, thereby assuring actuation of the primer.

3,789,761

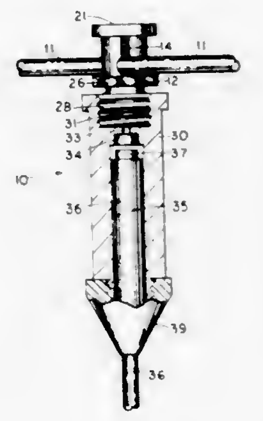
PROPAGATION TRANSFER ARRANGEMENT

Bruce W. Travor, Holland, Pa., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 2, 1973, Ser. No. 328,989

Int. Cl. C06c *5/06*

U.S. Cl. 102—27 R **3 Claims**



A propagation transfer arrangement for a high-low temperature flexible mild detonating fuze system having an impulse joint selectively connected to a desired portion of a fuze line. The impulse joint includes a base member and an anvil, both grooved or recessed to receive the fuze line desired portion, and a cap for securing the anvil within the base member. The base member has a firing pin, responsive to radial expansion of the fuze line desired portion in a transverse direction and opposite to or away from the anvil, for striking a detonator to ignite an end transfer assembly of a second high-low temperature flexible mild detonating fuze line.

3,789,762

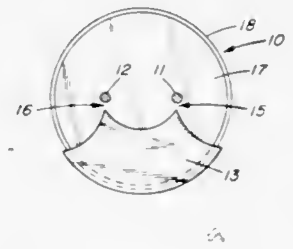
DEVICE TO PREVENT ACCIDENTAL IGNITION OF ELECTRO-EXPLOSIVES FROM ELECTROSTATIC DISCHARGE

John T. Petrick, Fredericksburg, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 30, 1972, Ser. No. 239,527

Int. Cl. F42g *3/18*

U.S. Cl. 102—28 R **2 Claims**



Conductive structure connected to a electroexplosive device casing and extending into close proximity to igniter electrical lead wires at a place where discharge of stray electrostatic charges across a spark gap from one or both of said lead wires to the conductive means will not cause ignition of the electroexplosive devices.

3,789,763
FIN-STABILIZED PROJECTILE FOR LAUNCHERS, MORTARS AND THE LIKE

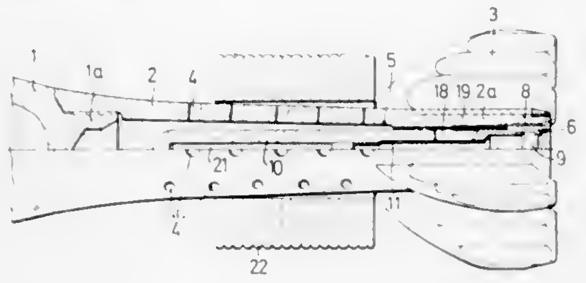
Frederic Arno Donner, Rahapajankatu 1, Helsinki 16, Finland

Filed Oct. 21, 1971, Ser. No. 191,273

Claims priority, application Germany, Oct. 21, 1970, P 20 51 574.6

Int. Cl. F42b *9/00*

U.S. Cl. 102—49.2 **9 Claims**



A fin-stabilized projectile for launchers, mortars and the like includes an annular tail member secured to the rear end of the projectile body with a fin assembly secured to the exterior of the tail member. A propulsion charge powder cartridge is mounted in the interior of the annular tail member and comprises an externally threaded element secured in the rear end of the annular tail member with a sleeve extending forwardly therein upon which an elongated tubular powder member is mounted.

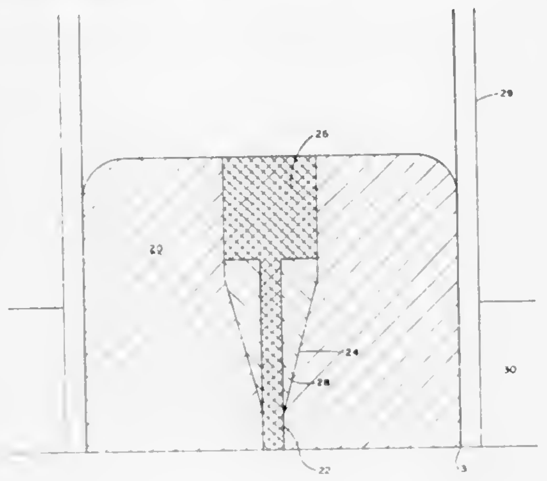
3,789,764
EXPLOSIVE LEAD PLUG

Richard Stresau, Spooner, Wis., and Robert Bonde, St. Louis Park, Minn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 20, 1973, Ser. No. 333,578

Int. Cl. F42b *3/10*

U.S. Cl. 102—70 R **1 Claim**



A metal fuze extension with an explosive-filled channel passing through it. The channel is small on one end and large on the other end with a conical section in the middle. A small conical insert fits into the conical portion of the channel. An opening extends from one end of the insert to the other allowing communication between the large and small ends of the channel. The large end of the channel is filled with an explosive charge. In the intended use of the extension, it is so positioned that the end containing the large diameter channel extends through the plate (usually steel) which forms the end of the canister. A detonation wave from a fuze located at the small end of the channel passes through the opening in the conical insert and causes detonation of the explosive material in the large end of the channel. The insert is then forced into the smaller end of the channel closing the smaller end of the channel and also the opening in the insert and the end of the plug is expanded so that the plug assumes the external configuration of a bottle stopper, preventing its ejection from the burster tube.

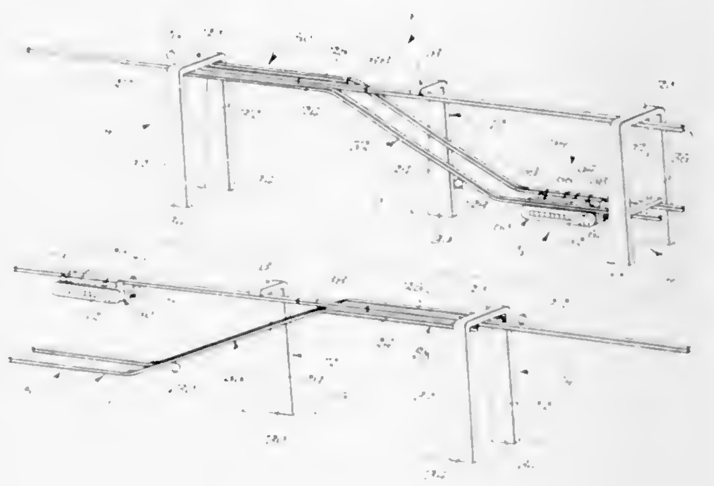
3,789,765
SWITCHING SYSTEM

Arthur P. Schultz, 9123 Rivershore Dr., Niagara Falls, N.Y.

Filed Oct. 26, 1972, Ser. No. 301,173

Int. Cl. E01b *25/06*

U.S. Cl. 104—96 **10 Claims**



A displaceable rail section, normally forming a part of a transportation system's main rail, is bodily movable out of alignment with the main rail to effect a transfer of a vehicle from the main rail to branch rails deviating from the path of the main rail.

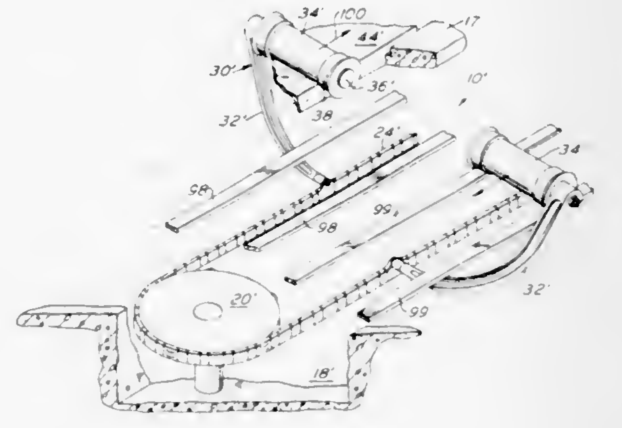
3,789,766
VEHICLE CONVEYOR

Paul D. Hurwitz, 1422 Redwood Ln., Wyncote, Pa.

Filed Feb. 22, 1972, Ser. No. 227,790

Int. Cl. B61b *13/12;* **B65g** *19/22*

U.S. Cl. 104—172 B **10 Claims**



A vehicle conveyor suitable for a car wash is disclosed wherein tire-engaging rollers are attached to an endless chain positioned beneath the path of the vehicle. The rollers may selectively engage a tire on the vehicle or may selectively move along a path located at an elevation below the elevation of the tire. The tire-engaging rollers are supported as cantilevers from the chain. Slots are provided adjacent the ends of the chain so that the rollers may move up to a tire-engaging position and return to a lower position.

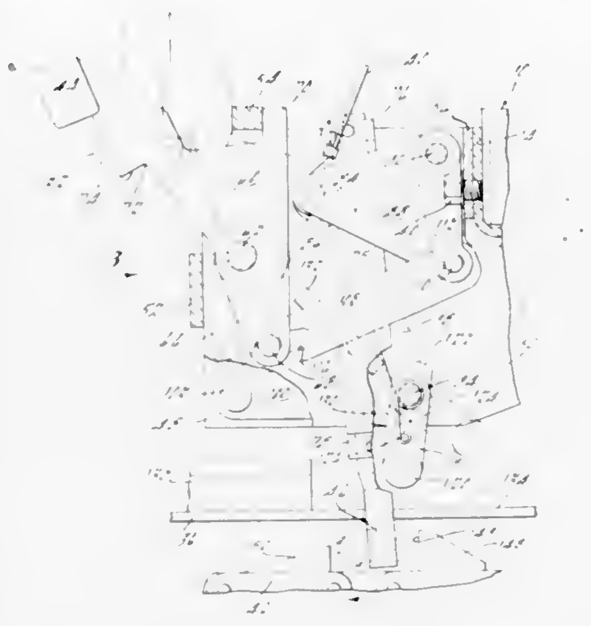
3,789,767
SUBFLOOR TOWLINE CONVEYOR SYSTEM

Robert Krammer, Farmington, Mich., assignor to Seatech Engineering, Inc., Southfield, Mich.

Filed Nov. 26, 1971, Ser. No. 202,198

Int. Cl. B65g *17/42*

U.S. Cl. 104—172 BT **34 Claims**



Disclosed is a subfloor towline conveyor system including a tow cart therefor having an improved tow pin actuating, controlling and locking mechanism. The mechanism includes a linkage system for controlling the movement of the tow pin to obtain power assisted engagement and disengagement with the towline conveyor, as well as improved means for positively locking the tow pin in a driven position and for manually locking the tow pin out of an operative position. There is also disclosed improved accumulating bumper means providing automatic accumulation of a plurality of such tow carts and also serving as a personnel safety bumper.

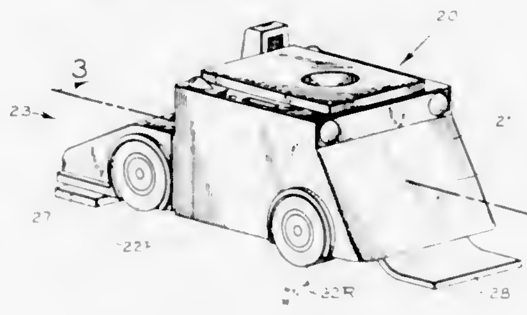
3,789,768
SLOT CAR TRACK CLEANING DEVICE

Jerry J. Broz, Scranton, Pa., assignor to Twinn-K, Inc., Indianapolis, Ind.

Continuation of Ser. No. 103,731, Jan. 4, 1971, abandoned. This application Nov. 6, 1972, Ser. No. 303,699

Int. Cl. B24b *23/00*

U.S. Cl. 104—279 **8 Claims**



A slot car track cleaning device for removing foreign matter from the conductors and bed of the slot car track. A main body having wheels rotatably mounted thereon is propelled on the slot car track by an electric motor housed within the main body. Wipers contacting the track conductors are electrically connected to the motor. The motor rotatably drives the rear wheels of the slot car. An abrasive conductor cleaner projects from the slot car and contacts the track conductors. A petroleum distillate saturated wick extends from the rear of the slot car removing lint and other foreign material from the track. The wick extends out of a tank formed within the main body having cleaning liquid therein.

3,789,769
CAR STABLIZING CONTROL SYSTEM

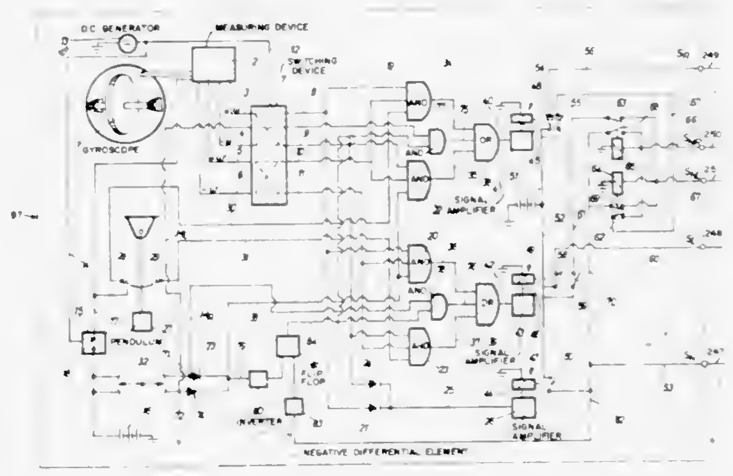
Alfred Strohmer, and Joachim Rau, both of Munich, Germany, assignors to Knorr-Bremse GmbH, Munich, Germany

Filed Jan. 26, 1971, Ser. No. 109,830

Claims priority, application Germany, Jan. 26, 1970, P 20 03 374.3

Int. Cl. B60g *21/06;* **B61f** *5/10, 5/24*

U.S. Cl. 105—164 **3 Claims**



The air cushion suspension system of a railway vehicle is controlled to tilt the vehicle in the proper direction in response to a curvilinear path. Control signals are generated from a gyroscope in response to the curvilinear movement of the vehicle. In response to these control signals there are generated signals indicating angular acceleration and angular velocity of the vehicle about its vertical axis. A central switch generates two measurement signals responsive to the directions of deflection of the vertical central longitudinal plane of the vehicle from its vertical and the plane of the track. In response to the angular acceleration and velocity signals, direction actuating signals are generated from two pair of AND circuits connected to two OR circuits with the direction actuating signals controlling the air cushion suspension to tilt the vehicle in the proper direction when travelling a curvilinear path. There is also generated a blocking signal which is independent of the direction of turning. The measurement signals and the blocking signal are delivered to a switching means which unblocks the generation of the actuating signals when the blocking signal disappears. Two further AND circuits are connected to the switching means and the outputs of these AND circuits effect the release of actuating signals.

3,789,770
ARTICULATED RAILWAY TRUCK

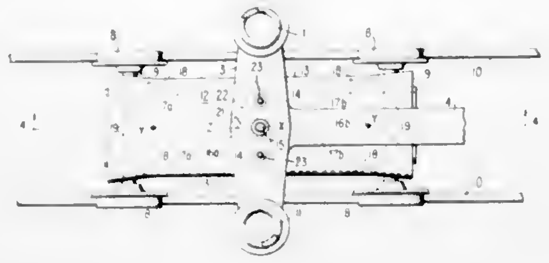
Harold A. List, Bethlehem, Pa., assignor to Railway Engineering Associates, Inc., Bethlehem, Pa.

Continuation of Ser. No. 882,359, Dec. 15, 1969, abandoned, which is a continuation of Ser. No. 680,257, Nov. 2, 1967, abandoned. This application Feb. 2, 1972, Ser. No. 222,999

Int. Cl. B61f *3/08, 5/14, 5/38*

U.S. Cl. 105—168 **6 Claims**

Two articulated railway truck assemblies for supporting and steering a railway vehicle, each comprising a main truck pivotally connected to the railway vehicle and two sub-trucks pivotally connected to the main truck, at least one of the subtrucks also being pivotally connected to the railway vehicle at



a particular point whose location is determined by the ratio of the truck assembly's wheel base to the distance between truck assemblies.

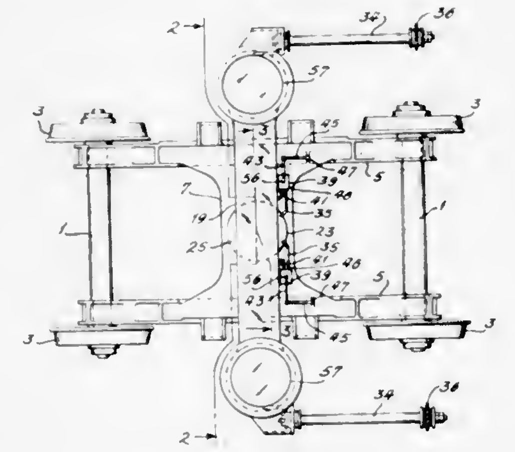
3,789,771
PNEUMATIC RAILWAY CENTER BEARING

Keith L. Jackson, Granite City, Ill., assignor to General Steel Industries, Inc., St. Louis, Mo.

Filed June 14, 1972, Ser. No. 262,788

Int. Cl. B61f *3/08, 5/10, 5/16*

U.S. Cl. 105—199 C **20 Claims**



A pneumatic center bearing for slidably supporting a railway vehicle body on a swivel truck has a horizontal pad of friction material between opposed horizontal surfaces of the truck and body parts for the purpose of damping oscillations of the truck about its swivel axis. To reduce frictional resistance offered by the friction pad when the vehicle is rounding curves, one of the surfaces is apertured and means is provided for introducing compressed air into the apertures responsive to swivel movements of the truck and thereby partly support the body by the compressed air and thus reducing friction between the body part of the bearing and the truck part.

3,789,772
HOPPER CAR DOOR OPERATING AND LOCKING MECHANISM

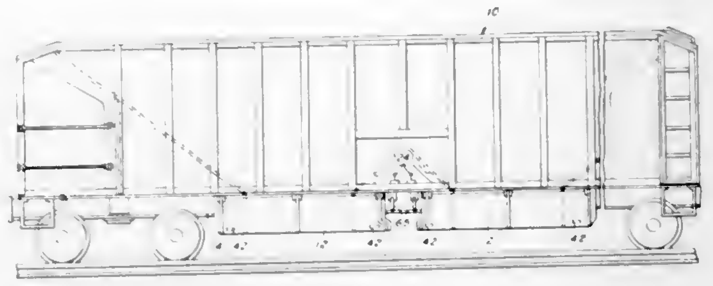
Haran W. Bullard, 4228 Wilderness Rd., Birmingham, Ala.

Filed May 15, 1972, Ser. No. 253,078

Int. Cl. B61d *7/08, 7/18, 7/28*

U.S. Cl. 105—240 **11 Claims**

A hopper car door operating and locking mechanism for bottom opening containers is especially suited for use in railroad hopper cars. The mechanism comprises pneumatic cylinder actuated lever arms linked to the hopper doors. A positive force is required to either open or close the hopper doors. The mechanism is an assembly which can be removed



and installed as a unit, and it eliminates need for removing the car from service for a long period of time for repairs to the operating mechanism.

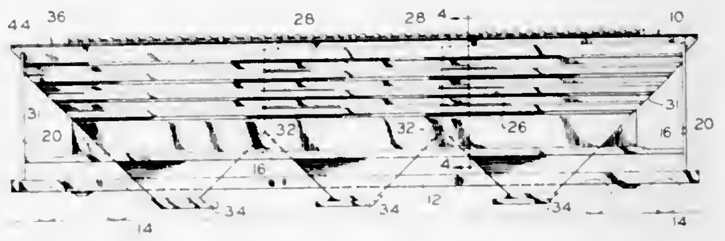
3,789,773
RAILWAY HOPPER CAR SIDE WALL CONSTRUCTION

George S. McNally, South Holland, Ill.; Floyd J. Brinks, Butler, Pa., and Sang H. Lee, Homewood, Ill., assignors to Pullman Incorporated, Chicago, Ill.

Filed Oct. 31, 1972, Ser. No. 302,613

Int. Cl. B61d *7/00, 17/06, 17/08*

U.S. Cl. 105—248 **8 Claims**



A railway hooper car having a folded plate side wall girder construction incorporating full length longitudinally extending corrugations having a generally trough shaped cross section to thereby form a side wall beam having vertical shear strength, transverse beam strength, as well as a high resistance to compressive stresses imposed by high buffing loads. Intermediate hopper partitions have stepped end portions to fit within the side wall corrugations.

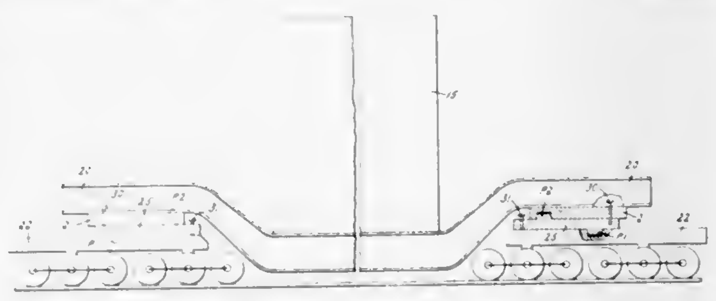
3,789,774
TRANSPORT VEHICLE FOR LONG LOADS HAVING LIMITED LATERAL ROADWAY CLEARANCE

Stanley H. Wilk, Dalton, Mass., assignor to General Electric Company

Filed May 8, 1972, Ser. No. 251,154

Int. Cl. B61d *3/16*

U.S. Cl. 105—367 **4 Claims**



In a transport vehicle including a swiveled wheel truck, a flat bearing plate between the bolster platform of the truck and a bed plate of the vehicle frame provides two longitudinally spaced swivel pins, one between the bearing plate and the truck and the other between the bearing plate and the vehicle frame. Selectable locking means between the bearing

plate and truck and between the bearing plate and vehicle frame provide means for preventing swiveling movement about either swivel pin while enabling swiveling movement about the other. By this means longitudinal spacing between swivel pins at opposite ends of the vehicle may be adjusted to reduce lateral displacement of the vehicle midpoint on curved sections of roadway.

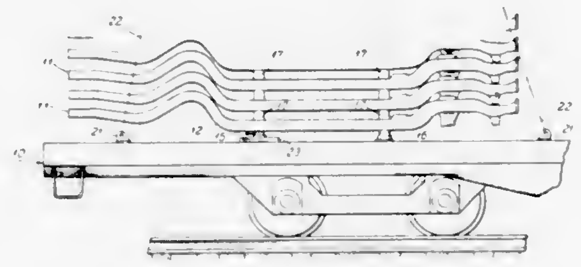
3,789,775
ADJUSTABLE PEDESTAL ASSEMBLY

Keith W. Broling, Olympia Fields, and Richard A. Tatina, Chicago, both of Ill., assignors to Portec, Inc., Oak Brook, Ill.

Filed May 17, 1972, Ser. No. 254,158

Int. Cl. B60p *7/08;* **B61d** *45/00*

U.S. Cl. 105—367 **7 Claims**



Adjustable pedestal assemblies for supporting stacks of automobile frames on the deck of a flat car. Each adjustable pedestal assembly forms a support for the rear end portion of the bottom frame of a stack of frames, and includes a channel-like base extending longitudinally of the car having parallel side walls and retainer flanges extending inwardly therefrom having inwardly opening notches spaced therealong. A pedestal block is supported on the channel-like base between the flanges thereof and is retained from tilting movement relative to the base by said flanges and is locked in position by a locking ring extending about the pedestal block. The locking ring has portions registrable with the notches in the flanges and is released from the notches by upward movement of the ring along the pedestal block, to accommodate movement of the pedestal block along the base in accordance with the length of frame to be supported.

3,789,776
HOPPER CAR HATCH COVER AND LOCK ASSEMBLY

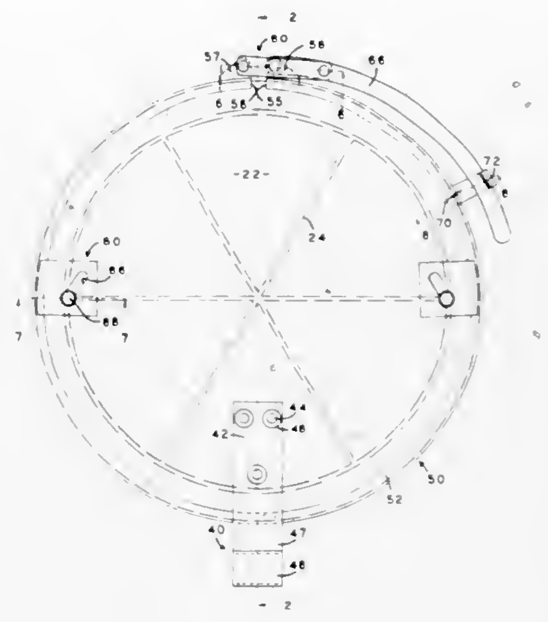
Donald J. Funkey, Ionia, Mich., assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Nov. 7, 1972, Ser. No. 304,445

Int. Cl. B61d *39/00*

U.S. Cl. 105—377 **5 Claims**

A hatch cover and lock ring assembly is provided for use in sealing the hatch of a pressurized railroad hopper car, with the cover in sealing engagement with the upper lip of the coaming. There is a circular cover hingedly attached to the railroad car and having an elastomeric gasket attached to the bottom surface of the cover, adjacent its periphery to be compressible between the cover and the upper lip. An annular lock ring having end portions and a generally U-shaped cross section is held by retaining means in a uniform spaced relationship with respect to the cover. An over-center clamp mechanism is connected to the end portions of the lock ring and when locked, it draws the lock ring into tight sealing engagement about the cover and upper lip causing the cover to approach the upper lip, compressing the gasket therebetween for an air-tight uniform seal. The cover and lock ring assembly enables the use of a cover made from fiber reinforced plastic (FRP),



rather than a heavier and more expensive aluminum or stainless steel casting, with improved sealing capability and less labor time and skill.

3,789,777
PLANETARY TYPE DRAWING TABLE

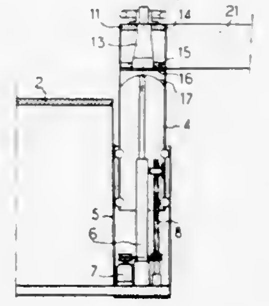
Claude Sautereau, 62, rue Saint-Lazare, Crepy-En-Valois, France

Filed Nov. 2, 1971, Ser. No. 194,855

Claims priority, application France, Nov. 3, 1970, 7039560; Sept. 21, 1971, 7133900

Int. Cl. A47f *5/12*

U.S. Cl. 108—4 **5 Claims**



A drawing table of planetary type. The drawing board performs general rotational movements about a fixed pivot with vertical axis which acts as a support base, and rotational movements on itself about a vertical axis, in the manner of a planet around the sun. The table comprises a fixed pivot with vertical axis, referred to as a column, a radial arm, referred to as a support arm, which turns in a horizontal plane about said pivot, and a board which is mounted rotatably about a vertical axis at the end of the support arm.

3,789,780

3,789,782

3,789,784

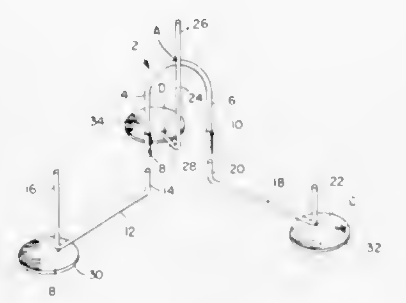
3,789,778
MODULAR DISPLAY STAND

Charles S. Brand, Old Westbury, N.Y., assignor to Oberly & Newell, Inc., New York, N.Y.

Filed July 5, 1972, Ser. No. 269,143

Int. Cl. A47b *57/00*

U.S. Cl. 108—94 **12 Claims**



A modular display stand includes a plurality of trays supported at various levels so as to be eccentrically rotatable and arcuately displaceable for imparting a high degree of spacing flexibility to the stand

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3,789,779
DOCUMENT SORTING APPARATUS

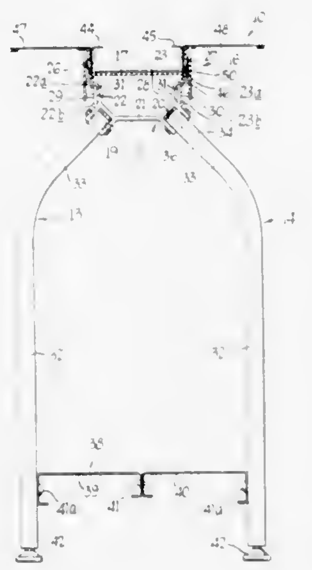
Jack B. Guest, and Kathleen E. J. Guest, both of 119 Albury Dr., Pinner, England

Filed Jan. 3, 1972, Ser. No. 214,783

Claims priority, application Great Britain, Jan. 11, 1971, 1200/71

Int. Cl. A47b *57/00*

U.S. Cl. 108—101 **16 Claims**



Document handling apparatus comprising an elongate and substantially rigid base mounted on four legs and an elongate carriage which is slidably mounted on the base. The carriage is formed with an elongate upwardly facing channel adapted to hold documents or alternatively to hold trays for documents and each end of the base is formed with two similar transversely spaced and longitudinally extending downwardly facing channels in which the upper end portions of the legs are located and mounted. The base is preferably formed with two upstanding longitudinally extending side walls and the carriage with two downwardly depending longitudinally extending side walls which overlap vertically with the upstanding side walls and rolling elements are mounted and contained between the upstanding and downwardly depending side walls enabling the carriage to be readily slidably moved on the base.

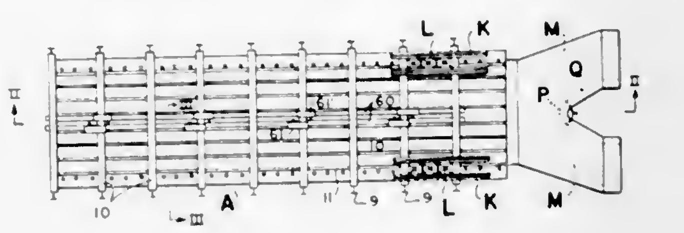
3,789,780
SUSPENDED ROOF AND END WALL CONSTRUCTION FOR REVERBERATORY FURNACE

Levi S. Longenecker, 61 Mayfair Dr., Pittsburgh, Pa.

Division of Ser. No. 182,409, Sept. 21, 1971. This application Dec. 29, 1972, Ser. No. 319,625

Int. Cl. F23m *5/04*

U.S. Cl. 110—1 A **7 Claims**



A refractory furnace construction is provided with a panelized roof using a hooked-on post or gooseneck type of suspension, as distinguished from a so-called piggy-back or cantilevered type. Each roof panel comprises a group of refractory tile members and their hanger castings constructed for unitized mounting within the roof construction. In addition to supporting metal structural framework, a cover assembly is provided to enable cleaning the upper surfaces of and, if desired, to provide a continuous cooling of the upper reaches of the refractory tile members of the roof. Refractory side wall parts converge towards each other and cooperate with a nose part to enclose an uptake end of the furnace. The nose part is constructed for unitized removal and insertion with respect to the side wall parts.

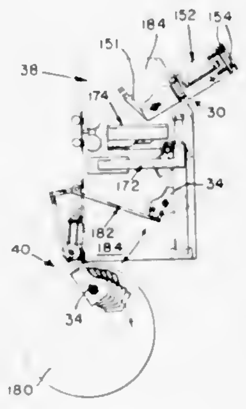
3,789,781
SEWING SYSTEM

Charles F. Carson; Carney J. Bryan, and Fred Birdsong, all of Greensboro, N.C., assignors to Blue Bell, Inc., Greensboro, N.C.

Filed Aug. 24, 1971, Ser. No. 174,351

Int. Cl. D05b *33/02*

U.S. Cl. 112—121.29 **7 Claims**



Apparatus for the sewing of preformed fabric blanks into garment components includes first and second stitch machines for sewing and controlling the fabric in a prescribed manner and a mechanism for collecting and stacking the sewn fabric. Each stitch machine includes means for positioning and aligning preselected edge portions of fabric in a prescribed manner. The fabric is directed in a predetermined path of travel relative to sewing instrumentalities to stitch selected portions to form a garment component.

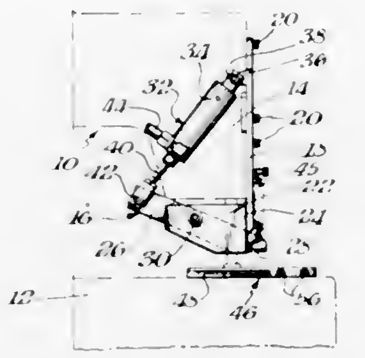
3,789,782
SEWING MACHINE CUTTER

Billy L. Speer, Campbellsville, Ky., assignor to Spear Systems, Inc., Campbellsville, Ky.

Filed Jan. 17, 1972, Ser. No. 218,148

Int. Cl. D05b *37/04*

U.S. Cl. 112—130 **4 Claims**



Sewing machine includes flat bed and cutting assembly includes mounting plate secured to machine with blade mounting arm integral with plate. Movable cutter blade is connected to arm and motivator between blade and mounting plate moves blade toward and away from flat bed of sewing machine. Stationary cutter blade is adjustably secured to flat bed of sewing machine and has cutting edge thereon arranged so that movable cutter blade sweeps across cutting edge of stationary blade when motivator is activated. Special mounts are provided for adjustably securing stationary cutter blade to bed of sewing machine so that stationary blade is adjustable for precise alignment of blade relative to movable blade.

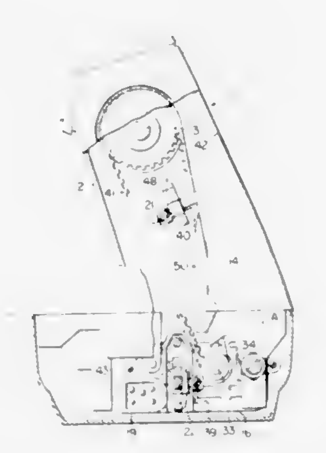
3,789,783
SEWING MACHINE AND MOTOR SPEED REGULATING SYSTEM THEREFOR

Albert N. Cook, 6 Stonehedge Ln., Madison, N.J.; Lawrence R. Goetz, Rt. 3, Box 647, Monticello, Ind.; Paul A. Manley, 1355 Brookfall Ave., Union, N.J., and Joseph P. Yelpo, 28 Galaway Pl., Boonton, N.J.

Filed June 1, 1973, Ser. No. 366,227

Int. Cl. D05b *69/12*

U.S. Cl. 112—220 **15 Claims**



A sewing machine having a solid state-controlled rectifier motor speed regulating system which includes a motor control module having electrical circuit components, a remotely located motor speed controller and switching means on the machine cooperably connecting said controller and circuit components through electrical circuitry incorporated in an end support base of a split housing for the motor. The end support base is adapted to mount the motor and motor control module and to also operably complete the electrical circuitry for the speed regulating system.

3,789,784
SEWING MACHINE

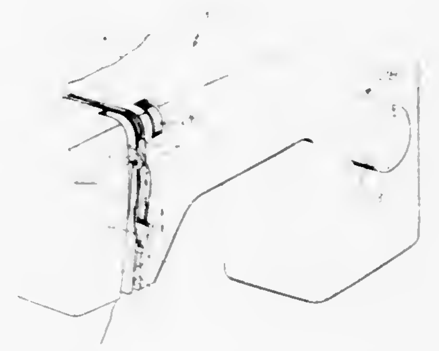
Susumu Hanyu, No. 1100, Higashi-machi, Sanda, and Noboru Kasuga, No. 767-25, Kami-Ichibunkatamachi, both of Tokyo, Japan

Filed June 22, 1972, Ser. No. 266,526

Claims priority, application Japan, June 22, 1971, 46/44513

Int. Cl. D05b *49/00*

U.S. Cl. 112—246 **7 Claims**



A thread take-up lever is reciprocable in vertical direction and receives thread from a thread tensioning device. Intermediate the take-up lever and the tensioning device the thread is supplied to a thread guide which is displaceable in parallelism with the movement of the take-up lever between an upper and a lower position. A dial is movable to at least two positions and is connected with the thread guide by linkage means so that the thread guide moves between its upper and lower positions in dependence upon the movement of the dial to the respective positions of the latter. Depending upon whether the thread guide is in its upper or lower position the amount of thread supplied to the take-up lever is varied, that is it is either increased or decreased.

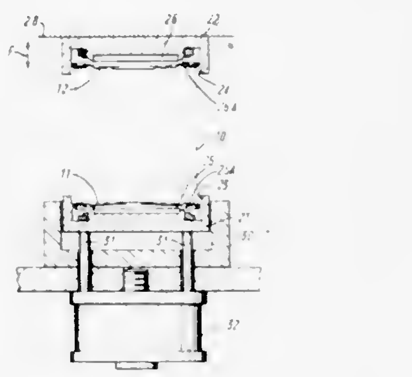
3,789,785
STERILISATION OF TINS

Maurice Petit, deceased, late of Paris, France, and Georges Thomas, Ville-D Avray, France, assignors to Ets J.J. Carnaud & Forges De Basse-Indre, Paris, France

Division of Ser. No. 886,585, Dec. 9, 1969, Pat. No. 3,704,140. This application Sept. 17, 1971, Ser. No. 181,356

Int. Cl. B21d *51/26*

U.S. Cl. 113—1 G **17 Claims**



To prevent bursting of a can due to the vacuum formed therein on cooling after sterilisation a part of the can, generally an end thereof, is subjected to a permanent deformation, effected before the can is fully cooled, which reduces the internal volume of the can.

3,789,786
DEVICE FOR APPLYING AN ELONGATED RIBBED STRIP TO THE EXTERIOR OF A ROTATING CONDUIT

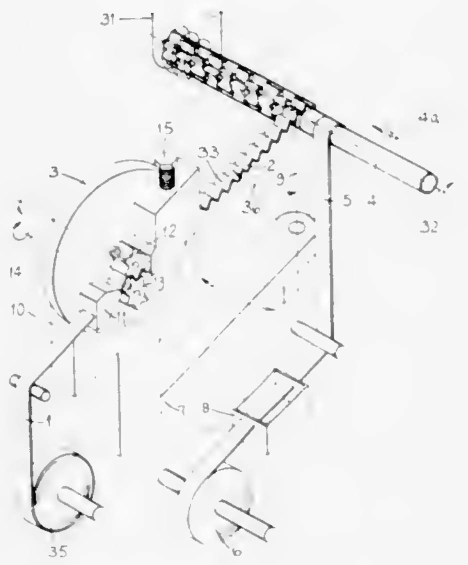
Konrad Wiedenmann, Staufenring, and Peter Prelisauer, Hafenbad, both of Germany, assignors to Wieland-Werke AG, Ulm, Germany

Filed Mar. 1, 1972, Ser. No. 230,640

Claims priority, application Germany, Mar. 4, 1971, P 21 10 306.0

Int. Cl. B21d *53/00*

U.S. Cl. 113—1 C **12 Claims**



A device for the manufacture of externally ribbed heat transfer conduits and/or cores insertable into conduits to provide internally ribbed heat transfer conduit. Means for converting a smooth ribbon into a corrugated ribbon are mounted on a tool holder which in turn is mounted on means pivotable around an axis perpendicular both to the elongated direction of the corrugated ribbon and to the axis of the conduit, or core as the case may be. This pivoting is to enable the ribbon to be wrapped around the conduit, and/or core, in close side to side abutment of the several wraps with respect to each other. The wrapping angle is adjustable from about 45° to about 135° with the 90° position being chosen corresponding to the angle required for a conduit or core approximately midway between the size extremes which a given machine is to handle. A given tool holder and the tools mounted thereon are readily replaceable by lifting one tool holder off the driving gears provided therefor and replacing it with another tool holder.

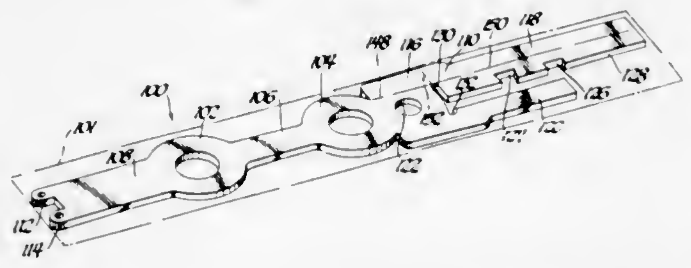
3,789,787
METHOD OF MANUFACTURING A GEARSHIFT AND DETENT PLATE BRACKET

Thomas J. Milton, 313 Cornell St., Bay City, Mich.

Division of Ser. No. 194,173, Nov. 1, 1971, Pat. No. 3,748,921. This application Jan. 26, 1973, Ser. No. 326,796

Int. Cl. B21d *53/88*

U.S. Cl. 113—116 R **2 Claims**



The steering column-mounted shift mechanism shown includes a rotatable stamped shroud secured to a stamped gearshift and detent plate bracket which, in turn, is operatively connected to the usual shift or control tube. The bracket is formed from a flat blank to include a pair of spaced end rings with an interconnecting strap member and having a support for the pivotal mounting of a shift lever formed on a side of one of the end rings and a bracket with a pair of arcuate mounting flanges formed on a side of the other end ring in spaced parallel relationship. The arcuate flanges are secured to an inner surface of the shroud and one of the flanges includes notches suitable for cooperation with a sliding rack of the usual steering column lock system. A shift lever biasing spring is mounted through an opening in the bracket and retained at one end against the shift lever pivotal mounting support. This arrangement is adaptable for use with either an automatic or a synchromesh transmission.

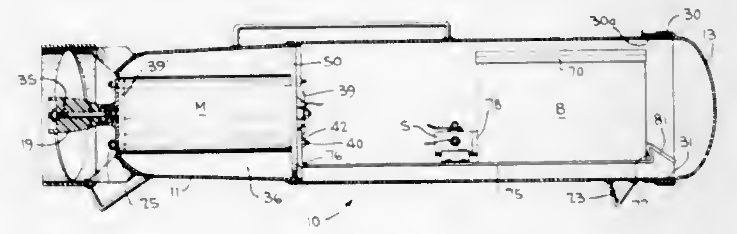
3,789,788
BODY SEAL FOR UNDERWATER DEVICE

George J. Peroni, Miami, Fla., assignor to Seatech Corporation, Miami, Fla.

Division of Ser. No. 28,476, April 14, 1970, Pat. No. 3,685,480. This application Nov. 19, 1971, Ser. No. 200,452

Int. Cl. B63b *21/56*

U.S. Cl. 114—16 A **3 Claims**



Heat from the motor of a sealed underwater vehicle is transferred and dissipated through direct heat transfer paths having sufficient heat transfer capacity to permit the continuous operation of the motor at a safe temperature. The direct transfer path includes an annular disc that supports the rear of the motor and also reinforces the interior of the shell-like body of the vehicle; further reinforcement being provided by the fit of the battery in the vehicle. The nose cone is welded to a standard pipe and a rear dome is removably mounted and sealed to the other end of the pipe by a stretchable elastic band. A spring clip is utilized to retain the internal operating assembly together for ease of assembly and disassembly. Control grips for the vehicle provide an open grip by the diver and distribute the bulk of the pulling force across the length of the second and third sections of the diver's fingers and by friction to the full length and width of the palm.

3,789,789
HYDROFOIL SAILING CRAFT

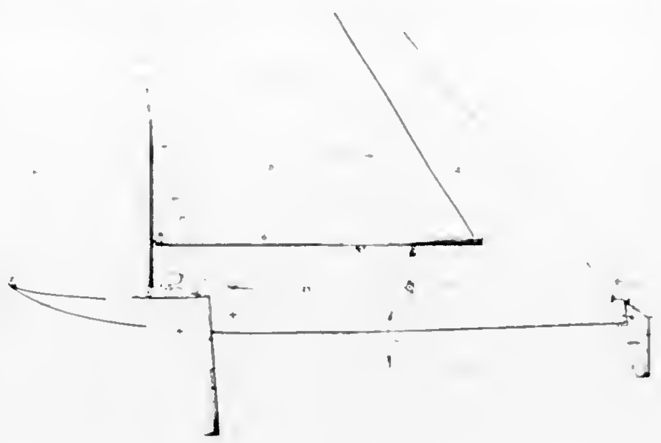
James M. Cleary, P.O. Box 541, Falmouth, Mass.

Filed Mar. 23, 1972, Ser. No. 237,414

Int. Cl. B63b *1/18*

U.S. Cl. 114—66.5 H **25 Claims**

A hydrofoil sailing craft having a hydrofoil assembly comprising an outrig pivotally mounted on the hull of the craft and a pair of swept-back hydrofoils mounted on each end of the outrig, an elastic restraint attached to the outrig and to a control shaft mounted on the hull of the craft whereby the foils are permitted to pivot through an angle which is controlled by the combined effects of the elastic restraint and the rearward shift of the lift center on the hydrofoils as they rise from the water. Means are also provided for adjusting the tension on the elastic restraint and for pivoting the hydrofoils inwardly to adjust the angle of the hydrofoils with respect to the outrig and ultimately to fold the hydrofoils against the outrig for transport.



3,789,790
SYSTEM FOR REEFING AND FURLING SAILS

Donald H. Crall, 1580 Oleander, Chula Vista, Calif.

Continuation-in-part of Ser. No. 198,707, Nov. 15, 1971, Pat. No. 3,749,043. This application June 1, 1973, Ser. No. 366,173

Int. Cl. B63h *9/04*

U.S. Cl. 114—106 **10 Claims**

Spool sections are rotatably mounted on the jib stay. Each section is formed of two identical halves which are fixed together by screws or clips. The two parts in cross-section are formed with a central hole which receives the stay. A bore is formed on one side and connected to the exterior by a first slot. A smaller second bore has a second slot to the exterior. The luff of a sail and its luff rope fit in one large bore, the luff extending out the first slot. The luff rope extends up over a pulley in a crown block above the highest spool section, then down through the first bore on the opposite half. Thus the sail may be rapidly installed. Pins fit into the second bores of adjacent spool sections, holding them for rotation together. A drum consisting of two sections screwed together and fixed to the lowermost spool section receives a furling line used to revolve the spool sections and furl or reef the sail.

3,789,791
CHEMICAL HULL PATCH

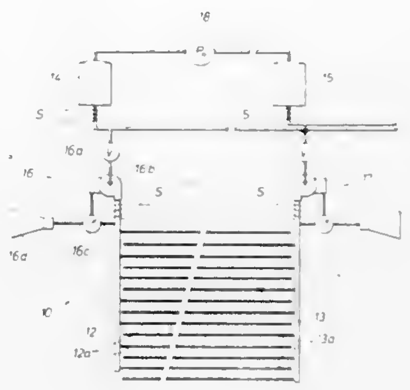
Robert R. Lent, Houston, Tex., and Francis G. Firth, El Segundo, Calif., assignors to Tenneco Oil Company, Houston, Tex.

Filed Apr. 12, 1971, Ser. No. 133,255

Int. Cl. B63b *23/16*

U.S. Cl. 114—227 **23 Claims**

A system and method in which in a preferred form, a network of breakable conduits are secured to the internal confining surfaces of a fluid containing structure such as the compartment walls of an oil tanker. The conduits are adapted to be broken upon rupture of the containing walls whereupon one or more reactive chemical agents are forced through the ruptured conduit system and are discharged into the confines of the structure in the area of the rupture where they react to form a solid or semi-solid mass of limited size. The resulting mass forms a localized blockage which reduces or terminates flow of the contained fluid through the point of rupture. Automatic control systems may be employed to initiate and terminate flow of the reactive agents through the pipe network.



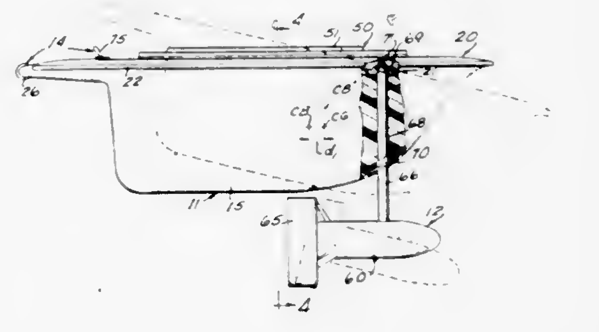
3,789,792
MOTORIZED SWIMMING AID

David P. Smith, 3909 Campbellton Rd., S.W. Apt. E-9, Atlanta, Ga.

Filed Feb. 3, 1972, Ser. No. 223,226

Int. Cl. A63c *11/10*

U.S. Cl. 115—6.1 **4 Claims**



A motorized swimming aid including a boat shaped hull with a pair of handles at the rear end thereof to be grasped by a swimmer and be pulled along the surface of the water. The center of gravity of the swimming aid is located within the hull laterally aligned with and longitudinally spaced from the center of buoyancy to generate a moment of force on the hull to lift the handles out of the water. A motor is attached to the hull to generate a moment of force on the hull when it is operating to force the handles toward the surface of the water. The motor is powered by two batteries selectively connectable to the motor in parallel or in series to vary the operating speed of the motor.

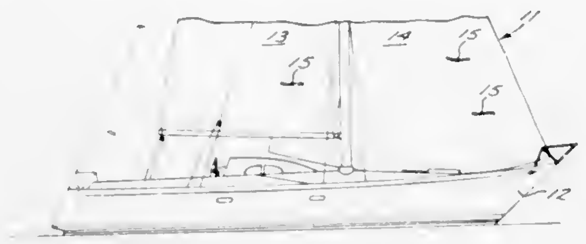
3,789,793
METHOD OF DETECTING WIND AT A MID-POINT OF A SAIL AND MEANS THEREFOR

Melville Keim, 933 via Lido Soud, Newport Beach, Calif.

Filed Nov. 21, 1972, Ser. No. 308,311

Int. Cl. G01d *21/00*

U.S. Cl. 116—114 R **17 Claims**



Wind indication and direction may be sensed by a flexible strip attached to the surface of a sail. A button member and a reception member attach the flexible strip to a selected point on the sail. A pair of flexible strips may be attached on opposite sides of the sail to indicate the presence and direction of wind from vantage points on either side of the sail.

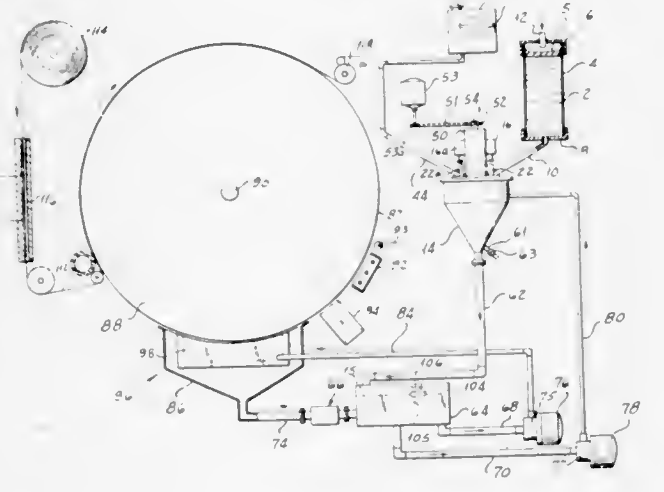
3,789,794
APPARATUS FOR DEVELOPING ELECTROSTATIC IMAGES

Ian Edward Smith, Lockleys, South Australia; Peter John Hastwell, Elizabeth Grove, South Australia, and Marinus Cornelius Vermeulen, Valley View, South Australia, all of Australia, assignors to Savin Business Machines Corporation, Valhalla, N.Y.

Filed Dec. 27, 1971, Ser. No. 212,155

Int. Cl. G03g *13/10*

U.S. Cl. 118—7 **12 Claims**



An electrostatic copier includes means to recirculate developer comprising a diluent carrier and a tacky toner, between a developer supply tank and a developer station. A recirculation system communicates a mechanical mill with the supply tank. Means monitoring developer level in the supply tank and opacity of the developer material control the respective feeds of carrier and toner to the mill.

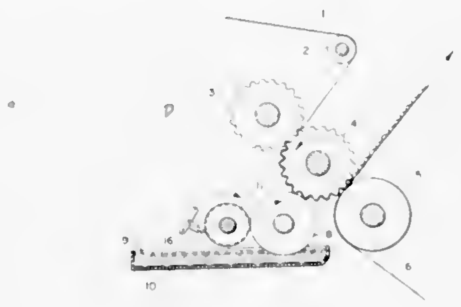
3,789,795
GLUE-APPLYING APPARATUS FOR CORRUGATED PAPERBOARD MACHINE

Helmut Brandenburg, Wuppertal-Ronsdorf, Germany, assignor to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei mbH, Bochum, Germany

Filed Mar. 15, 1972, Ser. No. 234,779

Int. Cl. B05c *1/08*

U.S. Cl. 118—262 **3 Claims**



A smooth surface applicator roll dips into glue in a vat and applies the glue to the crests of the corrugations of a corrugated paper web traveling around a support roll above the vat. A doctor roll is located beside the applicator roll above the glue level in the vat and is pressed against the side of the applicator roll that carries glue upwardly. The doctor roll is rotated in the same direction as the applicator roll to remove glue from it. The doctor roll is provided with grooves extending around it so that laterally spaced strips of glue are left on the applicator roll between the areas of the latter from which glue is removed by the doctor roll. As a result, longitudinally spaced areas of glue are applied to the crest of each paper corrugation by the smooth surface applicator roll.

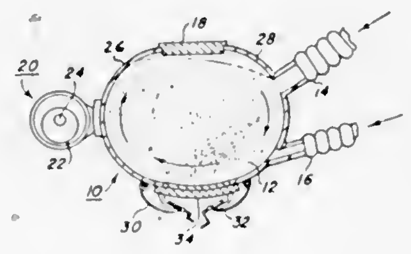
3,789,796
APPARATUS FOR PRODUCING DEVELOPER MATERIAL

Robert W. Madrid, Macedon, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 585,875, Oct. 11, 1966, abandoned. This application Jan. 20, 1971, Ser. No. 107,913

Int. Cl. G03g *13/08*

U.S. Cl. 118—612 **7 Claims**



Carrier beads for electrostatographic developer mixtures having substantially smooth surfaces and having finely divided particulate material imbedded in a softenable surface are made by softening the external surface of the bead material and contacting the softened bead with finely divided particulate material and subjecting the beads to multiple collisions with other beads.

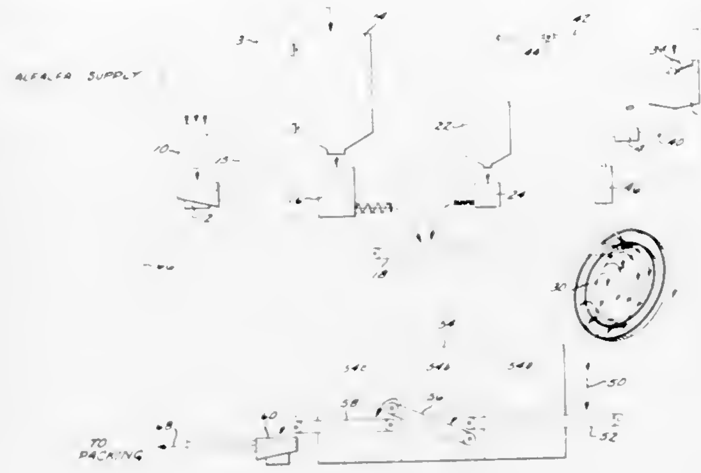
3,789,797
CAT LITTER

Andrew I. Brewer, Los Angeles, Calif., assignor to Star-Kist Foods, Inc., Terminal Island, Calif.

Filed Nov. 12, 1971, Ser. No. 198,112

Int. Cl. C05f *5/00*

U.S. Cl. 119—1 **11 Claims**



An animal litter prepared from a mixture of alfalfa, bentonite and a binder for absorbing and neutralizing the odors of animal waste matter.

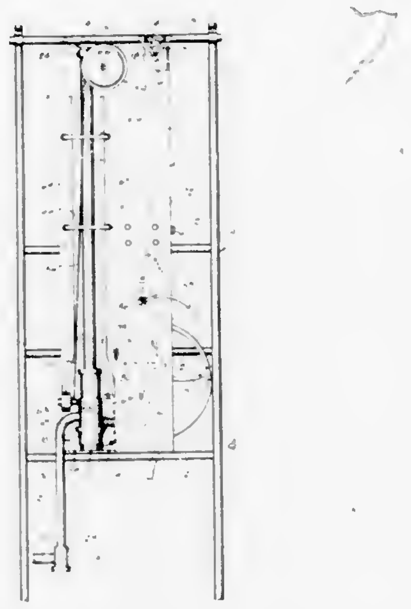
3,789,798
AUTOMATIC MILKING UNIT

Rolf W. Reisgies, Madison, and Franklin B. Jones, Delavan, both of Wis., assignors to Sta-Rite Industries, Inc., Delavan, Wis.

Filed Aug. 10, 1972, Ser. No. 279,337

Int. Cl. A01j *5/04*

U.S. Cl. 119—14.08 **27 Claims**



An automatic milking unit to be associated with a milking stall or palor. The milking unit includes a vertical shaft and a housing is mounted for sliding movement on the shaft and carries an arm that supports a milking claw. The housing is biased upwardly to a storage position and when manually lowered, it follows a cam track which rotates the milking claw to a position beneath the cow's udder and is locked in the lowered position. The milking claw is connected by a hose to a milk receptacle adjacent the stall and an automatic release mechanism is incorporated with the receptacle so that the vacuum to the claw and teat cups will be automatically shut off when the milk flow ceases. Cessation of the milk flow releases the teat cups and also acts to unlock the housing so that the arm and claw will be urged upwardly to the storage position.

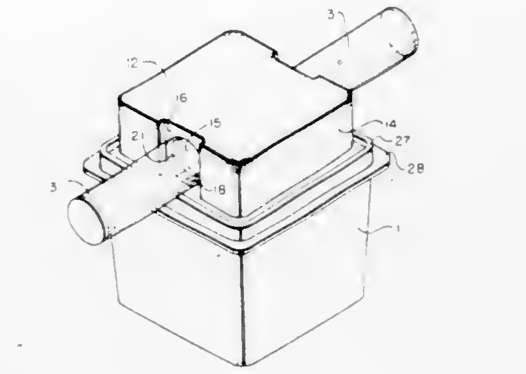
3,789,799
EDUCATIONAL OBSERVATORY

John B. Orfei, Revere, Mass., assignor to American Science & Engineering, Inc., Cambridge, Mass.

Filed Oct. 12, 1971, Ser. No. 188,087

Int. Cl. A01k *01/00*

U.S. Cl. 119—15 **2 Claims**



An educational observatory includes a dish-shaped base member of thermoplastic material formed with circular sidewall openings with recessed and reinforced sockets for accommodating transparent vials which may be detachably secured to these sockets. Each socket has a flange with a radial length greater than the thickness of the sidewall for bonding to the inside of the sidewall. The socket forms a seat for one end of the vial, and the ridge means between the sidewall opening and vial seat engages lip means on the vial to prevent its accidental removal from the socket. A transparent hood matingly engages an edge portion of the circumferential wall of the dish-shaped base member.

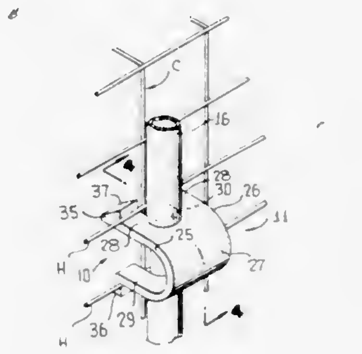
3,789,800
WATER FOUNTAIN SYSTEM

Frederick W. Steudler, Jr., Lancaster, Pa., assignor to The Vallorbs Jewel Company, Lancaster, Pa.

Filed Apr. 24, 1972, Ser. No. 246,989

Int. Cl. A01k *07/00*

U.S. Cl. 119—18 **18 Claims**



This disclosure relates to a novel system for suspending water fountains for mass poultry watering, and is particularly directed to means for coupling the supporting member of a water fountain to horizontal wires of a poultry cage, the coupling means being a clip having a bight portion and two pairs of spaced resilient legs whose ends are clamped to the wires and between each pair of legs is a slot for supportingly embracing the water fountain supporting member. Another clip is of a closed loop configuration defined by a pair of legs common to two bight portions which embrace a pair of water fountain supporting members, the clip being not only adjustable vertically with respect to a cage but also adjustably carries a support for a conventional water pipe.

3,789,801

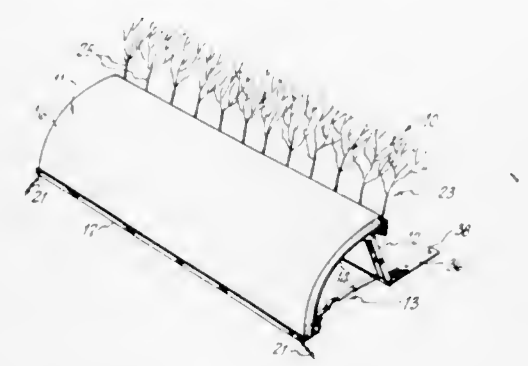
PORTABLE, COLLAPSIBLE STEEPLECHASE HURDLE OR FENCE

Joseph H. Moreng, Ridgefield, N.J., assignor to Joseph Moreng Iron Works, Inc., Ridgefield, N.J.

Filed Jan. 5, 1973, Ser. No. 321,334

Int. Cl. A01k *15/00*

U.S. Cl. 119—29 **10 Claims**



A portable, collapsible steeplechase hurdle or fence comprises a barrier member of light weight, reinforced construction which is adapted to rest on the ground, at one longitudinal edge, in the erected condition and which is preferably curved in the direction toward the opposite or uppermost longitudinal edge, support legs pivoted in back of the barrier member to swing between erected positions, in which the legs extend downwardly from the uppermost edge of the barrier member for engagement with the ground, and stored positions in which the legs lie against the barrier member, and bracing link members pivotally connected to the barrier member and legs and being movable between extended and collapsed positions respectively corresponding to the erected and stored position of the legs, with such bracing link members being automatically retained in either their extended or collapsed positions for preventing inadvertent displacement of the legs from either their erected or stored positions, respectively.

3,789,802

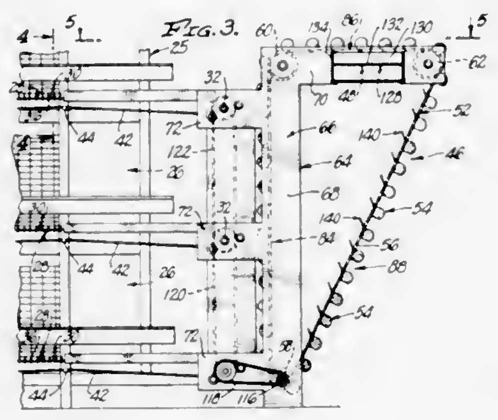
AUTOMATIC POULTRY EGG COLLECTOR

John L. Conley, 3870 Chino Ave., Chino, Calif.

Filed May 12, 1971, Ser. No. 142,511

Int. Cl. A01k *31/14*

U.S. Cl. 119—48 **17 Claims**



An automatic egg collector for an automated poultry handling system having a poultry cage battery composed of tiered banks of poultry cages with inclined floors along which eggs roll from the cages onto feeder conveyors alongside the cage tiers. The several feeder conveyors of each cage bank feed a common transfer conveyor which transfers eggs from the feeder conveyors to an overhead outfeed conveyor. The outfeed conveyor transports the eggs from all the transfer conveyors of the cage battery to an egg receiver.

3,789,803

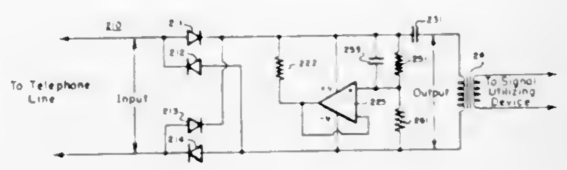
INDUCTOR-LESS TELEPHONE LINE HOLDING CIRCUIT GIVING HIGH A.C. SHUNT IMPEDANCES

Steven J. Davis, Ridgefield, and Stephen L. Domyan, Bridgeport, both of Conn., assignors to General Datacomm Industries, Norwalk, Conn.

Filed Nov. 15, 1971, Ser. No. 198,789

Int. Cl. H04m *1/00*

U.S. Cl. 179—81 R **6 Claims**



A circuit is disclosed for eliminating the inductor ordinarily used to provide large A.C. shunt impedances in a telephone line holding circuit. A relatively low resistance path through the output of an amplifier and one of its voltage supply inputs shunts the input of the line holding circuit. The input is also shunted by a phase shifting and voltage dividing network that phase shifts the input A.C. signal to cause the current signal to lead the voltage signal. The phase shifted signal is applied to the input of the amplifier. The amplifier has a gain of one and the voltage of the signal applied to it approaches the voltage at the input to the circuit. As a result, the A.C. signal voltage at the output of the amplifier has a magnitude and phase relation with respect to that of the input signal that produces a high A.C. shunt impedance.

3,789,804

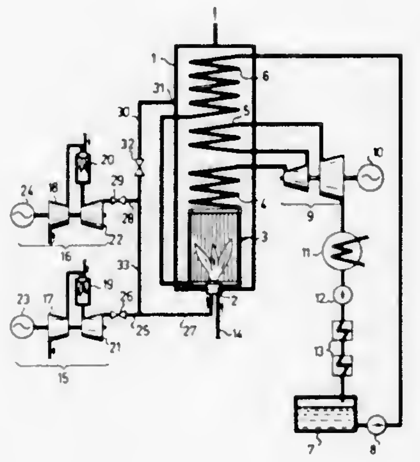
STEAM POWER PLANT WITH A FLAME-HEATED STEAM GENERATOR AND A GROUP OF GAS TURBINES

Emile Aguet, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Dec. 14, 1972, Ser. No. 314,963

Int. Cl. F22b *33/18*

U.S. Cl. 122—1 R **7 Claims**



At least two gas turbine groups of identical construction are selectively connected to the burner of the steam generator. If one group fails, the other group takes over to deliver the combustion air necessary to continue efficient operation without an interruption in service. In normal operation, one gas turbine group is connected to the burner while the other is connected at a mixing location in the steam generator, e.g. between the preheater and a superheater.

3,789,805

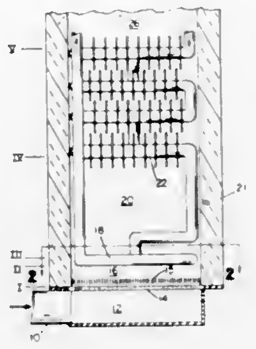
BURNER AND HEAT EXCHANGER

Glenn C. Williams, Lexington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 17, 1972, Ser. No. 254,001

Int. Cl. F22b *21/22*

U.S. Cl. 122—235 R **5 Claims**



A combination burner and heat exchanger has a first combustion zone for hot gaseous flow adjacent the burner, a first stage of heat exchanger in and terminating this zone and adapted to cool the flow to a temperature too low to support formation of certain undesired components therein but sufficiently high to support combustion of other undesired components, a second combustion zone, longer than the first, wherein the flow is maintained at a temperature sufficiently high to support such combustion, and a second stage of heat exchanger wherein the flow exiting the second combustion stage is cooled below the combustion temperature.

3,789,806

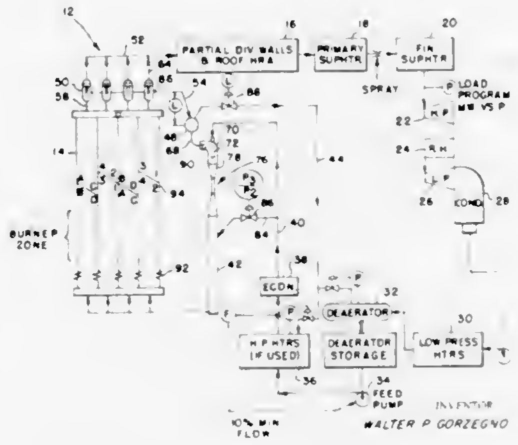
FURNACE CIRCUIT FOR VARIABLE PRESSURE ONCE-THROUGH GENERATOR

Walter P. Gorzegno, Florham Park, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.

Filed Dec. 27, 1971, Ser. No. 211,899

Int. Cl. F22d *7/00*

U.S. Cl. 122—406 R **28 Claims**



A variable pressure vapor generator of the once-through type in which circulation is established at normal loads by the generator feed pump. However, at start-up and loads below about 50 percent, evaporation in the generator furnace enclosure is carried out only to a vapor-liquid mixture. At least a minimum flow, for instance about 10 percent flow, is maintained by the generator feed pump, and circulation in the furnace enclosure is established by natural recirculation of the liquid portion of the vapor-liquid mixture, assisted by the feed pump flow. By the invention, turbine throttle pressure is varied in response to load demand, and fluid pressure within the vapor generator circuit is varied essentially in step with the throttle pressure.

3,789,807

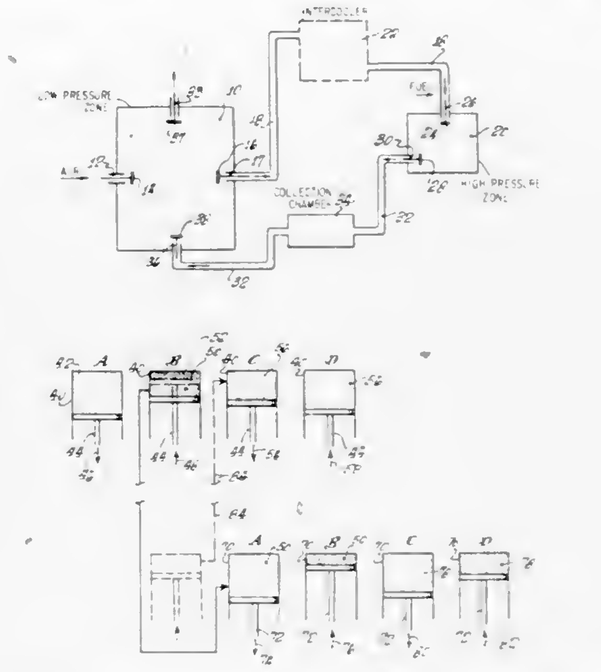
DUAL COMBUSTION PROCESS FOR AN INTERNAL COMBUSTION ENGINE

James David Pinkerton, 12689 Cometa Ave., Sylmar, Calif.

Filed June 19, 1972, Ser. No. 264,201

Int. Cl. F02h *75/12;* **F01k** *27/00;* **F02m** *25/06*

U.S. Cl. 123—1 R **22 Claims**



An internal combustion process in which fuel is twice combusted before leaving the system. Air is compressed in a low pressure cylinder with some of this compressed air being withdrawn and injected, with or without cooling, into a high pressure cylinder where it is further compressed and combusted with fuel in a highly fuel rich mixture. The exhaust gases from the high pressure cylinder are withdrawn from the latter and flowed into a reservoir chamber from which they are intermittently withdrawn and injected into the low pressure cylinder for mixture and combustion with the compressed air in the latter cylinder. The foregoing steps are repeated after the exhaust gases are purged from the low pressure cylinder.

3,789,808

SUPERCHARGING COMBUSTION ENGINES

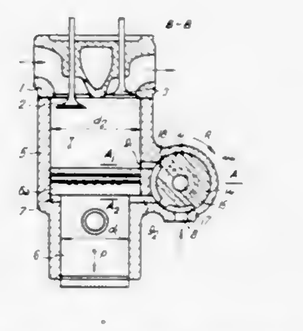
Antonin Richter, Prague, Czechoslovakia, assignor to Ustav pro vyzkum Motorovych Vozidel, Praha, Czechoslovakia

Filed June 20, 1972, Ser. No. 264,462

Claims priority, application Czechoslovakia, July 2, 1971, 4880/71

Int. Cl. F02b *33/14*

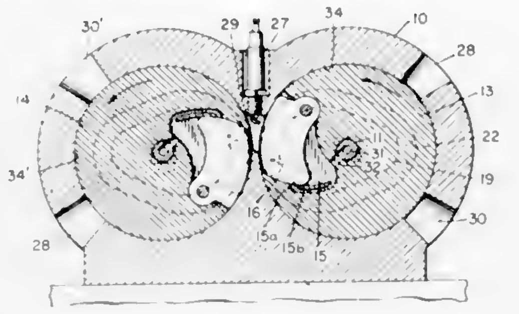
U.S. Cl. 123—71 R **7 Claims**



Method and Apparatus for supercharging the cylinder, wherein additional air is compressed in two stages and only delivered to the cylinder in bulk during the suction stage of the working cycle. In the expansion stage the compressed air is diverted to the other cylinders and only a portion of the compressed air is delivered to the cylinder and only at the end of the expansion stroke.

3,789,809
ROTARY INTERNAL COMBUSTION ENGINE

Emil Georg Schubert, 4210 Kenyon Ave., Los Angeles, Calif.
Filed May 1, 1972, Ser. No. 248,863
Int. Cl. F02b *53/04*
U.S. Cl. 123—8.05 **6 Claims**



A rotor is mounted in a casing defining a cylindrical annular interior wall in sealing relationship with the periphery of the rotor. The rotor includes a peripheral cavity mounting a piston for radial movement towards and away from the opposed annular wall surface of the casing. An air-fuel mixture inlet port, a combustion chamber, and an outlet port for burnt gasses are circumferentially spaced about the interior annular wall so that the portion of the peripheral cavity on the rotor between the piston and the interior annular wall is successively placed into communication with the inlet port, combustion chamber, and outlet port as the rotor rotates. A cam arrangement connects the piston with a cam surface on the interior of the casing so that movements of the piston towards and away from the opposed interior annular wall are guided. A fresh air inlet in turn communicates with the peripheral cavity portion under the piston and includes a check valve so that outward movement of the piston draws in fresh air and inward movement compresses the air. The cavity is shaped such that complete inward movement of the piston exposes an outlet portion so that the compressed air can circulate around the piston. With this arrangement, the fuel-air inlet mixture is supercharged by the compressed air during a portion of the compression stroke of the piston and the burnt gasses are in turn purged by the fresh air during an exhaust stroke of the piston. The fresh air inlet also provides cooling for the piston and rotor.

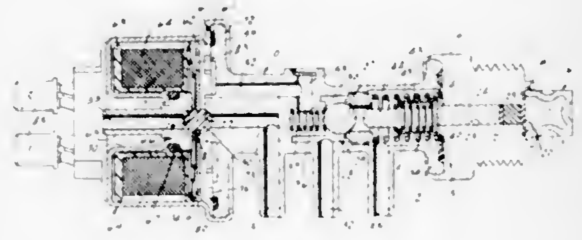
3,789,810
INTERNAL COMBUSTION ENGINE SPEED LIMITING CIRCUIT

Walter J. Sattler, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed July 14, 1972, Ser. No. 271,783
Int. Cl. F02m *51/00*
U.S. Cl. 123—102 **6 Claims**

An internal combustion engine speed limiting circuit. A direct current sawtooth waveform potential signal having a substantially constant maximum magnitude is applied to the inverting input circuit of a conventional operational amplifier and a direct current engine speed potential signal which increases linearly in magnitude with engine speed is applied to the non-inverting input circuit of the operational amplifier. The operational amplifier produces an output direct current control potential signal while the magnitude of the engine speed potential signal exceeds the magnitude of the sawtooth waveform potential signal which is applied across the gate-cathode electrodes of a silicon controlled rectifier, the anode-cathode electrodes of which are connected in shunt across the conventional ignition distributor breaker contacts.

3,789,811
EMISSIONS REDUCTION VACUUM CONTROL VALVE

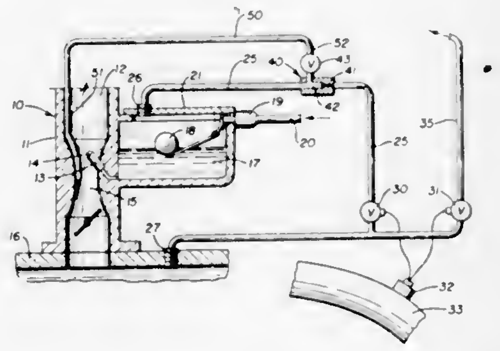
Rudolph J. Franz; John S. Freismuth, both of Arlington Heights, Ill., and Nello L. Benedetti, deceased, late of Prospect, Ill. (by Lena Benedetti, executrix), assignors to Eaten Corporation, Cleveland, Ohio, by said Franz and Freismuth
Filed Nov. 3, 1971, Ser. No. 195,239
Int. Cl. F02p *5/04;* **F16k** *17/38*
U.S. Cl. 123—117 A **10 Claims**



Spark advance vacuum control valve arranged to reduce the emission of noxious gases from the internal combustion engines of automotive vehicles. A solenoid energized by an electric switch in association with the transmission operates a valve effective to vent the distributor to atmosphere as the engine is started and the transmission is shifted into high gear. When the transmission is in high gear, the solenoid is deenergized to connect the distributor to effect advance of the spark by carburetor vacuum. A manifold port, distributor port and vent port lead into the valve housing through a wall of the housing while the carburetor port is at an end of the valve housing. A valve chamber within the housing has communication with the manifold vacuum port, the distributor port, the vent port and the carburetor vaccum port under the control of a thermally responsive valve. The thermally responsive valve is operated by overheating of the engine to advance the spark by manifold vacuum and increase the speed of the engine.

3,789,812
AIR/FUEL MIXING SYSTEM CONTROLLED BY TEMPERATURE ACTIVATED MECHANISM FOR INTERNAL COMBUSTION ENGINES

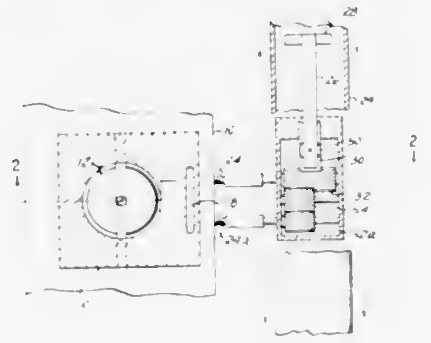
James M. Berry, Boulder, and William C. Womack, Lafayette, both of Colo., assignors to Colspan Environmental Systems, Inc., Boulder, Colo.
Filed Apr. 10, 1973, Ser. No. 349,686
Int. Cl. F02m *7/00;* **F02p** *5/00*
U.S. Cl. 123—117 A **7 Claims**



An improvement in air/fuel mixing systems controlled by temperature activated mechanism for internal combustion engines, embodied in air/fuel mixing means which permit the carburetor to be initially adjusted for efficient economical performance to maintain a variable nearly perfect air/fuel mixture for combustion under a wide range of operating conditions by varying the pressure in the float bowl of the carburetor, achieved by connecting a vacuum source to the carburetor float bowl by a vacuum conduit whereby the difference between the pressure in the fuel bowl and the pressure in the Venturi throat of the carburetor is reduced. The temperature activated mechanism is incorporated into the mixing system and provides an automatic over-temperature safety cutout device which is a thermal vacuum valve that simultaneously disables the main air/fuel mixing system and enables the distributor advance upon sensing an over-temperature condition.

3,789,813
FUEL MIXTURE CONTROL

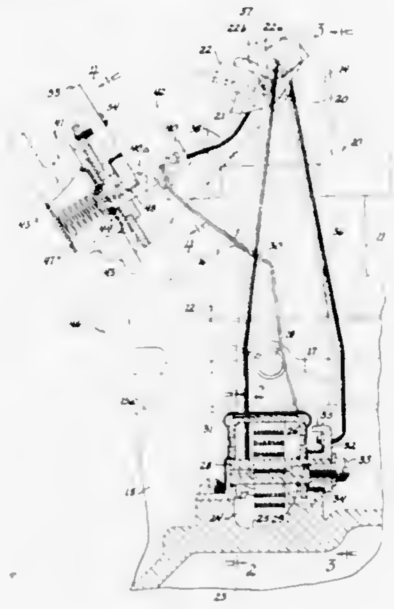
Duane A. Hunt, East Lansing, Mich., assignor to Donnell R. Matthews, Jr., East Lansing, Mich.
Filed May 22, 1972, Ser. No. 255,761
Int. Cl. F02m *1/10*
U.S. Cl. 123—119 F **9 Claims**



Means responsive to the temperature of the engine are employed to adjust the flow of fuel in the carburetor to regulate the mixture during normal operation of the engine. In addition, means are preferably provided which also effect an automatic adjustment of the fuel flow to the engine in accordance with variations in atmospheric pressure such as occurs at different elevations.

3,789,814
AMBIENT TEMPERATURE REGULATED CHOKE

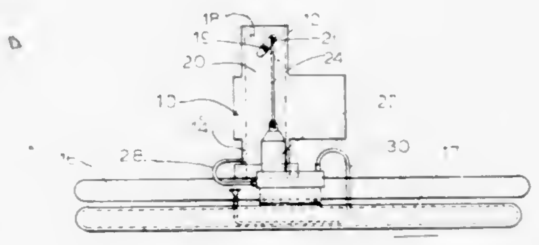
Ronald F. Gillham, Huntington Woods, and Ward W. Wiers, Washington, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Sept. 14, 1972, Ser. No. 289,003
Int. Cl. F02m *1/10*
U.S. Cl. 123—119 F **8 Claims**



An ambient temperature regulated choke mechanism for a carburetor is provided with temperature actuated means whereby the choke pull angle, the angle the choke valve attains after the engine starts, and the time required to achieve wide open choke are modulated by ambient temperature.

3,789,815
TEMPERATURE RESPONSIVE CONTROL DEVICE

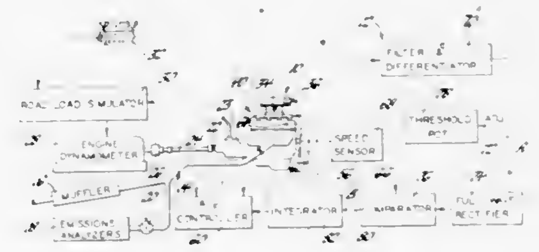
Louis W. Schreiner, Palatine, Ill., assignor to Charles M. Carter, Northbrook, Ill., a part interest
Filed Feb. 17, 1971, Ser. No. 116,008
Int. Cl. F02m *1/10;* **F01h** *21/00*
U.S. Cl. 123—119 F **10 Claims**



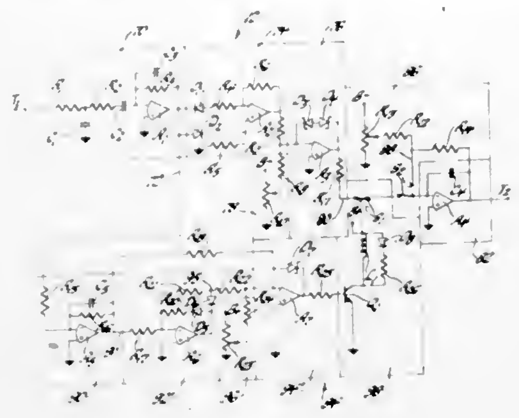
A device for controlling the movement of a control member between first and second positions in accordance with a varying temperature condition and a power condition generated by a temperature-power source. The device includes means responsive to the varying temperature condition and the power condition for driving the control member between the first and second positions so that (1) the control member is driven to the first position when no power condition is generated and the temperature condition is below a prescribed level, (2) the control member is driven toward the second position as a function of the temperature condition when the power condition is generated, and (3) the control member is driven to a prescribed intermediate position between the first and second positions when the temperature condition is at or above the prescribed level and the power condition is terminated.

3,789,816
LEAN LIMIT INTERNAL COMBUSTION ENGINE ROUGHNESS CONTROL SYSTEM

Lael B. Taplin, Livonia; William R. Seitz, and Chun Keung Leung, both of Farmington, all of Mich., assignors to The Bendix Corporation, Southfield, Mich.
Filed Mar. 29, 1973, Ser. No. 346,240
Int. Cl. F02d *5/00;* **F02m** *51/00, 57/00*
U.S. Cl. 123—119 R **15 Claims**



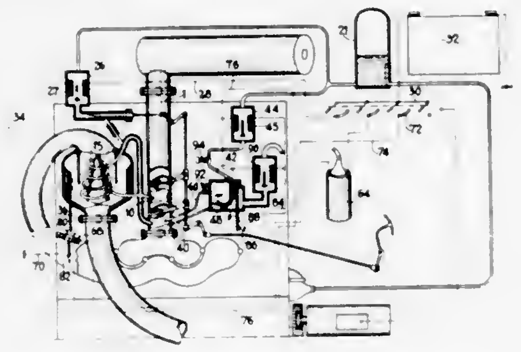
A closed loop fuel control mechanism for controlling the air fuel mixture delivered to an internal combustion engine so as to regulate the roughness of the engine at a predetermined level. The control system receives as input signal a signal indicative of the engine roughness and processes this signal to



generate an output control signal for controlling the fuel delivery mechanism of the internal combustion engine to operate that engine at the leanest possible air/fuel mixture ratio compatible with a predetermined level of engine roughness.

3,789,817
ANTI-POLLUTION SUPPLY DEVICE FOR INTERNAL COMBUSTION ENGINES

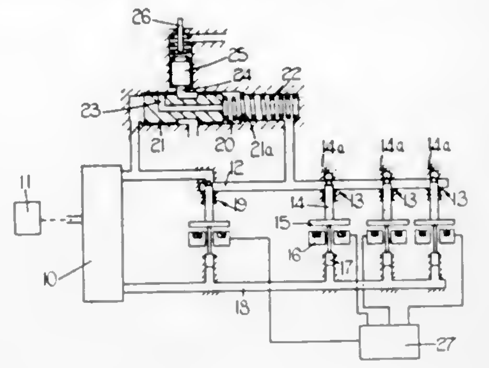
Marcel Morel, 14 Mesnil Clinchamps, and Lucien Lepareur, 49, Avenue de la Gare, Vire, both of France
Filed Apr. 28, 1972, Ser. No. 248,645
Claims priority, application France, Apr. 30, 1971, 71.15575
Int. Cl. F02m *1/08, 31/12, 31/14*
U.S. Cl. 123—133 **7 Claims**



Anti-pollution supply device for an internal combustion engine which comprises an air intake pipe, a main fuel supply pipe and an auxiliary fuel supply pipe. The main fuel pipe has a portion in the form of a frustoconical spiral disposed in a vaporization chamber heated by the exhaust gases of the engine. A thermostat is responsive to the temperature in the vaporization chamber and controls the supply of fuel above a given temperature in said chamber. The auxiliary fuel supply pipe is surrounded at least partly by an electric heating resistance and an auxiliary air intake pipe communicates with said air intake pipe. Control means are provided for heating the resistance and allowing supply of auxiliary air and auxiliary fuel for starting the engine above a predetermined temperature in the heating resistance and so long as the given temperature of the vaporization chamber has not been reached.

3,789,818
FUEL INJECTION SYSTEMS

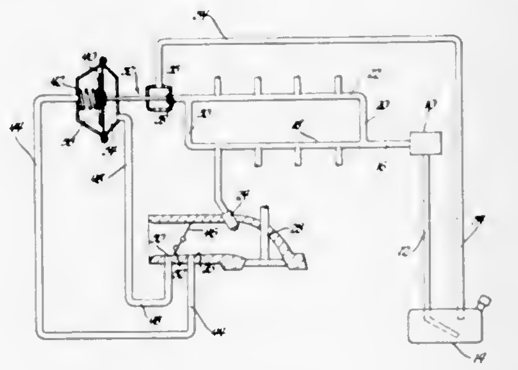
John Harrison Asbery, Wembley, and Ivor Fenne, Greenford, both of England, assignors to C. A. V. Limited, Birmingham, England
Filed Oct. 27, 1972, Ser. No. 301,587
Claims priority, application Great Britain, Oct. 30, 1971, 50526/71
Int. Cl. F02d *5/02*
U.S. Cl. 123—139 AM **5 Claims**



A fuel system for an internal combustion engine includes an accumulator for storing fuel under pressure a plurality of injection valves connected to the accumulator through a conduit a shuttle member for controlling the amount of fuel flowing to the injection valves from the accumulator during an injection stroke and an additional valve operable to permit the return of the shuttle at the other end of the injection stroke.

3,789,819
FUEL RAIL VAPOR BLEED

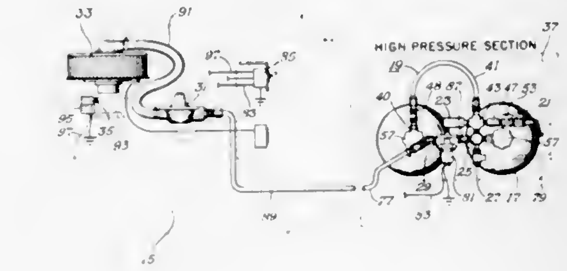
John W. Moulds, Penfield, N.Y., assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 28, 1972, Ser. No. 221,640
Int. Cl. F02m *5/06*
U.S. Cl. 123—140 MP **4 Claims**



In an internal combustion engine fuel injection system, a vacuum operated valve opens during closed throttle engine operation to permit fuel vapor to bleed from the end of the pressurized fuel rail back to the fuel tank.

3,789,820
COMPRESSED GASEOUS FUEL SYSTEM

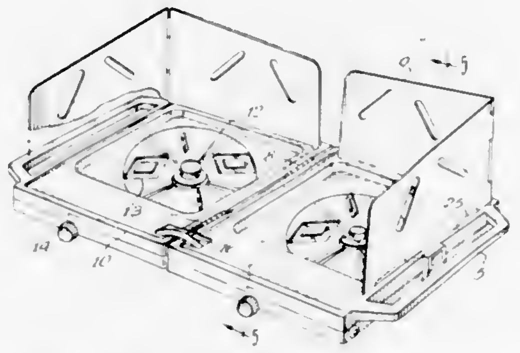
Lloyd A. Douglas, and Kirk T. Garanflo, both of Fort Worth, Tex., assignors to Victor Equipment Company, Denton, Tex.
Filed Oct. 19, 1971, Ser. No. 190,550
Int. Cl. F02m *13/06, 13/68*
U.S. Cl. 123—27 GE **12 Claims**



Apparatus for enabling a conventional vehicle to be operated on a compressed gaseous fuel, characterized by a high degree of safety with features such as concentrating the high pressure portion of the apparatus into a section that is located outside of the passenger compartment for safety; employing a remote indicating fuel gauge that does not have a fuel connection inside the passenger compartment; employing double regulators with respective relief valves vented to a safe area; employing special factory-tested high pressure assemblies, and employing an excess flow shut-off valve for blocking flow in the event of a line failure. Also disclosed are specific embodiments such as employing a single stage compensated high pressure regulator for uniform performance until the container of compressed gaseous fuel is substantially empty; and parallel connected containers for increased range.

3,789,821
MODEL 2600 CAMPING STOVE DESIGN

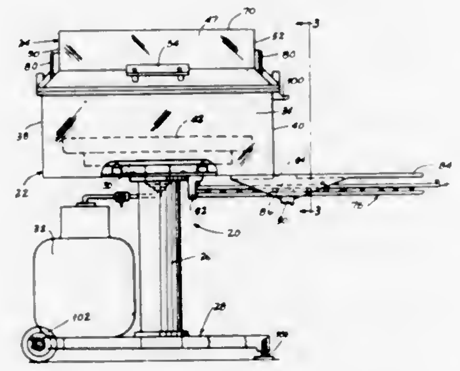
Bernard E. Fick, Tulsa, Okla., and Kim Yamasaki, Lombard, Ill., assignors to Brunswick Corporation, Skokie, Ill.
Filed July 7, 1972, Ser. No. 269,772
Int. Cl. F24c *5/20*
U.S. Cl. 126—38 **5 Claims**



The invention is a portable camping stove having two burners. The burners are housed in separate casings, which casings are hinged together so that the burners fold face-to-face and the folded housing takes on the appearance of a briefcase. The top side of each casing is removable and comprises a drip pan for the burner. A pressure regulator is disposed within one of the burner casings and a flame control regulator is mounted on the front of each burner casing. A windscreen for each burner folds to a stored position over each casing.

3,789,822
HINGED COVER DEEP FAT FRYER, GRIDDLE AND BARBEQUE

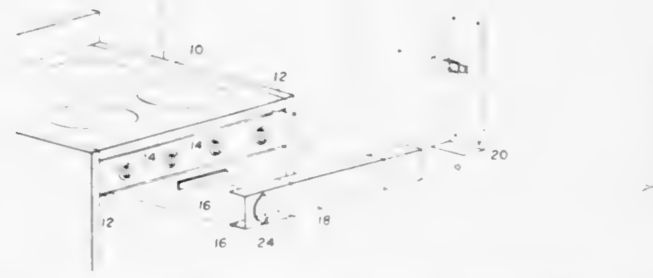
John S. Schantz, Marine, Ill., assignor to Raymond G. Schantz and Socrates J. Schantz, both of Marine, Ill., part interest to each
Filed Nov. 30, 1972, Ser. No. 310,774
Int. Cl. A47j *37/00;* **F24c** *3/04*
U.S. Cl. 126—41 R **14 Claims**



A portable gas stove supporting for separate use a deep fat fryer, griddle and barbeque with a uniquely designed cover which serves as a griddle when in a closed position, a deep fat fryer in a reversed or inverted position and a barbeque heat reflector and windshield when opened to a vertically extending position. The stove has an open top within which a gas burner is provided. The open top of the stove supports the cover in a closed position where the flat top surface of the cover acts as a griddle. Hinge means enable the cover to be opened to a vertical position acting as a heat reflector and windshield. When the cover is reversed its open box like structure enables it to receive grease to act as a deep fat fryer. Hinged means are provided enabling the cover to rest upon the open top housing of the stove and be quickly hinged to a vertically extending in open position for use as a barbeque and to further enable the cover to be removed and reversed to act as a deep fat fryer.

3,789,823
STOVE PROTECTOR

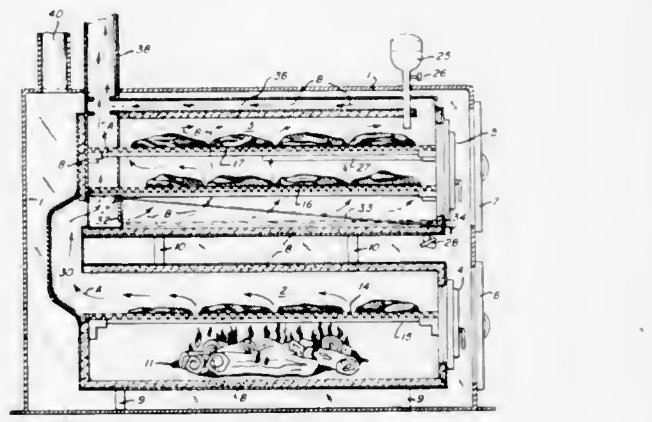
Patricia A. Doskocil, New York, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y.; a part interest
Filed Apr. 23, 1973, Ser. No. 353,681
Int. Cl. F24c *3/12*
U.S. Cl. 126—42 **5 Claims**



A device for protecting a stove from accidental release of heat or gas due to faulty manipulation of controls by children, pets and the like. The controls extend out of a vertical surface of the stove. A horizontally elongated shield is adapted to detachably cover the controls. The shield has at least one port permitting access to a control. A disc is pivotally secured to the shield to normally cover said port. The disc is manually pivotable out of sealing engagement with the cover.

3,789,824
COOKING STRUCTURE

William B. Mason, Memphis, Tenn., assignor to Barbecue Ovens, Inc., Memphis, Tenn.
Filed Dec. 4, 1972, Ser. No. 312,192
Int. Cl. A01g *13/06*
U.S. Cl. 126—59.5 **8 Claims**



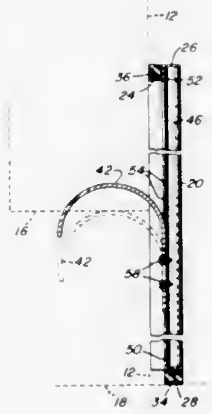
A cooking structure comprising a pair of elongated insulated ovens spaced apart one above the other with individual doors at their adjacent ends, and a common upright flue at their opposite ends, there being removable grills between top and bottom of each oven. The lower portion of the lower oven forms a firebox with an outlet for the products of combustion at one end which may discharge into the flue or into the lower part of the upper oven according to the setting of a manually-adjustable damper. The upper oven has a horizontal passageway extending above the oven grill for the full length of the oven with a connection to the flue. Means are provided for supplying water or sauce to a grill in the upper oven and for discharging the same from the lower portion thereof. Preferably both ovens are enclosed in a sheet metal casing with inlets for an air supply to the firebox in the lower oven. The cooker eliminates continuous personal attention to broiling or barbecuing operations, moistens smoke from the logs or charcoal in the firebox which flows around meat on the grills breaking down tough fibers and permitting the natural juices to saturate the inner portions and outer surfaces evenly flavoring and cooking the meat without basting or turning the meat which is thoroughly tenderized and given an attractive color.

3,789,825

FIREPLACE CLOSURE APPARATUS

Lawrence O. Reiner, 109 Eastland Ave., Brighton, N.Y.
Filed June 20, 1972, Ser. No. 264,552
Int. Cl. F24c *15/28*

U.S. Cl. 126—140 **5 Claims**



A closure device for sealing a fireplace opening over the hearth of the fireplace when it is not in use, having a cover member with sealing material along the bottom edge and along the back of the cover member along the side and top edges, and also having a pair of "J" shaped springs mounted on the back of the panel by a height adjusting mechanism for covering over the edge of the roof of the fireplace opening and frictionally engaging the roof to hold the cover member firmly but detachably in place, thus sealing the fireplace opening.

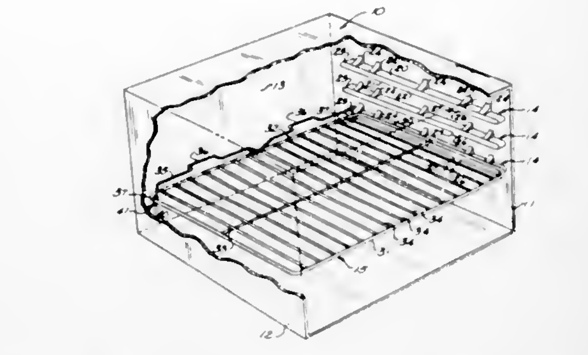
3,789,826

RUNNER CONSTRUCTION FOR OVEN RACK

Albert L. Baltz, Millstadt, and Elmer E. Voeke, Belleville, both of Ill., assignors to Eagle Range and Manufacturing Company, Belleville, Ill.
Continuation of Ser. No. 95,730, Dec. 7, 1970. This application June 5, 1972, Ser. No. 259,401
Int. Cl. F24c *15/16*

U.S. Cl. 126—339 **1 Claim**

This rack and runner construction includes opposed runners attached to the sidewall of an oven compartment and having inclined bearing glides spaced along their length, each pair of horizontal runners receiving a rack in sliding engagement. Each rack includes rear guide elements cooperating with associated horizontal runners to limit upward and outward movement of the rack.

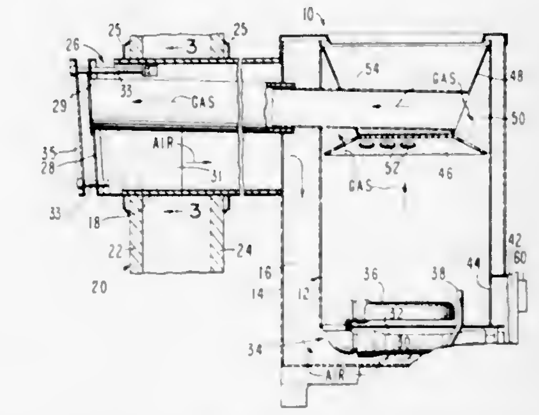


3,789,827

ROCK HEATER FOR SAUNA BATH

Toivo I. Kolkka, 2030 Park Boulevard, Palo Alto, Calif.
Continuation-in-part of Ser. No. 852,838, Aug. 25, 1969, abandoned. This application Dec. 8, 1971, Ser. No. 205,824
Int. Cl. F24h *3/14*

U.S. Cl. 126—344 **20 Claims**



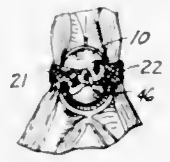
An improved rock heater wherein an imperforate rock box extends into and closes the top of a generally continuous side wall enclosing a combustion region. Air for supporting combustion in the region is preheated as it flows toward the same along a passage between the wall and a casing surrounding the wall. Exhaust gases are directed along an inclined path from an area surrounding the outer surface of the rock box and into the atmosphere. In one form, the rock heater has the exhaust path extending through the rock box and in another form, the rock box has a conical outer surface.

3,789,828

URETHRAL PROSTHESIS

Rudolf R. Schulte, Santa Barbara, Calif., assignor to Heyer-Schulte Corporation, Santa Barbara, Calif.
Filed Sept. 1, 1972, Ser. No. 285,637
Int. Cl. A61b *19/00*

U.S. Cl. 128—1 R **17 Claims**



A prosthesis to resist the flow of urine through the urethra, which comprises a fluid-impervious, flexible and deformable

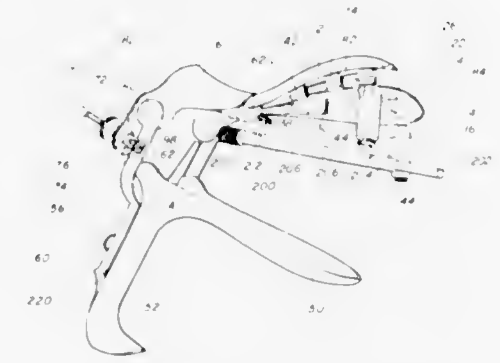
capsule having a gel-filled, or gel and liquid-filled cavity therein. A cover encapsulates the capsule, and two flexible sling ties extend beyond the cover. The material of the cover and of the ties is such as to enhance fiber ingrowth into openings formed by the material, whereby mechanically to stabilize the prosthesis when it is implanted in the human body.

3,789,829

VAGINAL RADIUM APPLICATOR

Harrith M. Hasson, 6942 N. Waukesha Ave., Chicago, Ill.
Filed June 1, 1971, Ser. No. 148,823
Int. Cl. A61n *5/10*

U.S. Cl. 128—1.2 **8 Claims**



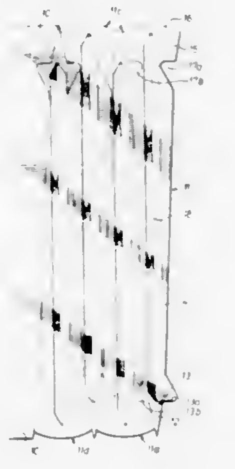
A radium applicator for treating cancer of the uterus formed in the shape of a vaginal speculum. The speculum applicator comprises an upper colpostat housing having a pair of pivotable arms connected thereto and a lower retractor blade assembly. A radium-carrying ovoid is connected to each colpostat arm and a linkage is connected to each ovoid for pivoting each ovoid about an axis that is substantially perpendicular to the pivotal axis of its colpostat arm. Means are provided for connecting a radium-carrying tandem to the colpostat's saddle handle after the applicator has been inserted in the vagina.

3,789,830

DISPOSABLE LANCET

Sven-Erik Malmstrom, Reftele, Sweden, assignor to Swedish Hospital Supply SHS AB, Malndal, Sweden
Filed Sept. 22, 1971, Ser. No. 182,862
Int. Cl. A61b *10/00, 17/32*

U.S. Cl. 128—2 F **4 Claims**



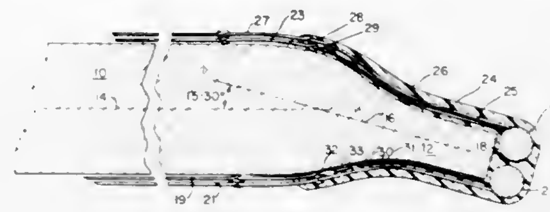
A disposable lancet used for piercing the tissue of a finger to obtain blood specimens. The lancet is designed to contain minimum material to achieve low material costs which still have the strength and rigidity to be completely functional. The lancet design permits multiple lancets to be punched from a strip of sheet steel to obtain economy in the manufacturing operation.

3,789,831

THERMOELECTRIC PROBE APPARATUS FOR TISSUE FLUID FLOW MEASUREMENT

Dennis R. Kopaniky, Case Western Reserve University, School of Medicine, 2109 Adelbert Rd., Cleveland, Ohio, and Donald S. Gann, 720 Rutland Ave., Baltimore, Md.
Filed Feb. 11, 1972, Ser. No. 225,582
Int. Cl. A61b *5/02*

U.S. Cl. 128—2.05 F **3 Claims**



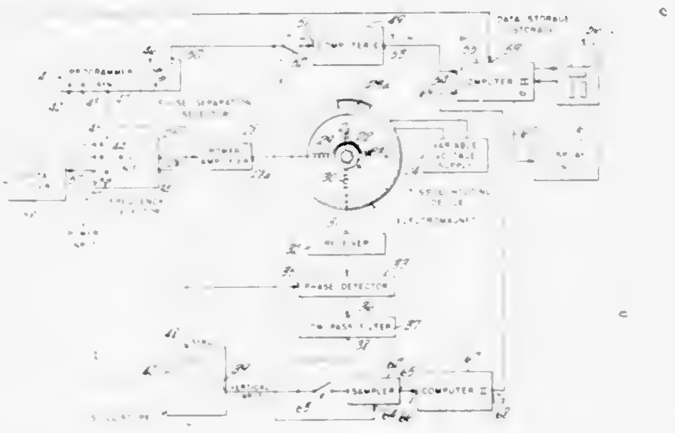
This is a thermoelectric probe apparatus which is responsively connected to an electrical amplifying readout circuit. The probe is most useful in sensing blood flow at minute loci throughout the animal body. It can sense as low as zero blood flow with significantly less tissue trauma than previous devices.

3,789,832

APPARATUS AND METHOD FOR DETECTING CANCER IN TISSUE

Raymond V. Damadian, 64 Short Hill Rd., Forest Hill, N.Y.
Filed Mar. 17, 1972, Ser. No. 235,624
Int. Cl. A61b *5/05*

U.S. Cl. 128—2 R **16 Claims**



An apparatus and method in which a tissue sample is positioned in a nuclear induction apparatus whereby selected nuclei are energized from their equilibrium states to higher energy states through nuclear magnetic resonance. By measuring the spin-lattice relaxation time and the spin-spin relaxation time as the energized nuclei return to their equilibrium states, and then comparing these relaxation times with their respective values for known normal and malignant tissue, an indication of the presence and degree of malignancy of cancerous tissue can be obtained.

3,789,833

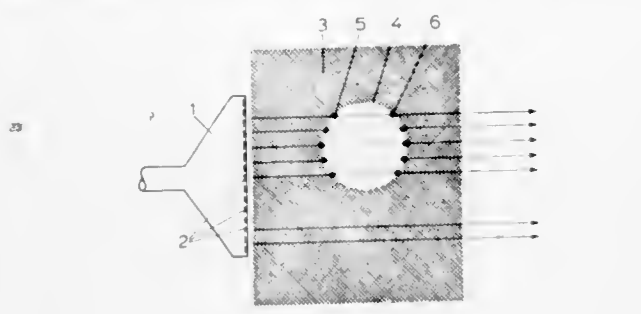
HEART EXAMINATION BY MEANS OF ULTRASOUND WAVES

Nicolaas Bom, Berkenwoude, Netherlands, assignor to Medische Faculteit Rotterdam, Rotterdam, Netherlands
Filed Mar. 23, 1972, Ser. No. 237,286
Claims priority, application Netherlands, Mar. 31, 1971, 7104271
Int. Cl. A61b *10/00*

U.S. Cl. 128—2 V **5 Claims**

An examination of the human heart is carried out by means of ultrasound waves emitted by piezo-electric crystals. The

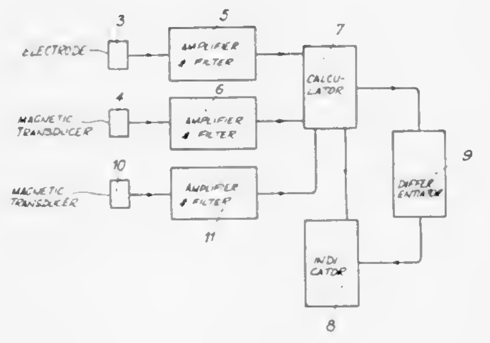
predetermined ratio. Pneumatic and electrical control circuits consisting of a bag-shaped member made of plastic foil, crystals are inserted in a holder adapted to be placed on the body of a patient; they are arranged in a row and have parallel axes of radiation. The crystals are cyclically excited at a high scanning frequency, and the echo signals reflected by the heart walls and received by the crystals are displayed on the screen of a cathode ray tube to obtain a cross-sectional picture of the heart. In a modification of the invention, the holder comprises two or more rows of crystals radiating at different angles; in this case the echo signals related to a common point of the heart wall are superposed on the screen of the cathode ray tube by means of a coordinate transformation.



3,789,834

PROCESSES AND APPARATUS FOR THE INVESTIGATION OF INTERNAL PHYSIOLOGICAL PHENOMENA BASED ON MEASUREMENTS OF THE IMPEDANCE VARIATION OF THE SURFACE OF THE BODY

Jean Duroux, 12, rue Flatters, Paris, France
Filed Nov. 14, 1972, Ser. No. 306,481
Claims priority, application France, Nov. 15, 1971, 7140737
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.1 Z **14 Claims**



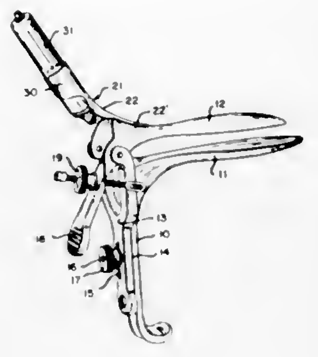
A method of investigating physiological phenomena of a portion of a body based upon the variation of the impedance or resistivity of the body. An electromagnetic field is applied to a portion of the body and the field at the surface of the body is then measured. The components of the measured field are used to determine the impedance or resistivity of the the body.

3,789,835

ILLUMINATING ATTACHMENTS FOR VAGINAL SPECULUM

Robert S. Whitman, 6407 Beacon St., Pittsburgh, Pa.
Filed Mar. 16, 1972, Ser. No. 235,333
Int. Cl. A61b *1/30, 1/06*
U.S. Cl. 128—18 **7 Claims**

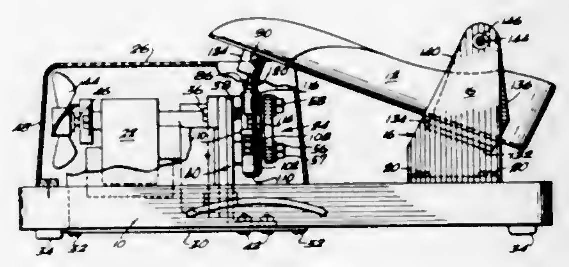
A modified Graves Vaginal Speculum is provided having cooperating upper and lower blades pivoted with respect to one another, the upper blade having a longitudinal slot in the upper blade at the rear portion thereof, a removable light carrier member frictionally engaging the upper blade at the slot and curving rearwardly to engage a light source, said source and arm directing a light beam intermediate the two blades in their expanded position.



3,789,836

APPARATUS FOR THE STIMULATION OF BLOOD CIRCULATION IN FEET AND LEGS

William Girten, Fort Lauderdale, Fla., assignor to Joseph W. Scott and Zephyr Scott, both of Miami, Fla.
Filed Dec. 7, 1972, Ser. No. 311,740
Int. Cl. B61h *1/02*
U.S. Cl. 128—25 B **13 Claims**



A device for stimulating the circulation of blood in the feet and legs of a standing or seated person, which comprises a pair of treadles to receive the feet of a person when the calves of the legs are in substantially upright positions, such as in a normal standing or sitting position. The treadles are pivotally mounted and linked to drive means to impart a generally up and down oscillating movement thereto, whereby the movement is imparted to the feet in a manner so as to oscillate the feet about the ankle joints.

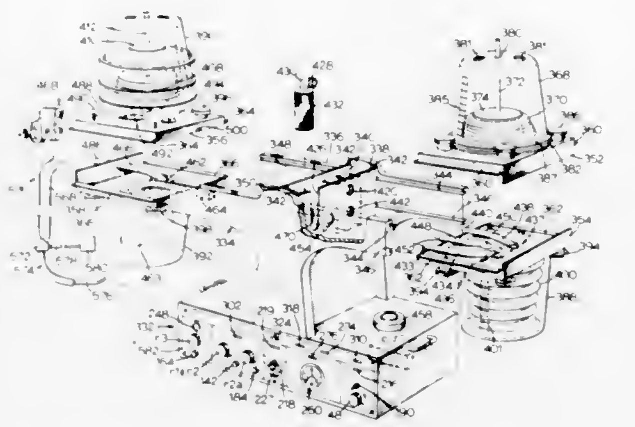
3,789,837

AUTOMATIC THERAPEUTIC VENTILATOR

Walter John Philips, 250 Canandra Blvd., Apt. 140, Don Mills, Ontario, and Jack Anthony Liddall, 43 Mineola Rd. East, Port Credit, Ontario, both of Canada
Filed Dec. 11, 1970, Ser. No. 97,279
Int. Cl. A61m *16/00*
U.S. Cl. 128—145.8 **37 Claims**

An automatic therapeutic ventilator having an oxygen bellows for receiving and measuring a volume of oxygen and a breathing mixture bellows for mixing the oxygen with air in a

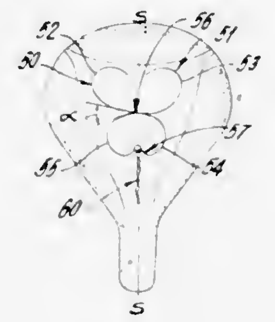
predetermined ratio. Pneumatic and electrical control circuits are provided for automatic, semi-automatic, and patient-triggered modes, and a sigh circuit is incorporated in the control circuits. The bellows are mounted on trays which can be replaced simply.



3,789,838

FORCE TRANSMITTING INTRAUTERINE DEVICE

Erick-Pierre Fournier, 30 Park Ave., New York, N.Y., and Alberto Lomeo, 200 E. End Ave., New York, N.Y.
Filed Feb. 19, 1971, Ser. No. 116,867
Int. Cl. A61f *5/46*
U.S. Cl. 128—130 **16 Claims**



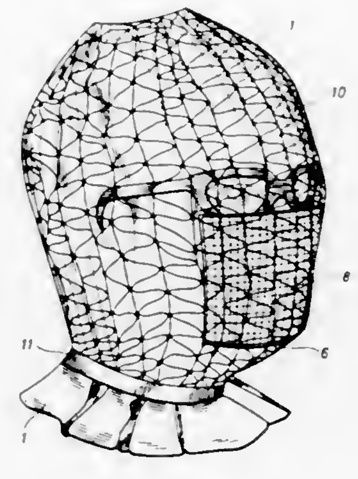
An intrauterine contraceptive device having substantial surface area for contact with the endometrium and capable of being releasably contracted to a size and shape for ready passage into the uterus and, when released, of expanding to conformably engage the walls of the uterine cavity in the mid-uterine area above the level of the internal so to resist expulsion, and thereafter of being readily removed, together with an introducer implement for releasably contracting the device in the proper orientation for insertion are disclosed.

3,789,839

COVERING FOR PROTECTING HEAD AND FACE FROM DANGEROUS AEROSOLS AND GASES

Bodil Vibeke Jerslev Lund, and Frederik Christian Freuchen Oxenboll Lund, both of Hellerup, Denmark, assignors to Civilforsvarsstyrelsen, Copenhagen, Denmark
Filed June 27, 1972, Ser. No. 266,573
Claims priority, application Denmark, June 29, 1971, 3212/71
Int. Cl. A62b *18/04;* **A42b** *1/18*
U.S. Cl. 128—142.7 **5 Claims**

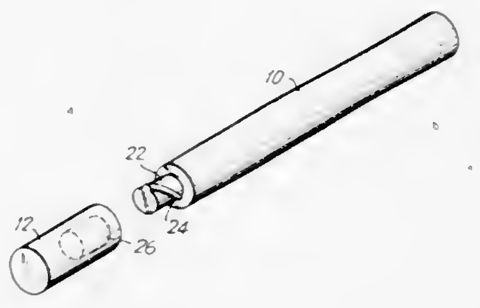
A protective hood adapted to surround the head of a person in order to protect him against contact with and inhalation of aerosols and gases and other dangerous substances, the hood consisting of a bag-shaped member made of plastic foil, preferably transparent plastic foil, in which an opening is provided and closed by an inhalation filter, a shrouding member being provided and adapted to surround the hood and press it into contact with the surface of the head of the user, so that the dead space in the hood is decreased, said shrouding member preferably consisting of a hood-shaped, elastic net.



3,789,840

DEVICE FOR ASSISTING CIGARETTE SMOKERS TO DISCONTINUE SMOKING

Richard D. Rosenblatt, 4941 Arlington Ave., Riverdale, N.Y.
Filed July 27, 1971, Ser. No. 166,345
Int. Cl. A61m *31/00;* **A24f** *47/00*
U.S. Cl. 128—260 **11 Claims**

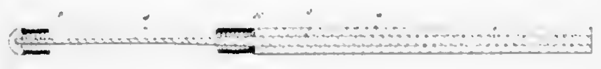


A device for assisting smokers to give up smoking cigarettes and which provides a chemical substance to suppress the desire for smoking and also satisfies the psychological requirements associated with giving up smoking. The device in its assembled form resembles a cork tipped cigarette. The white portion is a plastic barrel. The cork portion is a lozenge preferably containing a chemical substance which inhibits the desire for tobacco. The two portions are preferably packed separately and the smoker in attaching them, satisfies the requirement of "lighting up." The device is used as a normal cigarette and sucking on the lozenge and removing it from the mouth satisfies the oral gratification associated with smoking. The device may also be provided with a simulated ash which may also be luminous under the control of the smoker. This latter feature satisfies further psychological requirements associated with smoking.

3,789,841

DISPOSABLE GUIDE WIRE

William T. Antoshkiw, Kearny, N.J., assignor to Becton, Dickinson & Company, East Rutherford, N.J.
Filed Sept. 15, 1971, Ser. No. 180,810
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 **10 Claims**

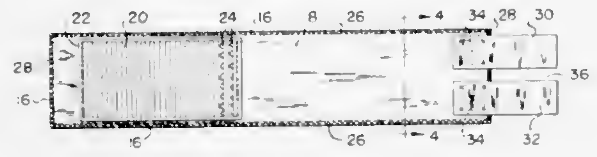


A stainless steel core wire has a tapered portion at one end and a portion of uniform thickness at another end. A Teflon jacket encloses the portion having uniform thickness to form a proximal end and a flexible stainless steel spring encloses the tapered portion forming a distal end. The spring is secured at both ends to the stainless steel core wire.

3,789,842

THERAPEUTIC SUPPORT DEVICE

Avrum I. Froimson, 19300 Shelburne, Shaker Heights, Ohio
Filed Oct. 21, 1971, Ser. No. 191,389
Int. Cl. A61f *13/00*
U.S. Cl. 128—165 **3 Claims**



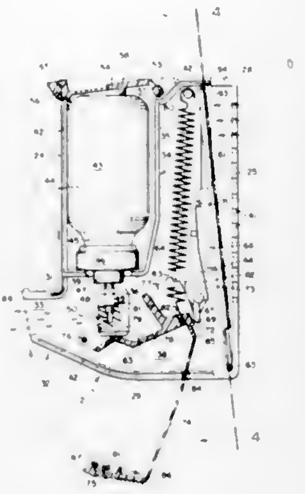
A theropeutic support device of the type to be worn by a user, such as a tennis player, on his arm for relief of the pain resulting from the pathological lesion commonly referred to as "tennis elbow." The device includes a flexible, elongated band-like body formed from a substantially inelastic material for disposition around the proximal forearm below the elbow, and having a selectively adjustable fastener system to hold the opposed ends of the body in secured overlapping relation to provide a closed adjustable loop encompassing the forearm in the installed position thereof.

3,789,843

BREATH-ACTUATED AEROSOL DISPENSER

John C. Armstrong, Milton, and George F. Lyman, Weston, both of Mass., assignors to Armstrong-Kropp Development Corporation, West Roxbury, Mass.
Filed Feb. 23, 1972, Ser. No. 228,529
Claims priority, application Great Britain, Feb. 25, 1971, 5,450/71
Int. Cl. A61m *11/00*
U.S. Cl. 128—173 **5 Claims**

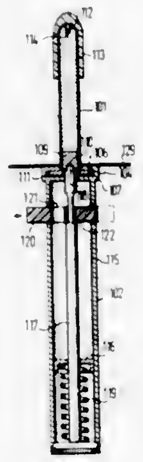
An inhalation device for use with an aerosol container capable of discharging a metered amount of an aerosol formulation on depression of its valve nozzle comprising, a chamber, a mouthpiece communicating with the chamber, a mechanism for causing actuation of the valve including a movable wall, a linking lever, an actuating lever, a spring biasing the actuating lever, and a latch mechanism such that the movable wall member disposed between an air admission port into said chamber and said moutnpiece moves away from said port under influence of air flow through said port to release the latch mechanism when suction is applied to said mouthpiece and therefore causing the actuating lever to actuate the valve.



3,789,844

FOIL SEALED SYRINGE

Albert Burges, Georg-Kalb-Strasse 5, 8021 Grosshesselohe, Germany
Filed Sept. 10, 1971, Ser. No. 179,427
Claims priority, application Germany, Apr. 16, 1971, 2118631
Int. Cl. A61m *1/00*
U.S. Cl. 128—235 **4 Claims**



A spring loaded syringe device is provided with a liquid container which is foil sealed. The foil is pierced by an actuating rod of the device which also engages the piston of the syringe when the syringe is operated, for example as an enema device.

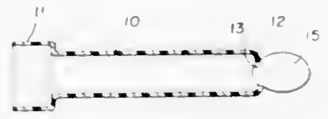
3,789,845

CAPSULE AND TABLET ADMINISTRATION FOR ANIMALS

J. Raymond Long, R.D. No. 3, Cuba, N.Y.
Filed Jan. 29, 1973, Ser. No. 327,425
Int. Cl. A61f *5/46;* **A61m** *31/00*
U.S. Cl. 128—264 **17 Claims**

A syringe holder tube is used to administer capsules or tablets to animals. A capsule is pressed into the opening at the rounded end of the tube and turned to seat in the opening with most of the capsule extending outward from the tube. Then the animal's mouth is opened and the tube is quickly thrust over base of tongue and into the throat where the capsule or

tablet is dislodged when contacting the soft palate and is automatically swallowed by the animal. For tablets, a syringe piston is removably inserted in the tube opening to serve as a plug, and a sticky food material is used to stick the tablet to the plug. Then the tube is thrust into the animal's mouth in the same way to knock the tablet off where it will be swallowed automatically.



3,789,846

FASTENING APPARATUS FOR OSTOMY APPLIANCES

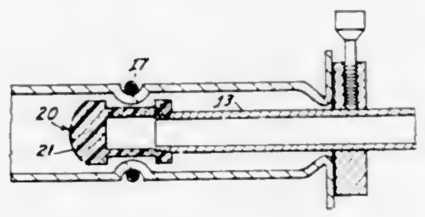
Donald Dean Barrett, Palos Hills, Ill.; Kenneth R. Whalen, Worth, Ill.; Charles Nichols, Arlington Heights, Ill.; Robert G. Knapp, Wheaton, Ill.; Jay A. Wickum, Westmont, Ill., and Daniel A. Maust, Winfield, Ill., assignors to Marsan Manufacturing Co., Inc., Chicago, Ill.
Continuation of Ser. No. 105,286, Jan. 11, 1971, abandoned. This application Nov. 20, 1972, Ser. No. 307,936
Int. Cl. A61f *5/44*
U.S. Cl. 128—283 **11 Claims**

A fastening apparatus for securing ostomy appliances which apparatus includes a belt and fastening elements provided with structure for releasably securing, at an ostomy site, a rigid base gasket and an expendable retainer gasket and attached pouch, to retain the base gasket in place during removal and replacement of the expendable retainer gasket and pouch.

3,789,847

TOOL FOR LOWER COLON SURGERY

Arnold L. Lehmann, W. 49-34th Ave., Spokane, Wash.
Filed Aug. 19, 1971, Ser. No. 173,012
Int. Cl. A61b *17/02, 17/11;* **A61m** *3/00*
U.S. Cl. 128—303 R **4 Claims**

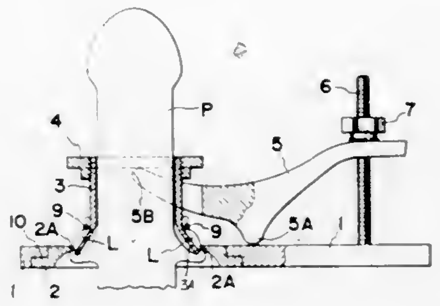


A combination of an obturator designed to be apposed to the bowel and an external perineal tractor for assisting a surgeon during lower colon surgery. By fixing the relative axial positions of the obturator and tractor on a supporting pipe or rod, maximum "stretch" of the bowel is achieved and upward pressure can be applied on the perineum to assure the surgeon of an adequate length of bowel for anastomosis.

3,789,848

CIRCUMCISION INSTRUMENT

Michitaro Honjyo, 279 Ogimachi, Imadegawa Teramachi Kamigyoku, Kyoto, Japan
Filed Mar. 19, 1973, Ser. No. 342,848
Int. Cl. A61b *17/32, 17/00*
U.S. Cl. 128—305 **1 Claim**



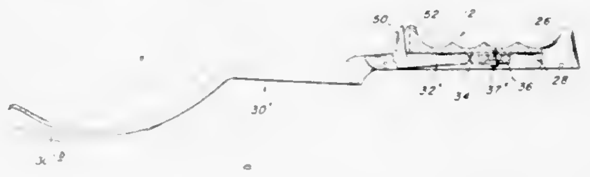
Different from the known circumcision method, this invention resides in pulling out surplus skin around the base of penis so as to expose glans penis completely, crushing and cutting off said surplus skin without bleeding while leaving prepuce unharmed.

The circumcision instrument for carrying out said method is simple and easily maneuverable. The main action of said instrument is to bring surplus skin pulled over tapered skirt between said skirt and cooperating circular blunt edge and crush said surplus skin by lifting said skirt.

3,789,849

OBSTETRICAL FORCEPS

Leonard E. Laufe, 1206 Iverness Ave., Pittsburgh, and Victor Jackman, Westmoreland, both of Pa., assignors to by said Jackman said Laufe
Filed Apr. 26, 1971, Ser. No. 137,169
Int. Cl. A61b *17/44*
U.S. Cl. 128—323 **22 Claims**



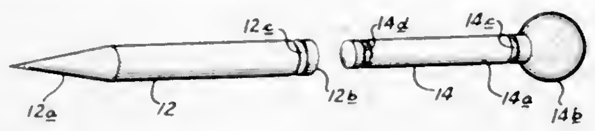
Obstetrical forceps for assisting in the delivery of a baby. The forceps include a pair of elongated members pivotably connected with each other. Each member includes a fetus-engaging blade portion and a handle portion. At least one of the members has means movably connecting the blade portion thereof to its handle portion. Such blade and handle portions are connected in such a manner that the blade is shiftable a limited amount with respect to the handle. Biasing means are provided for holding the shiftable blade in an axially aligned position with respect to the handle. The biasing means are constructed and arranged to impart a predetermined holding force on the blade for holding the respective shiftable blade and handle together whereby when a force above and generally opposite in direction to the holding force is applied to the shiftable blade, as during the use of the forceps to assist delivery of a baby, the shiftable blade portion will shift its position relative to the handle.

3,789,850

IMPLEMENT FOR PIERCING EAR-LOBES

James W. Ford, 1018 Elmwood, Wilmette, Ill.
Filed Feb. 2, 1972, Ser. No. 222,920
Int. Cl. A61b *17/34;* **A44c** *7/00*
U.S. Cl. 128—329 **2 Claims**

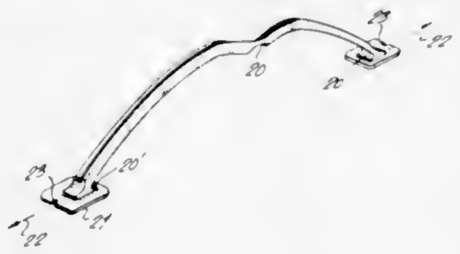
An implement or device for piercing ear-lobes and forming an opening therethrough for receiving ear rings which comprises a pointed, hollow, sheath-like ear-lobe piercing member and a separable, ear-lobe opening stabilizing member. The stabilizing member is carried by the piercing member as the latter is passed through the ear-lobe and is adapted to be temporarily retained in the opening formed by the piercing member after the piercing member is separated from the stabilizing member.



3,789,851

WOUND SPLINTS

Harry H. LeVeen, 800 Poly Pl., Brooklyn, N.Y.
Continuation-in-part of Ser. No. 813,478, April 4, 1969, abandoned. This application July 1, 1971, Ser. No. 158,687
Int. Cl. A61b *17/04*
U.S. Cl. 128—335 **3 Claims**

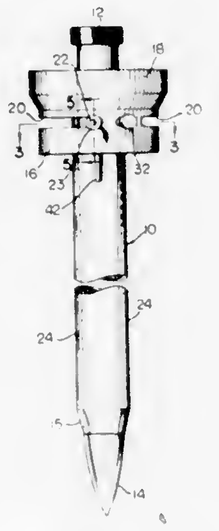


Semi-rigid resilient bars or bar-like materials of slightly pliable elastomeric plastics are provided for use in post-surgical procedures in connection with sutures for closing incisions. The bars may be of various cross-sectional configurations, such as a flat or semi-circular bar, with a downwardly converging slot or groove for the reception, guiding and gripping of the sutures. Alternatively, the bar-like element may be bowed or bridge-like with expanded terminal foot portions slotted for the reception and passage of sutures or provided with a central hinge portion.

3,789,852

EXPANDABLE TROCHAR, ESPECIALLY FOR MEDICAL PURPOSES

Sung Soo Kim, 4724 Imperial Park Dr., Fort Wayne, Ind., and Andress Dusseau, R.R. No. 1, Geneva, Ind.
Filed June 12, 1972, Ser. No. 261,794
Int. Cl. A61b *17/34*
U.S. Cl. 128—347 **17 Claims**

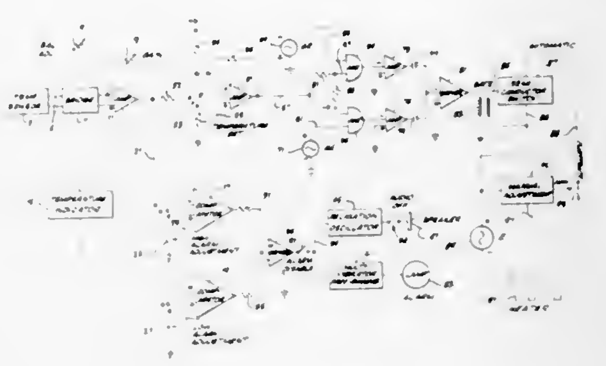


An expandable tubular element, especially for use as a trochar, in which one or more thin metal strips, such as stainless steel, are arranged to form a tubular element with the tubular element being radially expandable and contractible.

3,789,853

RADIANT ENERGY HEATING SYSTEM FOR TEMPERATURE CONTROL OF LIVING SUBJECTS

Clyde Reinhard, 220½ Reposado, La Habra Heights, Calif.
Filed May 22, 1972, Ser. No. 255,684
Int. Cl. A61f *7/00*
U.S. Cl. 128—399 **10 Claims**

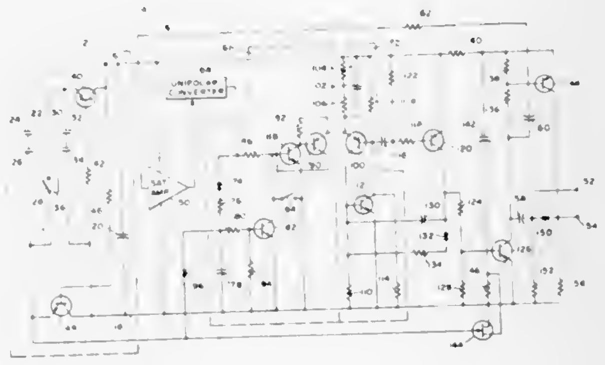


A temperature sensor attached to a living subject and is connected to a control circuit having an input for connection to a source of alternating current power and an output from which half-waves of the alternating current power are generated when the temperature of the sensor falls below a first temperature and full-waves of the alternating current power are generated when the sensor falls below a second temperature. The output of the control circuit is connected to a plurality of pre-focussed incadescent lamps with infrared filters, the lamps directing infrared radiant energy to a region of controlled temperature within which the temperature sensor and living subject are located.

3,789,854

DUAL MODE CARDIAC PACER POWER SOURCE

Jin W. Lee, North Miami, Fla., assignor to Medcor, Inc., Hollywood, Fla.
Filed Apr. 6, 1972, Ser. No. 241,577
Int. Cl. A61n *1/36*
U.S. Cl. 128—419 P **15 Claims**

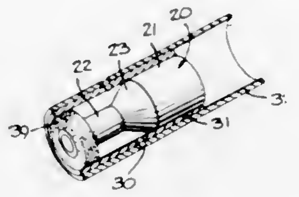


A power source for a cardiac pacer operative in first and second states to provide respectively redundant battery power to said pacer and series connected battery power to said pacer. The alternative power source states permit accurate evaluation of battery conditions and provide altered cardiac pacer operating characteristics adapted to enable emergency operation for the relief of predetermined cardiac patient conditions.

3,789,855

HIGH FLAVOR IMPACT, LOW SMOKE YIELD CIGARETTE MOUTHPIECE

Dr. Vello Norman, Durham, N.C., assignor to Liggett & Myers Incorporated, New York, N.Y.
Filed June 22, 1971, Ser. No. 155,517
Int. Cl. A24d *1/04;* **A24f** *5/04*
U.S. Cl. 131—9 **7 Claims**

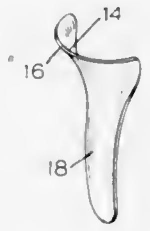


A cigarette mouthpiece for an unfiltered cigarette in which the proportionate volume of smoke drawn from the tobacco section of the cigarette into the smoker's mouth is regulated with respect to the volume of ventilating air simultaneously drawn into the smoker's mouth where the smoke and the air are first commingled, the regulation providing precise, preselected control over the dilution of the smoke in the smoker's mouth. The mouthpiece comprises at least one central smoke passage and ventilation perforations around the periphery of the mouthpiece. A particular draw resistance for the smoke passage is selected to complement a particular draw resistance for the ventilation perforations, thereby regulating the respective volumes of smoke and air entering the smoker's mouth when he draws on the cigarette.

3,789,856

SHIELD FOR USE IN APPLYING EYELASH MAKEUP

Zdenka Bomba, R.R. 1 McCowan Rd., Agincourt, Ontario, Canada
Filed Aug. 5, 1971, Ser. No. 169,289
Claims priority, application Canada, June 9, 1971, 115175
Int. Cl. A45d *40/30*
U.S. Cl. 132—88.5 **4 Claims**

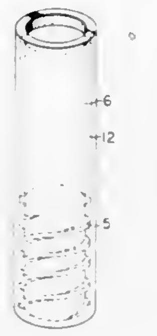


The present invention provides a device which may be used during the application or removal of eyelash makeup. The device consists of a body of plastic material which is formed with a lip at its upper end which projects a substantial distance outwardly from the remainder of the body. The lip has an arcuate curvature conforming generally to the curvature of the human eye and is disposed in a plane which is substantially at right angles to the plane of the remainder of the body. The outer edge of the lip extends in a plane which is substantially parallel with the remainder. The upper end of the body which extends between the lip and the remainder of the body is formed with a curvature so as to fit around the underside of the eyeball of the user.

3,789,857

STICK TYPE COSMETIC APPLICATOR

Shinichi Ikeda, Kawaguchi, and Toshio Taguchi, Tokyo, both of Japan, assignors to Shiseido Co., Ltd., Tokyo, Japan
Filed Feb. 20, 1973, Ser. No. 333,930
Int. Cl. A45d *40/26*
U.S. Cl. 132—88.7 **5 Claims**



A stick type cosmetic applicator provided with a cylindrical casing, a base member rotatably disposed at the lower end of the casing and an actuating means disposed therein for projecting and retracting a solid cosmetic contained therein. The actuating means comprises a relay barrel and a saucer supporting the cosmetic which are movably engaged with each other and which are turnably and slidably engaged with the cylindrical casing and the base member, respectively, by means of the key and the screw mechanisms provided in the applicator. The relay barrel is elevated and lowered relative to the cylindrical casing when the base member is rotated with respect to the cylindrical casing, simultaneously the saucer is relatively elevated and lowered to the relay barrel, whereby the solid cosmetic is smoothly and quickly projected and retracted therewith in respect to the applicator.

3,789,858

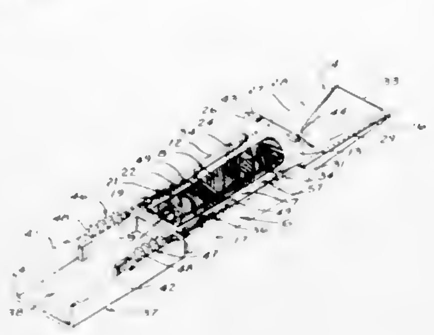
DENTAL FLOSS

Louis Pesce, 1311 W. Webster Ave., Maitland, Fla.
Filed Dec. 27, 1971, Ser. No. 212,472
Int. Cl. A61c *15/00*
U.S. Cl. 132—89 **5 Claims**

Dental floss comprises a pair of strands twisted together. One strand is smooth and relatively strong, for example nylon. The other strand is relatively weak and has tufts at spaced intervals thereon for cleaning between the teeth and may be example cotton.

3,789,859
DENTAL FLOSS HOLDER

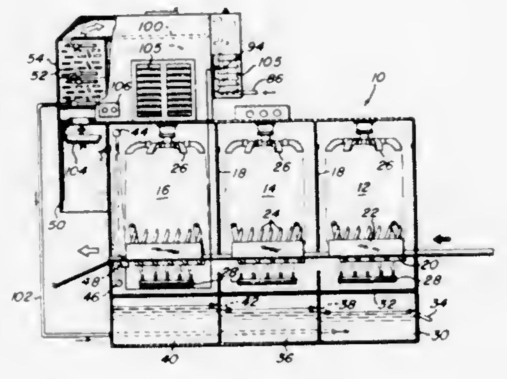
Ondas S. Chambers, 1425 Walnut St., Alameda, Calif.
Filed Aug. 21, 1972, Ser. No. 282,125
Int. Cl. A61c *15/00*
U.S. Cl. 132—92 R **3 Claims**



An improved Dental Floss Holder for removing food particles lodged between the teeth of a person. It is of the type which retains a section or length of dental floss in taut position between a pair of spaced prongs for application between the person's teeth, and in which a fresh portion of the floss may be easily and quickly advanced into operative position between the prongs.

3,789,860
METHOD AND APPARATUS FOR TREATING DISHWASHER DISCHARGE

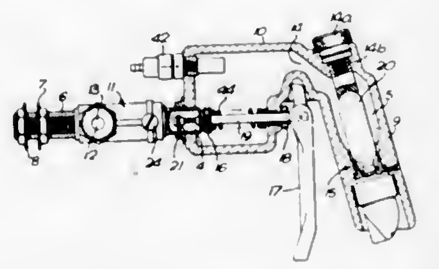
Fred H. Katterheinrich, and Gerald B. Fox, both of Troy, Ohio, assignors to The Hobart Manufacturing Company, Troy, Ohio
Filed Nov. 5, 1971, Ser. No. 196,091
Int. Cl. B08b *15/00*
U.S. Cl. 134—104 **24 Claims**



In a dishwasher of the type in which racks of dishes are carried through a series of washing and rinsing stations, the hot, moisture laden air emitted by the dishwasher is directed over a series of cooling coils to both cool the air and remove by condensation a substantial portion of the moisture. The cooled, dried air is then exhausted to ambience. Relatively cool tap water is utilized in the cooling coils with the water passing from the coils to the first stage of the dishwasher for use in washing dishes. A valve regulates water flow to the cooling coils and is controlled by the same switch which actuates the final rinse stage of the dishwasher so that additional cooling capacity is gained during the final rinse stage. An adjustable opening is also provided for admitting ambient air into the apparatus for mixture with the air from the cooling section to prevent a build-up of condensate in the sections of the apparatus downstream of the cooling section.

3,789,861
DEVICE FOR CLEARING BLOCKED PIPES

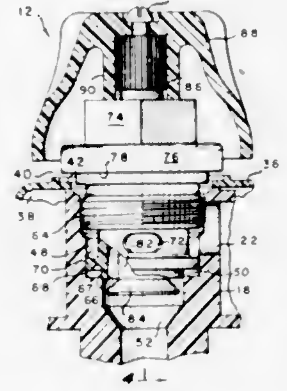
Jack Samuel Conn, Walton-on-Thames, and Lionel Ralph Fabien, London, both of England, assignors to Surrey Steel Components Limited, Surrey, England
Filed May 8, 1972, Ser. No. 251,397
Claims priority, application Great Britain, May 10, 1971, 14,020/71
Int. Cl. B08b *9/02;* **B67b** *7/24*
U.S. Cl. 134—166 C **6 Claims**



A device for use in clearing blocked pipes, drains and other conduits comprises a hollow body portion, means to receive a bottle or cartridge of compressed gas which means are operable to feed a controlled quantity of gas from the bottle or cartridge into the hollow body portion, a valve controlled outlet from the hollow body portion to an outlet conduit, and a liquid inlet to said outlet conduit with a non-return valve therein, the outlet being connectable to a blocked conduit so that liquid may be passed into the said outlet conduit and the blocked conduit through the said liquid inlet to fill the blocked conduit as far as the blockage and gas fed into the hollow body and held under pressure therein may be rapidly released therefrom by actuation of the valve and applied against the liquid in the conduits to impart a shock to the liquid.

3,789,862
DISPOSABLE VALVE CONSTRUCTION AND METHOD OF MAKING SEALS

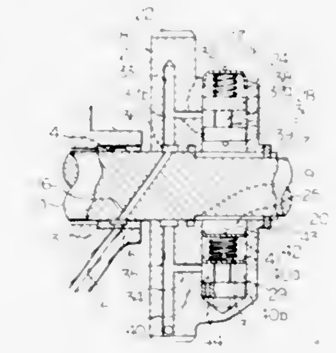
Robert J. Keller, III., Richmond, Va., assignor to Kel-Win Manufacturing Company, Inc., Chester, Va.
Division of Ser. No. 197,741, Nov. 11, 1971. This application Nov. 6, 1972, Ser. No. 303,712
Int. Cl. F16k *1/04*
U.S. Cl. 137—15 **4 Claims**



A method of making seals in which the valve member is made from a flexible material, such as plastic. A valve housing member is provided with a longitudinal bore which communicates with a fluid to be dispensed. The housing member is provided with a countersunk portion to receive therein a hollow valve member. The latter is provided with a lower cylindrical portion, the bottom surface of which functions as a valve seat for a centrally disposed stem member. The outer surface of the lower cylindrical portion provides an interference fit for the bore of the housing member. The hollow valve body member is threaded into the countersunk housing until an interference seal is initially established with the bore of the housing member. The valve body member is threaded further causing flexing of the valve body to occur as an integral annular skirt portion of the valve body engages the shoulder at the bottom of the countersunk which serves as a valve seat therefor. Continued threading of the valve body establishes a controlled tension on the valve housing member by an interference in length between the valve member and the housing member between the valve seat and a bottoming out position. While the countersunk portion is threaded to receive the valve body member, the bottom of the countersink is unthreaded and is positioned to support the annular skirt portion of the valve body and prevents radial movement thereof which would cause leaking under heavy pressures.

3,789,863
FLUID PRESSURE GOVERNOR VALVE

Koji Enomoto; Kunio Ohtsuka, and Wataru Ishimaru, all of Yokohama City, Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan
Filed Dec. 7, 1971, Ser. No. 205.520
Claims priority, application Japan, July 14, 1971, 46/61181
Int. Cl. G05d *13/10*
U.S. Cl. 137—54 **1 Claim**

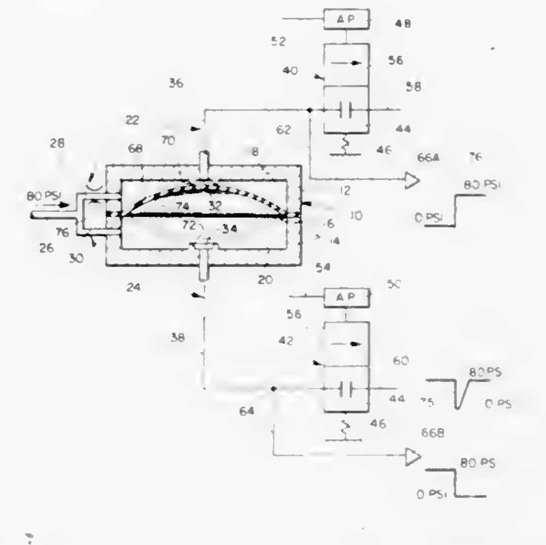


A fluid pressure governor valve adapted to produce a pressure signal that is proportional in magnitude to the speed of rotation of an output shaft of an automotive power transmission having a parking lock gear mounted for rotation with the output shaft, which governor valve consists of a valve body formed by a convex portion of the parking lock gear, first and second valve chambers formed in the convex portion of the parking lock gear, first and second passages formed in a disc portion of the parking lock gear and respectively communicating with the first and second valve chambers, and first and second drain ports formed in the convex portion of the parking lock gear and respectively communicating with the first and second valve chambers. The governor valve further consists of a primary governor valve element and a secondary governor valve element, which are radially movably accommodated in the first and second valve chambers, respectively. The primary and secondary governor valve elements are associated with each other for thereby producing a pressure signal that is proportional in magnitude to the speed of rotation of the output shaft.

3,789,864
FLUID OPERATED SYSTEM

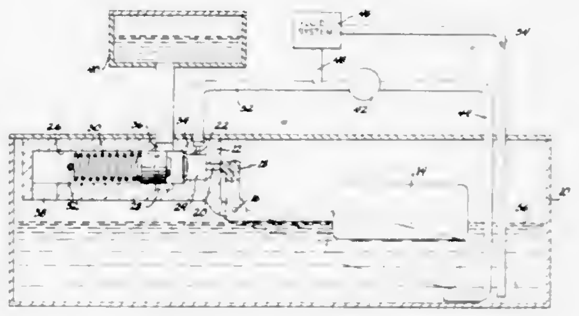
Larry C. Cowan, Saunderstown, and Edward A. Rubel, East Greenwich, both of R.I., assignors to Leesona Corporation, Cranston, R.I.
Continuation-in-part of Ser. No. 179,844, Sept. 13, 1971, abandoned. This application Apr. 9, 1973, Ser. No. 349,635
Int. Cl. F15c *3/04*
U.S. Cl. 137—119 **12 Claims**

A fluid pulse operated system provides selective output for operating a fluid device, such as reversing operation of a fluid motor, or memory device in a logic environment. The system includes a pair of chambers separated by a flexible diaphragm. Fluid paths, one through each of the chambers, each includes an inlet for pressurized fluid into the associated chamber and a chamber outlet connected with a normally closed vent valve. Output signal lines are provided in the paths, one between each of the outlets and the associated vent valve, for connection with the motor or providing memory signals. The diaphragm serves as a valve member which selectively cooperates with one of a pair of valve seats, one for each of the outlets, for closing the selected outlet. During normal operation of the system either of the outlets may be open and the other closed by the diaphragm which is releasably retained in its selected closed position by a differential in facial area of opposite sides of the diaphragm exposed to fluid in the respective chambers. In order to reverse the diaphragm, thereby opening the previously closed outlet and closing the formerly open outlet, the vent associated with the outlet to be closed is momentarily opened, thereby reducing the fluid pressure in the associated chamber and causing the diaphram to reverse its position and seat against the valve seat about the outlet to be closed. The system operates with little power while pulsing through a control cycle and stands by with no power in a static condition, by provision of positive fluid pressure, being decreased by control pulses and by provision of gating structures sealing off leakage paths in static condition.



3,789,865
LIQUID LEVEL CONTROL

August H. Borman, Farmington, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 8, 1972, Ser. No. 287,507
Int. Cl. G05d *9/04*
U.S. Cl. 137—122 **3 Claims**



A liquid level control for maintaining a predetermined liquid level in a primary reservoir and permitting storage of excess fluid in a secondary reservoir. The fluid in the primary reservoir is delivered by a pump to a fluid operated system. Excess fluid which cannot be immediately utilized by the fluid system is returned via a valve to the primary reservoir. The primary reservoir has a level indicating device which operates the valve to control fluid return to the primary reservoir from the fluid system. When the fluid level in the primary system is above a predetermined level the valve is operated to discontinue flow to the primary reservoir and direct the fluid to be stored temporarily in the secondary reservoir.

3,789,866

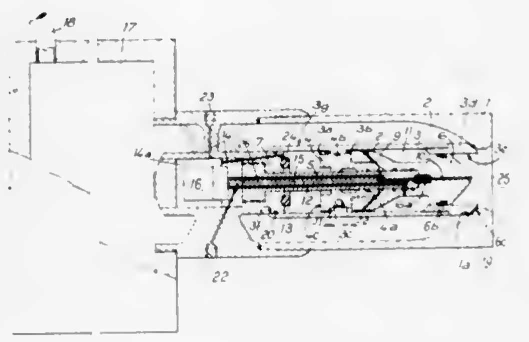
PRESSURIZED FLUID VALVES

Robert P. Combes, La Valette, France, assignor to Societe Pour Le Developpement De La Recherche Appliquee, Toulon, France

Filed Oct. 27, 1972, Ser. No. 301,351

Int. Cl. F16k *31/06*

U.S. Cl. 137—219 **6 Claims**



A valve for controlling the flow of pressurized fluid comprising a hollow, cylindrical valve body having a hollow, cylindrical obturator slidably mounted therein, the exterior of the obturator being spaced, along most of its length, from the inner surface of the body, to provide space for receiving the pressurized fluid. The space is closed at its forward end by contact means on the obturator contacting a seat on the body. The obturator is supported internally by a first male guide piece mounted from the body and slidably contacting the inner surface of the obturator at its rearward end, a rod coaxial with the obturator and supported by the first guide piece and a second male guide piece mounted on the rod and slidably contacting the inner surface of the obturator at its forward end. A piston slidably mounted within the obturator, on the rod and between the guide pieces, forms, in its forward position, a starting chamber with the second guide piece, in a position rearward of the forward position, a control chamber with the second guide piece, the rod and the inner surface of the obturator and at its rear side, a closing chamber with the rod, the first guide piece and the inner surface of the obturator. When the piston moves rearward it engages a stop on the obturator and causes it to move with the piston. A fluid duct through the rod and the second guide piece connects the start chamber to the atmosphere at the forward end of the obturator, and fluid ducts, for control purposes, extend from exteriorly of the body to the start, control and closing chambers to cause movement of the piston and hence, the obturator.

3,789,867

TIRE INFLATION VALVE WITH PRESSURE INDICATOR

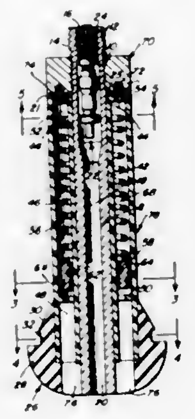
Enrique M. Yabor, Miami, Fla., assignor to David Moliver, Miami, Fla.; a part interest

Filed May 17, 1972, Ser. No. 254,057

Int. Cl. F16k *37/00;* **B60c** *23/00*

U.S. Cl. 137—227 **5 Claims**

A operatively attached constantly ready-for-use self-contained tire valve and companion air pressure indicating device having an elongated barrel or tube with an axial bore, said tube providing a core for the overall device. A normally closed conventional-type tire valve is telescopingly fitted within the outer screw-threaded end portion of the bore and is accessible for attachment and association therewith of an air pump hose. The outer end portion of the tube is externally screw-threaded to accomodate a protective screw cap and also a valving nut for air exhausting and bleeding as hereinafter set forth. The inner end portion of the tube is embedded air-tight in a central or axial portion of a rubber adapter base. The base is peripherally grooved and adapted to be lodged and retentively anchored in an opening provided therefor in a portion of the tire rim. Cylinder means surrounds a predetermined portion of the tube and more specifically comprises inner and outer concentric cylinders with the space therebetween providing a pressurized air trapping chamber. Inner end portions of the cylinders are also embedded in the base. The base has slots or openings allowing the air from the tune to pay back into the chamber. A spring-biased piston, is confined for sliding movement in the chamber and has suitable O-rings to provide shiftable but air-tight contact between inner and outer peripheral surfaces of the piston and cylinders. The outer cylinder has a graduated scale and the coordinating piston provides an indicator for measuring association with the graduations of the scale. Exhaust ports at the outer end and an opening and closing and valving nut on a threaded portion of the tube make it possible to exhaust air from the chamber to permit accurate operation of the indicator.



3,789,868

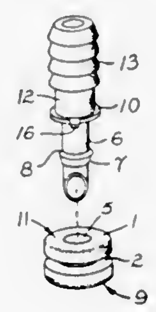
FLUID OUTLET FOR PIPES

Otto C. Menzel, Torrens Park, Australia, assignor to Iplex Plastic Industries Pty. Ltd., Elizabeth, South Australia, Australia

Filed Dec. 3, 1971, Ser. No. 204,454

Int. Cl. B23b *41/08;* **F16e** *41/04*

U.S. Cl. 137—317 **2 Claims**



A fluid outlet for pipes which comprises an apertured grummet having a peripheral groove in the grummet engageable in an aperture in a pipe, and a nipple engageable through the aperture in the grummet to lock the grummet to the pipe and provide an opening from the pipe, a shoulder being provided optionally to engage the inner face of the grummet to prevent blowing out of the nipple under pressure. The grummet can be rotational and have a sloping inner end to effect flow control.

3,789,869

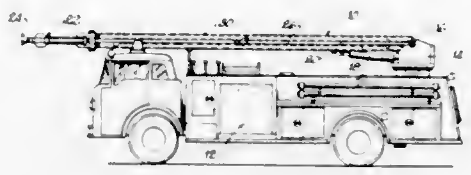
FIRE-FIGHTING APPARATUS AND ELONGATE CANTILEVER BOOM ASSEMBLY THEREFOR

Carrol V. Morris, St. Joseph, Mo., assignor to Snorkel Fire Equipment Company, St. Joseph, Mo.

Filed Jan. 24, 1972, Ser. No. 220,188

Int. Cl. B66f *9/06*

U.S. Cl. 137—351 **13 Claims**



An elongate cantilever boom assembly. The assembly is fabricated from identical U-shaped extrusions. The web is thicker than the legs of the extrusion so that when the extrusions are welded together the webs which are positioned at the extreme fiber have the greatest stress resistance to provide a strong, lightweight boom. The legs define tongue and groove means, one leg defining a tongue and the other the groove so that a pair of such extrusions from a single die may be juxtaposed in tongue and groove engagement for welded securement.

3,789,870

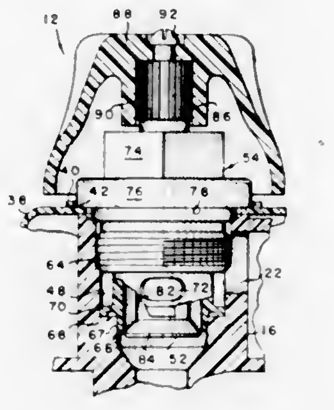
DISPOSABLE VALVE CONSTRUCTION AND METHOD OF MAKING SEALS

Robert J. Keller, III, Richmond, Va., assignor to Kel-Win Manufacturing Company, Chester, Va.

Filed Nov. 11, 1971, Ser. No. 197,741

Int. Cl. F16k *31/38*

U.S. Cl. 137—454.5 **16 Claims**



A disposable valve construction and method of making seals in which the valve member is made from a flexible material, such as plastic. A valve housing member is provided with a longitudinal bore which communicates with a fluid to be dispensed. The housing member is provided with a countersunk portion to receive therein a hollow valve member. The latter is provided with a lower cylindrical portion, the bottom surface of which functions as a valve seat for a centrally disposed stem member. The outer surface of the lower cylindrical portion provides an interference fit for the bore of the housing member. The hollow valve body member is threaded into the countersunk housing until an interference seal is initially established with the bore of the housing member. The valve body member is threaded further causing flexing of the valve body to occur as an integral annular skirt portion of the valve body engages the shoulder at the bottom of the countersink which serves as a valve seat therefor. Continued threading of the valve body establishes a controlled tension on the valve housing member by an interference in length between the valve member and the housing member between the valve seat and a bottoming out position. While the countersunk portion is threaded to receive the valve body member, the bottom of the countersink is unthreaded and is positioned to support the annular skirt portion of the valve body and prevents radial movement thereof which would cause leaking under heavy pressures.

3,789,871

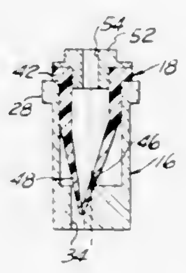
VENT APPARATUS

Willis E. Tupper, Dexter, Mich., assignor to Dexter Automatic Products Co., Inc., Dexter, Mich.

Filed Apr. 19, 1972, Ser. No. 245,436

Int. Cl. F16k *15/16*

U.S. Cl. 137—493.2 **7 Claims**



Apparatus for venting gasoline tanks for snowmobiles, chain saws, yard or garden tractors, and the like, which comprises a tubular fitting that is mounted on the outside of the tank in communication with the interior of the tank, and a check-relief valve assembly mounted in the outer end of the fitting to allow air to enter the tank and excessive gas vapor pressures to escape from the tank, but which will prevent discharge of liquid gasoline. The valve assembly includes a resilient unitary valve element that has a duck bill portion, and means are provided to urge the lips of the duck bill portion together so that an effective liquid gasoline seal is provided but which will not interfere with venting of the tank.

3,789,872

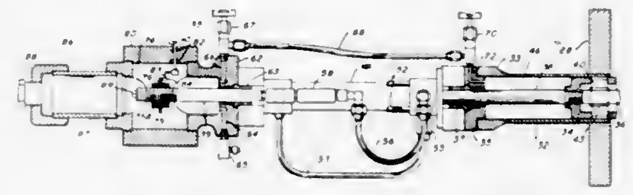
HYDRAULIC CONTROL MEANS FOR CHECK VALVES

Robert E. Elliott, 5336 E. 6th, Tulsa, Okla.

Filed May 31, 1972, Ser. No. 258,452

Int. Cl. F16k *21/10*

U.S. Cl. 137—514 **7 Claims**



This invention describes an improved hydraulic control means for a check valve in a gas pipeline. A hydraulic cylinder which is nominally operated at a low pressure has a piston which is connected by connecting rod to the clapper of the valve. As the clapper opens under gas pressure in the pipeline, hydraulic liquid is permitted to pass from one side of the piston to the other through a controlling choke valve with bypass, so that the piston offers nominal resistance to the movement of the opening clapper. On the other hand, when the gas flow in the pipeline reverses, and the clapper tends to close, the check valve prevents flow to the first bypass around the piston, and forces the liquid flow around the piston through an orifice or restriction of controlled size, so as to control the rate at which the clapper is permitted to close. This prevents high velocity slamming of the clapper against its seat.

3,789,873

of the cam arm and a transverse line on the clapper assembly.

source, the armature being effective to vary the relative in-

sleeve having a flange that overlies the bottom of the box cir-

3,789,873
PNEUMATIC PRESSURE TRANSMITTING DEVICE

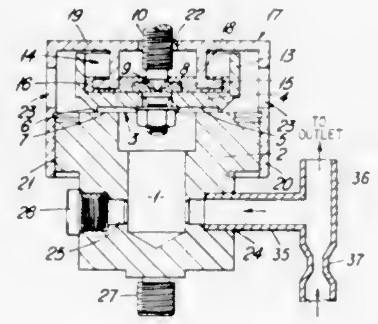
Herbert Wilfred Westwood, Orpington, England, assignor to Darenth Weighing Equipment Limited, Kent, England

Filed Oct. 8, 1971, Ser. No. 187,693

Claims priority, application Great Britain, Oct. 15, 1970, 49,093/70

Int. Cl. G01g *5/00*

U.S. Cl. 137—514.3 **5 Claims**



A pneumatic pressure transmitting device for transmitting a pneumatic pressure which is in linear relation to a variable applied force, of the kind comprising a pneumatic pressure chamber having an inlet duct with throttling means for admitting air under a pressure greater than that to be transmitted, and an outlet duct in communication with the inlet duct downstream of the throttling means, and a pneumatic pressure relief opening which is closed by a loose cover which engages a seating surrounding the opening, the cover being acted upon by a damper which damps its movement off and on to the seating to prevent it from vibrating and also acted upon by a member by which the variable force is applied to it as a thrust along a line of action in alignment with the resultant of the pneumatic pressure in the chamber acting on the cover, so that when a force is applied to the member and air is supplied under pressure through the inlet duct, the pressure in the chamber increases until the cover is moved off its seating against the applied force to allow air to escape from the opening to such an extent that equilibrium is established between the oppositely acting pressure and force on the cover, the equilibrium pressure which is in linear relation to the force being transmitted through the outlet duct, the device being provided outside of the pneumatic pressure chamber with a receptacle for receiving oil or other damping liquid, and the damper including a plate which is supported near the bottom of the receptacle where, in use, it is submerged in the damping liquid, one part, that is either the receptacle or the plate being rigid with the cover and the other part, that is the plate or the receptacle respectively, being rigid with the body containing the pneumatic pressure chamber.

3,789,874
CHANGING BIAS CHECK VALVE

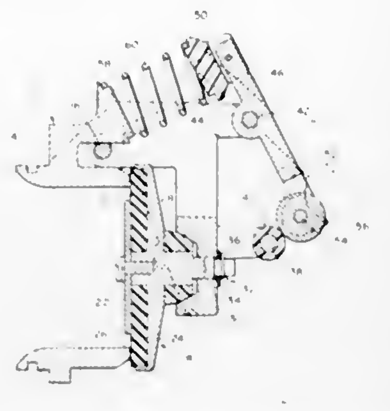
David A. Hills, Abington, Mass., assignor to Hersey Products Inc., Dedham, Mass.

Filed July 13, 1972, Ser. No. 271,625

Int. Cl. F16k *15/03*

U.S. Cl. 137—527 **8 Claims**

A check valve in which clapper bias torque diminishes as the clapper opens, a clapper support carrying pivotally mounted thereon a clapper assembly and (pivotally mounted intermediately thereof) a cam arm, a compression spring extending between the clapper support and one end of the cam arm causing the other end of the cam arm to impose a bias force on the clapper assembly, the bias force being imposed along a plane defined by a transverse line near said other end of the cam arm and a transverse line on the clapper assembly. In a preferred embodiment the force is imposed from a stainless steel roller rotatably mounted in said other end of the cam arm to a plastic roller rotatably mounted at the downstream end of the clapper assembly.



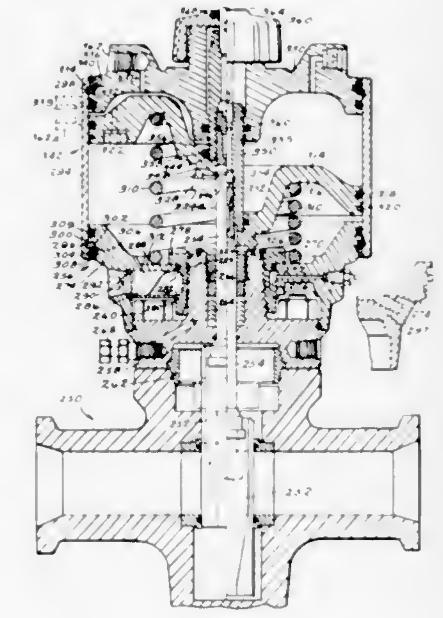
3,789,875
FLUID PRESSURE ACTUATED VALVE OPERATOR

John K. McGee, Houston, Tex., assignor to Gray Tool Company, Houston, Tex.

Filed May 15, 1972, Ser. No. 253,512

Int. Cl. F16k *31/143, 37/00*

U.S. Cl. 137—553 **11 Claims**



The valve operator preferably includes electrical or fluid pressure means for indicating the open or closed condition of the valve at a remote location. Means are provided for exerting additional valve operating force, should the normal manual and/or automatic actuator prove insufficient. The valve operator is constructed to be easily installed and serviced.

3,789,876
SOLENOID VALVE WITH ELECTRONIC POSITION INDICATOR

Calvin E. Kempton, Laguna Hills, and Robert H. Reinicke, Mission Viejo, both of Calif., assignors to Parker Hannifin Corporation, Cleveland, Ohio

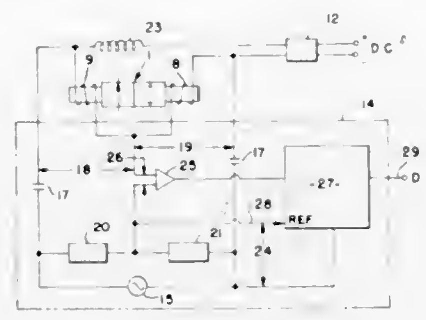
Filed Apr. 6, 1973, Ser. No. 348,747

Int. Cl. F16k *37/00*

U.S. Cl. 137—554 **16 Claims**

A solenoid valve with an electronic position indicator in which the armature of the solenoid coil means is itself the movable valve member or is operatively coupled with the movable valve member characterized in that the solenoid coil means is hooked up as an inductance bridge to an AC power

source, the armature being effective to vary the relative inductances of the legs of the bridge according to the position of the armature with respect to said solenoid coil means, the voltage drops at the juncture of the legs being compared with in-phase reference voltages and resolved by a phase detector having an output which indicates the position of the armature and thus indicates the position of the valve. The invention herein is further characterized in that the armature is actuated by DC energization of the solenoid coil means and in that the position indicator has condensor means to prevent the DC voltage from entering the position indicating circuitry.



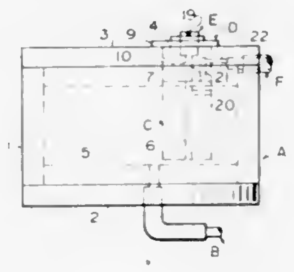
3,789,877
VISUAL AUTOMATIC LIQUID FEEDER

Tore H. Noren, and George J. Federichi, both of 1350 Donner Ave., San Francisco, Calif.

Filed Mar. 13, 1972, Ser. No. 234,232

Int. Cl. G01f *15/00*

U.S. Cl. 137—590 **2 Claims**



A visual automatic liquid feeder having a fluid holding container with a transparent wall and an inlet pipe for fluid communicating with the container at its bottom. The top of the container carries a depending dip tube that extends downwardly into the container and has its lower end spaced a slight distance above the container bottom. An axial bore in the dip tube extends from the lower end of the tube and communicates with an output pipe for the fluid. A suction on the outlet pipe causes fluid in the container to flow into the pipe. An adjustable valve controls the flow of fluid passing from the container through the axial bore in the dip tube and out through the outlet tube. A radial branch bore in the dip tube leads from the axial bore to the top of the container interior so as to create a vacuum in the container that will draw fluid through the inlet pipe into the container until the fluid closes the entrance end of the radial branch bore.

3,789,878
DEAD BED PROTECTIVE SLEEVE FOR USE IN PROCESSING TACONITE

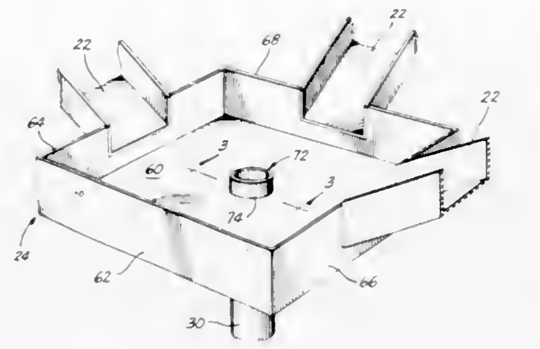
Byron G. Rowell, Virginia, Minn., assignor to I. R. A., Incorporated, Hibbing, Minn.

Filed Jan. 24, 1972, Ser. No. 219,943

Int. Cl. B03b *11/00*

U.S. Cl. 137—590 **10 Claims**

To minimize the amount of wear at the outlet or discharge pipe in the bottom of a tank or box through which a liquid or slurry containing abrasive particles flows, such as in the processing of taconite, a dead bed protective sleeve of a material having abrasion-resistant properties is employed, the sleeve having a flange that overlies the bottom of the box circumjacent the outlet pipe and also having a cylindrical portion depending downwardly into the outlet pipe. The flange functions as a dam or baffle so that the particles build up therearound to provide a cushioning effect which protects the bottom of the box in this region. The joint where the outlet pipe is connected to the box is also protected. Still further, the upper portion of the outlet pipe where turbulent action occurs is protected by the depending cylindrical portion of my sleeve.



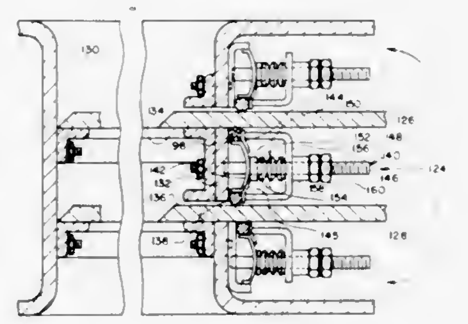
3,789,879
SELF-ADJUSTING SEALING APPARATUS

Elden A. Hale, Pikesville, Md., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Apr. 20, 1972, Ser. No. 245,880

Int. Cl. F16k *25/00*

U.S. Cl. 137—614.11 **21 Claims**



A self-adjusting sealing apparatus for sealing a space between the wall of an enclosure and an irregular surface on a closure gate which moves substantially perpendicularly through the enclosure to block a flow of gas through the enclosure. A sealing element acts against the wall of the enclosure and the irregular surface thereby preventing gas within the enclosure from escaping between the wall and the closure gate. A resilient retaining mechanism urges the sealing element against the wall of the enclosure and against the irregular surface of the closure gate for maintaining the sealing element in sealing engagement with the wall and the irregular surface during movement of the closure gate into and out of the enclosure and when the gate is in any of its open, closed, or intermediate positions.

3,789,880
POROUS METAL FLOW CONTROL SPOOL

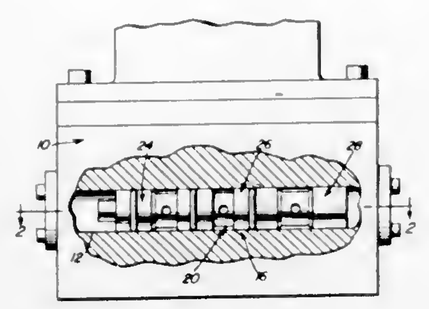
Dan F. Armstrong, and George F. Armstrong, both of Saint Albans, W. Va., assignors to Chem Valley Machines, Inc., St. Albans, W. Va.

Filed Jan. 4, 1972, Ser. No. 215,318

Int. Cl. F16k *3/32, 47/14;* **F15d** *1/10*

U.S. Cl. 137—625.3 **8 Claims**

A flow control spool having first, second, and third separate cylindrical spool parts, and a pair of porous metal discs arranged in the second spool part for controlling the flow in a flow path defined by the spool. The spool parts are hollow with an end of the first and third spool parts being enclosed,



and each spool part is provided with ports which cooperate with passages in a valve block in which the spool is arranged for defining a flow path system.

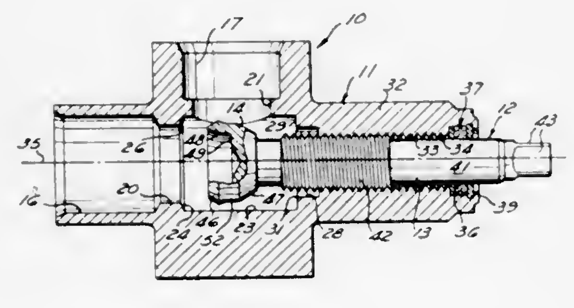
3,789,881
REFRIGERATION SERVICE VALVE

Robert E. Kozulla, Willowick, and Richard J. Silagy, Parma, both of Ohio, assignors to The Weatherhead Company, Cleveland, Ohio

Filed Mar. 31, 1972, Ser. No. 240,096

Int. Cl. F16k *11/02*

U.S. Cl. 137—625.48 **8 Claims**



A valve assembly and method of making the same particularly suited for use as a double seat refrigeration valve comprising a body which has an internal poppet receiving chamber and a pair of valve seats at opposite ends of the chamber with one seat associated with an axial port and the other seat associated with an axial stem guide bore. The poppet has an initial outer diameter at least as small as the axial port seat to permit it to be positioned in the chamber through the axial port and is adapted to be plastically expanded radially outwardly by a flaring tool to a final diameter larger than the axial port seat so it is capable of sealing the port to prevent fluid communication between the axial port and a second port in the chamber. The poppet includes a sealing surface adapted to seal the stem guide bore seat when the poppet is moved away from the axial port seat.

3,789,882
DISCHARGE COLLECTOR FOR FLUID COOLED ROLL

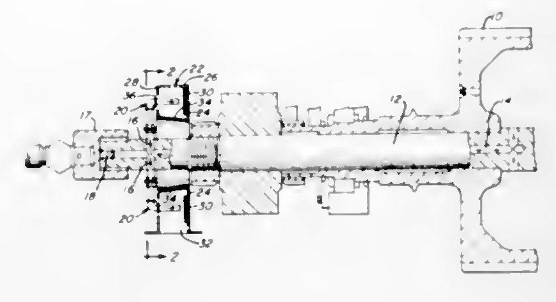
Fay R. Edmonson, Birmingham, Ala., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Aug. 25, 1972, Ser. No. 283,865

Int. Cl. B21b *27/06, 27/08*

U.S. Cl. 137—802 **6 Claims**

A discharge collector for a fluid cooled roll has a nozzle engaging each radial fluid outlet in the shaft of the roll, and a collecting chamber surrounding the shaft into which chamber the nozzles protrude and emit cooling water. An alternative embodiment includes a sleeve having an internal water passageway attached to the roll and communicating with the



radial fluid outlets, and one or more nozzles engaging the sleeve to deliver discharged cooling water to the collecting chamber.

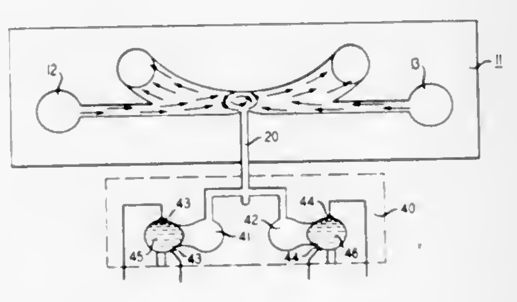
3,789,883
PUSH-PULL FLUIDIC LOGIC ELEMENT AND DRIVE UNIT

Donald Lee De Gregory, Columbus, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 2, 1972, Ser. No. 294,368

Int. Cl. F15c *1/20*

U.S. Cl. 137—824 **1 Claim**



A fluidic logic element and drive unit is disclosed which performs the half adder logic function of a passive AND gate but has a single output capable of giving two distinct output signals. The element has opposed aligned input nozzles and diverters arranged so that an output port is pressurized by the simultaneous presence of input signals at each nozzle and is evacuated by an atomizer effect when an input is present at either nozzle alone. The AND signal is indicated by a pressure at the output, while the OR signal is indicated by a vacuum at the output.

3,789,884
PNEUMATIC PRESSURE POSITION ADJUSTING CONTROLLER

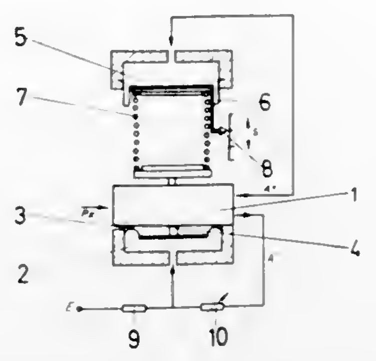
Horst Bader, Stuttgart, Germany, assignor to J. C. Eckardt AG, Stuttgart, Germany

Division of Ser. No. 128,042, March 25, 1971, Pat. No. 3,721,422. This application Jan. 19, 1973, Ser. No. 325,063

Int. Cl. F15c *3/04*

U.S. Cl. 137—832 **13 Claims**

A pneumatic pressure position adjusting controller which includes a differential pressure amplifier providing first and second output pressures from a comparison unit responsive to pressures provided by the first and second pressure chambers, the second output pressure from the differential pressure amplifier being compared to an input pressure by a pressure distributor which applies a control pressure to the second pressure chamber, the first output pressure of the differential pressure amplifier being applied to the first pressure chamber.



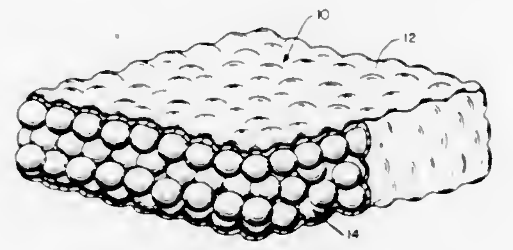
3,789,885
INTERNALLY SUPPORTED THIN WALLED DUCT

Joseph R. Wilson, Hutweidengasse 10 A-1190, Vienna, Austria

Continuation-in-part of Ser. No. 51,650, July 1, 1970, Pat. No. 3,732,919. This application May 18, 1972, Ser. No. 254,563

Int. Cl. F16l *55/00*

U.S. Cl. 138—103 **6 Claims**



A thin walled duct, operating at reduced pressure, is maintained rigid by an internal packing of particles that does not materially affect low velocity fluid flow through the duct.

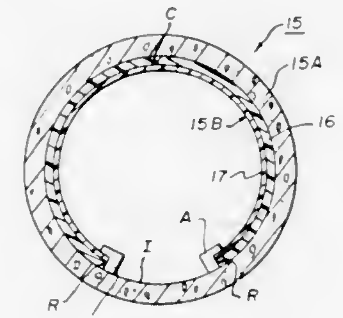
3,789,886
LINED CONDUIT

Thomas K. Breitfuss, Tustin, Calif., assignor to Hydro Conduit Corporation, Newport Beach, Calif.

Filed July 27, 1972, Ser. No. 275,793

Int. Cl. F16l *9/14*

U.S. Cl. 138—146 **6 Claims**



A closed conduit has a liner for the crown thereof, the conduit being ordinarily subject to flow in the invert portions thereof of a liquid bearing a corrosive vapor or a vapor which is converted to a corrosive liquid. The liner is formed from a rectangular essentially planar corrosion resistant sheet of deformable material having memory characteristics causing the material to tend to revert to its undeformed condition. The sheet is deformed and constrained to define a tube having a diameter less than the diameter of the conduit, and is inserted into the conduit. Structure is disposed within the conduit adjacent at least to one side of the flow line thereof to engage the longitudinal edge of the sheet and restrain the edge in position upon release of the constraint of the sheet, so that when the sheet returns to its undeformed state to line the crown of the conduit, the corrosive action of the vapor is not manifest against the crown portions of the conduit.

3,789,887
ARRANGEMENT FOR RECIPROCATING A WEFT INSERTER ROD

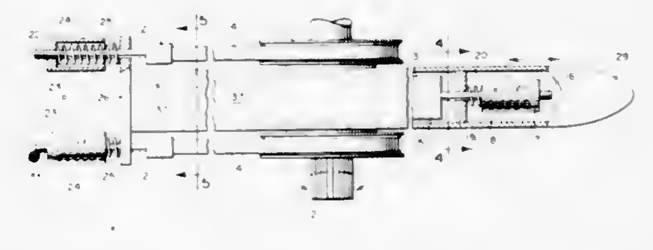
Arnold Peter, Lichteneiche uber Bamberg, Germany, assignor to Ruti Machinery Works Ltd. formerly Caspar Honegger, Ruti (Zurich), Switzerland

Filed June 1, 1972, Ser. No. 258,765

Claims priority, application Switzerland, June 2, 1971, 8030/71

Int. Cl. D03d *47/00*

U.S. Cl. 139—123 **12 Claims**



The present invention relates to an arrangement for reciprocating a weft inserter rod for inserting picks into a shed of a weaving machine. The arrangement comprises a driving wheel rotating in both clockwise and counterclockwise directions about a pivot and connecting means transmitting the movement of the driving wheel to reciprocating motion of the inserter rod.

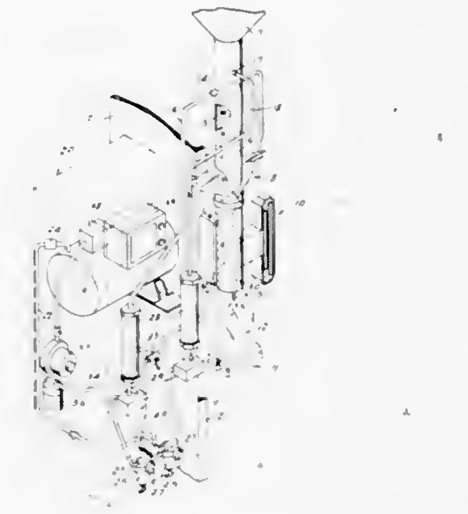
3,789,888
GAS FLUSHING SYSTEM FOR VERTICAL FORM, FILL AND SEAL MACHINES

Robert C. James; David A. Wilson, and Frank E. Pringle, Jr., all of Sheboygan, Wis., assignors to Hayssen Manufacturing Company, Sheboygan, Wis.

Division of Ser. No. 888,615, Dec. 29, 1969, Pat. No. 3,664,086. This application Sept. 27, 1971, Ser. No. 184,165

Int. Cl. B65b *1/04, 3/04*

U.S. Cl. 141—4 **10 Claims**



Gas flushing is effected by introducing the gas through one or more ducts into a free portion of the vertical package forming, filling and sealing tube above the area to which packaging sheet material is fed onto and tubularly formed about the tube. At least one of the ducts communicates with an extension duct nozzle depending within the tube for releasing and distributing flushing gas onto the product delivered through the tube into

the form packaging bags. Pre-purging gas may be introduced

nected to the machine parts and have drive motors with one of the motors manually controlled and with the other of the mo-

one of a number of other plates of different thickness and having openings of different sizes so as to vary the depth and area

center of the stand. One arm has means connected to and operable to move the associated dog into clamping engage-the form packaging bags. Pre-purging gas may be introduced into the tube upstream from the flusihing gas. Gas sampling and machine start-up pre-flushing may be effected through a duct having a combination inlet and outlet located to extend partially downwardly into the bag to be filled or which may have been last filled when the machine is restarted after a shut-down.

3,789,889
CONTROL ARRANGEMENT FOR A VESSEL FILLING MACHINE

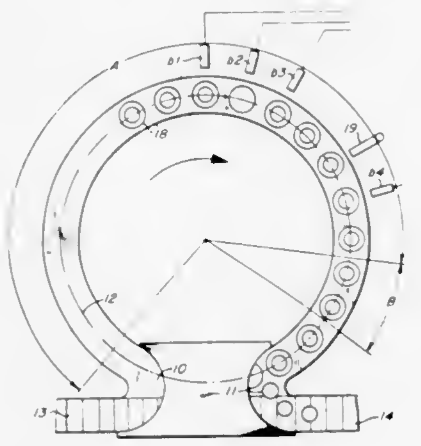
Rudolf Riedel, Bad Kreuznach; Felix Zelder, Munster-Sarmsheim, and Horst Gilles, Bad Kreuznach, all of Germany, assignors to Seitz-Werke G.m.b.H., Bad Kreuznach, Germany

Filed Feb. 14, 1972, Ser. No. 226,168

Claims priority, application Germany, Feb. 16, 1971, P 21 07 226.4

Int. Cl. B65b *57/02*

U.S. Cl. 141—140 **10 Claims**



A vessel filling machine having a conveyor for conveying vessels to be filled in spaced relation through a filling region in which filling devices engage the vessels from above. In the absence of a vessel in a respective position of the conveyor, the respective filling device will move beyond the normal vessel engaging position thereof to a second position.

Feeler elements are located along the filling region for detecting the positions of the filling devices. In the event a complete vessel is absent from a position on the conveyor, the feeler elements cooperate to actuate an instrumentality designed to clear debris from the position from which the complete vessel is absent and in the event the debris is not cleared from the position, the machine stops.

3,789,890
ROTATING VESSEL PROCESSING MACHINE, ESPECIALLY VESSEL FILLING MACHINE

Rudolf Riedel, Bad Kreuznach, and Felix Zelder, Muenster-Sarmsheim, both of Germany, assignors to Seitz-Werke G.m.b.H., Bad Kreuznach, Germany

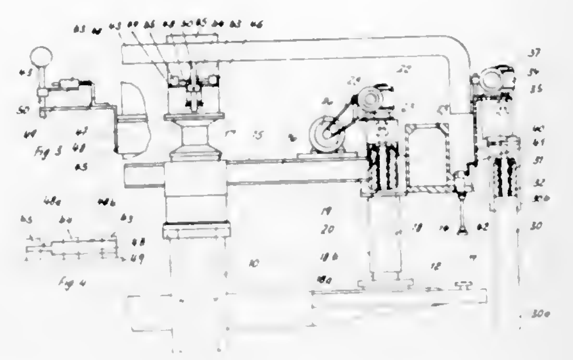
Filed Dec. 22, 1971, Ser. No. 210,785

Claims priority, application Germany, Jan. 5, 1971, P 21 00 284.6

Int. Cl. B65b *43/50*

U.S. Cl. 141—144 **11 Claims**

A machine, especially for filling vessels in which a rotary table has circumferentially distributed vessel supports thereon. Mounted on the table for vertical movement thereon is a machine part having valve controlled filling devices to engage the vessels. A further machine part having valve actuating means is supported above the first mentioned machine part, and is also vertically moveable. Screw drives are connected to the machine parts and have drive motors with one of the motors manually controlled and with the other of the motors being controlled in response to relative movement of the machine parts so that the machine parts maintain a certain relationship relative to each other.



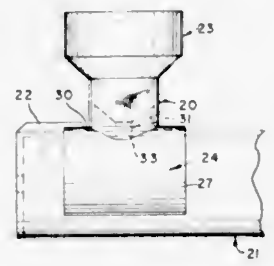
3,789,891
B-B GUN FUNNEL DEVICE

James D. Bosch, 892 E. Main, Valley City, N. Dak.

Filed Mar. 2, 1972, Ser. No. 231,225

Int. Cl. B65b *39/00*

U.S. Cl. 141—331 **1 Claim**



The invention comprises a funnel device. The funnel device is for attachment to the barrel of a B—B gun having a bore therein for filling a magazine in the barrel of the B—B gun. The funnel device has a funnel with a clamp mounted to the bottom of the funnel. The clamp is detachably mounted to the barrel of the B—B gun so that the bore in the funnel aligns with the bore in the barrel of the gun so that B—B's may be fed into the funnel through the bore in the funnel and into the bore in the barrel of the B—B gun to fill the magazine of the B—B gun with B—B's.

3,789,892
TEMPLATE FOR USE IN THE ROUTING OF WORKPIECES

Gordon L. Converse, Elk Rapids, and Merle C. Mihulka, Boyne City, both of Mich., assignors to Twin Bay Industries, Inc., Elk Rapids, Mich.

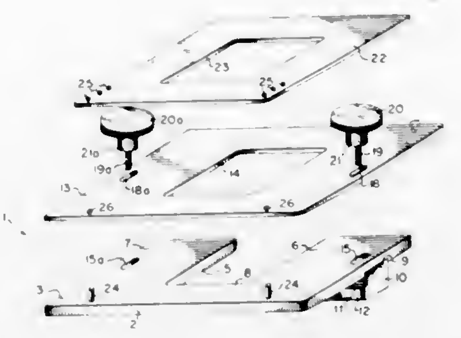
Filed Apr. 15, 1971, Ser. No. 134,278

Int. Cl. B27c *5/10;* **B23q** *35/44*

U.S. Cl. 144—144.5 **7 Claims**

A routing template comprises a body adapted to overlie a workpiece to be routed and having an opening formed in the body for the accommodation of a routing tool. Atop the body is carried a plate having a predetermined thickness and having an opening therein of an area corresponding to the area of the workpiece to be routed, the area of the opening in the plate being no greater than that of the opening in the body and communicating with the latter. The plate may be replaced by any

one of a number of other plates of different thickness and having openings of different sizes so as to vary the depth and area of the cut made in a workpiece. The body is provided with means for clamping and unclamping the body to the workpiece to be routed.



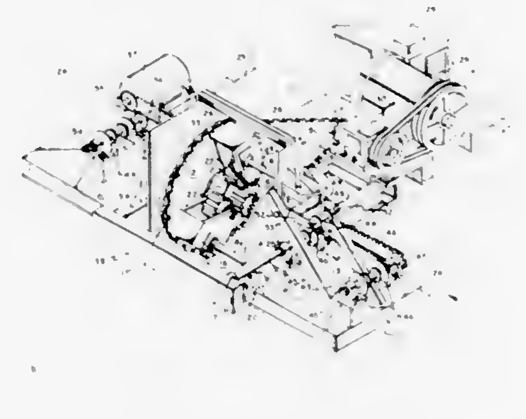
3,789,893
DELIMBER-DEBARKER

Loren A. Carson, 1501 S. Capital Blvd., Boise, Idaho; R. S. Tremewan, 4405 Gauge, Boise, Idaho, and Ronald C. Yanke, 10425 Estate Dr., Boise, Idaho

Filed Sept. 15, 1972, Ser. No. 289,715

Int. Cl. B27l *1/00*

U.S. Cl. 144—208 E **3 Claims**



The delimber-debarker comprises a suitable frame, a cutter carriage carried in the frame and being driven by a motor through a sprocket and chain, a plurality of cutting heads mounted on journaled shafts provided with pinions operable to engage a ring gear on the carriage and to drive the cutting heads carried in each of the respective cutters, and a feed assembly carried on the frame and being operable to drive a log through the carriage and between the cutters.

3,789,894
STAND FOR MOTORCYCLE WHEELS

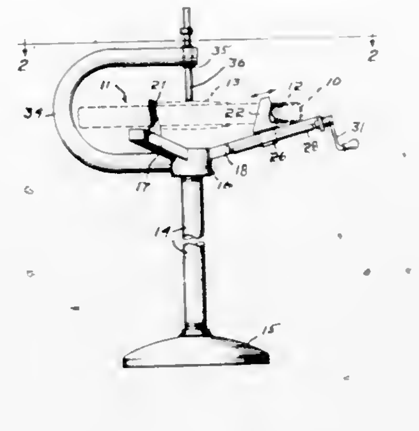
John Walker Adams, Post Office Box 308, Bar Mills, Maine

Filed July 20, 1972, Ser. No. 273,386

Int. Cl. B25h *5/00*

U.S. Cl. 144—288 A **5 Claims**

A stand is disclosed for use in changing motorcycle tires. The stand has three upwardly and outwardly inclined wheel supporting arms, each provided with rim-clamping dog, and a support holding a depending rod in vertical alignment with the center of the stand. One arm has means connected to and operable to move the associated dog into clamping engagement with the rim of the supported wheel and to bring the rim into engagement with the other dogs whose positions may also be shifted as required by the wheel diameter.



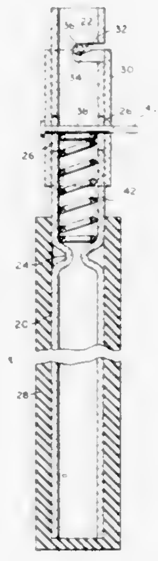
3,789,895
NAIL HOLDER

Walter W. Levinsón, 101 Conshohocken State Rd. Apt. 3C, Bala Cynwyd, Pa.

Filed Oct. 5, 1971, Ser. No. 186,642

Int. Cl. B25c *3/00*

U.S. Cl. 145—46 **1 Claim**



The invention relates to a hand tool intended for use as a holder for nails of all sizes, including brads. A tubular barrel has a side nail-gripping slot near one end, an interior spring abutment in the barrel removed from that end and cooperating longitudinal pin slots between the nail-gripping slot and the spring abutment, a sleeve surrounding and telescoping around the barrel having near one end a gripping face, preferably including a socket and an inclined gripping wall, which cooperates with the nail-gripping slot to grip a nail, a pin extending through the sleeve and through the cooperating longitudinal slots in the barrel, a compression spring within the barrel acting between the spring abutment and the pin and gripping means projecting from the sleeve preferably extending a substantial distance to the side in prolongation of the pin and as an extension from the pin. In the preferred embodiment the limiter for the telescoping motion of the sleeve is the ends of the cooperating longitudinal slots in the barrel.

3,789,896
SCREWDRIVERS AND LIKE TOOLS

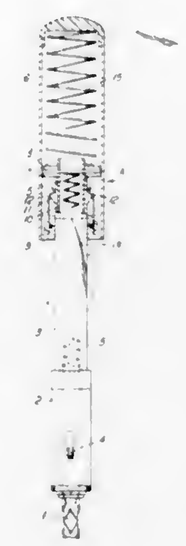
Eustace Cooke-Yarborough, 49a Maresfield Gardens, Hampstead, London NW 3, England

Filed June 14, 1972, Ser. No. 262,446

Claims priority, application Great Britain, June 22, 1971, 29,136/71

Int. Cl. B25b *17/02*

U.S. Cl. 145—54 **6 Claims**



A screwdriver or like tool incorporating a rotatable shaft which is driven by axially movable members mounted therein, and having helical drive connection therewith, is provided with two helical grooves of different pitch associated with corresponding drive means, whereby the shaft is driven at comparatively high speed when encountering comparatively low resistance torque, and is thereafter driven at lower speed but with greater applied torque when the resistance increases. The shaft may be fitted with a hollow, axially movable handle, having pin and helical groove connection therewith, to form said higher-torque driving means. Spring means may be provided to prevent relative axial movement of handle and shaft until the resistance torque on the shaft exceeds a prearranged value.

3,789,897
PACKING CONTAINERS

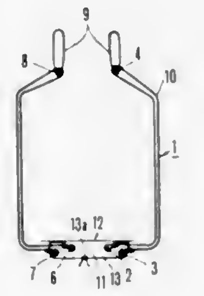
Akio Saito, Kakegawa-shi, Shizuoka, Japan, assignor to Shinwa Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 13, 1971, Ser. No. 179,934

Claims priority, application Japan, Sept. 11, 1970, 45/89922 [U]; Sept. 12, 1970, 45/90333 [U]; Nov. 11, 1970, 45/111319 [U]; Nov. 30, 1970, 45/118256 [U]; Dec. 26, 1970, 45/118581 [U]; Feb. 1, 1971, 46/3898 [U]; Mar. 19, 1971, 46/18446 [U]

Int. Cl. B65d *29/02*

U.S. Cl. 150—11 **19 Claims**



In a container, a double walled cylindrical body is formed by turning inside out a pliable cylindrical member at about the center of the length thereof, first and second binding cords are threaded about the lower ends of the inner and outer layers of the cylindrical body and are tied to substantially close the bottom of the cylindrical body, a third binding cord is threaded about the upper end of the cylindrical body to close the upper end thereof and a plurality of circumferentially spaced apart closed loop shaped hanging cords are provided to encircle the third binding cord.

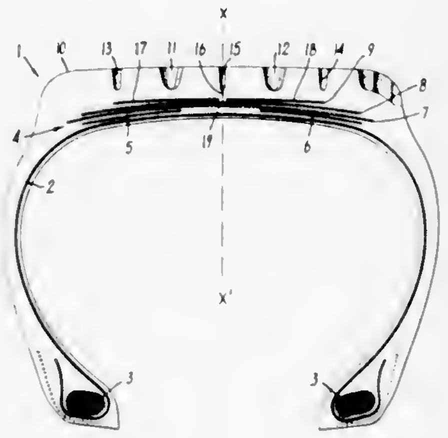
3,789,898
TUBELESS TIRES

Jean Bernard Montagne, Cebazat, France, assignor to Compagnie Generale Des Establissements Michelin, raison sociale Michelin & Cie, Clermont-Ferrand, France

Filed Apr. 6, 1972, Ser. No. 241,739

Int. Cl. B60c *11/06*

U.S. Cl. 152—209 R **3 Claims**



A tire having excellent road-holding and wear properties is further improved behaviorally by providing a central articulation zone or joint in the tread thereof.

3,789,899
PNEUMATIC TIRES

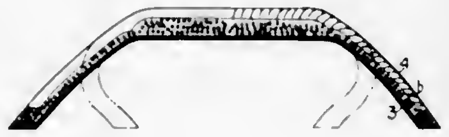
Takashi Kobayashi, Fujisawa, Japan, assignor to The Yokohama Rubber Company, Limited, Tokyo, Japan

Filed June 12, 1972, Ser. No. 261,675

Claims priority, application Japan, June 12, 1971, 46/41409

Int. Cl. B60c *9/02, 15/04*

U.S. Cl. 152—356 **7 Claims**



A pneumatic tire in which the tire is built by arranging a layer of an elastic material, such as rubber, radially outwardly of a reinforcement layer extending from one bead region to the other bead region of the tire and formed of at least one reinforcement member which has its one end located at either one of the bead regions and is wound up helically or circumferentially in a direction at an angle of 0° to 20° with respect to the rotating direction of the tire, whereby the number of the cut ends of said at least one reinforcement member is substantially decreased, the resistance of the tire to centrifugal force is increased over the entire area of the tire, the occurrence of steady wave is prevented and the tire withstands high speed rotation.

3,789,900
PNEUMATIC TIRES

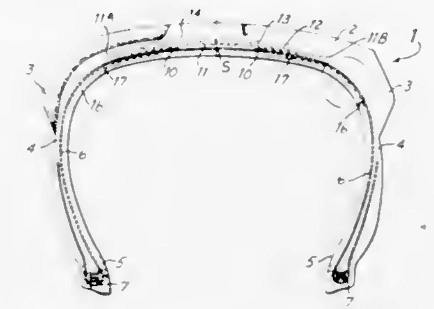
Henri Verdier, Beauregard-L Eveque, France, assignor to Compagnie Generale Des Establissements Michelin, raison sociale Michelin & Cie, Clermont-Ferrand, France

Filed June 9, 1972, Ser. No. 261,379

Claims priority, application France, June 15, 1971, 7121773

Int. Cl. B60c *9/04, 9/18*

U.S. Cl. 152—356 **8 Claims**



A tire of reduced weight and greater strength is obtained by restraining the radial carcass on the inside by means of a shoulder ply arranged on the inside of the carcass at each end of the crown reinforcement so as to impart a nearly rectangular meridian profile to the carcass.

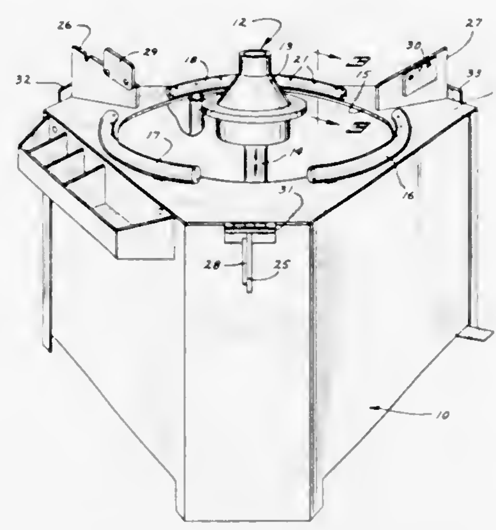
3,789,901
METHOD AND APPARATUS FOR INFLATING TUBELESS TIRES AND THE LIKE

Sigurd A. Rishovd, Minneapolis, Minn., assignor to Royal Industries, Inc., Osseo, Minn.

Filed Jan. 31, 1972, Ser. No. 222,167

Int. Cl. B60c *25/12*

U.S. Cl. 157—1.1 **8 Claims**



Apparatus for inflating a tubeless tire on the wheel of a vehicle which is operable for tires and wheels of different sizes. A work surface, with a circular aperture dimensioned to removably accept a wheel of the largest diameter to be used, is provided with a plurality of annularly spaced, upwardly, inwardly directed sources of air under pressure. A plurality of support members of adjustable height are disposed radially outwardly of the sources of air. A wheel and deflated tire are then disposed over the inflating apparatus with the bottom side wall of the tire engaging the top of the apparatus radially outwardly of the sources of air and the top bead of the tire supporting the upper rim of the wheel. The height of the wheel and tire above the plane of the sources of air is determined by the size of the wheel. Once the tire and wheel are disposed in proper position, a substantial quantity of air under pressure is emitted from the sources of air and supplied to the normal valve on the wheel and the tire is seated and inflated almost instantaneously.

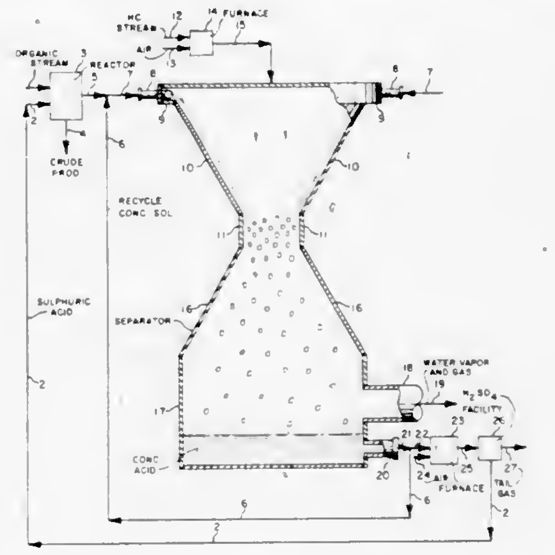
3,789,902
METHOD FOR CONCENTRATING DILUTE ACIDIC SOLUTIONS

Indravadan S. Shah, Forest Hills, N.Y., and John B. Rinckhoff, Lakeland, Fla., assignors to Chemical Construction Corporation, New York, N.Y.

Filed June 18, 1971, Ser. No. 154,366

Int. Cl. B01d *1/16, 1/22, 1/16*

U.S. Cl. 159—49 **7 Claims**



Dilute aqueous acidic solutions are concentrated by direct contact with a hot gas stream in a venturi contactor, under specific conditions of the ratio of total solution flow rate to hot gas flow rate, and hot gas flow velocity at the throat section of the venturi passage, so that the acidic liquid solution is concentrated by evaporation of water vapor into the hot gas stream without the formation of an acid mist or other contaminants in the gas stream.

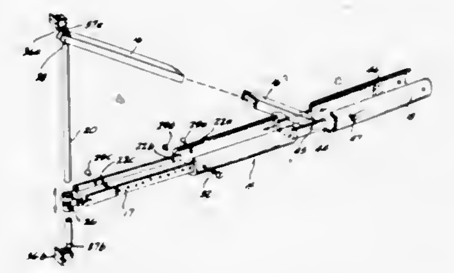
3,789,903
HIGHLY COMPACT STABLE AWNING FOR TRAVEL TRAILERS, MOTOR HOMES AND/OR CAMPERS

Robert Clement Clark; Pauline Cecilia Clark, both of 8651 Foothill Blvd., No. 84, Cucamonga, Calif., and Robert Bevan Clark, 6318 Napa Ave., Alta Loma, Calif.

Filed Nov. 1, 1971, Ser. No. 194,343

Int. Cl. E04f *10/06*

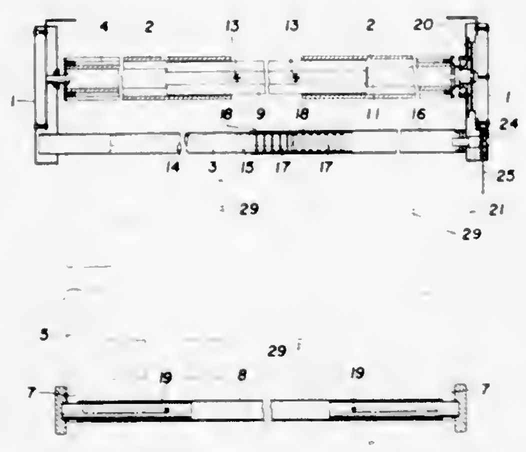
U.S. Cl. 160—75 **3 Claims**



Compact stabilized awning unit and support structure therefor having triangulated tension and/or compression bearing support elements for collapsible awning units that are adjustable for variable extended positions or collapsible into a nesting integrated unit are provided for, and attached to vehicles such as travel trailers, motor homes and/or campers. The awning unit and/or the support structure is comprised of a vertical slide adapted to be fixed to a wall, a main support secured in sliding relation at a first end thereof to said slide, an auxiliary support secured at one end thereof to the main support intermediate the ends thereof and at its other end adapted to be secured to the wall above said main support first end, a torque spring loaded roller supported by said main support at its second end, and a flexible cover having its outer end windably secured to said roller and its inner end adapted to be secured to said wall.

3,789,904
DOUBLE CURTAIN DEVICE

Ietsugu Takazawa, Bancho Habitation 901, 3, Sanbancho Chiyoda-ku, Japan
Filed Jan. 15, 1973, Ser. No. 323,363
Claims priority, application Japan, Apr. 24, 1972, 47/47543
Int. Cl. E06b *9/08, 9/20*
U.S. Cl. 160—120 **1 Claim**

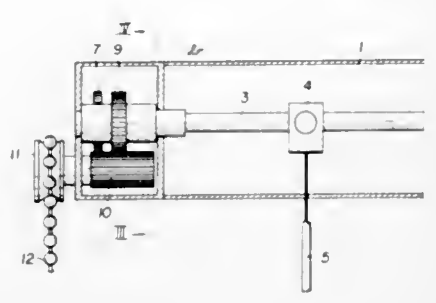


A double curtain device wherein a curtain (**5**) provided with punched patterns (**29**) is connected at the respective ends with a main winding shaft (**2**) and auxiliary winding shaft (**3**) both rotatably provided between right and left supporting cases (**1**), a balance weight shaft (**8**) is inserted and held in a folded part (**7**) of the curatin (**5**) so as to tension the curtain (**5**), a joint (**9**) is slidably fitted to the main winding shaft (**2**) so that the length of the main winding shaft (**2**) may be adjustable, said auxiliary winding shaft (**3**) is formed by fitting a small diameter tube (**15**) provided with an axial groove (**14**) cut on one side into a large diameter tube (**16**) provided also with an axial groove (**14**) cut on one side, many annular concave grooves (**17**) and annular convex parts (**18**) fitting them are formed respectively in the fitting parts of the small diameter tube (**15**) and large diameter tube (**16**) so that the length of the auxiliary winding shaft may be adjustable and a winding chain (**25**) is hung on a chain wheel (**24**) secured to one end of the auxiliary winding shaft (**3**) and engaging holes (**26**) for said winding chain (**25**) are made as opposed to the chain (**25**) on the lower surface of the supporting case (**1**).

3,789,905
VERTICAL TYPE VENETIAN BLIND

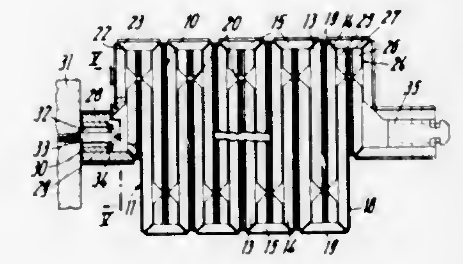
Yasuji Saito, Atsugi, Japan, assignor to Nichi-Bei Blind Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 21, 1972, Ser. No. 282,066
Claims priority, application Japan, Aug. 22, 1971, 46-63778; Nov. 1, 1971, 46-87023; Dec. 6, 1971, 46-98403; Dec. 16, 1971, 46-102372; Jan. 17, 1972, 47-7168; Jan. 17, 1972, 47-7169
Int. Cl. E06b *9/30*
U.S. Cl. 160—168 **12 Claims**

An operating device for a vertical type venetian blind is set forth. A single control means is provided to feed and rotate slats of the blind. By operating the single control means, a travelling gear moves in axial direction, while rotating; and in a part of its axial movement it comes into engagement with a gear for rotating a slat rotating rod and at the ends of said axial movement it comes into means for rotating a slat feeding rod to initiate feeding of the slats.



3,789,906
FOLDING WALL OR DOOR

Gunter Viol, Oldenburg, and Werner Kohfeldt, Bloh, both of Germany, assignors to Lignacord GmbH, Oldenburg, Germany
Filed Apr. 14, 1972, Ser. No. 244,192
Int. Cl. E06b *03/48*
U.S. Cl. 160—199 **8 Claims**

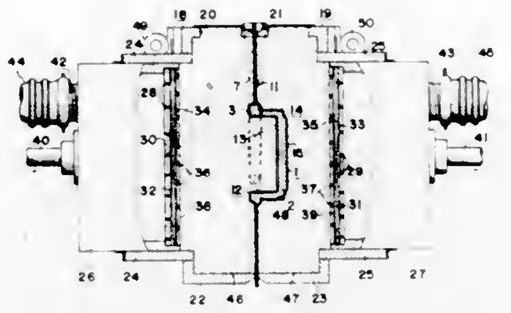


A folding panel structure, useful as a wall, partition or door, has two opposite and equally configured sides 10, 11. Each side comprises a repeating series of two wide sections 13, 14 separated by an intermediate narrow section 15, and the sides are connected together by spacers 24 such that the fold or hinge line between two adjacent wide sections of one side lies opposite the center of a narrow section of the other side. When folded, the structure roughly approximates, in cross-section, two series of adjacent U-shaped members with the side-by-side legs of each series accommodated or nested within the cavities of the other series.

3,789,907
MOLDING METHOD WITH SHIELDING MEMBER DRAWN AGAINST PARTICULATE MATERIAL

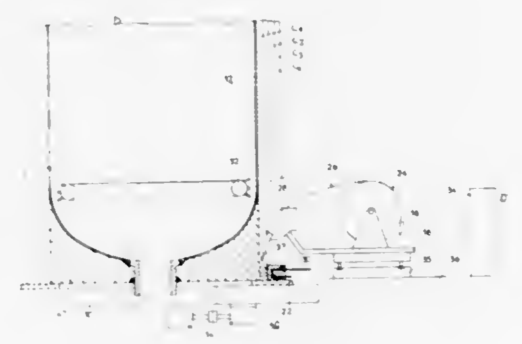
Kunii Nakata, Nagano City, and Yoshimasa Kubo, Susaka City, both of Japan, assignors to Kabushiki Kaisha Akita and Kabushiki Kaisha Akita and Kunii Nakata, both of Susaka City, Japan
Filed Sept. 21, 1971, Ser. No. 182,476
Claims priority, application Japan, June 25, 1971, 46/463
Int. Cl. B22c *15/22*
U.S. Cl. 164—7 **5 Claims**

A molding method comprising steps of bringing a shielding mold member into contact with the shaping surface of a shaping mold member to provide a mold assembly, filling a charge of a heat resisting particulate material in space disposed opposite the shaping mold member with respect to the shielding mold member, rendering negative the internal pressure of the space containing the charge so as to draw the shielding mold member toward the charge and cause the same to adhere thereto, removing the shaping mold member from the mold assembly so as to form a cavity defined by the shielding mold member, and pouring a molten metal into said cavity.



3,789,908
MANUFACTURE OF HOLLOW CYLINDRICAL BODIES

Gabriel Ruget, St.-Etienne, France, assignor to Compagnie Des Ateliers Et Forges De La Loire Saint Chamond Firminy, Saint Etienne, Jacob Holtzer, C.A.E.L., Paris, France
Filed Aug. 28, 1970, Ser. No. 67,887
Claims priority, application France, Sept. 3, 1969, 6930004
Int. Cl. B22d *27/02;* **B23d** *19/00*
U.S. Cl. 164—52 **12 Claims**

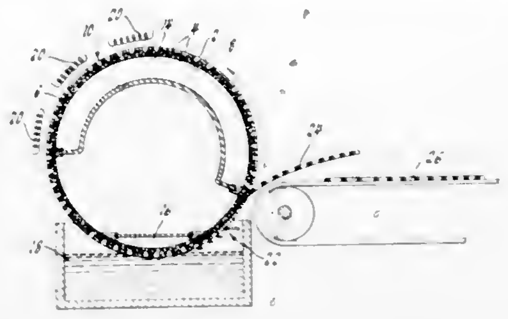


A method of producing a hollow cylindrical body of revolution in which there is welded to the outer peripheral surface of a metal sleeve a lower molten metal by means of a ring of molten metal surrounding the sleeve and the sleeve and ring of molten metal being relatively vertically displaceable. Other external layers can be applied successfully by the same method.

3,789,909
DIP CASTING METHOD USING TRANSPIRATIONALLY COOLED MOLD HAVING RELIEVED IMPERVIOUS OUTER LAYER

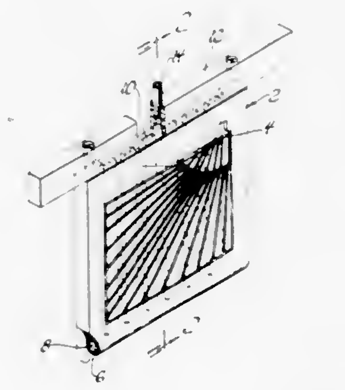
Oscar H. Smith, Muncie, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 7, 1972, Ser. No. 304,353
Int. Cl. B22d *11/06*
U.S. Cl. 164—87 **3 Claims**

In a dip casting process, a die is provided having a porous metal body, an impervious outer layer, a relieved surface on the outer layer and mold cavity in the porous body opening through the outer layer. The relieved surface provides a plurality of peaks/ridges for limited area contact with the melt. In operation, air is blown through the porous metal and out the porous walls of the mold cavity to cool them, and the impervious layer is heated to a temperature where casting metal will not adhere to the surface after the die leaves the melt. Shallow die immersion in the melt limits melt contact to the peaks/ridges on the surface thereby precluding any substantial chilling of the melt on the surface.



3,789,910
DIP CASTING METHOD USING TRANSPIRATIONALLY COOLED MOLD CAVITY

Robert C. Matter, Anderson, and Leon F. Paul, Muncie, all of Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 7, 1972, Ser. No. 304,352
Int. Cl. B22d *23/04, 25/04*
U.S. Cl. 164—121 **5 Claims**

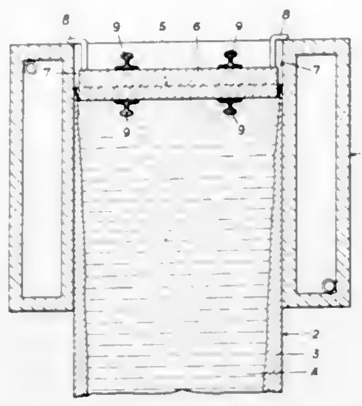


A method and die for forming intricate, thin-sectioned castings. A die is provided having a porous metal body, an impervious surface and a mold cavity through the surface and in the porous body. The impervious surface is heated to a melt-metal-shedding temperature at which the casting metal does not adhere to the surface upon its removal from the melt. Air is introduced behind the mold cavity and exits through the cavity's porous walls thereby transpirationally cooling the cavity without substantially cooling the surface. The die is immersed in the casting metal where it is quickly solidified in the cool mold cavity. The process is particularly useful for casting low alloy lead battery grids.

3,789,911
PROCESS FOR CONTINUOUS CONTINUOUS CASTING OF HOT LIQUID METALS

Ernst Bachner, Linz, Austria, assignor to Vereinigte Osterreichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria
Filed Nov. 30, 1971, Ser. No. 203,162
Claims priority, application Austria, Dec. 2, 1970, A 10 838
Int. Cl. B22d *23/00*
U.S. Cl. 164—82 **2 Claims**

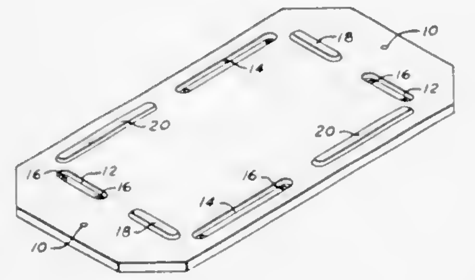
The disclosure relates to a process for continuous continuous casting in which melts of different chemical compositions are successively cast into a water-cooled mould to form a continuous bar. When casting a melt of one composition is terminated, a metallic body is inserted into the mould so that it may weld with said melt, and then casting is continued with a melt of another composition which, in turn, welds with said metallic body. By this process the formation of transitional zones comprising a mixture of melts of different chemical compositions is avoided.



3,789,912
MATCHING PATTERN PLATES

Gerald R. Rusk, Maumee, Ohio, and Robert E. Koch, Ottawa Lake, Mich., assignors to The Freeman Supply Company, Toledo, Ohio

Filed May 30, 1972, Ser. No. 257,930
Int. Cl. B22c *7/04*
U.S. Cl. 164—243 **5 Claims**



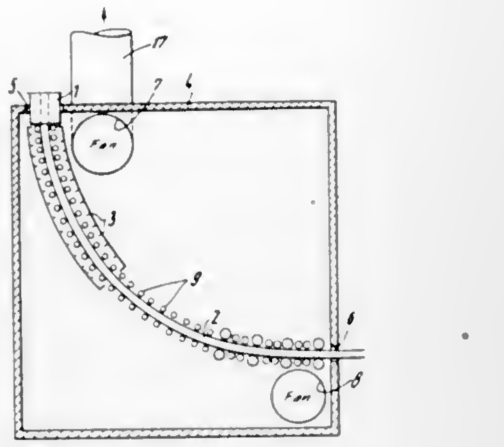
Method of producing plates having an identical configuration of valleys and lugs thereon so that one plate is interchangeable with another. Flat plates are provided with a pair of individual holes at opposite ends of the plate center line. Thereafter one or more valleys are machined in a predetermined spacing and location from one or both of the locating holes, and the process repeated for a plurality of plates. Lugs are produced by matching one plate with another by means of pins inserted into the locating holes, and injecting a hardenable material into the valleys. This hardenable material is bonded to the opposite plate. The machining operation of the valleys is carried out in a manner to produce randomly spaced ridges along the side surfaces of the valleys which form depressions in the side surfaces of the lugs that are cast therefrom. Molds made from the respective pattern plates have valleys with ridges therein which have an interference fit with respect to lugs of a matching mold.

3,789,913
STEAM FLOW CONTROL IN CONTINUOUS CASTING MACHINES WITH DIRECT SPRAY WATER COOLING

Wilhelm Stellmacher, Dusseldorf, Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Mar. 27, 1972, Ser. No. 238,188
Claims priority, application Germany, Apr. 5, 1971, P 21 17 621.6
Int. Cl. B22d *11/12*
U.S. Cl. 164—283 **6 Claims**

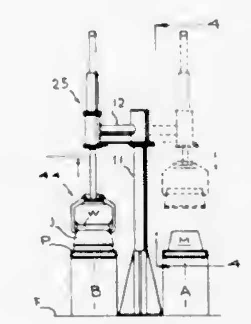
In a machine for continuous casting, which includes a mold, a water spray cooling system for the casting and an enclosure, provided with a suction fan near the location where the casting enters the enclosure, and a second, lower positioned suction fan of lower suction power and disposed preferably below the opening in the enclosure through which the casting leaves.



3,789,914
FOUNDRY MOLD JACKET AND WEIGHT SHIFTER

Wilmer J. Friesen, and Frank A. Hulet, both of Hutchinson, Kans., assignors to M. W. Hartmann Manufacturing Co., Inc., Hutchinson, Kans.

Division of Ser. No. 101,363, Dec. 24, 1970, Pat. No. 3,731,822. This application Apr. 24, 1972, Ser. No. 246,904
Int. Cl. B22d *33/04*
U.S. Cl. 164—339 **4 Claims**

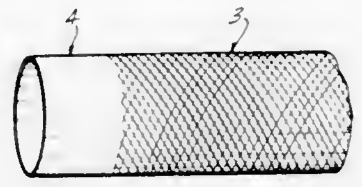


The shifting of the jackets and weights from the molds on one conveyor system run to a contiguous conveyor system run is performed automatically by a swinging boom mechanism having a vertical lift mechanism on the outer end of the boom. An open clamp means attached to the lower end of the lift rod closes the clamp on the jacket and accompanying weight of a mold in which the molten metal has solidified. The closed clamp and its load is lifted clear of the mold, swung on the supporting post through an angle to an aligned position over a fresh mold approaching the metal pouring station, after which the jacket and weight, held in the clamp assembly, is lowered over the green mold, set or snugged down on the mold, and the clamp is then opened, raised, swung back over the first conveyor run, and the cycle repeated. The operation is synchronous with the step-by-step movement of the mold pallets on the conveyor.

3,789,915
PROCESS FOR IMPROVING HEAT TRANSFER EFFICIENCY AND IMPROVED HEAT TRANSFER SYSTEM

James A. Ford, North Haven, Conn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 822,686, May 7, 1969. This application Apr. 23, 1971, Ser. No. 136,726
Int. Cl. F28f *13/18*
U.S. Cl. 165—1 **8 Claims**

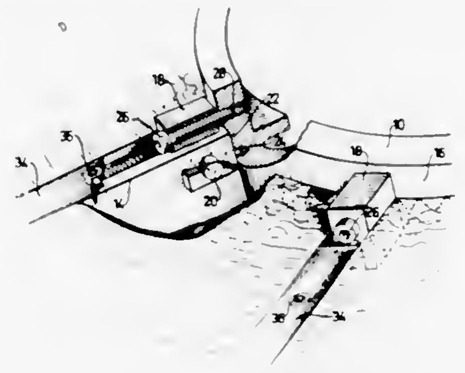


The instant disclosure teaches a process for improving heat transfer efficiency and an improved heat exchange system utilizing an improved highly corrosion resistant enhanced metal tubing consisting essentially of from 0.5 to 4.0 percent iron, balance essentially copper.

3,789,916
ROTOR FOR EXCHANGERS OF THE THERMODYNAMIC CHARACTERISTICS OF TWO GAS CURRENTS

Sven H. B. Lindahl, Spanga, Sweden, assignor to Aktiebolaget Carl Munters, Sollentuna, Sweden

Filed Apr. 6, 1971, Ser. No. 131,735
Int. Cl. F28d *19/04*
U.S. Cl. 165—8 **2 Claims**



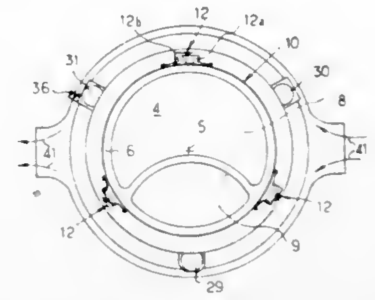
A rotor for exchangers in which the thermodynamic characteristics of two gas currents are transferred from one current to the other while they are being passed through the exchanger insert in zones separated from one another, said rotor being formed with sector spaces defined by the outer surface of an inner hub, an outer envelope and radial spokes interconnecting said hub with said envelope, which sector spaces are filled with a moisture and/or heat transferring insert formed as prefabricated units having the shape of the sector spaces.

3,789,917
ROTARY HEAT-EXCHANGER

Philippe Jarry, Sevres, France, assignor to Le Moteur Moderne, Billancourt, France

Filed Feb. 14, 1972, Ser. No. 225,753
Claims priority, application France, Feb. 15, 1971, 7104935
Int. Cl. F28d *19/00*
U.S. Cl. 165—8 **9 Claims**

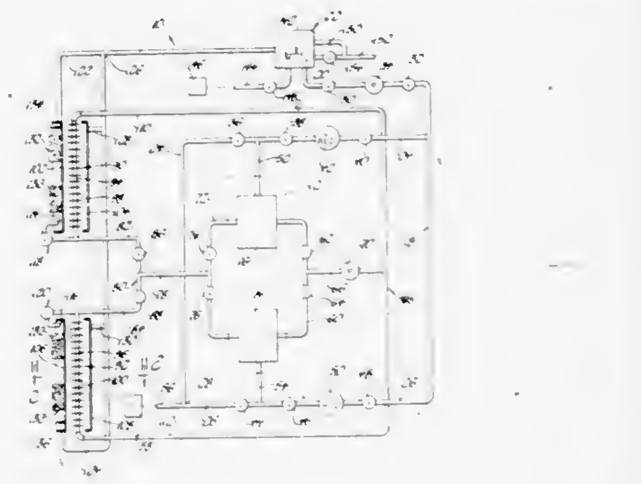
A rotary heat exchanger of the type having a hot gas pipe, a cold gas pipe and a rotary matrix of a refractory material situated in an interrupted part of the pipes. The matrix has longitudinal passages therethrough capable of establishing communication between said pipes. The active periphery of the matrix is compressed substantially uniformly over its whole width by an elastic peripheral collar which is made up of thin arcuate bands connected by elastic tension members.



3,789,918
WATER HEATING AND COOLING SYSTEM WITH HUMIDITY CONTROL MEANS

Frank Rogalski, 47900 Harbor Dr., New Baltimore, Mich.

Continuation-in-part of Ser. No. 31,696, April 24, 1970, ahandoned. This application Feb. 10, 1972, Ser. No. 225,127
Int. Cl. F24f *3/14*
U.S. Cl. 165—19 **3 Claims**



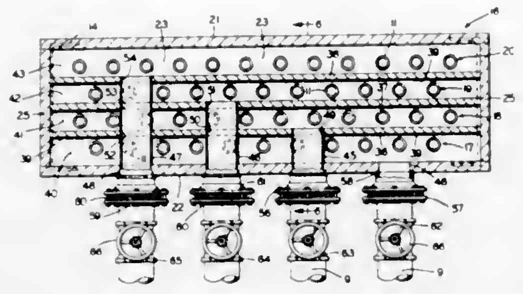
A system for heating a particular zone within a related structure, such as a dwelling, includes a water heating boiler and a water reservoir or humidifier sump. The boiler is supplied by the humidifier sump or water reservoir which also reclaims waste water from associated humidifier troughs and drip pans. The drip pans of the system define condensation collecting means for the system. Also included are a plurality of valves to control the heating and humidity, within the zone to be heated, as well as an emergency water supply for the boiler with a circulation pump provided for the heating and/or cooling.

3,789,919
STEAM CONDENSER CONSTRUCTION

Ferdinand V. Huber, Canton, Ohio, assignor to Ecodyne Corporation, Chicago, Ill.

Filed Oct. 18, 1971, Ser. No. 190,087
Int. Cl. F28b *1/06, 11/00*
U.S. Cl. 165—101 **8 Claims**

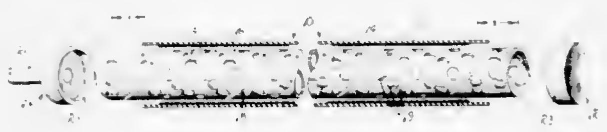
An air cooled steam condenser having plates mounted within the condensate outlet header compartment. The plates in effect form a series of subchambers, each of which communicate with a row of cooling tubes in which steam is condensed by a stream of cooling air flowing over, around and past the tubes. The rows of tubes extend transversely of the direction of airflow and the rows extend perpendicular to the direction of airflow at spaced intervals. Tube sleeves extend through a plurality of openings in the outlet header into the header compartment and terminate, each in a separate subchamber. Valves are connected in condensate lines extending from the tube sleeves externally of the header compartment. The valves are adjusted so that the passages through the valves are smaller in area for each successive connected subchamber in the header into which the condensate flows so that only that amount of steam that can be condensed effectively within the tubes in any row, enters such row due to the back pressures created by the varying sizes of valve openings, having regard to the length and the temperature difference at the particular row which determines the cooling effect of the airflow over the successive rows of tubes.



3,789,920
HEAT TRANSFER DEVICE

George M. Low, Deputy Administrator of the National Aeronautics and Space Administration in respect to an invention of, and Ralph W. Kalkbrenner, P.O. Box 10864, Pittsburgh, Pa.

Filed May 21, 1970, Ser. No. 39,343
Int. Cl. F28d *15/00*
U.S. Cl. 165—105 **1 Claim**



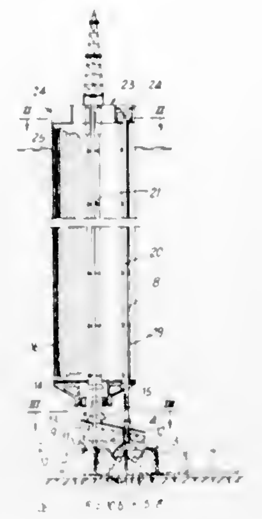
A heat transfer device characterized by an hermetically sealed tubular housing including a tubular shell terminating in spaced end plates, and a tubular mesh wick concentrically arranged and operatively supported within said housing. A feature of the invention resides in the provision of an improved wicking restraint formed as an elongated and radially expanded tubular helix concentrically related to the wick and adapted to be axially foreshortened and radially expanded into engagement with the wick in response to an axially applied compressive load, whereby the wick continuously is supported in a contiguous relationship with the internal surfaces of the shell.

3,789,921
DEVICE FOR OFF-CENTERING ABOVE-WATER ARTICULATED MULTIPLE-DRILLING STRUCTURES

Christian DeChassy, Gelos, and Andre Capdeboscq, Jurancon, both of France, assignors to Entreprise De Recherches Et D'Activites Petrolieres (ELF), Paris, France

Filed Mar. 1, 1972, Ser. No. 230,918
Claims priority, application France, Mar. 5, 1971, 7107709
Int. Cl. E02b *17/00;* **E21b** *15/02*
U.S. Cl. 166—.5 **9 Claims**

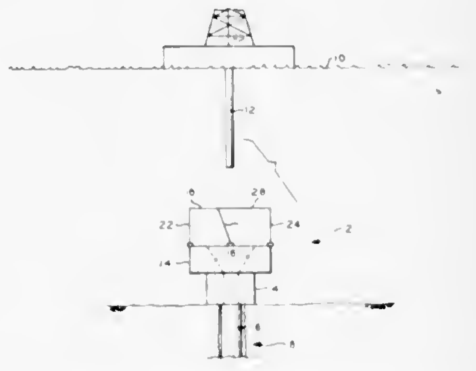
A device for off-centering an above-water articulated drilling structure in relation to a base on the seabed, consisting of a roller-table on the base, surmounted by a vertical pivot-shaft, a circular roller-path, also on the base and concentric with the pivot, an off-centering carriage that can revolve round the pivot, supported by the roller-table and roller-path, and with a guide-ramp along which the lower end of the main articulation of the structure can slide, and means for rotating the carriage and sliding the articulated structure along the guide-ramp.



3,789,922
GUIDING AND POSITIONING APPARATUS

Chester L. Knief, Bartlesville, Okla., assignor to Phillips Petroleum Company, Washington, D.C.

Filed Apr. 26, 1972, Ser. No. 247,676
Int. Cl. E21b *33/035*
U.S. Cl. 166—.5 **6 Claims**



This invention resides in an apparatus for guiding and positioning a generally vertically depending element to a preselected location. First and second guiding elements are pivotally attached to an underlying directing element which has sloping inner surfaces. First and second contacting members of the respective guiding elements are maintained above the directing element in an intersecting relationship relative one to the other.

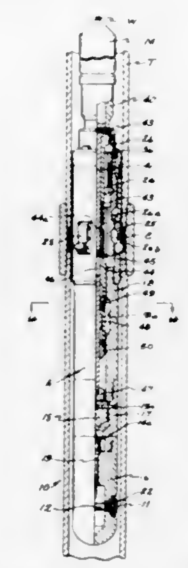
3,789,923
METHOD AND APPARATUS FOR MODIFYING A WELL TO PROVIDE GAS LIFT PRODUCTION

Henry U. Garrett, Houston, Tex., assignor to Brown Oil Tools, Inc., Houston, Tex.

Filed Dec. 17, 1971, Ser. No. 209,128
Int. Cl. E21b *43/14*
U.S. Cl. 166—55.1 **13 Claims**

In the method, a perforating device equipped with perforation forming means is lowered through a conventional tubing string and locked with a collar recess at a predetermined subsurface location. On a second trip, a remotely operable actuating device is lowered into engagement with the perforating device and operated to actuate the perforating device which in turn forms perforations through the wall of the surrounding tubing string. On the return leg of the second trip, the perforating device is unlocked and removed from the tubing string along with the attached actuating device. On a third trip, a gas lift valve is lowered through the tubing and anchored with the same collar recess to provide regulated valving of fluids flowing through the perforations.

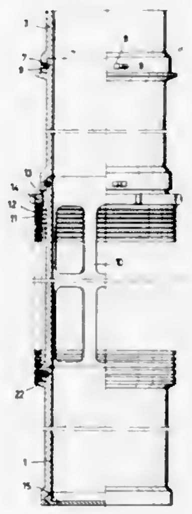
The apparatus includes a perforating device and a separate actuating device. The actuating device is lowered into engagement with the perforating device following locking of the perforating device with a subsurface collar recess. The actuating device is surface operated to ignite a charge carried in the perforating device which produces a cutting jet stream to form perforations in the surrounding tubing string. The perforating and actuating devices are locked together for removal as a unit. The apparatus includes a gas lift valve provided with radially movable collar recess anchoring members and axially spaced, self expanding seal members for respectively anchoring the valve with the collar recess and providing a seal above and below the perforations whereby the valve regulates the flow of fluids through the perforations.



3,789,924
FOUNTAIN WELL

Lasse Aaltonen, Nastola; Teuvo Salminen, Lahti, and Voitto Vaisanen, Nastola, all of Finland, assignors to Upo Osakeyhtio, Nastola, Finland

Filed June 9, 1972, Ser. No. 261,451
Claims priority, application Austria, June 17, 1971, 75265
Int. Cl. F28d *15/00;* **E03b** *3/18*
U.S. Cl. 166—105.1 **4 Claims**

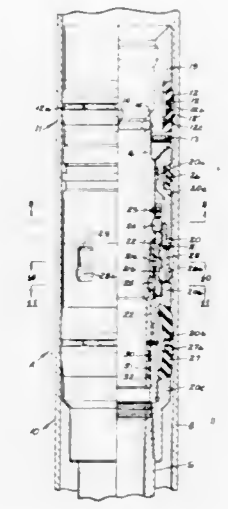


A pipe-formed fountain (bored) well for pumping liquid from a hole in the ground having a pump situated in the sieve section thereof. The sieve section comprises a plurality of ring elements arranged on top of each other. The ring elements are provided with distance elements determining the distance between adjacent ring elements, the distance elements being formed as projections and recesses of stepwise heights and depths, respectively, or as mutually collaborating wedge units so as to allow an arbitrary setting of the ring distance.

3,789,925
ANCHORING ASSEMBLY FOR ANCHORING WELL EQUIPMENT WITHIN A TUBULAR WELL CONDUIT

Cicero C. Brown, Houston, Tex.

Filed Apr. 23, 1971, Ser. No. 136,796
Int. Cl. E21b *23/06, 33/126*
U.S. Cl. 166—125 **22 Claims**

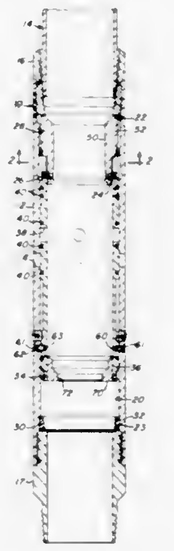


An assembly including a pressure driven positioning member releasably connected with an anchoring member. The assembly is pumped-down a well conduit and the anchoring member is set in anchoring engagement with a collar recess in the conduit where it supports attached well equipment. A resilient annular seal on the positioning member forms a sliding pressure seal with the conduit causing the member to be moved downwardly by well-head pressure and upwardly by formation pressure. The anchoring member is set and retrieved by axial movement of the positioning member which separates from the anchoring member after it is set. The positioning member may be reconnected to release and retrieve the anchoring member and attached well equipment. The positioning member may also be retrieved by a wire-line or tubing string operated device.

3,789,926
TWO STAGE CEMENTING COLLAR

Ronald W. Henley, P.O. Box 638, Waxahachie, Tex., and William D. Taliaferro, 408 Shockley, Desoto, Tex.

Filed Oct. 19, 1972, Ser. No. 298,994
Int. Cl. E21b *33/16, 33/134*
U.S. Cl. 166—224 R **10 Claims**



A cementing collar having a valve sleeve therein releasably held in port closed pre-cementing position until actuated by a plug device to a port open position maintained by a latching structure until a second plug device actuating a port closing seat disengages the latching structure and moves the valve sleeve into a post-cementing port closed position.

3,789,927
TREATMENT OF GRAVEL PACKED FORMATIONS

Derrel G. Gurley, New Orleans, La., and Curtis W. Crome, Tulsa, Okla., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 177,679, Sept. 3, 1971, abandoned. This application Nov. 8, 1972, Ser. No. 304,724

Int. Cl. E21b *43/27*

U.S. Cl. 166—282 **4 Claims**

The treatment of formations, which have been previously packed with gravel, with, for example, an acidizing liquid can be improved by employing as a diverting agent in said treatment fluid particulate diverting agents having a size distribution such that at least about 75 percent of said diverting agent passes through the pack.

3,789,928
PLOUGH BEAM WITH SPRING MECHANISM

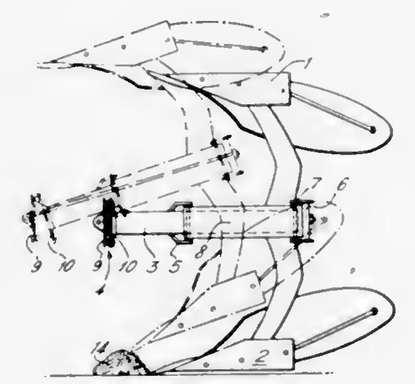
Olav Nja, Kvernaland, Norway, assignor to Kvernelands Fabrikk A/S, Kverneland, Norway

Filed May 19, 1972, Ser. No. 254,964

Claims priority, application Norway, Feb. 1, 1972, 250/72

Int. Cl. A01b *35/24*

U.S. Cl. 172—709 **9 Claims**



A plough beam having a spring mechanism which permits lateral sidewise motions in addition to motions up and down when encountering an obstacle.

3,789,929
THREE WHEEL ALL WHEEL HYDRAULIC DRIVE TRACTOR

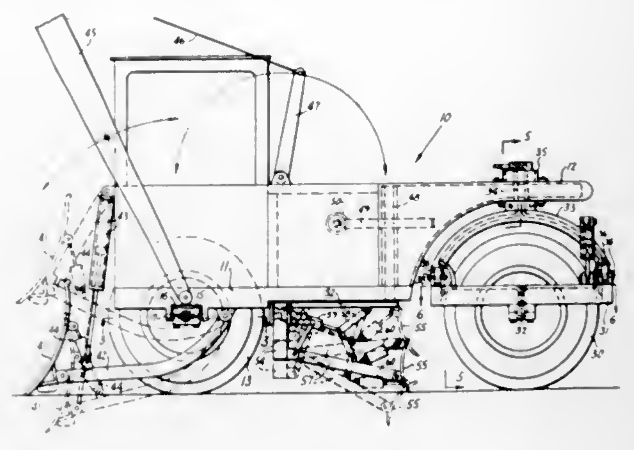
Raymond H. Leidig, Rt. 3 Box 504, Lake Charles, La.

Filed Mar. 29, 1972, Ser. No. 239,119

Int. Cl. E02f *3/12*

U.S. Cl. 172—798 **2 Claims**

A three wheel all wheel hydraulic drive tractor in which the single wheel is steerable and all wheels tilt about a longitudinal axis for maintaining the stability of the tractor. A bulldozer blade and a grader blade are each fixed to the tractor for vertical and tilting adjustment as well as transverse tilting adjustment. All adjustments are hydraulically made and an internal combustion engine drives a hydraulic pump to power the adjusting cylinders and the hydraulic power motors. The power motors are mounted within each of the wheels within the rim thereof.



3,789,930
METHOD FOR REDUCING NOISE OF A DIESEL PILE HAMMER

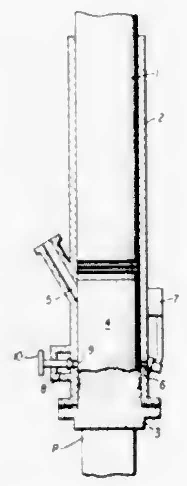
Shojiro Nishimura, Ashiya; Masao Ishizaki, Kakogawa; Yoshiro Seo, and Shinobu Akima, both of Kobe, all of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Jan. 19, 1972, Ser. No. 219,008

Claims priority, application Japan, Jan. 21, 1971, 46/2045

Int. Cl. E02d *7/12*

U.S. Cl. 173—1 **6 Claims**



A method and apparatus for reducing noise of a diesel pile hammer characterized by controlling the effective volume of a combustion chamber defined by a diesel cylinder, a ram reciprocably received in the cylinder and an anvil forming an end face of the cylinder in a manner that the combustion of the fuel-air mixture is always begun just before the ram comes into contact with the anvil, regardless of the operating condition of the pile hammer, atmospheric temperature and/or pressure, the kind of fuel used, or other conditions, whereby noise due to the mechanical striking of the ram against the anvil is nullified and a substantial reduction of noise is thereby accomplished.

3,789,931
TRACTOR MOUNTED HYDRAULIC POSTHOLE DIGGER

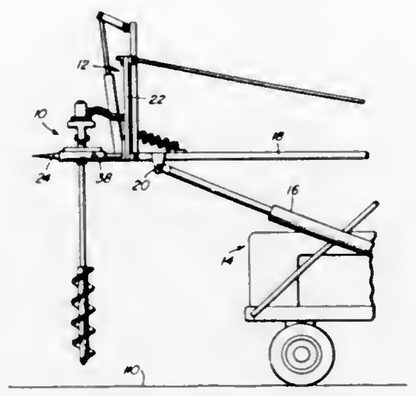
Gerald L. Quinn, Rt. 7, Burwell, Nebr.

Continuation-in-part of Ser. No. 60,577, Aug. 3, 1970, abandoned. This application Jan. 26, 1972, Ser. No. 220,862

Int. Cl. E21c *11/02*

U.S. Cl. 173—22 **4 Claims**

An attachment selectively mountable on different loader heads of farm and construction equipment and including a readily detachable hydraulic motor for actuation by the central hydraulic system of the loader whereby the same hydraulic motor may be utilized to power other attachments. The attachment includes a cradle for supporting a motorized auger in pendulum-like fashion so that true vertical disposition of the auger may be obtained. When the motor is energized and the supporting portion of the loader is lowered relative to the ground with which the auger is engaged, a substantially true vertical hole is bored in the ground. Further, the hydraulic motor is reversible whereby after a hole has been bored removal of the auger is facilitated.



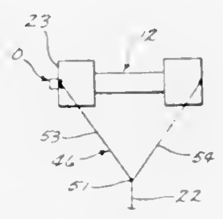
3,789,932
VIBRO HAMMER POSITIONER

Davis W. Giroux, No. 3 Lakewood, Council Bluffs, Iowa

Filed June 7, 1972, Ser. No. 260,418

Int. Cl. E02d *7/06*

U.S. Cl. 173—43 **6 Claims**



A positioner is disclosed herein for use on a vibrating hammer or vibro hammer. The vibro hammer is normally supported by a hoist line extending from a conventional crane. The positioner is secured to one end of the hammer and comprises a vertically disposed hydraulic cylinder means enclosed in a vertically disposed protective housing. The hydraulic cylinder has a first pulley secured to its upper base end and second and third pulleys secured to its rod end. A first cable member is fixedly secured at one end thereof to the upper end protective housing and extends around the second pulley, thence around the first pulley, thence around the third pulley and thence outwardly from the housing. The first cable member is connected at its other end to the other end of the hammer. The first cable member is connected between its ends, thereby defining first and second cable portions, to a standard Rud-O-Matic (TM) tagline extending from the crane. The hammer may be selectively rotated about the axis defined by the hoist line by activating the hydraulic cylinder which effectively increases or decreases the length of the first cable portion of the first cable member.

3,789,933
HAMMER DRILL

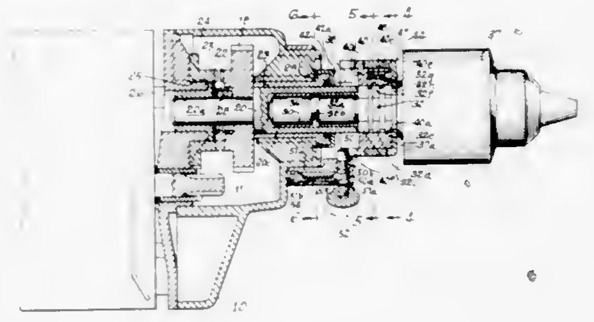
John S. Jarecki, Villa Park, Ill., assignor to Skil Corporation, Chicago, Ill.

Filed Aug. 30, 1972, Ser. No. 284,738

Int. Cl. B25d *11/00, 15/00*

U.S. Cl. 173—48 **14 Claims**

A shaft is driven by the motor of the power tool. This shaft carries a ring gear having an annular formation of teeth adapted for ratcheting engagement with an annular series of fixed teeth. When the shaft is moved inwardly of the tool housing as a result of contact of the drill bit with the work, these teeth are brought into engagement to provide a hammering action. A spindle carries the drill chuck at one of its ends; the other end of the spindle is rotatably received within a bore formed in one end of the shaft. The shaft has an external hexagonal formation at said one end thereof. The spindle has external hexagonal formations intermediate its ends. A sleeve has an internal hexagonal formation engageable with selected ones of said external formations for coupling and uncoupling the spindle and the shaft; a locking collar is mounted on the sleeve for positively locating the latter in any one of three axial positions to provide a hammering action only, a drilling action only and a combined drilling and hammering action.



3,789,934
ROTARY IMPACT MOTOR

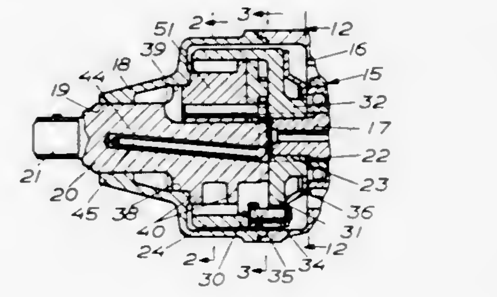
Knut Christian Schoeps, and Karl Gosta Karden, both of Nacka, Sweden, assignors to Atlas Capco Aktiebolag, Nacka, Sweden

Filed Mar. 31, 1972, Ser. No. 239,881

Claims priority, application Sweden, Apr. 7, 1971, 4515/71

Int. Cl. B25d *15/02*

U.S. Cl. 173—93.5 **14 Claims**



In a rotary impact motor for power driven fastener setting tools, an impact dog is pivotally journalled on a rotatable anvil about an axis spaced from the axis of rotation of the anvil. A hammer is rotatable around the impact dog and anvil. Cooperating cam means mounted respectively on the hammer and on the impact dog are responsive to relative rotation therebetween for pivoting out the impact dog from the anvil to be impacted by the hammer.

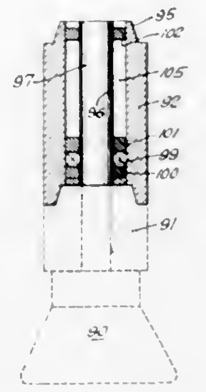
3,789,935
ANGULAR ACCELEROMETER

Fuad T. Saadeh, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Division of Ser. No. 859,768, Sept. 22, 1969, Pat. No. 3,693,460. This application Oct. 19, 1971, Ser. No. 190,639

Int. Cl. G01p *15/00*

U.S. Cl. 175—40 3 Claims



An angular accelerometer which employs an annular conduit filled with a dielectric fluid. The conduit is blocked at at least one point and there are piezoresponsive elements mounted so as to have the fluid directly apply pressure thereto. The elements are mounted adjacent to the blocked portion of the conduit, one on either side thereof. The structure is adapted for use with a drilling bit in order to indicate eccentricities during drilling as well as to measure instantaneous angular acceleration.

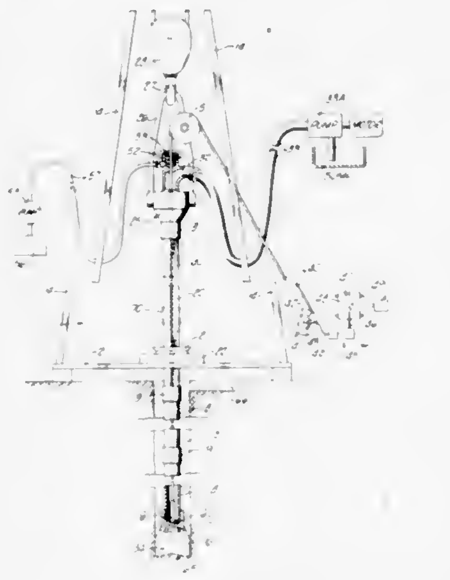
3,789,936
METHOD AND APPARATUS FOR SIMULTANEOUSLY DRILLING AND LOGGING

Ira J. McCullough, 10845 Sunset Blvd., Los Angeles, Calif.

Continuation-in-part of Ser. No. 854,506, Sept. 2, 1960, abandoned. This application Nov. 4, 1971, Ser. No. 195,639

Int. Cl. E21b *49/00*

U.S. Cl. 175—50 16 Claims



Method and apparatus for simultaneously drilling and logging a bore hole employing an electric cable extending through a drill string which has a swivel at the top end and a bit secured to its lower end. The electric cable communicates with a detecting probe which is disposed adjacent the bit. This provides a continuous circuit from the formation at the bottom of the well to the surface recording instruments at the top of the well. During the simultaneous drilling and logging operations the drill string and bit rotate while the surveying cable remains non-rotative. The swivel, drill string, cable and probe are lowered together during the simultaneous drilling and logging operation.

3,789,937
ELECTRICAL BALANCE INCLUDING MONITORING MEANS

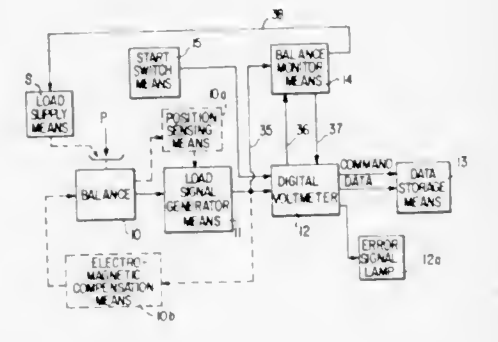
Felix Strobel, Greifensee, and Heinz Allenspach, Fallenden, both of Switzerland, assignors to Mettler Instrumente AG, Zurich, Switzerland

Filed June 25, 1973, Ser. No. 373,003

Claims priority, application Switzerland, June 27, 1972, 9601/72

Int. Cl. G01g *3/14*

U.S. Cl. 177—210 12 Claims



An improved electrical balance is disclosed of the type including stationary and load-responsive movable components, means being provided for supplying to signal evaluating means an analog load signal having a function that varies with load, said evaluation means being periodically operable during successive measuring periods to produce digitalized measurements that correspond with the load. The invention is characterized by the provision of balance monitoring means that disable the evaluation means in the event that movement of the movable balance component exceeds predetermined limits during the measurement period. The monitoring means further effects the transfer of each digitalized measurement result to associated data storage means only when the movement of the movable component has not exceeded the predetermined limits during the corresponding measurement period. In balances including load compensation means, the load signal may be the compensation current that is supplied to the compensation coil means.

ERRATUM

For Class 179—81 R see:
Patent No. 3,789,803

3,789,938
AUTOMATIC SHUT-OFF SWITCH

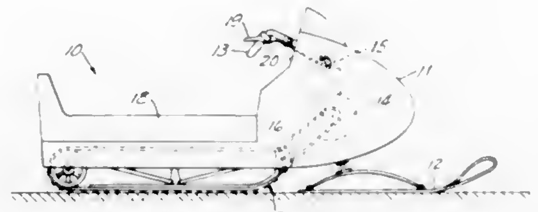
Edgar E. Hetteen, Thief River Falls, Minn., assignor to Artic Enterprises, Inc., Thief River Falls, Minn.

Filed Apr. 24, 1972, Ser. No. 247,097

Int. Cl. B60k *33/00*

U.S. Cl. 180—5 R 10 Claims

An automatic shut-off switch system for the ignition circuit of vehicles such as snowmobiles is provided wherein the ignition circuit includes a first switch, adjacent the carburetor throttle and in operative engagement therewith, which first switch is normally closed when the engine is at idle speeds and open when the engine is at running speed and a second switch electrically parallel to said first switch and operatively joined to the manually operated throttle control means remote from said throttle. The second switch is open at engine idle speeds and closed by the manual throttle control during running speeds so that if the throttle sticks in the open position the ignition circuit will be opened upon release of the manually operated throttle control means.



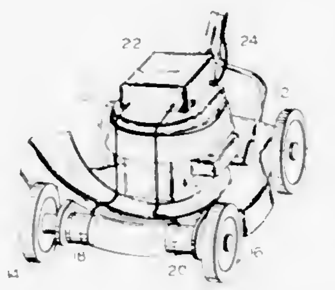
3,789,939
APPARATUS FOR PROGRAMMING MOVEMENT OF A CART

Eric L. Geislinger, 13773 S.W. Electric St., Beaverton, Oreg.

Filed Sept. 7, 1971, Ser. No. 178,116

Int. Cl. B62d *11/04*

U.S. Cl. 180—6.5 3 Claims



A wheeled cart is controlled to take a particular path under the direction of movement information stored on a tape recorder. The information on the tape recorder is initially placed there as the cart is manually directed over the desired path with a control means. The prescribed path for the cart can be altered at any time by changing the recorded information in the same manner as initially provided.

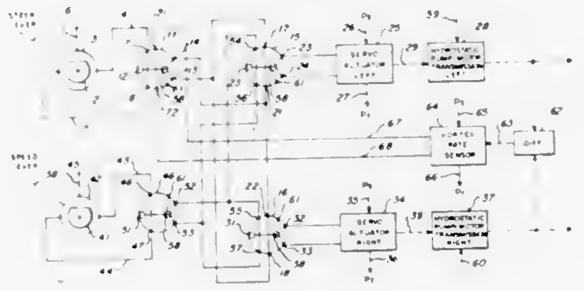
3,789,940
SYNCHRONIZED STEERING CONTROL SYSTEM

Robert V. Burton, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 7, 1972, Ser. No. 223,897

Int. Cl. B62d *11/04*

U.S. Cl. 180—6.48 8 Claims



A fluidic steering control system having at least two propelling means, one for each side of the vehicle, a separate variable speed transmission for driving each of the propelling means, a separate fluidic circuit for driving each of the transmission means, a common steering transducer for controlling the relative outputs of the amplifying means, and feedback means for providing a feedback dependent upon the relative speeds of the transmissions.

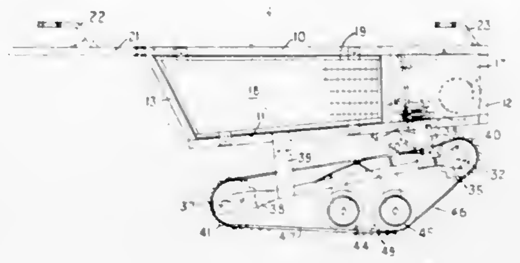
3,789,941
TRANSPORTERS

Roderick Robertson, Ross, Scotland, assignor to George Robertson; Kenneth Robertson; Roderick Robinson and William Berkeley, all of Tain, Ross-shire, Scotland

Filed Mar. 29, 1971, Ser. No. 128,762

Int. Cl. B62d *55/00*

U.S. Cl. 180—9.22 10 Claims



The invention is concerned with a pedestrian-controlled transporter. The transporter is arranged to traverse the ground on a motor-driven endless track upon which a load-carrying structure is supported, the transporter being controlled by the pedestrian through suitable located manual controls.

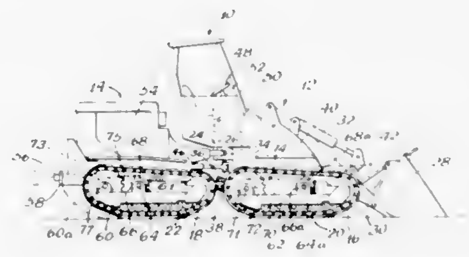
3,789,942
CLOSE COUPLED FRAME STEERED ALL CRAWLER TRACTOR

John J. Kowalik, Glenview, Ill., assignor to International Harvester Company, Chicago, Ill.

Division of Ser. No. 65,826, Aug. 21, 1970, Pat. No. 3,741,331. This application Aug. 18, 1972, Ser. No. 281,882

Int. Cl. B62d *11/00*

U.S. Cl. 180—9.44 9 Claims



Frame-steered, all crawler tractor having articulated frame sections end-to-end, and crawler tracks provided on one section which can be retracted from those confronting crawler tracks in tandem therewith which are provided on the other section. In driving the tractor into a turn I thus afford a retractive endless track, say a rear track which, as I make the turn, takes the inside of the turn, but at all times keeps its distance from the front track at the inside of the turn.

There is no interference because the retractive track, in the case of the rear track for instance, does not try to climb up on the front track, and the resulting close-coupled articulated vehicle is not train-like in length.

3,789,943
VEHICLE DRIVE AND POWER CONTROL MEANS

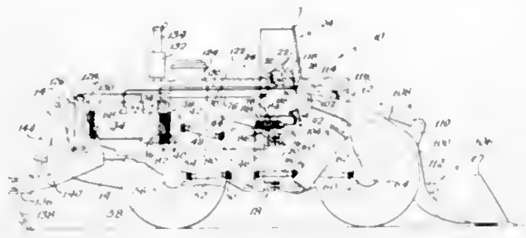
Keith W. Kampert, Libertyville, and Kenneth E. Houtz, Streamwood, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Oct. 12, 1971, Ser. No. 188,062

Int. Cl. B60k *17/02*

U.S. Cl. 180—66 R 1 Claim

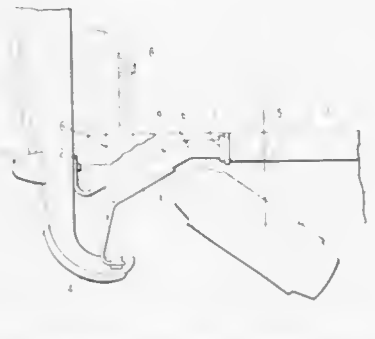
An articulated loader having an operator's compartment on the front section and an engine on the rear section connected to drive both a pump means and a modulated clutch, has a valve for varying the pressure in the modulated clutch in order to determine the speed of the vehicle and a foot pedal in the operator's compartment connected to the valve for controlling the position thereof. A stationary housing type torque convertor is driven by the modulated clutch and is connected to drive at least one of the axles of the vehicle.



3,789,944

MOTOR VEHICLE FRONT END CONSTRUCTION

Bela Barenyi, Maichingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Sept. 2, 1971, Ser. No. 177,365
Claims priority, application Germany, Sept. 2, 1970, 2043524
Int. Cl. B60r *19/06*
U.S. Cl. 180—68 P **35 Claims**

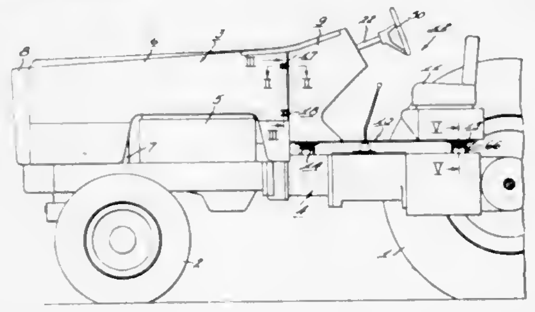


A front end arrangement with a radiator for motor vehicles, especially for passenger motor vehicles, in which longitudinal support girders that adjoin the form-rigid passenger center cell of the vehicle, are forked within the area of the axle planes while the radiator is arranged at mountings adjacent to and/or above the impact yielding areas of angular bends in the longitudinal girders so that the longitudinal girders possess a longitudinal yieldingness and the radiator and engine units are damaged only after the normal range of penetration of the bumper is overcome.

3,789,945

VEHICLE CONTROL MODULE SUPPORT

Kenneth N. Hansen, Waukesha, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Nov. 4, 1971, Ser. No. 195,641
Int. Cl. B62d *25/10*
U.S. Cl. 180—69 R **10 Claims**

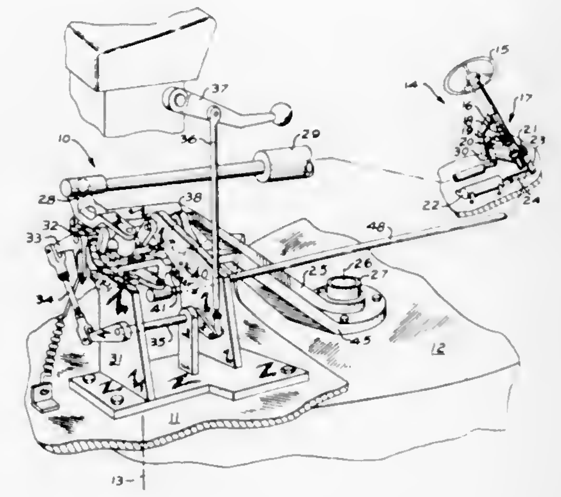


A supporting arrangement including a firewall for supporting the control levers and instrument panel and a resilient joint connecting the rear end of the engine hood and side panel with the firewall.

3,789,946

DUAL STEERING SYSTEM FOR ARTICULATED VEHICLES

Stanley A. Jorgensen, Oswego, and Stanley B. Adams, Yorkville, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Jan. 31, 1972, Ser. No. 222,073
Int. Cl. B62d *5/06*
U.S. Cl. 180—79.2 B **5 Claims**



A steering system for an articulated vehicle having a central vertical pivot and steering axis includes a follow up linkage pivotally connected to a follow-up arm for follow up steering of the vehicle, and neutralizing means to render the follow-up linkage insensitive to articulation of the vehicle for direct steering of the vehicle. The neutralizing means includes means pivotally mounting the follow-up arm on the vehicle frame, and linkage means operable to pivot the follow-up arm to a configuration wherein the pivotal connection of the follow-up arm to the follow-up linkage is disposed on the vehicle pivot axis.

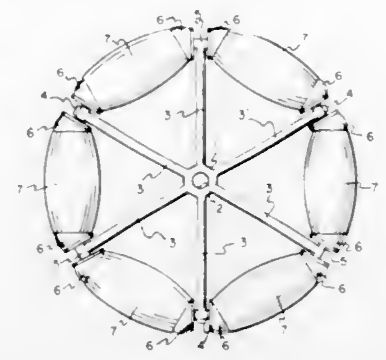
Articulation limit means is also provided to limit articulation of the vehicle when in the direct steering mode comprising a control arm attached to one frame of the vehicle and intersecting the vehicle pivot axis, and a lever having one end pivotally connected to the control arm at the vehicle pivot axis and a second end connected by a control link to the vehicle steering gear. Adjustable set screws on the control arm limit pivoting of the control arm with respect to the lever, whereby upon the control arm reaching the limit of rotation with respect to the lever, the steering gear will be actuated to stop further articulation of the vehicle.

3,789,947

OMNIDIRECTIONAL WHEEL

Josef F. Blumrich, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Apr. 17, 1972, Ser. No. 244,519
Int. Cl. B62d *5/02*
U.S. Cl. 180—79.3 **5 Claims**

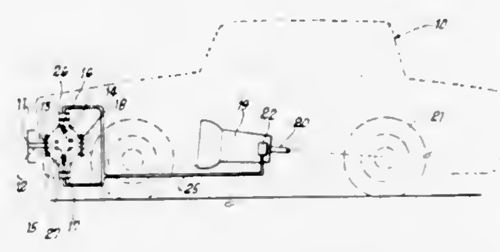
The apparatus of the invention consists of a wheel having a hub with radially disposed spokes which are provided with a plurality of circumferential rim segments. These rim segments carry, between the spokes, rim elements which are rigid relative to their outer support surfaces, and defined in their outer contour to form a part of the circle forming the wheel diameter. The rim segments have provided for each of the rim elements an independent drive means selectively operable when the element is in ground contact to rotatably drive the rim element in a direction of movement perpendicularly lateral to the normal plane of rotation and movement of the wheel. This affords the wheel omnidirectional movement.



3,789,948

MOTOR SPEED ACTUATED VEHICLE BUMPER

James Hrebicek, 2327 S. 61st Ave., Cicero, Ill.
Filed Jan. 6, 1971, Ser. No. 104,441
Int. Cl. B60r *19/06;* **B61f** *19/04;* **F16f** *13/00*
U.S. Cl. 180—91 **1 Claim**



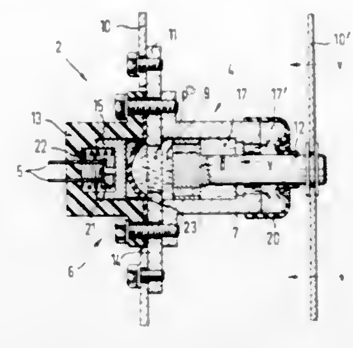
A motor actuated shock absorbing bumper has an improvement upon a variable rate spring used to absorb the energy of a collision, the improvement comprising a rate control for the spring, and means operated as a function of the speed of the vehicle for controlling the setting of the rate control such that the higher the speed at which a collision occurs, the stiffer the spring becomes. In its preferred form, the rate control comprises a piston, and the speed control comprises a variable pressure pump driven from the vehicle transmission output shaft and supplying liquid to the piston at a pressure which increases with the speed of the output shaft.

3,789,949

CERTAIN NEW AND USEFUL IMPROVEMENTS IN OR RELATING TO CONTROL MEANS FOR THE RELEASE OF SAFETY APPLIANCES IN VEHICLES, MORE PARTICULARLY PASSENGER CARRYING AUTOMOBILES

Manfred Bortfeld, Eching; Werner Wintershoff, and Rainer Anton, both of Munich, all of Germany, assignors to Bayerische Motoren Werke A.G., Munich, Germany
Filed July 14, 1972, Ser. No. 271,875
Claims priority, application Germany, July 16, 1971, 2135550
Int. Cl. B60r *21/00*
U.S. Cl. 180—91 **1 Claim**

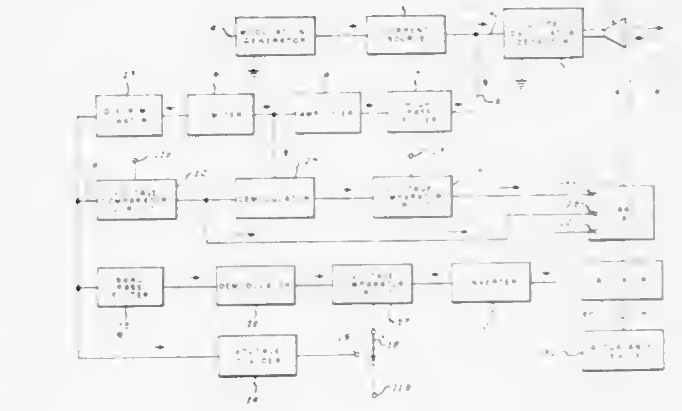
Control means for the release of safety appliances for the protection of passengers in motor vehicles comprising a hydraulic activating part and a receiving part co-operating therewith and adapted to operate release means for the safety appliance and secured to a part of the vehicle, said activating part consisting essentially in a casing filled with hydraulic fluid, a piston arranged for axial movement in said casing and adapted to be displaced with a velocity proportional to the degree of deformation to which the vehicle has been subjected, whereby the liquid pressure set up by throttling means on reaching a predetermined minimum value, determined by suitable dimensioning of the throttling means, activates via the receiving part release means for the safety appliance.



3,789,950

VEHICLE PROTECTIVE APPARATUS

Harry F. Strenglein, Clearwater, Fla., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Mar. 8, 1972, Ser. No. 232,814
Int. Cl. B60k *27/00*
U.S. Cl. 180—98 **7 Claims**



A vehicular protective apparatus includes radio means for detection of an impending collision immediately prior to actual contact of a protected vehicle with another vehicle or other object and for the actuation of restraining or other protective devices for the protection of the occupants of the vehicle when the crash actually occurs. Modulated single-port continuous wave, high frequency transmitter-receiver apparatus is employed for processing reflected object signals; obstacle presence, closing differential speed, and minimum range signals are generated. All must be present for actuation of passenger restraints or other protective devices.

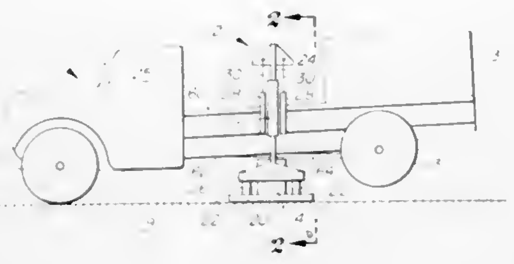
3,789,951

VIBRATOR SYSTEM FOR GENERATING SEISMIC WAVES IN THE EARTH

Daniel Silverman, 5969 S. Birmingham, Tulsa, Okla.
Filed Feb. 7, 1972, Ser. No. 223,896
Int. Cl. G01v *1/02*
U.S. Cl. 181—.5 VM **24 Claims**

This invention describes a vehicle-mounted electrohydraulic vibrator system useful for generating seismic waves in th earth. It comprises a baseplate supported from the vehicle by downwardly extending means and attached to the baseplate through compliances.

The vibrator system comprises four hydraulic cylinders and pistons operatively mounted in the cylinders. The pistons are attached to the baseplate through a first frame and are supported thereby. The cylinders are connected to a second frame placed above and resting on the vibrator. The second frame is adapted to support a mass. The mass can be a separate discrete mass of metal, or alternatively, the second frame can be clamped to the bed of the vehicle, in which case the vehicle becomes the reaction mass. If the vehicle has a drive shaft, two of the cylinders are placed on each side of the drive shaft.



The pistons in the cylinders are single-acting. That is, a first piston in a first cylinder is pushed downwardly and a second piston in a second cylinder is pushed upwardly with respect to the cylinders when pressure fluid is introduced into the cylinders. The four single-acting vibrators arranged in rectangular spacing provide an alternating vertical force acting at the center of the rectangle.

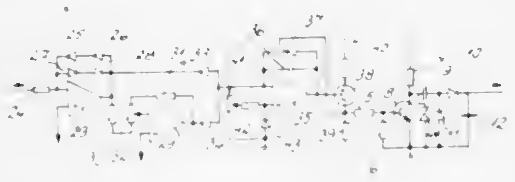
3,789,952
NOISE DOSIMETER

Lars H. Widegren, Larargatan 14, 981 00, and Tage O. Keskitalo, Knavagen 9, 981 00, both of Kiruna, Sweden

Filed May 15, 1972, Ser. No. 253,038

Int. Cl. G01h *3/12, 1/08*

U.S. Cl. 181—.5 AP **1 Claim**



A noise dosimeter having noise pick-up means for generating an analog signal in correspondence to picked-up noise, signal processing means for generating pulses in correspondence to the analog signal, and means for adding and storing the pulses.

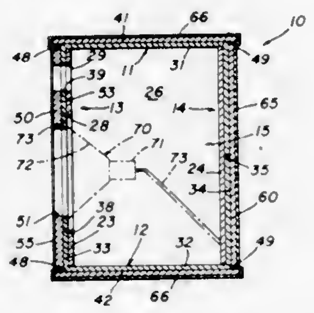
3,789,953
SOUND REPRODUCTION SYSTEM

Scott F. Everitt, Indianapolis, Ind., assignor to Accoustic Fiber Sound Systems, Inc., Indianapolis, Ind.

Filed Jan. 31, 1972, Ser. No. 222,262

Int. Cl. G10k *13/00;* **H04r** *1/28*

U.S. Cl. 181—31 B **5 Claims**



A plurality of generally tubular members of corrugated fiberboard, each rectangular in transverse cross-section and including four panels, are nested one within the other to form a closed six-walled housing, each wall comprising back-to-back panels secured together with the corrugations thereof extending in mutually perpendicular directions, each tubular member being formed of a continuous sheet of fiberboard folded to the tubular configuration and having opposite side edges thereof joined together to form a seam disposed centrally of one of said panels. One form of the invention comprises three tubular members nested together with the axes thereof mutually perpendicular. Another form of the invention comprises two tubular members nested together coaxially, with the inner member having four end flaps at each end thereof disposed in use in a folded configuration wherein opposed flaps are coplanar and joined together to form back-to-back end panels at each end of the tubular member for closing same.

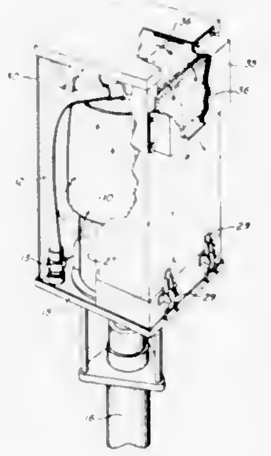
3,789,954
AIR MOTOR NOISE SUPPRESSOR

Walter J. Raleigh, St. Paul, Minn., assignor to Graco Inc., Minneapolis, Minn.

Filed June 19, 1973, Ser. No. 371,433

Int. Cl. F01m *3/06;* **F04b** *21/00*

U.S. Cl. 181—33 K **10 Claims**



Self-contained apparatus is described for reducing the acoustic and mechanical noise associated with an air-operated motor, wherein noise signals are contained within a sealed enclosure surrounding the air motor and channeled over a complex path including noise filters to the atmosphere.

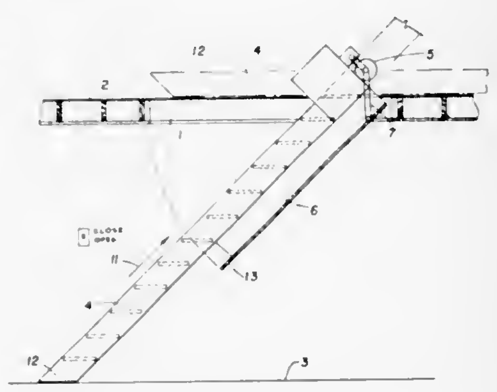
3,789,955
RETRACTABLE STAIRWAY DEVICE

William H. Knapp, Selma, Ala., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Aug. 18, 1972, Ser. No. 281,735

Int. Cl. E06c *9/00*

U.S. Cl. 182—78 **3 Claims**



A motor is mounted in an upper floor adjacent an opening between the upper floor and an adjacent lower floor of a structure. A coupling device is provided in a stair unit and the motor so that in one manner of operation the motor retracts the stair unit upward onto the upper floor through the opening and closes the stair unit substantially flush with the upper floor. In another manner of operation, the motor opens the stair unit downward from the upper floor and extends the stair unit downward onto the lower floor through the opening.

3,789,956
HYDROSTATIC LUBRICATING DEVICE FOR THE MESHES OF CYLINDER WORMS AND A WORM RACK

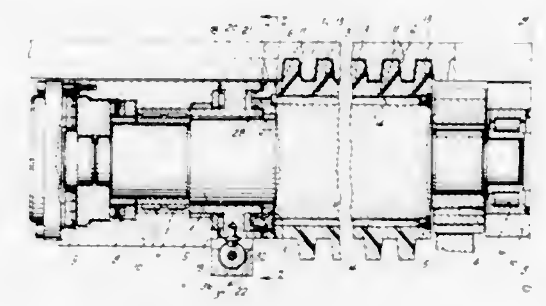
Heinz Neugebauer, Weidach near Coburg, Germany, assignor to Werkzeugmaschinenfabrik Adolf Waldrich Coburg, Coburg/Bay., Germany

Filed Apr. 3, 1972, Ser. No. 240,526

Claims priority, application Germany, Apr. 14, 1971, 2118033

Int. Cl. F01m *1/00;* **F16n** *17/06*

U.S. Cl. 184—6.12 **9 Claims**



A hydrostatic lubricating device for lubricating the teeth between a worm and a worm rack. The teeth are supplied with pressurized oil through passageways which are distributed over the circumference of the worm and open outwardly at the flanks.

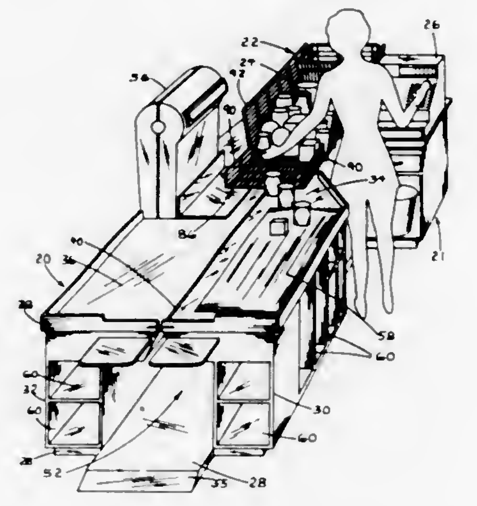
3,789,957
CHECK OUT SYSTEM

James Garth Close, Box 3096, Lubbock, Tex.

Filed Apr. 5, 1972, Ser. No. 241,279

Int. Cl. E04h *3/04*

U.S. Cl. 186—1 AC **20 Claims**



A check out system for a supermarket, or other retail merchandise store or the like, having a cooperating shopping cart and check out counter. The check out counter is provided with a horizontal check out surface which is elevated above the floor at a convenient work height. This surface can support apparatus such as scales, or be provided with conveyors in the surface thereof for moving merchandise. The check out surface is also provided with a centrally located groove which extends along the length thereof, the groove being narrow enough in width so that ordinary merchandise will not fall therein. Located below the groove is a clearance area which extends the length of the check out counter. This area has an inclined ramp surface for supporting a check out cart therein. A check out cart is provided with an undercarriage portion having a plurality of rotatable wheels thereon for allowing the cart to move over the surface of the store or supermarket, as required. Also attached to the undercarriage is an auxiliary merchandise receiving portion and a narrow upstanding support to which is pivotably attached an upper basket portion for receiving merchandise and the like. The merchandise cart is provided with a foldable infant seat assembly for use in transporting infants about the store. The carts are also provided with means for allowing the carts to nest together to reduce the storage space required therefor. The upstanding support on the cart is such a size that it will slide through the groove with the undercarriage portion moving through the clearance area and the upper basket portion being supported above the upper surface of the counter. Also, the upper basket portion is provided with a vertically swinging door in the side thereof which allows easy access to the interior of the basket portion.

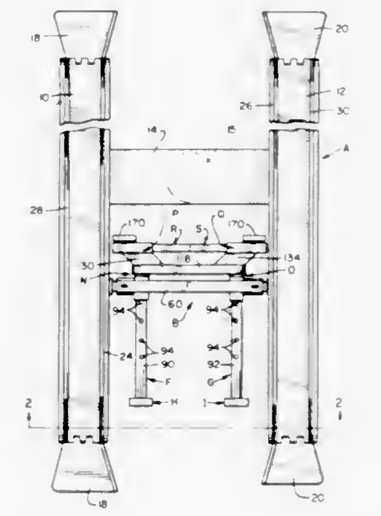
3,789,958
VEHICLE SUPPORT

Theodore J. Masaitis, Fairview Park, Ohio, assignor to Wyle Laboratories, El Sequndo, Calif.

Filed Oct. 2, 1972, Ser. No. 294,094

Int. Cl. B60s *13/00*

U.S. Cl. 187—8.49 **19 Claims**



An auxiliary vehicle support for use with a drive-on type of vehicle hoist selectively supports the vehicle from its undercarriage with its tires above the hoist tracks. The auxiliary vehicle support is swingable between a substantially vertical supporting position and a substantially horizontal storage position.

3,789,959
APPARATUS FOR AUTOMATIC PAD ADJUSTMENT IN DISK BRAKES

Takeski Kawaguchi, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

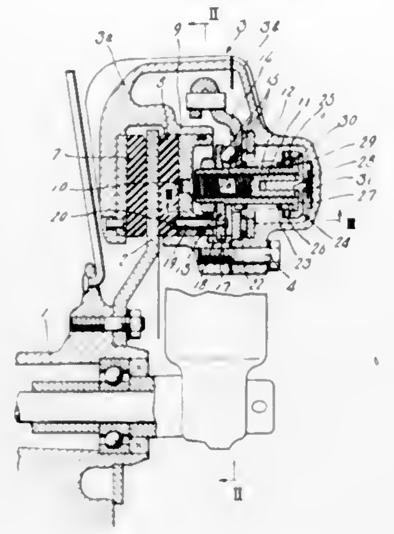
Filed Aug. 28, 1972, Ser. No. 284,458

Claims priority, application Japan, Aug. 28, 1971, 46-65567

Int. Cl. F16d *65/56*

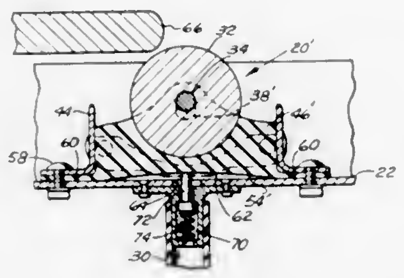
U.S. Cl. 188—71.9 **8 Claims**

A disk brake of the type in which a caliper member extends over a brake disk and is provided, on opposite inner surfaces, with a stationary pad and a movable pad, the latter being arranged to be advanced by being pushed upon pivoting of an operation lever. An automatic pad adjustment apparatus is provided for compensation of wear of the pads and the movable pad is so arranged as to be pushed by the operation lever through a threaded tube which is in threaded engagement with an adjusting screw secured to the rear face of the pad. A return spring is connected at one end to the operation lever and at its other end to the adjusting screw through a one-way clutch.



3,789,960
ROLLER BRAKE SYSTEM

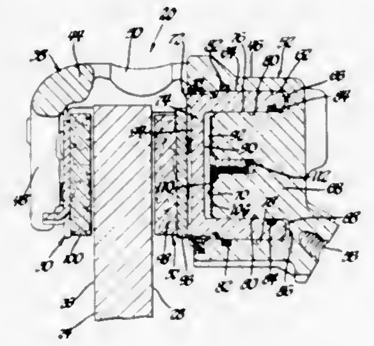
Robert A. Warren, Long Beach, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.
Filed May 18, 1972, Ser. No. 254,495
Int. Cl. F16d *63/00*
U.S. Cl. 188—74 **3 Claims**



A roller brake system including a plurality of rollers each having an associated friction member which is moved into engagement by controlled pressurized medium applied to a side of the friction member opposite the roller.

3,789,961
MULTIPLE CHAMBER DISC BRAKE CALIPER ASSEMBLY

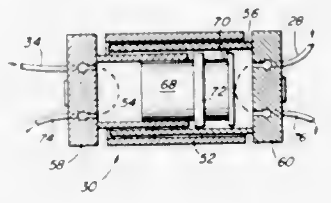
Edward H. Warwick, Englewood, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed May 22, 1972, Ser. No. 255,687
Int. Cl. B60t *11/16, 11/30*
U.S. Cl. 188—345 **8 Claims**



The invention relates to a wheel brake for an automotive vehicle and, more particularly, to the caliper assembly provided as a part of a disc brake. The invention is further related to a brake wheel cylinder assembly for use in a disc brake assembly or other types of brakes requiring multiple chamber wheel cylinder actuation.

3,789,962
HYDRAULIC ACTUATOR FOR DUAL BRAKING SYSTEM

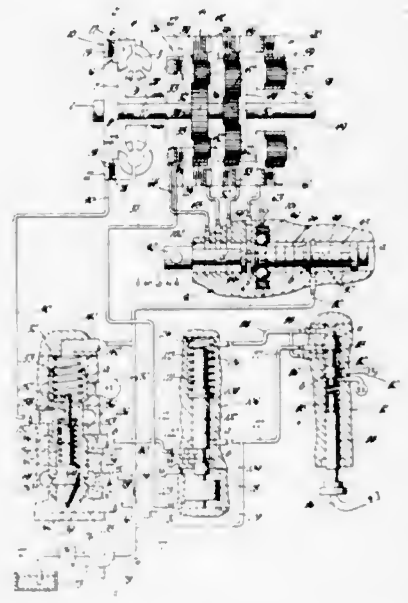
Emmanuel Frangiudakis, Athens, Greece, assignor to John W. Frangos, Beverly, Mass.
Filed May 25, 1972, Ser. No. 256,877
Int. Cl. B60t *11/10*
U.S. Cl. 188—345 **4 Claims**



An actuating device is provided for use particularly with braking systems especially for automobiles, trucks and the like. The hydraulic actuator includes a pair of telescopic tubular cylinders having a common movable piston valve mounted for limited reciprocation therebetween. Each cylinder is connected to a separate hydraulic circuit either or both of which when pressurized will cause the cylinders to spread apart so as to actuate the braking mechanism. The device will actuate irrespective of failure of one of the hydraulic lines.

3,789,963
TRANSMISSION CONTROL SYSTEM

Keith A. Bailey, Speedway, and Jerry R. Marlow, Greenwood, both of Ind., assignors to General Motors Corporation, Detroit, Mich.
Division of Ser. No. 21,950, March 23, 1970, Pat. No. 3,682,043. This application June 5, 1972, Ser. No. 259,465
Int. Cl. B60k *21/00*
U.S. Cl. 192—3.57 **9 Claims**

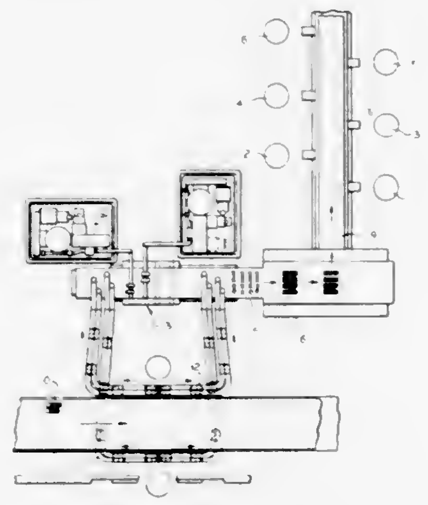


A transmission having a torque converter with a lockup clutch and a multi-ratio gear unit having fluid motors to establish the ratio drives. The controls have a shift system including a shift valve selectively supplying each fluid motor with leakage make-up flow to maintain a ratio established and shift flow to establish another ratio, a lockup clutch valve to engage the lockup clutch and a flow valve tripped by a fast change in flow rate on initiating shift flow to disengage the lockup clutch and permitting slow changes in the leakage flow

rate without tripping. These flows pass through a restriction providing a differential pressure which selectively actuates the trip control and the response control of the flow valve. The slowly increasing leakage flow rate actuates the response control which increases the size of the restriction or the return biasing force to permit slowly increased leakage flow without actuating the tripping control to trip the flow valve. The response control is unresponsive to the rapid increase of the shift flow rate which only actuates the tripping control to trip the flow valve.

3,789,964
APPARATUS FOR SUPPLYING SLUGS OF COOKIES IN PRESELECTED SIDE-BY-SIDE GROUPS FOR BAGGING

Richard C. Talbot; Edward Rose, both of Skokie, and Robert A. Roth, Chicago, all of Ill., assignors to Peters Machinery Company, Chicago, Ill.
Division of Ser. No. 173,473, Aug. 20, 1971, Pat. No. 3,719,020. This application Nov. 30, 1972, Ser. No. 310,970
Int. Cl. F16d *71/00*, **F16h** *35/06*
U.S. Cl. 192—29 **12 Claims**

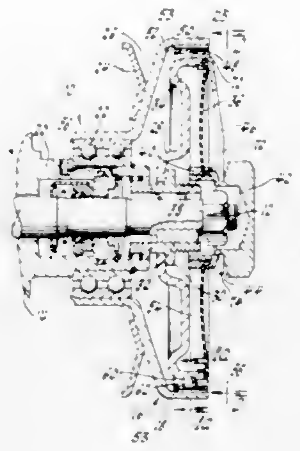


Phase selector and reduction drive mechanism, for effecting operation of a member in phase relation with respect to at least one other member. The phase selector includes a drive shaft, a driven shaft forming a drive member for the one other member, a disk freely mounted on the driven shaft and carrying two idler sprockets freely rotatable about axes parallel to the axis of rotation of the driven shaft and a drive sprocket on the driven shaft. An endless chain on the drive shaft is trained from the sprocket on the drive shaft along the periphery of the disk about one idler sprocket and inwardly therefrom about the drive sprocket on the driven shaft and outwardly from said drive sprocket to and about the second idler sprocket and about the periphery of the disk to the sprocket on the drive shaft. The disk forms an angular adjustment means for adjusting the phase of the driven shaft and members driven therefrom and is adjustably moved about the axis of the driven shaft by a crank and threaded shaft which also serves to hold the disk from rotation. The crank and threaded shaft are thus operable to adjustably move the disk to conform the phase relation of the drive to the at least one other member, in accordance with the changes in speed of travel of the drive shaft.

3,789,965
VACUUM CLUTCH ACTUATOR

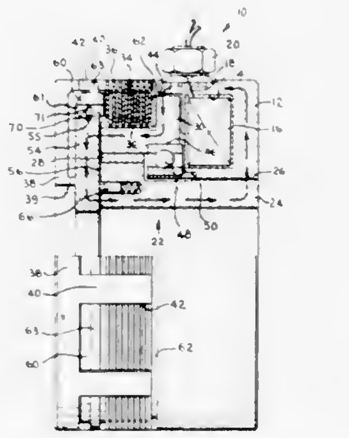
John H. Heidorn, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed June 21, 1972, Ser. No. 264,882
Int. Cl. F16d *25/00*
U.S. Cl. 192—85 V **3 Claims**

A vacuum clutch actuating mechanism including a member responsive to vacuum encircling a driven shaft and defining a closed space. One wall of the member is flexible and moves in response to vacuum supplied to the closed space. A leaf spring is attached to the moving wall and extends radially outwardly to engage a driven member mounted for radially outward movement and engage a driving member when the vacuum is supplied to the closed space moving the flexible wall. A two way overrunning clutch can be provided between the outer periphery of the driven member and an inwardly facing peripheral surface of the driving member. The radially outward movement of the spring is sufficient to initially lock up the overrunning clutch when the flexible wall moves in response to vacuum.



3,789,966
SELF-ADJUSTING ELECTROMAGNETIC DISC CLUTCH

Donald L. Miller, Horseheads, N.Y., assignor to The Bendix Corporation, Southfield, Mich.
Filed Mar. 31, 1971, Ser. No. 129,740
Int. Cl. F16d *13/60*
U.S. Cl. 192—111 A **6 Claims**



An electromagnetic clutch with wear compensating means having two sets of co-acting friction discs adapted for releasably coupling a driving and driven rotary component. When the clutch is energized, the armature, which is not in the drive train, contactively engages with the pole faces of the electromagnet causing the freely mounted armature to rotate with the driving member; an adjusting ring which is slidably splined to the driven rotary component and advanceably threaded to the armature for relative rotation therewith, thereby applies the necessary engagement pressure to the friction disc assembly causing torque to be transmitted from the driving to the driven rotary component through the disc assembly. Any lost motion occasioned by wear of the friction discs is automatically taken up by the screw-action of the adjusting ring upon the armature; thus, the desired disc engagement pressure and the electromagnetic engaging force are held constant for the life of the clutch.

3,789,967

CLUTCH ASSEMBLY FOR A VEHICLE

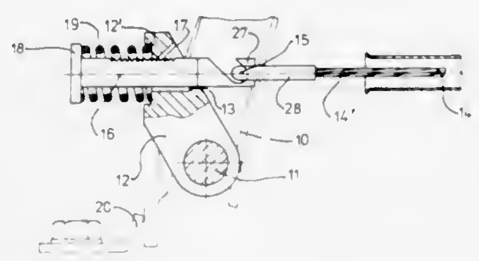
Wolfram Dau; Paul Langer, and Hans Gritzan, all of Wolfsburg, Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg

Filed Dec. 1, 1972, Ser. No. 311,103

Claims priority, application Germany, Dec. 4, 1971, P 21 60 278.8

Int. Cl. F16d *13/75*

U.S. Cl. 192—111 A **15 Claims**



An interlocking device for a clutch that utilizes an actuating mechanism containing a clutch cable and clutch pedal, the interlocking device being designed to automatically adjust the actuating mechanism for friction lining wear and cable elongation, when the clutch pedal is in its rest position. The interlocking device includes a gripping member which is coupled to the clutch pedal and which is adapted to be pivoted about an axis when the pedal is depressed to disengage the clutch. The gripping member has an opening formed therein in which a spring-mounted pin rides. This pin, which is coupled to the pedal end of the clutch cable, enjoys a certain degree of play in the opening when the clutch pedal is at its rest position, so that it will automatically be moved, under the spring force, relative to the gripping member by a distance and in a direction appropriate to compensate for cable elongation and lining wear. When the clutch pedal is depressed, the gripping member pivots relative to the pin to cause wall portions of the opening to grip the pin in tight frictional engagement to prevent movement thereof and allow for proper actuation of the clutch.

3,789,968

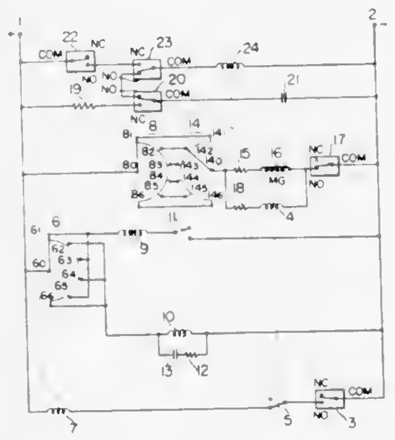
CONTROL SYSTEM OF A COIN-OPERATED LOCKER

Komei Inoue; Kazumi Yorisue, and Mitsuhiro Akamatsu, all of Himeji, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Himeji-Shi, Hyogo-Ken, Japan

Filed Sept. 15, 1972, Ser. No. 289,275

Int. Cl. G07f *17/12*

U.S. Cl. 194—1 N **5 Claims**



A control system of a coin-operated locker or a rental locker which comprises coin detector detecting the insertion of coins into a coin inlet slot of the locker, a first counter for counting the number of coins detected by the coin detector, a second counter operating stepwise in correspondence to the completion of one operation of the locker, that is, from locking to unlocking of the locker and to the lapse of time, and a key-operation locking device enabling the locker to be locked or unlocked only when output signals from the first and second counter correspond to each other, whereby unlike conventional rental lockers, it is not necessary to reset all of the control circuits thereof to their original or initial condition whenever the door of the locker is opened to take a piece of baggage or the like out of the locker.

3,789,969

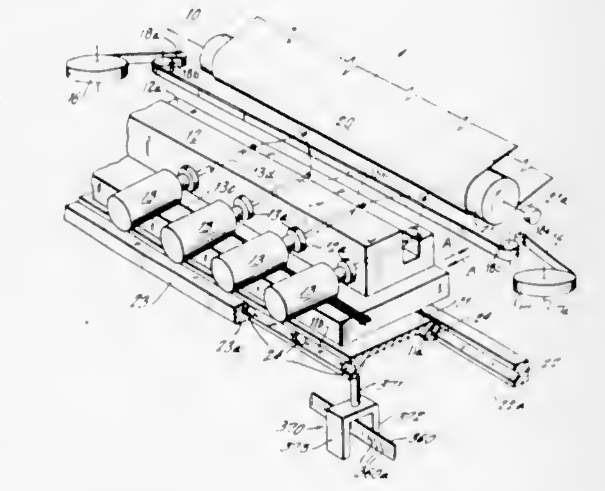
HIGH SPEED PRINTER

Robert Howard, Roslyn, N.Y., and Prentice I. Robinson, Hudson, N.H., assignors to Centronics Data Computer Corp., Hudson, N.H.

Filed Apr. 6, 1972, Ser. No. 241,782

Int. Cl. B41j *3/04*

U.S. Cl. 197—1 R **23 Claims**



A control system for printers in which an elongated paper document is moved at a substantially constant speed. A plurality of reciprocally mounted solenoid operated print wires are mounted at spaced intervals upon a movable assembly arranged to move along a line transverse to the direction of movement of the paper document. The print wires are selectively operated by electronic and electromechanical means to impact an inked ribbon against the paper document for printing and/or plotting. The movable assembly is designed to fully compensate for the movement of the document to assure that all dots printed along a single row will form a straight line. While only selected ones of the print wires need be operated at any given instant, those selected for operation are all driven against the inked ribbon simultaneously to provide high speed printing and/or plotting of the dot matrix type.

Means are provided, in one preferred embodiment, for paper movement of one, five and twelve "dot" feeds to respectively provide for dot row spacing, character line spacing and line feed.

3,789,970

STRIKING DEVICE FOR A TYPEWRITER

Georges Costa, Yverdon, Switzerland, assignor to Paillard S. A. Vaud, Sainte-Croix, Switzerland

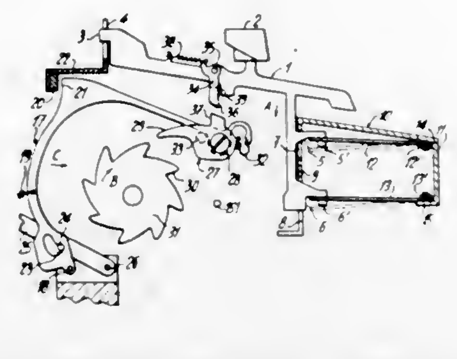
Filed Dec. 1, 1971, Ser. No. 203,515

Claims priority, application Switzerland, Dec. 15, 1970, 18598/70

Int. Cl. B41j *23/08*

U.S. Cl. 197—17 **4 Claims**

The typewriter has type bars with key levers and guide and return means for the key levers. The guide and return means are constituted by flexible guide parts arranged in two substantially parallel rows and extending over the whole width of the machine keyboard. The guide parts are fixed by one of their ends on a support rigidly fixed to the frame of the machine, whilst their free outer ends cooperate with the said type levers.



3,789,971

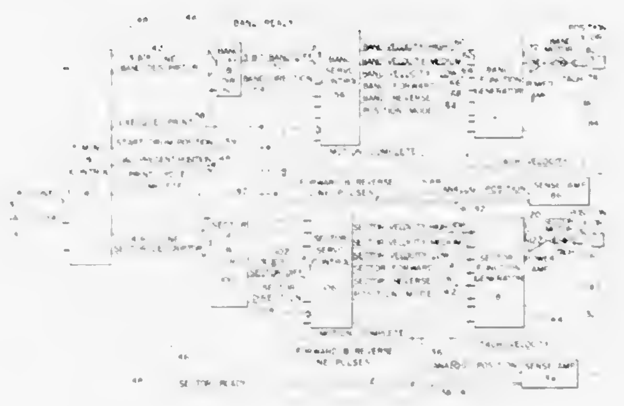
SERVO CONTROL SYSTEM FOR A SERIAL PRINTER PRINT HEAD

Joseph P. Deyesso, Walpole, and Gaston A. Palombo, Chelmsford, both of Mass., assignors to Honeywell Information Systems, Inc., Waltham, Mass.

Filed June 21, 1971, Ser. No. 155,187

Int. Cl. B41j *23/04*

U.S. Cl. 197—18 **25 Claims**



A novel print head positional control system for a serial printer is disclosed herein. The positional control system includes logic for determining the minimum displacements in each of two directions in order to move the print head to a new print position. The positional control system furthermore contains servo logic for implementing the determined minimal displacements in such a manner as to cause the print head to move in each direction at a number of different velocity levels depending on the magnitude of each minimal displacement. The positional control system also contains closed loop velocity servos which smoothly move the print head through the various velocity transitions to the next velocity level. The positional control system lastly contains a fine positioning servo that is switched to upon completing the final velocity approach to the new print position.

3,789,972

TRANSPORTATION DEVICE

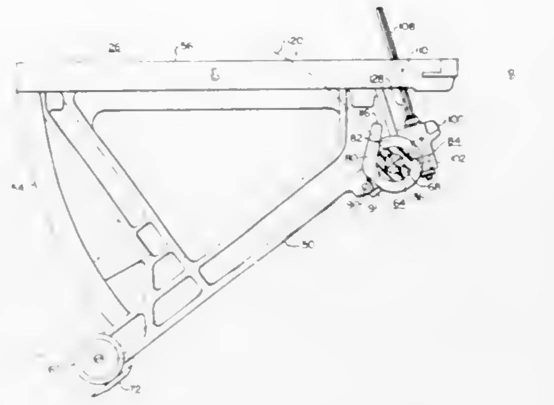
Joseph K. Kraft, Gettysburg, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 25, 1972, Ser. No. 283,679

Int. Cl. B65b *9/12*

U.S. Cl. 198—16 R **11 Claims**

A transportation device including a flexible unit having spaced axles driven about a closed loop which includes a load bearing run. A plurality of steps, platforms or pallets are detachably fixed to the axles by a clamping arrangement which permits removal of the steps, platforms or pallets anywhere on the load bearing run without disassembly of the steps, platforms or pallets, the drive system, or surrounding structure.



3,789,973

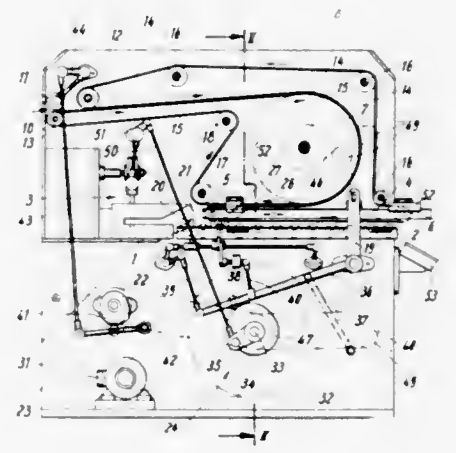
MATERIAL CONVEYANCE SYSTEM FOR FEEDING WORKPIECES TO A PROCESSING TOOL

Walter Kugler, Adolf-Feucht-Weg, Neuffen/Wurtt, Germany

Filed Dec. 29, 1972, Ser. No. 319,333

Int. Cl. B23q *7/00*

U.S. Cl. 198—19 **14 Claims**



A material conveyance system usable for feeding workpieces formed of sheet material to a processing tool, such as a punch or perforator, and for extracting the workpieces therefrom. The workpieces are transported from a conveyor inlet station by pairs of endless belts arranged to hold the workpieces firmly between them until released at a transfer location onto a conveyor table horizontally aligned with the processing tool. Positioning members then assist insertion of the workpieces into the processing tool and align the workpieces for processing. The workpieces are extracted from the processing tool by the action of one of the pairs of endless belts circulating around a reciprocating frame arranged directly above and parallel to the conveyor table and are then transported rearward to a finished parts storage.

3,789,974

APPARATUS FOR TRANSFERRING THE BLANKS OF KNITTING NEEDLES IN THE PROCESS OF MANUFACTURE OF SUCH NEEDLES

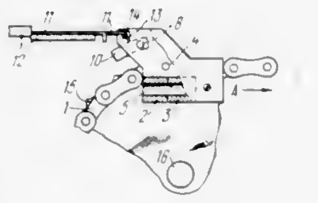
Alexandr Dmitrievich Afanasiev, ulitsa Kubinka, 6, kv. 35; Alexei Gavrilovich Lykov, ulitsa Kubinka, 12, korpus 4, kv. 30; Alexandr Moiseevich Mogilevsky, ulitsa Yablochkova, 41, kv. 27; Leonid Pavlovich Sokolov, ulitsa Slavyansky bulvar, 51/1, kv. 174, and Evl Gershkovich Fridman, ulitsa Kubinka, 6, kv. 20., all of Moscow, U.S.S.R.

Filed Dec. 29, 1971, Ser. No. 213,597

Claims priority, application U.S.S.R., Dec. 29, 1970, 1607854

Int. Cl. B65g *15/00, 47/00*

U.S. Cl. 198—20 **1 Claim**



An apparatus for transfering the blanks of knitting needles for knitting machines in which pairs of clamping jaws are mounted at uniformly spaced locations on a conveyor. The jaws are mounted so that the contact surfaces thereof extend parallel to the direction of progress, whereby they define a permanent base surface for the needle blanks being clamped.

3,789,975

DEVICE FOR USE IN TENTER TYPE STRETCHER FOR PREVENTING THE TORN-OFF EDGE OF FILM FROM RUNNING OFF THE NORMAL PATH

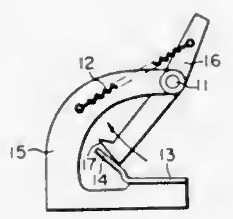
Saburo Ida, and Kuniharu Tobita, both of Yukagosei, Japan, assignors to Kabushiki Kaisha Oji Yukagoseishi Kenkyujo, Tokyo, Japan

Filed Nov. 26, 1971, Ser. No. 202,212

Claims priority, application Japan, Dec. 10, 1970, 45-108919

Int. Cl. B65g *19/00*

U.S. Cl. 198—180 **1 Claim**



A device for use in a tenter type stretcher is provided for preventing the torn off edge of the film from running off the normal path, said device comprising a liner consisting of a flat portion having a length and width sufficient for clipping a film thereon, and a tongue extending from said flat portion upwardly, and a clip lever pivotted to a clip body adapted for mounting said liner thereon, whereby the torn-off edge of the film, if it so happens when stretched laterally, may be prevented from running off the normal path behind said clip at the exit of the stretcher, said film being liable to be occasionally torn off lengthwise and made of a thermoplastic resin. (Such a film will be referred to as a film hereinafter).

3,789,976

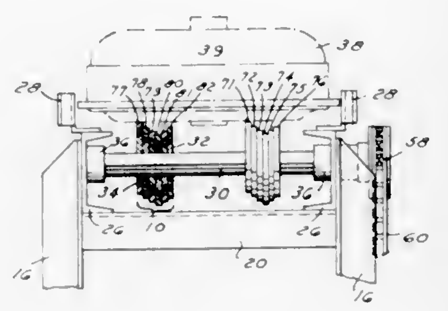
CONVEYOR

Dwight D. Paul, Jr., Mount Clemens, Mich., assignor to M. S. C. Inc., Mount Clemens, Mich.

Filed Nov. 18, 1971, Ser. No. 200,010

Int. Cl. B65g *25/04*

U.S. Cl. 198—219 **5 Claims**



A reciprocating bar conveyor having a plurality of parallel eccentrically supported bars angularly spaced from each other and grouped into at least two sets. Each set may be angularly spaced from each other set, and each set includes at least six bars which are individually angularly spaced from each other bar of the set. Each set of bars is supported on a pair of eccentric axles, only one of which need be connected to a drive motor.

3,789,977

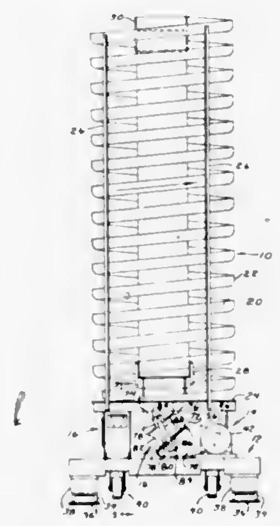
VIBRATORY VERTICAL LIFT CONVEYOR

Albert Musschoot, Barrington, Ill., assignor to General Kinematics Corporation, Barrington, Ill.

Filed Jan. 14, 1972, Ser. No. 217,891

Int. Cl. B65g *27/00*

U.S. Cl. 198—220 BC **4 Claims**



A vibratory vertical lift conveyor of the type employing a spiral ramp. The conveyor, in addition to the spiral ramp, includes a base vertically spaced therefrom, which base mounts a vibratory force imparting device which applies a generally vertically directed force to the ramp. The ramp is further connected to the base by means of elongated links, each of which is pivotally connected to the ramp at one end and pivotally connected to the base at the other. Each link is angularly disposed in a direction non-parallel to the direction of force application to the ramp.

3,789,978

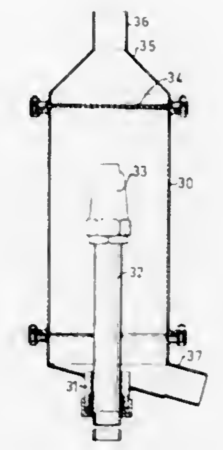
METHOD AND APPARATUS FOR SEPARATING FINER PARTICLES FROM COARSE PARTICLES SUSPENDED IN A LIQUID

Bengt Gotthard Janson, Vegagatan 8, Stockholm, Sweden

Filed Apr. 20, 1971, Ser. No. 135,685

Int. Cl. B03b *1/00*

U.S. Cl. 209—10 **11 Claims**



The present invention relates to a method and apparatus for separating finer particles from coarse particles suspended in a liquid by projecting the liquid, via a nozzle, in the form of a conical spray onto a screening member or strainer. A pressure difference is maintained between the pressures on either side of the screening means so that a portion of the liquid and finer particles together with a gas, such as air, are permitted to pass through the screening means to its outlet side whereas coarse particles are conducted away on the inlet side of the screening means. The invention is mainly characterized by a liquid column maintained on the outlet side of the screening means. This column communicates with the outlet side of said screening means.

3,789,979

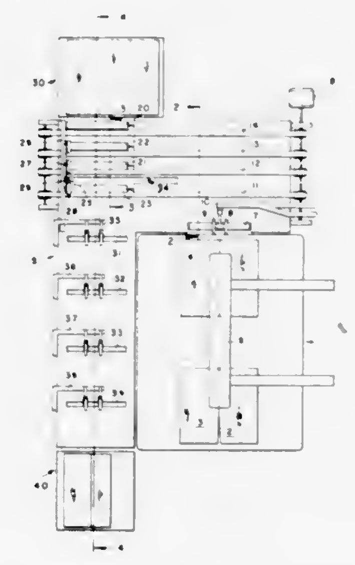
VENEER HANDLING APPARATUS

Thomas Streckert, Abbottsford, Wis.

Filed Feb. 17, 1972, Ser. No. 227,153

Int. Cl. B07c *5/342*

U.S. Cl. 209—73 **15 Claims**



An improved material transferring system that permits reliable movement of material from one location through one or more angled movements to a second location. The transferring system is designed to handle irregular material such as veneer which may be warped, buckled, or torn without loss in reliability, and may be used in the transfer of veneer from the outfeed of a veneer splicer back to a load near the infeed of the same or another splicer. The transfer system can also automatically sense finished veneer pieces, and send them to a different location.

3,789,980

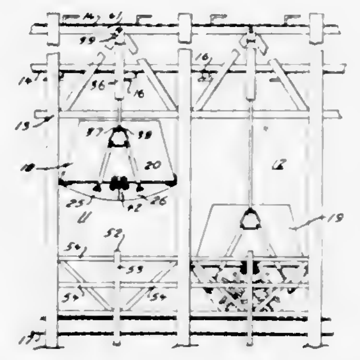
ACCUMULATOR APPARATUS FOR LUMBER SORTERS

Elmer Andrew Nagy, 15096-86th Ave., Surrey, B. C., Canada

Filed Oct. 20, 1972, Ser. No. 299,469

Int. Cl. C10g *37/02*

U.S. Cl. 209—74 R **5 Claims**



An accumulator for an automatic lumber sorter which includes a bucket supported by a hydraulic piston cylinder assembly for movement between an elevated lumber receiving position and a lower discharging position. The bucket bottom is closed by a pair of swinging doors which are hydraulically moved between open and close position. A gravity close latching device which normally releaseably locks the doors in a closed position when the bucket is in the elevated position is automatically released when the bucket is lowered to enable the doors to be opened.

3,789,981

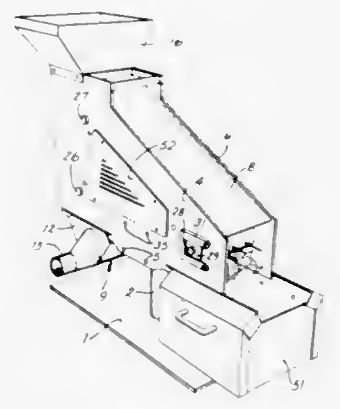
PARTS SEPARATOR

John H. Rossio, Portage, Mich., assignor to La Ros Equipment Company, Inc., Portage, Mich.

Filed Aug. 10, 1972, Ser. No. 279,500

Int. Cl. B07c

U.S. Cl. 209—78 **11 Claims**

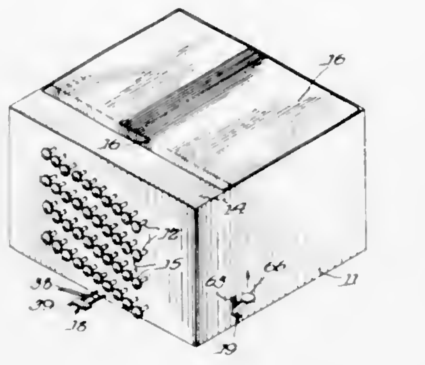


Separating device primarily for sorting separated but intermixed runners (and/or sprues) and molded parts discharged from a plastics molding machine. A belt carrying a series of projecting pins is arranged suitably around rollers to have at least one reach thereof oriented at a steep upward angle. The belt is driven in a direction such that it is moving upwardly as it passes through such reach. The pins are spaced apart transversley of said belt a distance so related to the size of the runners that such spacing is less than any dimension of the runners in at least one plane thereof and the parts are of less dimension in any plane than the transverse spacing of said pins.

3,789,982

RANDOM ACCESS CARD FILING AND RETRIEVAL APPARATUS

Walter Russell, Michigan City, Ind., assignor to Carol Ann Tolash; Victoria L. Tolash and Julianna Tolash, all of Michigan City, Ind., part interest to each
Filed Feb. 16, 1973, Ser. No. 333,403
Int. Cl. B07c *5/00*
U.S. Cl. 209—80.5 12 Claims

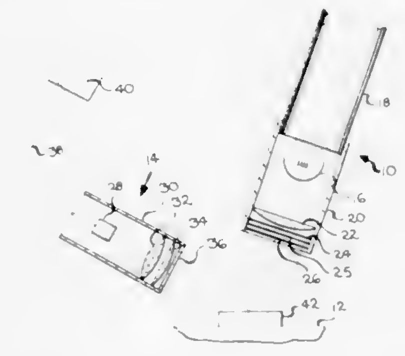


An apparatus for the selection and retrieval of randomly filed cards is provided by this invention and includes an outer housing, used to contain a plurality of coded-cards, a series of movable and individually operable selector knives which are used in conjunction with the coded or notched sections of each card to select and isolate specific cards from the large number of cards contained in the housing, and a card elevator mechanism which is used to lift and isolate the selected cards from nonselected cards. Other more detailed features of the invention are described in the specification.

3,789,983

METAL CAP SORTER

Albert P. Senesky, Camden, N.J., assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Sept. 16, 1971, Ser. No. 181,018
Int. Cl. B07c *5/342*
U.S. Cl. 209—111.6 2 Claims

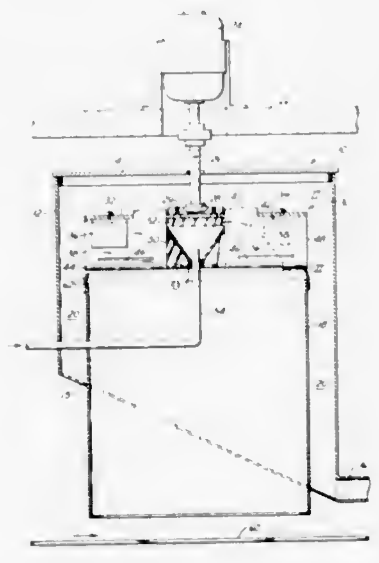


Apparatus and method for sorting foreign closures from a stream of closures being fed into a capping machine. A light source is positioned at an acute angle with respect to the horizontal plane defined by the top panel of a metal closure. A light sensing unit is positioned at an angle with respect to the horizontal plane less than the angle of spectral reflection of the light from the light source. It has been found that each of a plurality of metal closures has unique light-scattering properties which may be measured by the light sensing unit positioned off of the angle of reflection of the light source. By introducing a plurality of closures into the light beam, a level may be established for each of the closures. By setting an electronic logic unit sensitive to the scattered light level of a particular desired closure, foreign closures which fall above or below this preset level may be rejected by a rejection mechanism. The rejection mechanism most frequently takes the form of a puff of compressed air to blow foreign closures from a line of closures being fed into a capping machine. The apparatus further includes a series of filters positioned over the light source to reduce the amount of light to an intensity level to which the light sensing unit is responsive.

3,789,984

CENTRIFUGAL CLEANER

Eber W. Gaylord, Pittsburgh, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.
Filed Aug. 11, 1971, Ser. No. 170,839
Int. Cl. B01d *21/26*
U.S. Cl. 209—505 15 Claims



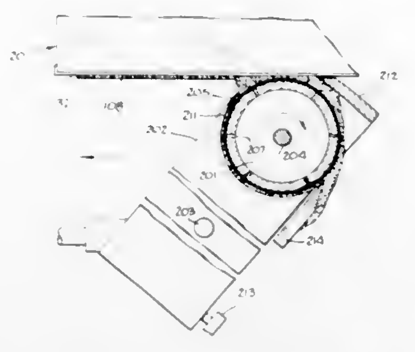
Apparatus for separating solid particles from liquid in a slurry in which radial blades are attached to a rotating base plate. The blades slope in a direction opposite the direction of rotation whereby the trailing edge of the blade is spaced from the base plate. Means are provided for delivering the slurry onto the inner end of the impellers near the surface of the base plate and for rotating the disc. The solid particles move rapidly in a radial direction along the impeller blades. That rapid movement creates a Coreolis force that causes the particles to be discharged from the trailing edge of the blades. Because the liquid wets the blades and the viscosity of the liquid slows movement of the liquid on the blades, Coreolis forces on the liquid are relatively small and the liquid is discharged from the outer end of the blades. The solid particles and liquid are collected separately as they are discharged from the impeller blades.

3,789,985

APPARATUS AND METHOD FOR CONTINUOUS FILTERING

William S. Eakins, Glen Cove, N.Y.
Division of Ser. No. 160,746, July 8, 1971, which is a continuation-in-part of Ser. No. 845,984, July 30, 1969, Pat. No. 3,615,011, which is a division of Ser. No. 578,361, Sept. 9, 1966, Pat. No. 3,460,674. This application Apr. 24, 1973, Ser. No. 354,151
Int. Cl. B01d *33/32*
U.S. Cl. 210—77 34 Claims

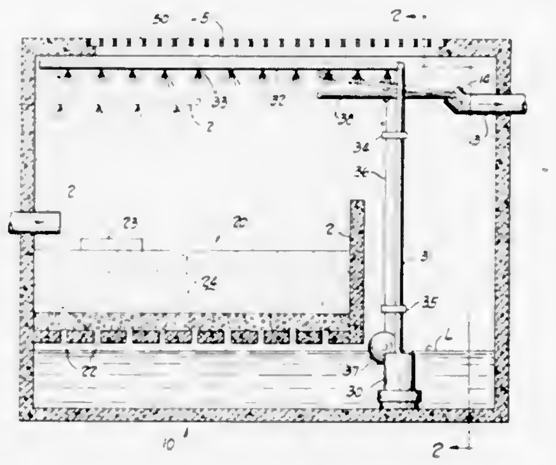
A traveling filter comprising a plurality of trays disposed to travel along a path, a plurality of frames adapted to travel along a second path and through a portion of said path mate with the trays to confine material thereon, and a plurality of conduit means adapted to travel along a third path and adapted to be advanced and retracted to establish communication with and discharge liquid from said trays.



3,789,986

PIVOTABLE FLUID DIVERTER FOR RECIRCULATION SYSTEM

Robert R. Oldham, and John H. Wooddell, both of Sidney, Ohio, assignors to Robert R. Oldham, Inc., Sidney, Ohio
Filed Apr. 16, 1973, Ser. No. 351,273
Int. Cl. B01d *23/10*
U.S. Cl. 210—121 7 Claims



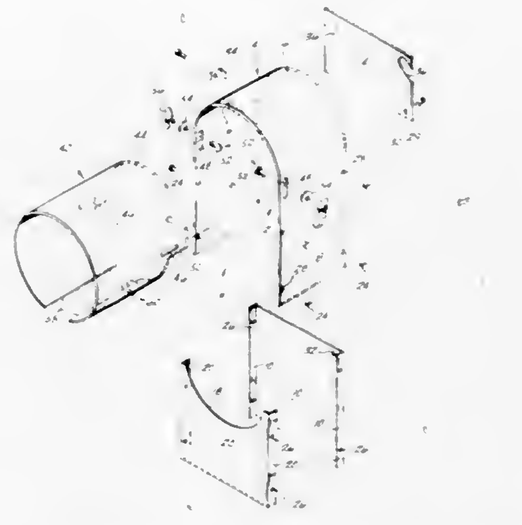
A reservoir for the final treatment of sewage is provided with a fluid diverter, one end of which is pivotally connected to and in open fluid communication with an outlet pipe. The fluid diverter is rigidly connected to a float responsive means on the surface of the liquid collected in the reservoir. A submersible pump within the liquid recirculates liquid by spraying it through a foraminous header disposed above the liquid level. When the liquid level in the reservoir falls below a predetermined liquid level, the diverter returns sprayed fluid to the reservoir. When the liquid level rises above the predetermined liquid level, the diverter diverts fluid into the outlet pipe and continues to do so until the predetermined liquid level is restored.

3,789,987

TRAP FOR THE SUBMERGED OUTLET OF A CATCH BASIN OR THE LIKE

John A. Malaspina, 7929 S.E. 37th, Mercer Island, Wash.
Filed July 26, 1972, Ser. No. 275,234
Int. Cl. C02c *1/38*
U.S. Cl. 210—232 7 Claims

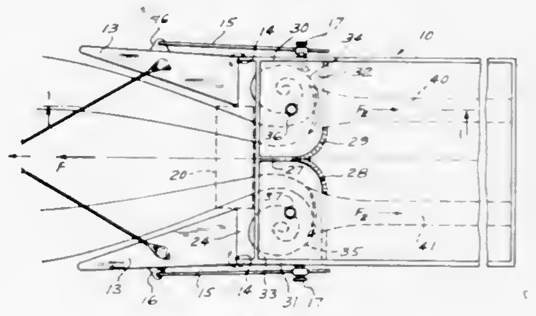
A trap for the submerged outlet of a catch basin or the like is disclosed. The trap comprises an inverted U-shaped hood which in use is oriented endwise of the outlet; and the distal upright end opening of which is closed to a point adjacent the bottom opening thereof, but the proximal end opening of which is closed in part only, by an arcuate panel which is connected across the lower portion of the opening in spaced relationship with the bight portion of the hood, so as to define a circular port between the arcuate edge thereof and the adjacent end edge of the bight portion. The hood is mated to the outlet by means of a split cylindrical collar which is oriented so that the split is disposed in the lower part cylindrical portion thereof; and which is telescopically engaged within the port, to seal with the edges of the panel and the bight portion. The collar is also hingedly connected to the legs of the hood, to pivot in the vertical median plane of the proximal upright end opening thereof, and in order to maintain a seal with the bight portion of the hood, the collar has a coaxial part annular brow on the hood-adjacent end of the upper part cylindrical portion thereof, which extends within the hood from said portion, to a point on the opposite side of the hinge between the hood and the collar.



3,789,988

APPARATUS FOR REMOVING SURFACE POLLUTANTS FROM WATER AND OTHER LIQUIDS

Bernard Valibouse, Grenoble, and Jacques Pichon, Saint Martin-d'Heres, both of France, assignors to Societe Grenobloise d'Etudes et d'Applications Hydrauliques (Sogreah), Grenoble (Isere), France
Continuation-in-part of Ser. No. 185,719, Oct. 1, 1971, abandoned. This application Mar. 14, 1973, Ser. No. 341,070
Claims priority, application France, Nov. 6, 1972, 7239209; Oct. 2, 1970, 7036478
Int. Cl. E02b *15/04*
U.S. Cl. 210—242 12 Claims



The apparatus disclosed herein for removing layers of pollutants, such as oil, floating on a heavier liquid, especially water, depends for its operableness on the effect of the relative displacement speed of the heavier liquid and the overlying pollutant. Such relative speed is used to direct the removed layer of heavier liquid and pollutant, by tangential introduction, into at least one cyclone chamber wherein the induced rotation of the removed materials is caused as to create a whirlpool area in which the pollutant is concentrated. In the central portion of such concentration, the pollutant is extracted through a pipe fitting in the axis of and crossing the ceiling of the cyclone. The centrifuged water, free of pollutant, is discharged at the end of the cyclone.

3,789,989

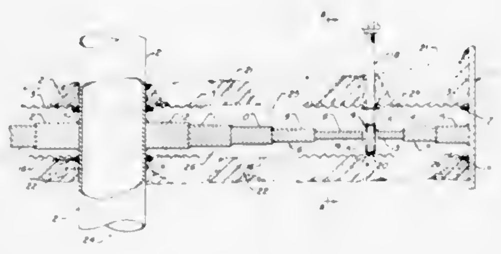
FLOW DISTRIBUTION APPARATUS

Don B. Carson, Mount Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed July 24, 1972, Ser. No. 274,146

Int. Cl. B01d *23/10*

U.S. Cl. 210—284 **5 Claims**



A baffling and flow distribution apparatus for use in a system in which a fluid is desired to be passed from one bed of particles to another bed of particles with addition or withdrawal of fluids between the beds at a location within a baffling and flow distribution apparatus which itself is located between the beds. The invention includes two substantially parallel solids retaining screens which are spaced apart and which contain ribs between said screens which radiate from a central support hub. The screens also have placed between them a fluid deflection plate which has a passage in it and which has placed near the passage a fluid transfer means which can allow fluid when passing from one bed through the screens, through the passage through the other screen and into another bed, to pass by said transfer means so fluid may be added or removed from the apparatus. The above apparatus allows placement of the fluid transfer means within the apparatus at a position which can improve the flow characteristics of fluid materials passing from one bed through the opening into another bed.

3,789,990

STRAINER FOR LIQUID PIPE LINES

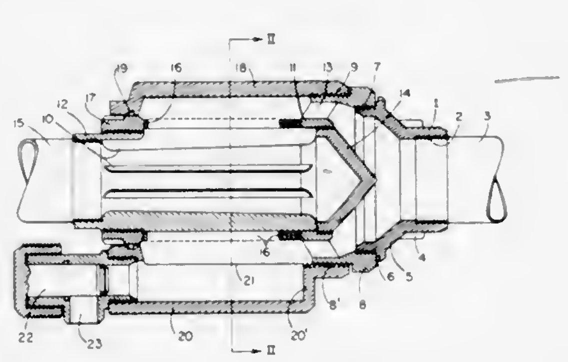
Mordeki Drori, 89 Zahal St., Kiron, Israel

Filed Nov. 10, 1971, Ser. No. 197,305

Claims priority, application Israel, Nov. 15, 1970, 35651

Int. Cl. B01d *25/00*

U.S. Cl. 210—310 **8 Claims**



The invention relates to a strainer for fluid pipe lines containing a filter element coaxial with the pipe line and a fluid deflector. The latter causes the incoming fluid first to flow around the filter element in a direction substantially parallel to its axis and thereafter to flow perpendicular through it and out of its downstream end.

The filter element is constituted by a plurality of juxtaposed grooved washers.

3,789,991

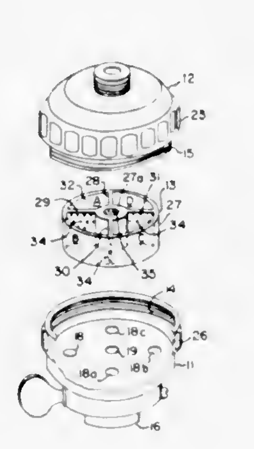
WATER FILTER DEVICE

Zaharias Krongos, 128 Sherman Ave., New York, N.Y.

Filed Aug. 23, 1971, Ser. No. 174,084

Int. Cl. B01d *29/24*

U.S. Cl. 210—317 **4 Claims**



A filter device adapted to be attached to faucets and the like for removing impurities from tap water. The device comprises two sections with a filter member between having a replaceable filter unit. The device is adapted to cause the flow of water to pass through the filter unit for filtering thereof, or if no filtering is desired, water can pass directly through the device unfiltered.

3,789,992

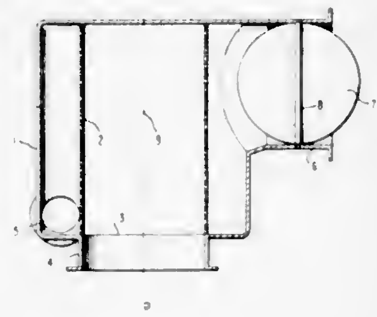
SCREEN INSTALLATION FOR SEPARATING SOLIDS FROM LIQUID STREAMS IN PIPELINES

Friedrich-Wilhelm Treplin, Hoesel; Guido Veltmann, Wittlaer, and Heinz Thal, Lintorf, all of Germany, assignors to Ludwig Taprogge, Dusseldorf, Germany

Filed Nov. 8, 1971, Ser. No. 196,474

Int. Cl. B01d *29/42, 35/22*

U.S. Cl. 210—405 **13 Claims**



A screen installation for the separation of solids from liquid streams in pipelines, which comprises a separator housing with built-in screen basket against which the liquid stream flows from the outside and which is connected with the housing wall at its open end; in addition to at least one discharge opening for the soiled water arranged near the screen base, the housing is provided with a lateral inlet pipe for the soiled water which includes an adjustable guide means for the tangential deflection of the liquid stream flowing transversely against the screen basket.

3,789,993

CELLULOSIC REVERSE OSMOSIS MEMBRANES HAVING HIGH FLUX AND HIGH SALT REJECTION

Barry M. Brown, and Elbert L. Ray, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 6, 1972, Ser. No. 215,810

Int. Cl. B01d *31/00*

U.S. Cl. 210—500 **13 Claims**

Using cellulose ester dope compositions in which the solvent portion contains a high proportion of formic acid, cellulosic reverse osmosis membranes can be manufactured. These membranes have surprisingly high flux and salt rejection properties, an unexpected resistance to compaction at high pressures over prolonged periods of time and salt rejection properties that are practically independent of applied pressure.

3,789,994

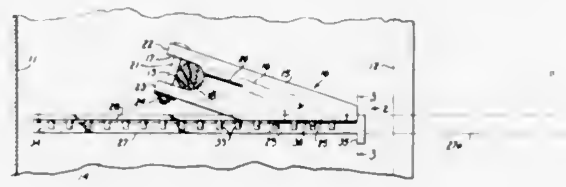
RETRACTABLE TIE RACK

Rodrick J. Koutnik, 1420 Morrow Cir., Thousand Oaks, Calif.

Filed May 15, 1972, Ser. No. 253,498

Int. Cl. A47f *5/08*

U.S. Cl. 211—86 **5 Claims**



A retractable tie rack for attachment to a clothes supporting rod within a clothes closet, including a one-piece elongate bracket which when attached to the support rod inclines downwardly toward the closet door opening. The lower end of the bracket terminates in a horizontal slide bearing for a hanger bar having spaced tie supporting pins thereon. When the hanger bar is extended, any ties or similar articles carried thereby are readily accessible. The upper end of the bracket has a lengthwise extending open-ended slot adapted to fit over the support rod and a lengthwise extending slit opening into such slot to enable the portions of the bracket on opposite sides of the slot and slit to flex. A clamp bolt extending through such portions is effective to frictionally clamp the same against the support rod.

3,789,995

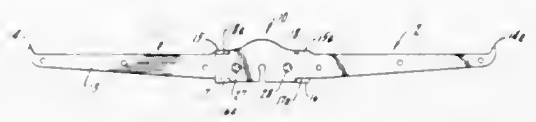
HANGERS FOR PORCELAIN ENAMELLING FURNACES

James M. Annal, Evergreen Park, Ill., assignor to The Fahralloy Company, Harvey, Ill.

Filed May 19, 1972, Ser. No. 255,014

Int. Cl. A47f *5/08*

U.S. Cl. 211—113 **9 Claims**



A multi-piece hanger for porcelain enamelling furnaces which can be assembled from sections of relatively short length. Because of the ability to build up a burning tool of any desired size from short sections, shell molding may be used for hangers of even large sizes, thereby eliminating problems connected with green sand molding.

3,789,996

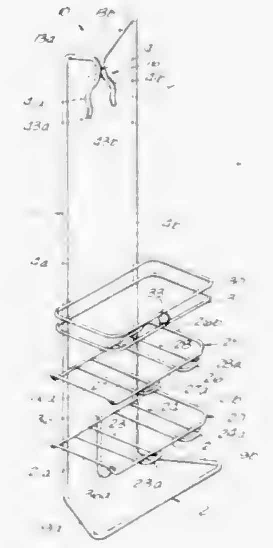
SHELF FIXTURE INCLUDING AN ATTACHMENT DEVICE THEREFOR

Alvin L. Stroh, Downey, Calif., assignor to McMillan Wire and Plating, Inc., Los Angeles, Calif.

Filed May 12, 1971, Ser. No. 142,623

Int. Cl. A47f *5/08, 5/14;* **A47h** *1/16*

U.S. Cl. 211—119 **5 Claims**

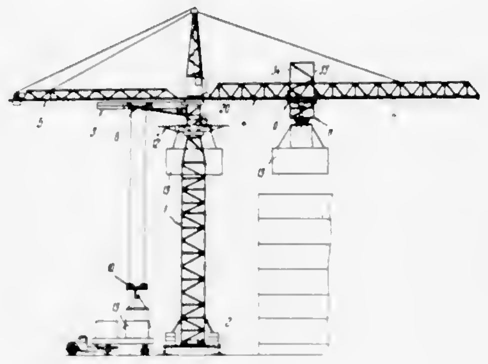


A shelf fixture for attachment to the water supply pipe of a stall shower is disclosed. The fixture includes a main frame formed of a single length of steel wire. The length of wire is bent so that the opposite end portions thereof located at the top of the frame are anchored together at a point and shaped to form an attachment device for the fixture. The opposite end portions of the wire for the attachment device is formed with extension portions extending downwardly from the anchor point prior to forming opposing outwardly curved portions which are made to tightly fit over the pipe. The terminating ends of the curved portions are located a sufficient distance from the anchor point because of the extension portions to provide an increased power of action for spreading the terminating ends to enable the attachment device to be readily snapped in a secure position over the pipe.

3,789,997
TOWER CRANE

Anatoly Avgustinovich Kozlovsky, Oruzheiny pereulok, 25, kv. 190; Nikolai Evgenievich Paschenko, Rostovskaya naberezhnaya, 5, kv. 150; Vladimir Grigorievich Polyakov, ulitsa Alabyana, 3, kv. 290, and Iosif Yakovlevich Kogan, 6-oi Novopodmoskovny pereulok, 4, kv. 9, all of Moscow, U.S.S.R.

Continuation of Ser. No. 28,747, April 15, 1970, abandoned.
This application Nov. 1, 1971, Ser. No. 194,761
Int. Cl. B66c *17/06*
U.S. Cl. 212—11 **4 Claims**

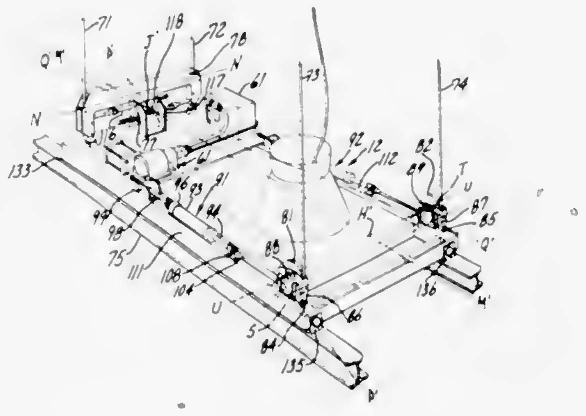


A tower crane, in which disposed on a non-rotary tower on the opposite sides thereof, are two booms having guides for the movement of load carriages with their load holding arrangements, and mounted on the tower under the booms is a rotating device to receive loads from the load holding arrangement of the first boom, and transfer loads to the load holding arrangement of the second boom.

3,789,998
HOISTING EQUIPMENT INCLUDING SPREADER WITH LONGITUDINAL AND TRANSVERSE TILTING MECHANISM

Jack E. Fathauer, Roxboro, N.C., and Carl R. Gottlieb, Mobile, Ala., assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed Jan. 17, 1972, Ser. No. 218,188
Int. Cl. B66c *19/00, 1/66*
U.S. Cl. 212—125 **13 Claims**

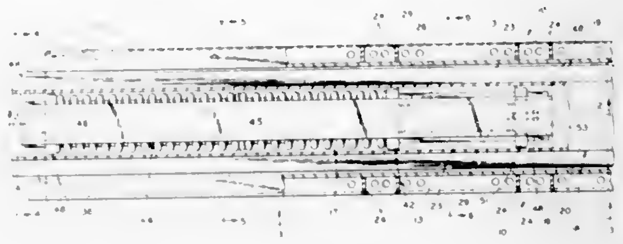


Hoisting equipment adapted especially for handling cargo containers including a spreader which may be adjustably tilted to facilitate entry of containers into a cargo vessel varying in its condition of list or trim. The equipment includes a crane and cables pendently supporting the spreader from the crane and shortenable and extendable coupling devices associated with the spreader which may be selectively operated to change the effective lengths of at least certain of the cables while independently of the cable-reeling mechanism on the crane. A further aspect of the equipment is linear adjustability of each cable with respect to the spreader and the coupling devices.

3,789,999
CUSHIONED UNDERFRAME FOR RAILWAY CARS

Robert S. Tamborski, Griffith, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Oct. 16, 1972, Ser. No. 298,181
Int. Cl. B61g *9/08*
U.S. Cl. 213—8 **6 Claims**

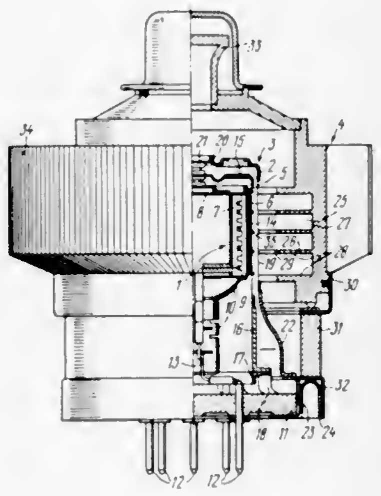


A cushioned underframe includes a stationary sill having a sliding sill supported therein. A cushion device is supported within the sliding sill and is anchored to a carrier and cover plate connected to the underneath side of the stationary sill. Integral sill lugs on the sliding sill are disposed between a spring retainer plate and a stationary plate connected to a tension strap on the cushion which during reciprocation of the sliding sill provides for operation of the cushion. The carrier and cover plate and the cushioning unit mounted thereon may be installed and removed as a unit with the cover and carrier plate.

3,790,000
MULTI-ELECTRODE ELECTRON TUBE

Valery Nikolaevich Manyafov, Grazhdansky prospekt, 15, korpus 4, kv. 93; Anatoly Ivanovich Busheev, Kolomenskaya ulitsa, 27, kv. 14; Roman Lvovich Semenov, prospekt Engelsa, 60, kv. 7, and Valery Alexeevich Klevtsov, Aprakin pereulok, 21, kv. 69, all of Leningrad, U.S.S.R.

Filed July 3, 1972, Ser. No. 268,888
Int. Cl. H01j *1/46*
U.S. Cl. 313—299 **6 Claims**

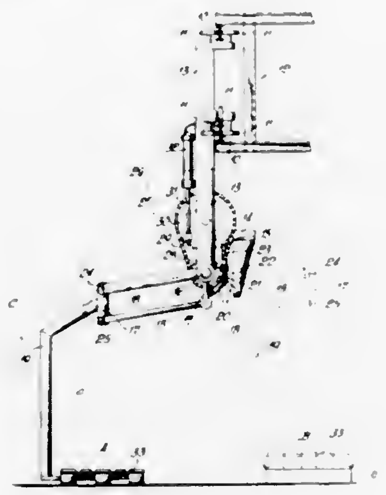


A multi-electrode electron tube is disclosed in which between the cathode and the chamber anode there is provided a control grid composed of wires. The chambers of the chamber anode are formed by fins arranged perpendicularly to the anode surface facing toward the cathode, and a bottom which is a part of the anode surface facing the cathode and contained between the fins. At points of normal projections of each fin of the chamber anode on the control grid and/or the cathode there are disposed elements for directing the electron flow from the cathode to the bottom of the chambers of the chamber anode arranged so as to form a plurality of sections, each including a part of the emitting cathode surface, part of the control grid wires and the bottom of a corresponding chamber of the chamber anode positioned parallel to one another in the direction of the electron flow.

3,790,001
CONVEYING ARRANGEMENT

Gerhard Schnell, Stuttgart, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed May 3, 1971, Ser. No. 139,611
Claims priority, application Germany, June 24, 1970, P 20 31 170.0
Int. Cl. B65g *47/90*
U.S. Cl. 214—1 BD **8 Claims**

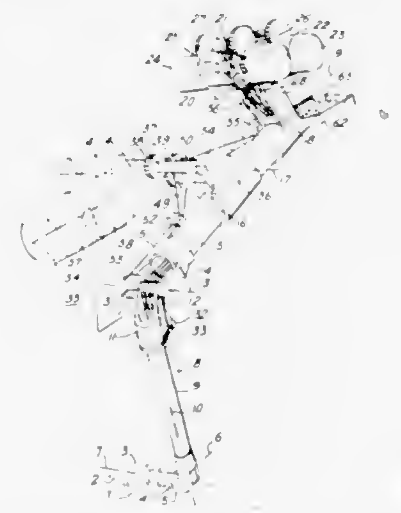


A carriage is movable on rails at opposite lateral sides of which objects are to be deposited or picked up. A turnable shaft is provided on the carriage and connected with a parallel-movement linkage, including a toggle joint, to a free end of which there is connected a gripper for engaging objects to be conveyed. A cylinder and piston unit is connected with the pivot of the toggle joint, so that when the unit is operated, the latter collapses and the gripper engages from below an object to be lifted, whereupon turning of the shaft causes the parallel movement to perform an arcuate movement so that the object is moved from one side of the rails to the other for deposition thereat.

3,790,002
MANIPULATOR WITH DRIVE MOTORS

Jean-Claude Germond, Paris; Charles Glachet, Vendome; Jean-Pierre Guilbaud, Jou Ars-Pontchartrain, and Jean Vertut, Issy-Les-Moulineaux, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Oct. 10, 1972, Ser. No. 296,054
Claims priority, application France, Oct. 11, 1971, 7136470; May 10, 1972, 7216859
Int. Cl. B25j *3/00*
U.S. Cl. 214—1 CM **13 Claims**



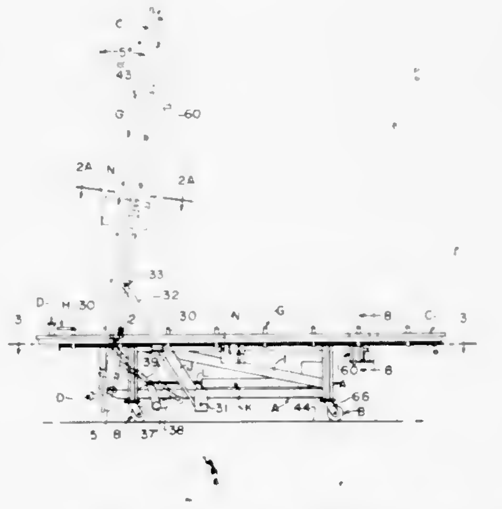
The manipulator arm is pivoted at its mid-point on a laterally displaced shoulder pin coupled to a rotatable body which has a horizontal axis on one side of said arm and serves to rotate the complete manipulator assembly about said axis.

A drive-motor block which produces a continuous balancing action about the shoulder-pin axis is pivotally mounted on one end of the manipulator arm in laterally displaced relation thereto. A wide range of angular motion is thus imparted by cable-type transmission means to a fore-arm which is rotated about an elbow pin or in azimuth and to a tong unit which is subjected to movements of elevation, rotation and closure.

3,790,003
TILTABLE GLASS CUTTING TABLE

Russell W. Tausheck, Hayward, Calif., assignor to ACE Glass Co., Hayward, Calif.

Filed Nov. 15, 1972, Ser. No. 306,719
Int. Cl. B65g *7/00*
U.S. Cl. 214—1 S **15 Claims**



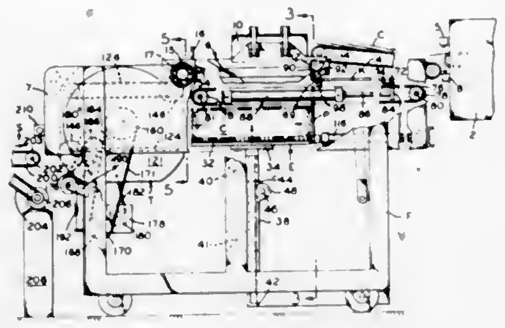
A power operated tiltable glass cutting table with novel means for removing a large sheet of glass from either a front opened or end opened case while the table top is inclined at a slight angle from a vertical position and without the operator having to touch the glass. The lower edge of the table top when in an upwardly inclined position is provided with retractable rubber rollers upon which the lower edge of the large sheet of glass rests preparatory to returning the table top to a horizontal position. A plurality of free revolvable spherical balls are arranged in spaced apart relation over the entire upper surface of the table top and are normally spaced above the table top so as to support the glass and permit the ready movement of the glass sheet over the table top. A single operator can handle a large sheet of glass with safety.

3,790,004
APPARATUS FOR AUTOMATICALLY STACKING MATERIAL

Ingvar L. Tole; Vernon J. Herzing; Everett L. Miller, all of Battle Creek, and George L. Lightfoot, Bellevue, all of Mich., assignors to General Foods Corporation, White Plains, N.Y.

Division of Ser. No. 795,187, Jan. 30, 1969, Pat. No. 3,580,402. This application Jan. 18, 1971, Ser. No. 107,496
Int. Cl. B65g *57/11*
U.S. Cl. 214—6 H **20 Claims**

This invention relates to apparatus for forming stacks or piles of sheet material, such as flat carton blanks (hereinafter also referred to merely as cartons), and delivering them in properly arrangd condition so as to be available for set-up or shipment. Cartons are conveyed from a cutting press to an assembly magazine in one or more laterally spaced single file lines. Each line of cartons entering the magazine is jogged or shuffled to form a neat stack or pile on a vertically movable elevator in the magazine. In response to the action of sensing mechanism, the elevator is lowered progressively carrying with it the piled cartons until a controlled separator is projected between adjacent cartons of the pile to separate stacks of desired height or number of cartons therefrom, whereupon



the elevator is lowered to a predetermined discharge position. A horizontally movable pusher is then operative to eject each stack beneath the separator from the elevator.

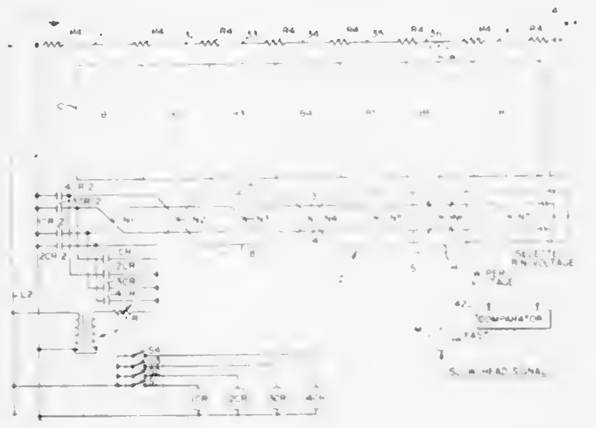
3,790,005
NULL TRACK FOR AUTOMATIC STACKER

Harry E. Smith, Newark, N.Y., assignor to Hartman Metal Fabricators, Inc., Victor, N.Y.

Filed Apr. 3, 1972, Ser. No. 240,547

Int. Cl. B66b *1/02*

U.S. Cl. 214—16.4 A **7 Claims**



Two pairs of null wires extend down an aisle in front of a storage rack that is serviced by an automatic stacker. The two wires of each pair are crossed and recrossed at intervals to form spaced crossover points or nulls, which register with horizontally spaced bins in the rack. The nulls of the two pairs alternate with one another, one pair of wires registering with odd-numbered bins, and the nulls of the other pair registering with the evenly-numbered bins. When the stacker control circuit is programmed to move the stacker to a preselected bin, an AC voltage is applied selectively to the four null wires to create stable nulls at every fourth bin. The stacker is then halted by known means at a preselected stable null.

3,790,006
POSITION CONTROL SYSTEM FOR A WAREHOUSE APPARATUS

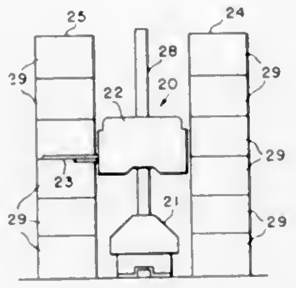
Elmer C. Hartman, III, Geneva, N.Y., assignor to Hartman Metal Fabricators, Inc., Victor, N.Y.

Continuation of Ser. No. 73,159, Sept. 17, 1970, abandoned. This application Nov. 15, 1972, Ser. No. 306,862

Int. Cl. B65g *1/06*

U.S. Cl. 214—16.4 A **12 Claims**

An automatic stacker or load carrier has a trolley section movable down an aisle between a pair of storage racks, an elevator movable vertically on the trolley, and a retractable fork mechanism movable out of either side of the elevator to pick up a load from, or deposit a load into, a selected bin in one of the racks. A stationary console remote from the stacker is connected electrically to the stacker by a plurality of brush contacts on the stacker, which have sliding, electrical contact with a like plurality of conductors, which extend from the console down the aisle. By means of a computer connected to the



console, an operator can program the stacker to perform a plurality of successive pick up and deposit operations to transfer loads between selected bins and a loading station at one end of the aisle, or between selected bins in the racks. At the end of each cycle, which comprises either a pick up or deposit operation, the stacker remains stationary until the computer enters the address of a new cycle.

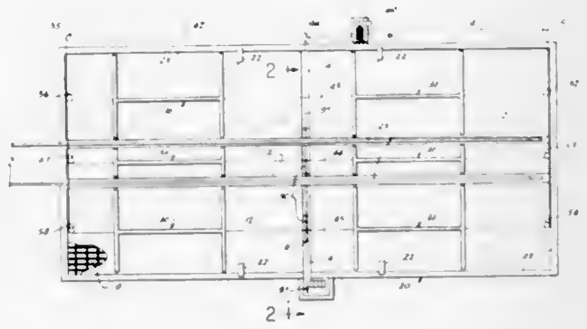
3,790,007
ABRASIVE RECOVERY SYSTEM

Brinton Sprague, R. 5, Box 5821, Bainbridge Island, Wash.

Filed Nov. 9, 1971, Ser. No. 197,089

Int. Cl. B24c *7/00*; **B65g** *25/08*

U.S. Cl. 214—17 D **8 Claims**



An abrasive recovery system comprising a perforated floor above a solid floor having a channel therein. Scraper assemblies are mounted above the solid floor for reciprocating movement across the floor toward and away from the channel. The scraper assemblies may be provided with pivoting blades adapted to pivot away from the floor when the scraper assemblies move away from the channel. A power source is connected to the scraper assemblies for reciprocation thereof. A conveyor may be located in the channel to convey collected abrasives away from the floor.

3,790,008
RAILWAY HOPPER CAR

Robert Montaque Joubert, Potchefstroom, South Africa, assignor to Rotaque (Proprietary) Limited, Potchefstroom, Transvaal Province, South Africa

Filed June 6, 1972, Ser. No. 260,189

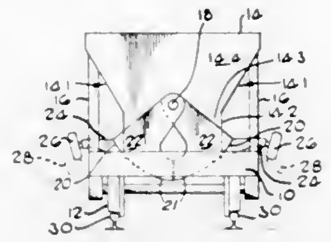
Claims priority, application South Africa, June 9, 1971, 71/3725

Int. Cl. B61d *7/04, 7/18, 7/32*

U.S. Cl. 214—63 **7 Claims**

The invention relates to a bottom discharge hopper or hopper car having radial doors across an open bottom of a

container and pivotally suspended about a common horizontal axis. The doors form collectively, a closure across the open



bottom and are caused to be simultaneously swung in upward and outward directions for gravitational discharge of the container.

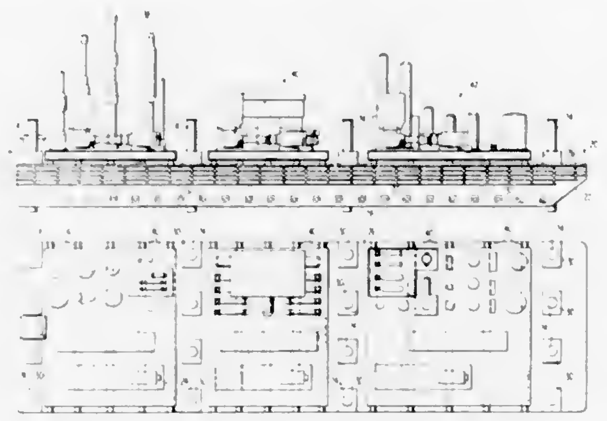
3,790,009
METHOD FOR HANDLING A BARGE FOR TRANSFERRING LARGE HEAVY CARGO MODULES

Ferdinand R. Hauber, Galena Park, Tex., assignor to Brown & Root, Inc., Houston, Tex.

Filed Nov. 7, 1972, Ser. No. 304,308

Int. Cl. E02b *17/02*

U.S. Cl. 214—152 **17 Claims**



A method of handling a barge for transferring large, heavy cargo modules onto the barge from a dock facility or off of a barge onto a dock facility including the steps of positioning the barge, buoyantly supported upon a body of water, contiguous to a dock facility; lowering a plurality of columns vertically through a corresponding plurality of wells in the hull of the barge and into engagement with the water bed adjacent the dock; extending a plurality of columns into the water against the weight of the barge, until the columns have reached a firm foundation. Following the step of extending the columns into the water bed sufficiently to support the barge, opening at least one valve positioned within a corresponding at least one passage through the hull of the barge to permit the ambient water to seek its own level within the interior of the barge and thus render the barge independent of normal buoyancy and tidal influences. Next the barge is vertically adjusted upon the columns until the deck of the barge is in generally planar horizontal alignment with the dock facility. The cargo modules may then be transfered onto or off of the barge. Once the transfer is completed, then at least one valve positioned within the hull of the barge is closed and finally the plurality of columns are raised to enable the barge to again be buoyantly supported upon the body of water.

In the event a particularly heavy construction module is going to be loaded from a dock facility onto a barge ballast may be added to the barge prior to extending the columns into the water bed. Moreover, the amount of ballast utilized may be selected to correspond to the weight of the construction module to be loaded in order to minimize the possibility of relative vertical movement of the barge deck with respect to a dock as the module is loaded onto the barge.

3,790,010
MECHANICAL HANDLING OF GOODS

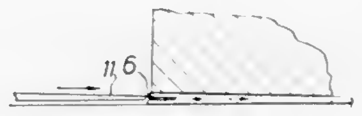
James Alexander Stirling, 5 Stonemead, Welwyn Garden City, and Gordon Carlton, St. Cross St., London, both of England

Filed June 4, 1971, Ser. No. 150,011

Claims priority, application Great Britain, Dec. 8, 1970, 58,253/70

Int. Cl. B65g *1/14, 7/02*

U.S. Cl. 214—152 **2 Claims**



This invention provides a method for the mechanical handling of goods in which the goods are stacked upon a flat flexible pallet, in the form of an envelope with a mouth at one end, which takes up very little space and which will not support the goods when the goods are to be moved. To lift the goods the pallet is partially inflated through the mouth by blowing air into the envelope and a rigid supporting member is introduced into the envelope through the mouth so that the goods can be lifted, moved and put down again whereupon the supporting member can be removed and the air supply turned off so that the pallet lies flat again.

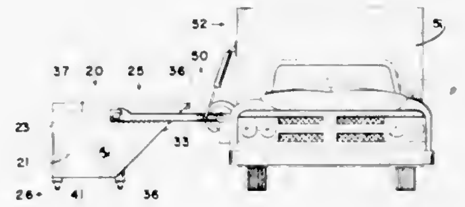
3,790,011
PIVOTABLE REFUSE CART DUMPING APPARATUS WITH HORIZONTALLY MOVABLE AND SPREADABLE ARMS

Thomas G. Owen, Jr., R.R. 7, Box 250, Bloomington, Ind.

Filed Dec. 1, 1971, Ser. No. 203,815

Int. Cl. B65f *3/02*

U.S. Cl. 214—302 **5 Claims**

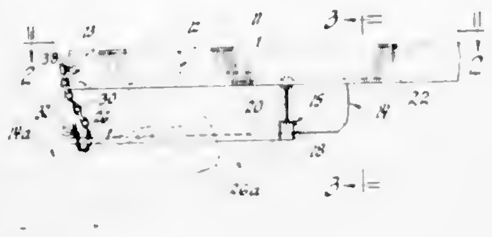


A dumping apparatus having a pair of arms mounted to a truck for engaging a refuse cart. The arms are pivotally mounted to a beam which is slidable horizontally to and from the truck by a cylinder motor. The beam is mounted to a pair of channels which are slidably mounted to a second pair of channels fixedly attached to the truck. The cylinder motor is attached to the truck and has a piston rod connected to the beam. A second cylinder motor mounted to the truck has an extendable piston rod connected to a lever which is fixedly connected to a shaft upon which the arms are hingedly mounted. A pair of cam plates mounted to the truck receive cam followers rotatably mounted to the arms which are urged against the cam plates by a pair of springs. The cam plates diverge and extend beneath the arms thereby allowing the arms to spread apart as they are pivoted downward past the horizontal position. A pair of slotted hands are mounted to the ends of the arms for receiving handles mounted to the refuse cart. The handles are slidable through the slots so as to achieve a shaking motion of the cart.

communicating from the ambient atmosphere to the chamber. gular container body defines a hollow chamber therein and

3,790,012
SPARE TIRE AND WHEEL CARRIER

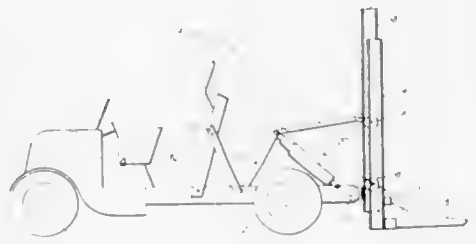
John Hrivnyak, 2055 Harward, Berkley, Mich.
Filed June 7, 1972, Ser. No. 260,425
Int. Cl. B62d *43/00*
U.S. Cl. 214—454 **5 Claims**



A spare tire and wheel carrier for a pickup truck, camper and the like which includes a transverse member having a pair of angled tire clamping shoulder portions. A hanger means is disposed at each of said transverse member and it has a lower end pivotally connected to the transverse member and an upper end fixed to the frame of the vehicle. The carrier includes a center supporting arm which has its inner end secured to the transverse member and means for releasably securing the center arm to the vehicle frame.

3,790,013
FORK-LIFT WHEELED VEHICLE

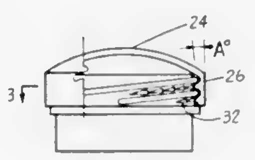
George Frederick Smith, Goodlands Farms, Shamblehurst Ln., Southampton, England
Filed June 23, 1971, Ser. No. 155,882
Int. Cl. B66f *9/20*
U.S. Cl. 214—674 **3 Claims**



A fork-lift vehicle for transporting bales is disclosed, having a tilting fork which acts both to lift and to transport the bales. The vehicle has a static guard frame co-operable with the fork in its tipped position to form a cage, movable side gates on the fork, and a push-off device.

3,790,014
SAFETY CLOSURE AND CONTAINER

Michael Mucsi, 2474 S. Centinela Ave., Los Angeles, Calif.
Filed Apr. 13, 1972, Ser. No. 243,807
Int. Cl. B65d *55/02*
U.S. Cl. 215—9 **11 Claims**

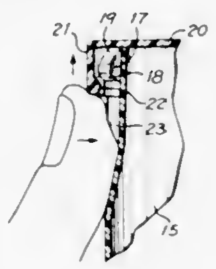


In an internally threaded closure for a container having an externally threaded neck, one or more ramplike ratchets are disposed on the internal thread of the closure for releasably interlocking with corresponding and mating ratchet detents disposed within the groove adjacent to the turns of the external thread on the neck of the container. The configuration of the ratchets and detents is such that the ratchets will easily slide into and out of successive detents and, thus, permits conventional closing of the container by ordinary rotation of the closure relative to the container. Reverse rotation of the closure relative to the container is prevented by corresponding locking side walls on the ratchets and detents which are in planes substantially in alignment with radii to the center of the package. The closure has a side wall and a resilient top wall. The closure is removed from the container by simultaneously rotating the closure relative to the container and pressing on the resilient top wall to dilate the side wall and disengage the ratchets from the ratchet detents.

In a variational embodiment, the ratchets are disposed on the groove of the neck of the container and the ratchet detents are disposed within the lateral side of the internal thread of the cap.

3,790,015
SAFETY CONTAINER AND CAP

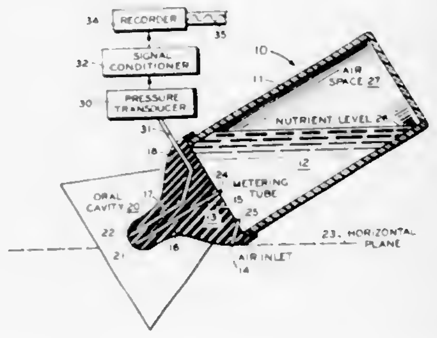
Harry H. Imamura, 5212 28th Ave. South, Seattle, Wash.
Filed July 13, 1972, Ser. No. 271,496
Int. Cl. B65d *55/02*
U.S. Cl. 215—9 **9 Claims**



This invention comprises a tubular container formed of plastic or like resilient material and having a cap which can not be removed by young children but is easily removed by older persons. The container has external flange means on its upper end and a selected area of the upper end part of the container wall is weakened so it can be sprung inwardly to either receive or release a cap and will always spring back to its original position when released. A cap fits over the top end of the container and has internal flange means which will interlock with the external flange means on the container. The only way to release and remove the cap is to bend the weakened upper part of the container wall inwardly by applying external pressure to it and immature children can not do this.

3,790,016
INSTRUMENTED NEWBORN NURSING SYSTEM

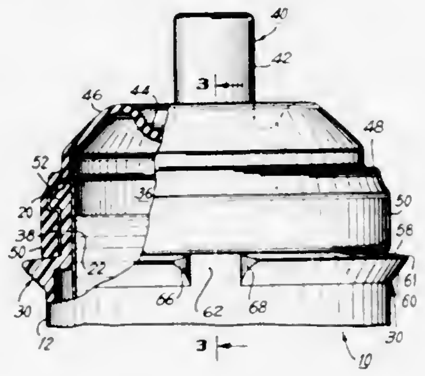
Reuben E. Kron, Narberth, Pa., assignor to The Trustees of the University of Pennsylvania, Philadelphia, Pa.
Filed Dec. 13, 1971, Ser. No. 207,360
Int. Cl. A61j *9/00*
U.S. Cl. 215—11 R **6 Claims**



An infant nursing device comprising a chamber for containing liquid contiguous to a nipple having an air inlet passage communicating from the ambient atmosphere to the chamber, a liquid metering passage communicating from the chamber and through a centrally protruding exterior portion of the nipple, and either a pressure indicative passage communicating from the centrally protruding exterior portion to another region or means communicating with the liquid metering passage for measuring the rate of flow therein. All are so arranged that the device is conveniently positionable for delivery of the liquid to an infant whose oral cavity surrounds the centrally protruding exterior portion of the nipple, with the air inlet passage communicating with the ambient atmosphere in substantially the same horizontal plane at which the exterior end of the liquid conductive passage is positioned, and with the inner ends of the liquid metering and the air inlet passages below the level of the liquid as long as the liquid occupies a substantial portion of the space in the chamber.

3,790,017
NURSING UNIT

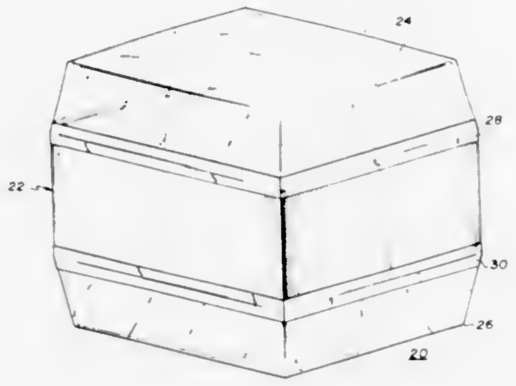
William E. Fitzpatrick, Wyckoff, and Robert B. Cubitt, Ramsey, both of N.J., assignors to International Playtex Corporation, New York, N.Y.
Filed Aug. 8, 1972, Ser. No. 278,856
Int. Cl. A61j *9/04*
U.S. Cl. 215—11 E **12 Claims**



A nursing unit is disclosed including a holder, a liquid-retention sac, and a nipple wherein the holder is provided with a discontinuous annular shoulder, which substantially reduces the possibility of accidental or inadvertent nipple removal.

3,790,018
CONTAINER

Paul Farkas, Elizabeth, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed Aug. 18, 1971, Ser. No. 172,833
Int. Cl. B65d *11/10, 25/04*
U.S. Cl. 220—4 C **3 Claims**



A container for storing elongated articles having different heights at their respective ends permitting maximization of the storage capacity in a minimum amount of volume. The rectangular container body defines a hollow chamber therein and has covers at either end, individually, selectively removable from the container body. At least one inclined intermediate wall placed within the container body segments the chamber into chamber portions some of which are accessable by removing a first of the covers and others of which are accessable by removing the second of the covers. By the inclusion of additional intermediate walls, the chamber can be further divided to increase the utility of the container. Selective shaping of the container covers permits nesting of the covers within one another and the container body to be angularly positioned within the covers to facilitate access to the articles stored within the container body.

3,790,019
STACKABLE PACKAGE AND METHOD OF MAKING SAME

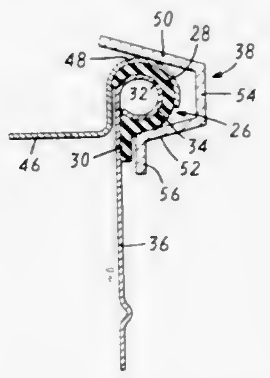
Lowell C. Murray, and John M. Hoge, both of Fort Wayne, Ind., assignors to Container Corporation of America, Chicago, Ill.
Filed Dec. 20, 1971, Ser. No. 209,585
Int. Cl. B65d *5/00*
U.S. Cl. 220—16 R **10 Claims**

A package is formed from a pair of rectangular panels, one having greater length than the other, and being in overlying relationship with respect thereto. The ends of the panels are constrained so that each is bowed slightly with the same chordal distance between the ends, the longer panel being thereby spaced from the shorter one. Each of the panels has side panel segments defined by a score line extending longitudinally of the panels and between opposite ends thereof. Upon curving of the rectangular panels as aforesaid, the side panel segments are brought into contacting relationship and are secured together by adhesive material. In bringing the side panel segments into contact, a pair of opposite side flanges for the receptacle is formed, these aiding in the stacking of the finished receptacle.

In a preferred form of the invention the two rectangular panels may be foldably connected and the distal ends thereof secured together by adhesive.

3,790,020
DRUM SEAL GASKET

Harry H. Fine, 144-14 Jewel Ave., Kew Garden Hills, N.Y.
Filed June 5, 1972, Ser. No. 259,546
Int. Cl. A47j *27/08, 36/10;* **B65d** *45/00*
U.S. Cl. 220—46 R **1 Claim**

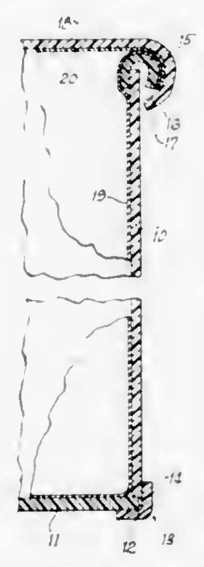


An open head drum has a head curl which receives a gasket, and a cover to effect closure of the drum. The gasket includes one portion formed as an annulus having an interiorly disposed channel in which the head curl is received and a skirt portion engaging the outside wall of the drum. A cover for the drum has a lip engaging the gasket annulus at the top surface of the drum curl. A locking ring has an upper lip pressing the cover lip toward the drum curl and a lower lip pressing the gasket annulus against the underside of the drum curl. The locking ring also has an annular skirt for pressing the annular lip of the ring gasket against the outside surface of the drum.

3,790,021

PLASTIC CONTAINER WITH DISPOSABLE INNER CONTAINER

Isabel W. Bailey, 8341 S.W. 137th Ave., Miami, Fla.
Filed June 30, 1972, Ser. No. 267,898
Int. Cl. B65d *25/14, 25/34*
U.S. Cl. 220—63 R **5 Claims**



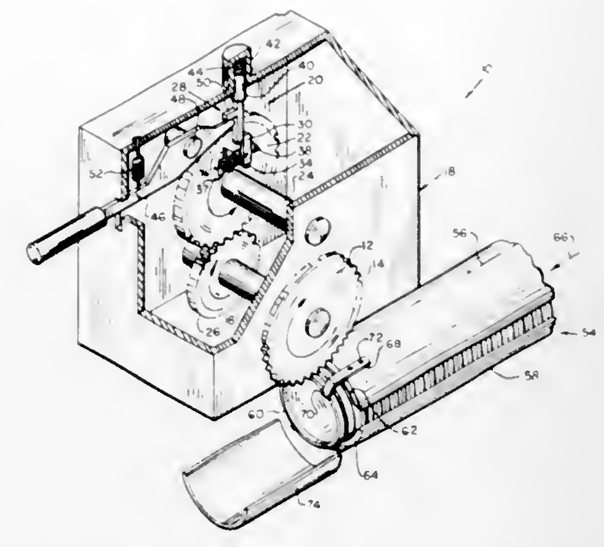
A lightweight container for soft drinks or the like comprising an outer cylindrical container of form-retaining plastic and a disposable inner container of thinner, flexible plastic which takes the shape of the outer container. Stiffening rings are placed at the top and bottom of the outer container, the top ring overhanging the upper edge of the outer container and receiving the crimped-over edge of a metallic cap. The material of the liner is polyester of approximately 1½ mils thickness and that of the outer container is either polyester or 5 mil Mylar conditioned by laminates or otherwise to withstand the elements, or a laminate of these materials.

3,790,022

APPARATUS FOR SEPARATING ARTICLES INTO NUMERICALLY UNIFORM GROUPS

Archie L. Lind, Lakewood, Colo., assignor to Bau Corporation, Muncie, Ind.
Filed Dec. 13, 1971, Ser. No. 207,411
Int. Cl. G06m *7/00*
U.S. Cl. 221—2 **1 Claim**

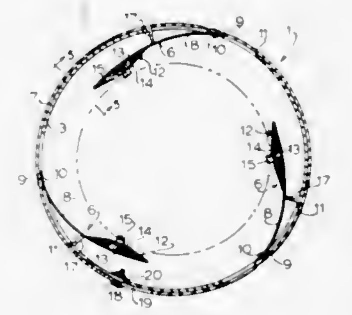
An apparatus for separating articles, such as, for example, container lids, into groups, each containing a predetermined number of articles, is disclosed herein. The apparatus includes an article separating member having a predetermined number of article engaging means. The separating member is connected with a support housing for allowing the engaging means to rotate along a predetermined path so as to engage different ones of a plurality of said articles during movement along said path. The separating member is limited to a predetermined amount of movement along said path so that a predetermined number of articles can be separated into a single group.



3,790,023

CUP DISPENSER WITH RADIALLY ADJUSTABLE CUP SUPPORTING TABS

Edwin A. Filipowicz, Milwaukee, Wis., assignor to Griffith-Hope Company, Milwaukee, Wis.
Filed Jan. 10, 1972, Ser. No. 216,612
Int. Cl. A47f *1/08*
U.S. Cl. 221—304 **16 Claims**



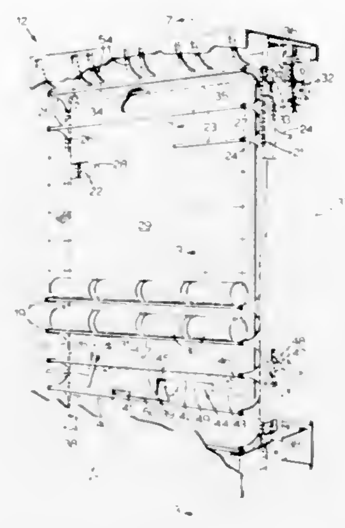
A cup dispenser capable of dispensing cups of different diameter. The dispenser includes a tube to contain a stack of cups and the cups are individually dispensed through an open end of the tube. The cup located adjacent the open end of the tube is supported on a series of tabs or ledges which extend inwardly from adjustable support members. Each support member comprises a flexible spring-like strip which extends through an opening in the tube and the outer end of the strip is secured to a collar that surrounds the tube. A series of cams are integral with the inner surface of the tube and bear against the respective strips. As the collar and support members are rotated with respect to the tube, the strips ride against the respective cams to move the strips radially with respect to the tube to vary the location of the supporting tabs and thereby enable different diameter cups to be supported on the tabs.

3,790,024

VENDING MACHINE HAVING LEVER ACTUATED CONVERTER PANEL

Berend Stegeman, Belleville, Ontario, Canada, assignor to Eddy Match Company, Limited, Toronto, Ontario, Canada
Filed Mar. 16, 1973, Ser. No. 342,311
Claims priority, application Canada, Apr. 21, 1972, 140216
Int. Cl. B65g *47/34*
U.S. Cl. 221—77 **12 Claims**

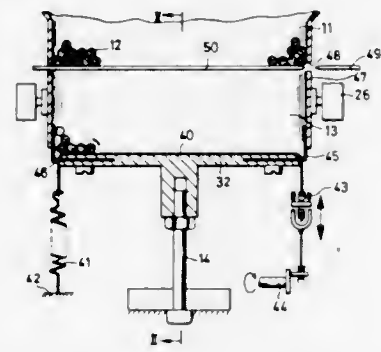
A vending machine having a rack assembly comprising endless side chain members, product shelf rods attached to the chain members, rear and front product back rests on which the product items slide, the front back rest having a lower end forming a vend panel with stepped portions therein allowing vending of product one at a time backwardly into the assembly from each shelf rod and a converter panel assembly rotatable into the vend panel to allow vending of different sized product.



3,790,025

APPARATUS FOR PACKAGING TUBULAR ARTICLES

Helmut Brodbeck, Trossingen, Germany, assignor to EFKA-Werke Fritz Kiehn GmbH, Trossingen/Wurtt, Germany
Filed Sept. 18, 1972, Ser. No. 290,066
Claims priority, application Germany, Sept. 30, 1971, P 21 48 870.0
Int. Cl. B65h *3/00*
U.S. Cl. 221—200 **13 Claims**

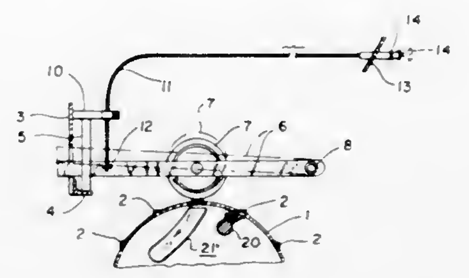


A device for sorting and packing round-bar-shaped or tubular articles and, more particularly, cigarette tubes or cigarette filter tubes. The device comprises a funnel-shaped container the downwardly tapering portion of which terminates in a chute having a bottom, side walls and a front wall, the front wall being designed as an ejector and the rear wall having an ejector orifice; a cut-off slide, or a plurality of cut-off slides arranged in pairs, and disposed between the container and the chute which serves as a batching chamber; and a belt which rests flatly on the bottom of the chute at right angles to the longitudinal axes of articles in the chute and/or on the inner surfaces of the side walls of the chute. The belt is adapted to be reciprocated or gradually moved by means of an external drive mechanism. The belt may be arranged with one end thereof outside the chute and attached to a fixed support such as the frame of the device and with its other end resiliently connected to a motion-imparting device adapted to impart a motion to the belt in the longitudinal direction thereof. With this device the articles being processed are closely packed and suitably batched without damage thereto and with a constant number of articles being ejected for each ejection stroke.

3,790,026

CORN PLANTER

Roger Neumeister, R.D. No. 1, Box 307, Ashland, Pa.
Filed Mar. 19, 1973, Ser. No. 342,465
Int. Cl. A01c *7/04*
U.S. Cl. 221—211 **2 Claims**

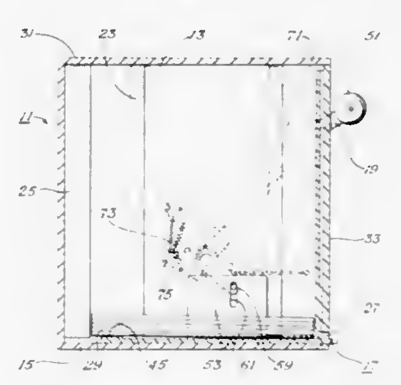


A seed planter of the type having an air pressured drum rotated about its axis by a trailer, which drum has a plurality of longitudinal rows of perforated pockets spaced evenly about the periphery of the drum. A plurality of separate rubber tired wheels are mounted on separate pivotal arms on the trailer frame for contacting selective peripheral rows of pockets denoting desired rows of seeds to be planted, whereby the blocked holes allow the seeds to be blown into discharge pipes leading to the furrows of the rows to be planted. Each arm is pivoted by a cable connected at one end to the arm and, at the other end to a control knob in the cabin of a tractor.

3,790,027

APPARATUS FOR DISPENSING FLAT ARTICLES

Carlton L. Barnhart, 3800 S. Hill Cir., Fort Worth, Tex.
Filed Oct. 11, 1972, Ser. No. 296,573
Int. Cl. B65g *59/06*
U.S. Cl. 221—274 **3 Claims**



Apparatus for dispensing flat, relatively thin articles characterized by an article drawer that is slidably mounted on a stationary frame so as to be moved rearwardly to emplace a raised portion behind the bottom one of a stack of the articles in a container such that upon forward movement of the drawer the article is pulled forwardly so that its front end protrudes out of a discharge aperture, all responsive to operation of a manually operable handle that is connected with the drawer. A biasing means is provided for biasing the handle and article drawer toward their normal position. A plurality of the delineated elements may be employed for vending a plurality of different articles. When the apparatus having the plurality of respective elements are operated in a coin operated vending embodiment; a locking means, including a lock bar and respective linkages, requires and allows operation of only one lever and prevents operation of other levers, once operation of the one lever is begun. Also disclosed are specific structural features of respective embodiments.

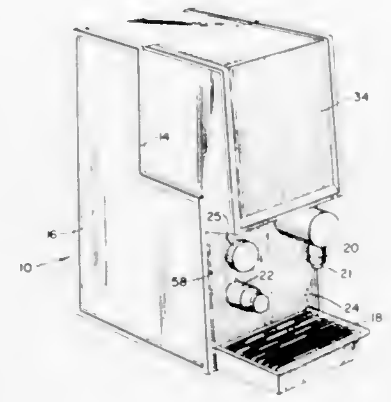
3,790,028
HOT LIQUID DISPENSER

John A. Gardner, Jr., and Merle S. Brown, both of 195 Bear Hill Rd., Waltham, Mass.

Continuation-in-part of Ser. No. 887,671, Dec. 23, 1969, abandoned. This application Sept. 3, 1971, Ser. No. 177,597

Int. Cl. B67d *5/56*

U.S. Cl. 222—129.4 **28 Claims**



A hot chocolate dispenser having separate water and chocolate syrup circuits with a syrup and water control assembly connected to the circuits to enable the customer to select a large or small drink while maintaining a fixed ratio of water to syrup. A reverse flow sensor can be used in the dispenser to sense an out-of-syrup condition. The sensor indicates backflow of fluid and actuates circuitry to activate a suitable response.

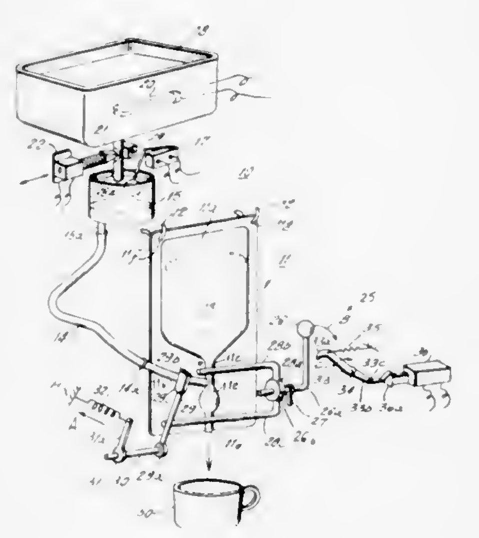
3,790,029
APPARATUS FOR DISPENSING AND MIXING LIQUIDS

Wallace W. Ward, 28 Long Hill Ln., Chatham Twp., Chatham County, N.J.

Filed Sept. 1, 1971, Ser. No. 177,019

Int. Cl. B67d *5/56*

U.S. Cl. 222—129.4 **7 Claims**



A bag having cavities and conduits is provided for the storage, selective passage and mixing of liquids. The sealed cavities contain liquids and the conduits are so connected as to cause the liquids to enter a mixing and metering pod from which the thus mixed liquids are dispensed. The arrangement is advantageously adapted for use in dispensing cold or hot drinks.

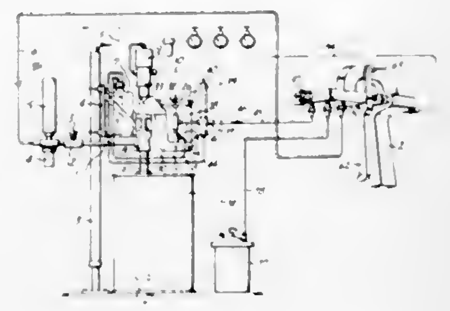
3,790,030
LIQUID RESIN SPRAY DISPENSERS

Frank E. Ives, 1862 Ives Ave., Kent, Wash.

Continuation-in-part of Ser. No. 129,375, March 30, 1971, abandoned, Continuation of Ser. No. 696,190, Jan. 8, 1968, abandoned. This application Nov. 8, 1971, Ser. No. 196,692

Int. Cl. B05b *7/04, 7/12*

U.S. Cl. 222—135 **13 Claims**



Resin and catalyst, respectively, in unaerated liquid form are pumped from containers by interconnected pumps having a common drive motor and delivered in accurate proportions to a trigger-operated dispensing gun. The pump motor is controlled by back pressure of liquid delivered by a pump so that, when resin and catalyst control valves in the gun body are opened simultaneously, lowering the pressure in the supply lines, operation of the pump motor will be initiated automatically. To enable the relatively viscous resin and the relatively fluid catalyst to be supplied to the gun body in accurate proportions of the order of one-hundred times as much resin as catalyst by weight despite the employment of long lines, such as thirty feet, the catalyst supply line is a tube having in it a core rod to provide a restricted annular passage. Resin and catalyst supplied separately to the gun body pass through a tortuous mixing passage in the gun body for the purpose of mixing the resin and catalyst thoroughly before passage of the mixture through the spray gun aperture. The small mixing chamber in the gun body can be cleaned by supplying to it a suitable solvent, such as acetone, from a container connected to the gun body mixing camber by a tube. If desired, chopped reinforcing strand material can be blown into the resin spray to be deposited with the resin.

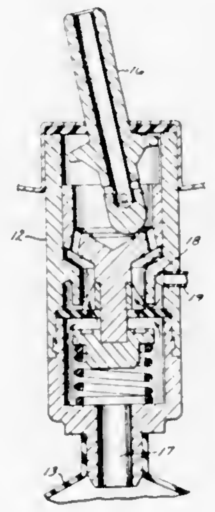
3,790,031
METHOD OF CONTROL FOR AEROSOL DISPENSING AND A MULTIPHASE AEROSOL DISPENSER

Samuel Benjamin Prussin, 2126 Banyan Dr., and Victor Joel Pierce, 2040 Vestal, both of Los Angeles, Calif.

Filed Oct. 20, 1969, Ser. No. 867,533

Int. Cl. B67d *5/24*

U.S. Cl. 222—136 **4 Claims**



A method for controlling flow of material from a multiple fluid aerosol product wherein a non-pressure producing fluid is intentionally overfilled whereby flow from the aerosol container will cease when the pressure producing fluid is exhausted.

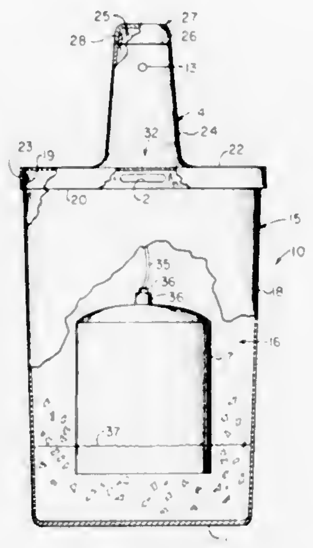
3,790,032
PARTY KEG BEER DISPENSER APPARATUS

Darell L. George, Midland, Tex., assignor to J. W. Henry, Odessa, Tex.

Filed Mar. 6, 1972, Ser. No. 232,172

Int. Cl. B67d *1/04*

U.S. Cl. 222—146 **1 Claim**



Party keg apparatus for cooling, housing, and dispensing draft or keg beer comprising a hollow main body within which a beer keg and ice may be housed so as to cool a considerable quantity of kegged beer. A removable tower structure has a platform included therewith which forms a closure member for the main body. The tower forms a chamber and also provides support means for a valve outlet which is disposed in overhanging relationship relative to a drain located in the platform.

A baffle plate located at the lower extremity of the interior of the tower enables a quantity of ice to be stored therewithin and about a flow line which flow connects the valve to the beer keg.

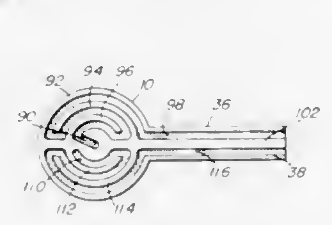
3,790,033
HOT CREAM DISPENSER

John T. Ciaffone, Bridgport, Conn., assignor to Warner Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 242,471, April 10, 1972, abandoned. This application Jan. 2, 1973, Ser. No. 320,429

Int. Cl. B67d *5/62*

U.S. Cl. 222—146 HA **9 Claims**



The specific disclosure provides a dispensing system including a heat exchange device for use in combination with aerosol containers having different creams therein. One type of aerosol container having a first cream, such as a cleansing cream, has a nozzle with an opening at the top thereof. Another type of container having a different cream, such as a moisturizing cream, has an opening formed in the side of the nozzle. The heat exchange device is positioned on either of the two types of nozzles, and an electrical heating unit applies heat to the top of the heat exchange device. The heat exchange device has a vertical center wall with a vertical cylindrical wall portion at the center thereof. An array of at least three concentric vertical walls are provided on each side of the center wall. Each array of concentric walls alternately has one end of the walls connected to and spaced from the center wall, and the other end of the walls spaced from and connected to the center wall to provide a channel in which cream flow changes direction to concentric flow paths at least twice as it flows outwardly from the cylindrical wall portion. One of the channels is formed for fluid communication with the nozzle having an opening at the top thereof, and the other of the channels is formed for fluid communication with the nozzle having an opening at the side thereof. The heat exchanger provides for dispensement of different heated creams by independent channels to avoid mixing of the products.

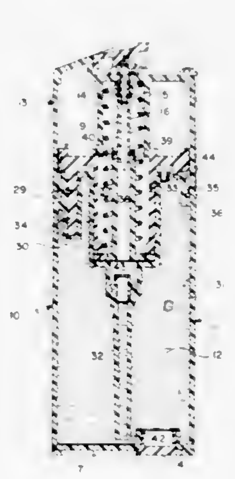
3,790,034
RECHARGEABLE SPRAYER

William Horvath, Chatham, N.J., assignor to Thiokol Chemical Corporation, Bristol, Pa.

Filed Feb. 14, 1972, Ser. No. 226,204

Int. Cl. B67d *5/32*; **G01f** *11/04*

U.S. Cl. 222—153 **16 Claims**



A manually operated, hand-held liquid spraying device which includes a non-pressurized, refillable or non-refillable container, is disclosed. The sprayer is a completely contained device wherein an internal cam in one part of the device which is rotated, causes a displacement of a piston, a part of which is a cam follower. Piston displacement vacates a chamber which is simultaneously charged with liquid. The piston is moved as a result of the cammed motion against a responsor biasing it. The biased responsor generates a hydraulic pressure on the liquid now in the chamber vacated by the piston, since a check valve traps the liquid in the chamber. The liquid is released from the chamber by depressing a push button device, which action uncovers a port in an outlet conduit permitting liquid to flow from the chamber through the conduit and out through a flow connected nozzle in response to the responsor-urged piston moving down through the liquid in the chamber.

3,790,035
MANURE SPREADER WITH BED CLOSING GATES

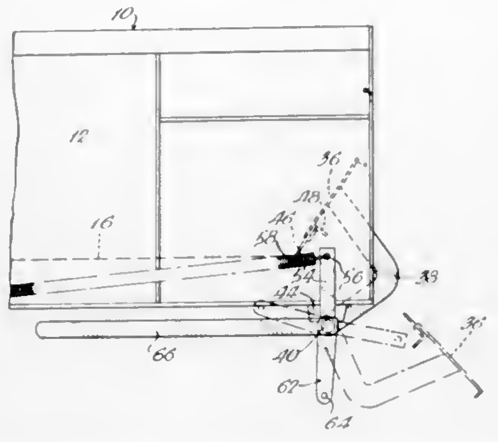
Kelly P. Ryan, Blair, Nebr., assignor to Blair Manufacturing Co., Inc., Blair, Nebr.

Filed Feb. 2, 1972, Ser. No. 222,864

Int. Cl. A01c *19/00*

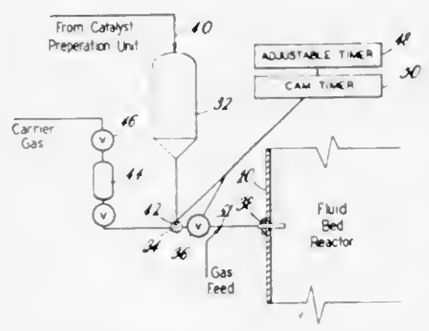
U.S. Cl. 222—178 **2 Claims**

A manure spreader especially adapted for use in spreading relatively fluid manures. The exemplary embodiment comprises a box-like bed having an open end mounted on wheels and including a conveyor within the bed for conveying manure towards the open end thereof. In addition, a rotary spreading element is provided for spreading manure fed to the same by the conveyor. A pivotally mounted gate is biased towards a position to close the bed with the biasing being sufficiently weak that upon operation of the conveyor or spreader, the pressure of manure impinging against the gate will cause the same to automatically open to allow manure to be spread. The gate insures that relatively fluid manures cannot escape from the bed during movement of the spreader to a location whereat a spreading operation is to take place and prior to initiation of the spreading operation.



3,790,036
FLUID BED POLYMERIZATION CATALYST INJECTION SYSTEM

Adam Roy Miller, South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.
Filed Nov. 21, 1969, Ser. No. 878,774
Int. Cl. B65g *69/06*
U.S. Cl. 222—194 **4 Claims**

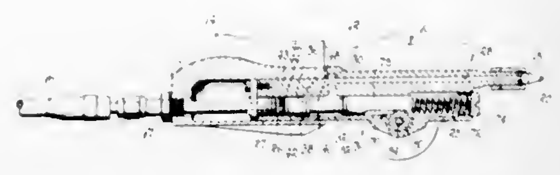


Polymerization catalysts in the form of dry powders are continuously fed to a fluidized bed reactor under essentially plug-flow conditions by a sequential repetition of the steps of dispensing under controlled conditions, a desired quantity of catalyst from a catalyst supply source to a chamber which is alternately communicable with such supply source and the reaction zone of the fluidized bed reactor, isolating the dispensed catalyst from the catalyst supply source, exposing the dispensed catalyst to the reaction zone of the fluidized bed reactor and rapidly injecting the catalyst into the reaction zone with a carrier gas.

3,790,037
METERING GUN FOR DISPENSING PRECISELY MEASURED CHARGES OF FLUID

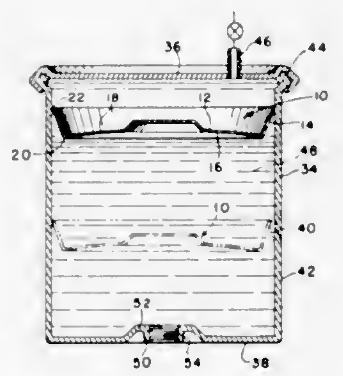
James C. Fletcher, Administrator of the National Aeronautics and Space Adiministration with respect to an invention of; Thomas A. Cook, 13681 Onkay Circle, Santa Ana, and Hans Scheibe, 13742 Claremont St., Westminister, both of Calif.
Filed June 28, 1972, Ser. No. 266,925
Int. Cl. G01f *11/02*
U.S. Cl. 222—324 **4 Claims**

A cyclically operable fluid dispenser particularly suited for use in dispensing precisely measured charges of potable water aboard spacecraft. The dispenser is characterized by a sealed housing adapted to be held within a crewman's palm and coupled with a pressurized source of potable water, a dispensing jet projected from the housing and configured to be received within a crewman's lips, an expansible measuring chamber for measuring charges of drinking water received from the source, and a dispenser actuator including a lever extended from the housing to be digitated for initiating operational cycles, whereby precisely measured charges of potable water selectively are delivered for drinking purposes in a weightless environment.



3,790,038
FOLLOW PLATE FOR DISPENSING MATERIAL

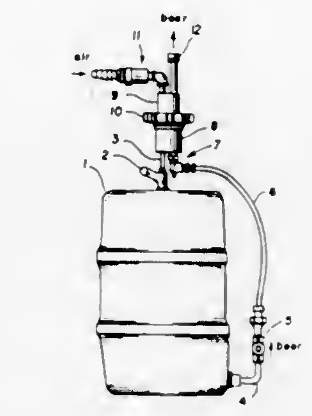
David E. Kifer, Parma, Ohio, assignor to Oatey, Co., Cleveland, Ohio
Filed Apr. 13, 1972, Ser. No. 243,616
Int. Cl. B67d *5/42*
U.S. Cl. 222—386 **3 Claims**



A follow plate particularly suitable for applying pressure on the flowable contents of a metal can or drum to force the material through an outlet opening which may be recessed within the lower end of the can to permit stacking of one can on top of another. The follow plate is made of a suitable flexible plastic material and preferably has a slightly conical face and a tapered flange about the periphery of the face including a free edge which engages the inner wall of the can. A hollow indentation may be provided in the face of the follow plate to receive the can outlet connection when the follow plate is against the lower end of the can. The conical shape of the face permits flexing of the face after engagement with the lower end of the can to force material disposed therebeneath toward the center and out through the outlet opening therein. The taper of the flange is desirably sufficient to permit the major diameter of the flange to ride over relatively large dents while avoiding contact between the dents and the minor flange diameter. Such relatively large taper of the flange also permits substantial tilting of the can and cocking of the follow plate without causing the follow plate to become wedged against movement within the can.

3,790,039
KEG TAPPING ASSEMBLY

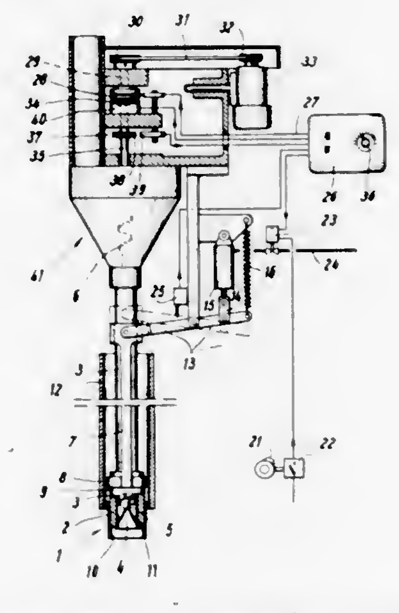
Homer R. Zucconi, 421 Speer St. N., Belle Vernon, Pa.
Continuation-in-part of Ser. No. 190,796, Oct. 20, 1971. This application Dec. 29, 1972, Ser. No. 319,454. The portion of the term of this patent subsequent to Feb. 27, 1990, has been disclaimed.
Int. Cl. B65d *83/00*
U.S. Cl. 222—394 **3 Claims**



A keg tapping assembly comprising a tavern unit having two prongs which are sleeve-like with tapered ends to unseat the two spring closed valves of a permanently attached keg unit detachably connected to the top central hole of a keg, upon insertion into the keg unit. The invention embodies an attachment having two bores through which said prongs are detachably fitted, each bore including a one-way valve. One bore is directly connected to a tap rod insertable in the top center opening,- and the other bore is connected to a valved outlet connection at the bottom of a keg. By simply unplugging the tavern unit from the keg unit and plugging it into said attachment it is selectively usable on either a conventional single connection tap or on the older double connection tap. A one-way valve is also provided in the air connection of the tavern unit.

3,790,040
WORM METERING DEVICE WITH SHUT-OFF MECHANISM

Siegmund Bahr, Stuttgart-Uhlbach, and Walter Saur, Korntal, both of Germany, assignors to Fr. Hesser Maschinenfabrik AG, Stuttgart, Germany
Filed Feb. 24, 1972, Ser. No. 228,900
Claims priority, application Germany, Feb. 25, 1971, P 21 08 911.2
Int. Cl. G01f *11/20*
U.S. Cl. 222—413 **8 Claims**



An apparatus and method for metering material, such as in container filling operations, which have closure means in the form of a first movable member, preferably of an annular configuration, operating in conjunction with second closure means in the form of a conically shaped closure element which the first closure means is adapted to abut in mating sealing engagement to prevent discharge of material.

ERRATUM

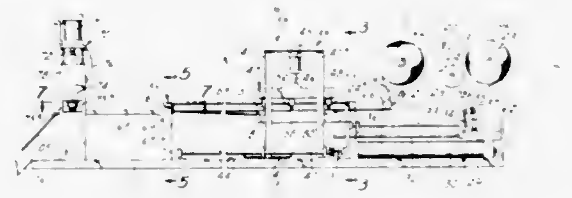
For Class 222—52 see:
Patent No. 3,790,042

ERRATUM

For Class 222—390 see:
Patent No. 3,790,048

3,790,041
APPARATUS FOR PRODUCING PREFABRICATED BOWS

Walter C. Pearson, St. Paul; Edward R. Quinn, Burnsville, and Dorman N. Thompson, North St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 320, Jan. 2, 1970, Pat. No. 3,637,455, and a continuation-in-part of Ser. No. 791,992, Jan. 17, 1969, abandoned. This application Apr. 15, 1971, Ser. No. 134,130
Int. Cl. A41h *43/00;* **D04d** *7/10*
U.S. Cl. 223—46 **4 Claims**

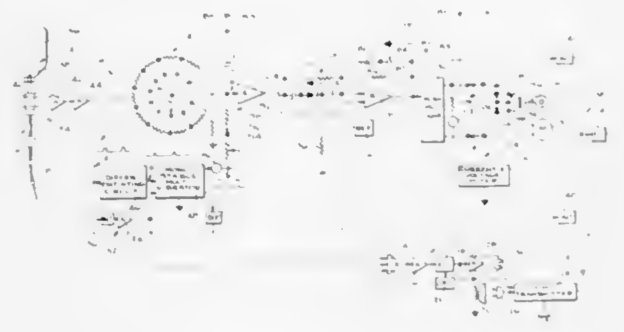


Apparatus for mechanically fabricating prefabricated bow forms from two strips of decorative ribbon material and including a drawstring partially bonded to the ribbon, said apparatus comprising a ribbon and drawstring supply, motor means, a ribbon bonding assembly for bonding said ribbon materials together at spaced points, a ribbon advancing means and a ribbon cut-off means. A simple method of forming decorative bows from the prefabricated bow forms is also disclosed, said method comprising accumulating the bonded areas of said prefabricated bow forms one upon another, simultaneously forming loops of ribbon on either side of said bonded areas, by means of the drawstring.

3,790,042
APPARATUS FOR REGULATING THE AMOUNT OF LIQUID ADMINISTERED PER UNIT TIME

James B. McCormick, Hinsdale, and Shunjiro Ohba, Chicago, both of Ill., assignors to Pelam Inc., Hinsdale, Ill.
Filed Sept. 15, 1970, Ser. No. 72,313
Int. Cl. B67d *5/08*
U.S. Cl. 222—52 **12 Claims**

A regulating apparatus for regulating the amount of liquid administered per unit time to a recipient by an administering apparatus. The administering apparatus includes a drip chamber connected by means of a delivery tube to a supply of drops of liquid and by a second delivery tube to a device for transferring the liquid to a recipient. The regulating apparatus comprises a first means which senses the drops of liquid passing through the drip chamber and which produces pulses representing the number of drops. The pulses produced by the sensing means are accumulated in a second means which produces a first signal related to the number of pulses received per unit time. The amplitude of the first signal is changed by a third means at a rate related to a preselected drip rate. A fourth means is provided for generating a reference signal which is compared in a fifth means to the changed amplitude of the first signal, the fifth means producing the third signal related to the difference between the signals. The third signal is fed to a sixth means which supplies the proper current to a bi-directional motor to drive the motor in one direction when the changed first signal is less than the reference signal and to



drive the motor in the opposite direction when the changed signal is greater than the reference signal. The bi-directional motor is connected to a valve or clamp which is disposed on the delivery tube so as to vary the amount of liquid flowing through the tube. Thus, if the drip rate becomes greater than the preselected rate, the valve is moved toward a closed position by the motor to reduce the drip rate, while if the drip rate is less than the preselected rate, the valve is moved toward the open position to increase the drip rate.

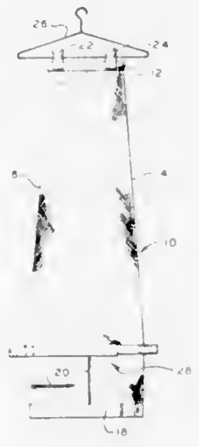
3,790,043
METHOD AND APPARATUS FOR REMOVING WRINKLES FROM SLACKS, OR THE LIKE

Elmer Ray Hagen, 230 W. Genesee St., Auburn, N.Y.

Filed May 19, 1972, Ser. No. 255,106

Int. Cl. D06c *15/00*

U.S. Cl. 223—61 **1 Claim**



Structure for attachment to slacks, or other such garments, tending to remove wrinkles and restore creases by exerting forces on the slacks both transverse and parallel to the creases. The transverse force is exerted by attaching the structure to the slacks at the front and rear at points aligned with the creases in the area between the waistband and crotch and maintaining a stretching force. The longitudinal force is provided by suspending the slacks freely from the cuffs with the structure attached, whereby the weight of the structure exerts a longitudinal force along the cuffs. The structure comprises a pair of telescoping rods with spring clips at the remote ends and detent means for maintaining the desired spacing of the clips to exert the transverse stretching force on the slacks.

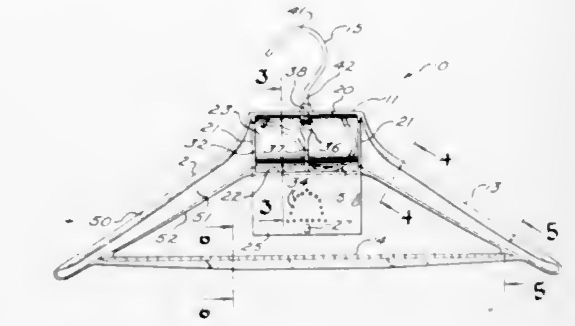
3,790,044
GARMENT HANGERS

Rocco Verdile, 4107 Ridgeview Rd., Cleveland, Ohio

Filed Sept. 28, 1972, Ser. No. 292,876

Int. Cl. A47j *51/10*

U.S. Cl. 223—86 **3 Claims**



Thereis disclosed herein a garment hanger having a compartment for moth crystals, deodorant tablets, and the like and hollow arms especially formed for efficiently dispersing the fumes into the garment. A crossbar of the hanger is provided with transversely projecting pegs for retaining a garment placed thereover.

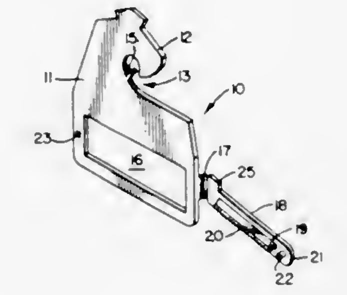
3,790,045
TIE HOLDER

Yehoshua Rigel, 21, Moshe Sharet St., Tel-Aviv, and Eduard Singer, 21, Deganim St., Ramat Gan, both of Israel

Filed Aug. 11, 1972, Ser. No. 279,804

Int. Cl. A47j *51/96*

U.S. Cl. 223—87 **6 Claims**



A tie holder comprising a body portion having hook means at the upper end thereof extending about a passage and an opening formed in the bottom end thereof, a movable tie support arm adapted to span said opening, a restraining strip protruding from said arm and adapted to project into said opening when said support arm is in its closed position spanning said opening, and means on said arm and said body adapted to engage to form a disengageable closure when said support arm is in its closed position.

3,790,046
COAT HANGER WITH COLLAPSIBLE HOOK

James L. Rooney, Erie, Pa., assignor to Niagara Plastics, Inc., Eria, Pa.

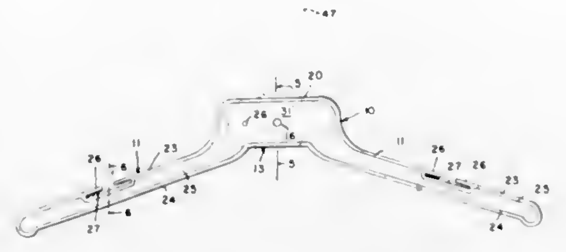
Filed Jan. 28, 1972, Ser. No. 221,510

Int. Cl. A47j *51/08*

U.S. Cl. 223—92 **1 Claim**

A coat hanger made of a hook and a body. The hook and body are both made of molded plastic material. The hook is swingably connected to the body by a pivot member and swingable from a collapsed position to a use position. The pivot member is integrally connected to the body and extends through a hole in the hook and a detent on the hook engages

the recess in the body when the hook is in use position. The pivot member has a head made up of spaced flangelike mem-



bers that overlie the part of the body and the pivot has a hole through it so that the head members can be deflected toward each other and spread after the hook is installed on the body.

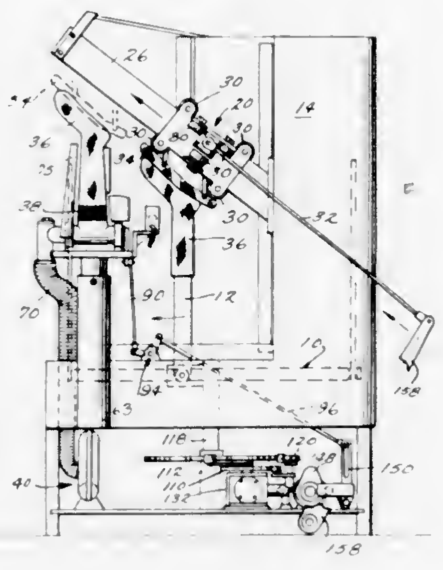
3,790,047
APPARATUS FOR TREATING AND TRANSFERRING ARTICLES OF HOSIERY, OR OTHER ARTICLES OF APPAREL, FROM BOARDING FORMS ONTO A COLLECTING SURFACE

J. T. Laxson, Paducah, Ky., assignor to Burlington Industries, Inc., Greensboro, N.C.

Continuation-in-part of Ser. No. 90,001, Nov. 16, 1970, abandoned. This application Oct. 6, 1971, Ser. No. 186,997

Int. Cl. A47j *51/06*

U.S. Cl. 223—112 **6 Claims**



Apparatus for treating and transferring articles of apparel includes a rotating support means which carries a plurality of boarding forms that are vertically disposed for carrying such articles into and out of a treating chamber. After treatment, the articles are removed from the boarding forms and received onto a foraminous surface of a transferring means for being subsequently stacked or collected on a flat surface. The transfer means operates on an air pressure differential principle, and mechanisms are provided for coordinating the treating, removing, and transferring of each article. During transfer of the article, there is an automatic cooling of the article by a flow of air created by the transferring means.

3,790,048
INCREMENTAL DOSE DISPENSER

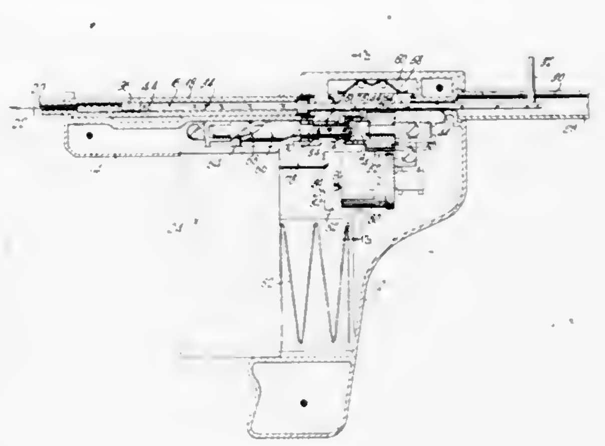
Robert A. Luciano, Warren; Chester M. Zmijewski, Martinsville, and Gustav V. Borden, Warren, all of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed July 28, 1972, Ser. No. 276,196

Int. Cl. A61m *5/22*

U.S. Cl. 222—390 **6 Claims**

A dispenser is provided for use in conjunction with syringes and is capable of accurate, rapid dispensing of small incremental doses and rapid and convenient refilling of the syringe. The dispenser comprises an elongated plunger for engaging and advancing the piston of the syringe to expell liquid doses therefrom. The plunger is threaded along at least a portion of its longitudinal, peripheral surface. A drive wheel is provided for advancing the plunger; the drive wheel having its



peripheral surface divided into alternate threaded sections and longitudinal separating grooves. The threaded sections engage the threaded portions of the plunger advancing the same to rapidly dispense the incremental doses. The longitudinal grooves provide a clearance between the plunger and drive wheel thereby leaving the plunger disengaged for rapid refilling of the syringe.

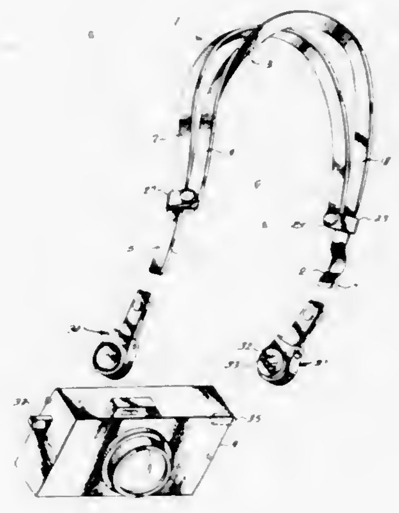
3,790,049
ADJUSTABLE CARRYING STRAP

August Bohanec, 44 N. Mentor Ave., Pasadena, Calif.

Filed May 8, 1972, Ser. No. 250,971

Int. Cl. A45c *11/38*

U.S. Cl. 224—45 P **5 Claims**



A pair of straps are arranged to form a carrying handle having relatively narrow opposite ends for connection to an article such as a camera. Each strap has a portion frictionally embraced by a loop secured to the other so as to space the straps apart in substantially edge-to-edge relationship so that the handle has a relatively wide intermediate portion. Each strap is slidable through the loop embracing it for adjusting the length of the handle.

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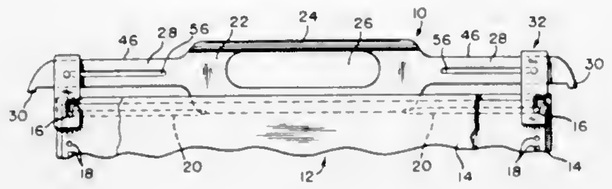
some of the radiation from a thermal source so that a tempera- under tension, wherein the web is passed over a support

3,790,050
ADJUSTABLE BINDER HANDLE

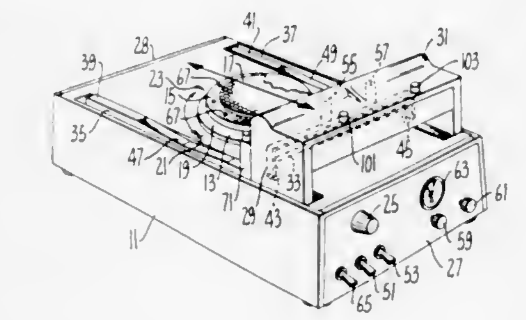
John L. Sullivan, New York, N.Y., assignor to The Mead Corporation, Dayton, Ohio
Filed June 8, 1972, Ser. No. 260,968
Int. Cl. B42f *15/00*
U.S. Cl. 224—45 P **2 Claims**



A carrier adapted to be attached to a binder, such as a computer print out binder, wherein the binder post engaging hooks are slidably mounted for movement towards and away from each other to accommodate binders having different binder post spacings.

3,790,051
SEMICONDUCTOR WAFER FRACTURING TECHNIQUE EMPLOYING A PRESSURE CONTROLLED ROLLER

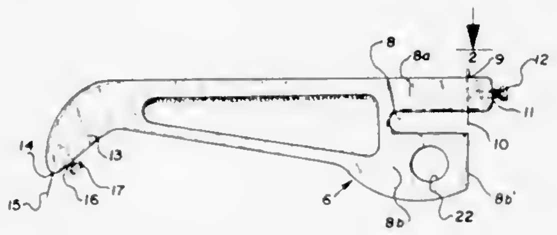
Arthur H. Moore, Fillmore, Calif., assignor to Radiant Energy Systems, Inc., Newbury Park, Calif.
Filed Sept. 7, 1971, Ser. No. 178,275
Int. Cl. B26f *3/00*
U.S. Cl. 225—1 **15 Claims**



A technique for fracturing a scribed wafer into its individual electronic circuit dice wherein a roller is passed over the wafer two times in paths that are 90° to one another, the force of the roll during the second pass being less than the force of the roll during the first pass over the wafer. A vacuum-driven apparatus is disclosed for moving a roller over a scribed wafer and maintaining an optimum force of the roll against the wafer in order to reduce the number of dice having chipped edges.

3,790,052
CUTTING TOOL

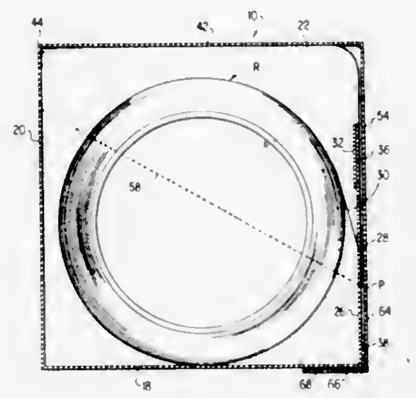
Louis Robert Toll, 930 N.W. 27th Ave., Miami, Fla.
Filed Feb. 8, 1972, Ser. No. 224,430
Int. Cl. B26b *3/08;* **B26f** *3/00*
U.S. Cl. 225—2 **6 Claims**



A plastic-cutter tool for cutting mica, the invention being both a cutting tool and the process of use thereof, the cutting tool having a butt jaw end with a slot thereabove and a downwardly held cutting needle, the process including the placing of the butt jaw-end of the tool against the table edge, scoring the mica by lateral movement to and fro several times, then snapping downwardly by applying pressure to the scribed strip-edge in order to snap off the scored edge. An opposite end of the cutting tool includes a downwardly extending projection angled slightly rearwardly having mounted therein extending coaxially with the downwardly extending projection a cutting needle utilizable for cutting mica, cutting plastic, or cutting irregular cuts and holes, the use for cutting mica being by use of a straight edge, scoring the back side of the mica several times and pressing downwardly with the thumb at the cuts with the other hand snapping the mica upwardly, while when cutting plastic the same procedure is followed except snapping downwardly, while using a pattern or a hole tablet to produce irregular cuts and/or holes by scoring several times then pushing from the face to the back of the scored material.

3,790,053
DISPENSING CONTAINER FOR ROLLED SHEET MATERIAL

Antoinette Schiano, and Rosemary Schiano, both of 261 76th St., Brooklyn, N.Y.
Filed Dec. 30, 1971, Ser. No. 214,180
Int. Cl. B26f *3/02*
U.S. Cl. 225—48 **5 Claims**

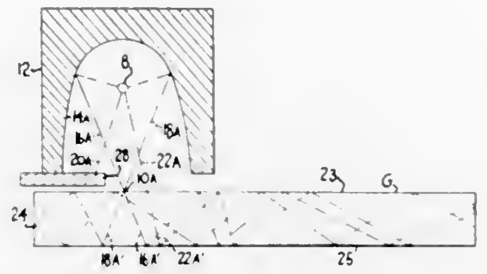


A dispensing container for rolled sheet material includes a receptacle portion having a front wall and an open top, the front wall being provided with a transverse slot therein through which the free end of the roll of sheet material is issued and, along the bottom edge of the front wall, there is a cutting edge device for severing the sheet material. A cover assembly is provided which includes a front cover wall portion which partially covers the front wall of the receptacle portion and overlies the slot to sandwich the free end portion of the sheet material between it and the front wall of the receptacle portion and, prior to use, the cover assembly is provided with a sealing and protecting extension joined to the front cover wall portion of the cover assembly along a line of perforations and which extends downwardly and below the cutting edge member and is adhesively secured to the underside of the package. The front wall member of the receptacle portion is provided with a reinforced upper free edge portion immediately above the slot.

3,790,054
DIRECTIONAL CONTROL FOR THERMAL SEVERING OF GLASS

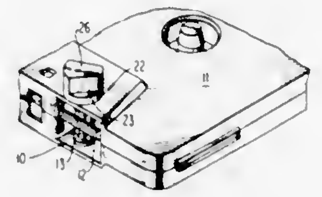
John R. Dahlberg, Jeannette; James L. Oravitz, Jr., Cheswick, and Edmund R. Michalik, West Mifflin, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Division of Ser. No. 72,353, Sept. 15, 1970, Pat. No. 3,709,414. This application June 21, 1972, Ser. No. 265,081
Int. Cl. B26f *3/00*
U.S. Cl. 225—93.5 **6 Claims**

This invention relates to non-contact thermal severing of glass and includes methods and apparatus for altering at least some of the radiation from a thermal source so that a temperature profile that would ordinarily otherwise tend to be asymmetrical becomes symmetrical about an intended path of cut. The problem of asymmetrical temperature profiles occurs, for example, in non-bisecting cuts. The cut is completed either by continuing with the application of radiant heat until a tensile stress of about 1,000 pounds per square inch is generated within the glass, or by applying a bending moment about the thermal score.



3,790,055
MOTION CONTROL DEVICE

John C. Sims, Jr., Sudbury, Mass., assignor to New England Research Associates, Inc., Bedford, Mass.
Filed Jan. 11, 1973, Ser. No. 322,808
Int. Cl. B65h *17/44*
U.S. Cl. 226—174 **5 Claims**

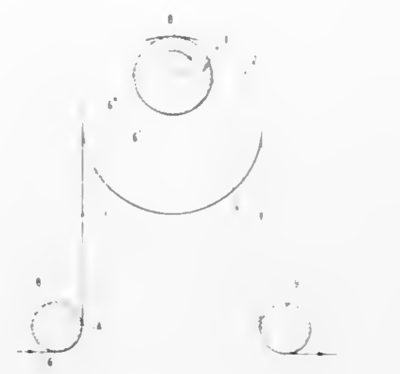


A clutch or motion control device for quickly controlling with great accuracy the motion of the tape in a cassette when inserted in a cassette player-recorder unit. The device is a hollow, elongated member mounted for rotation about its longitudinal axis in the cassette adjacent the tape such that the driving capstan of the cassette player-recorder unit is retained within the cavity of the hollow member. A portion of the sidewall of the hollow member is cut away to expose the cavity and bring the tape into contact with the driving capstan when the hollow member is in one rotative position. In a second rotative position, the boundry of the unremoved sidewall portion of the hollow member separates the tape from the rotating capstan.

3,790,056
METHOD AND APPARATUS FOR EQUALIZING LONGITUDINAL VARIATIONS IN THE RUNNING OF A WEB UNDER TENSION

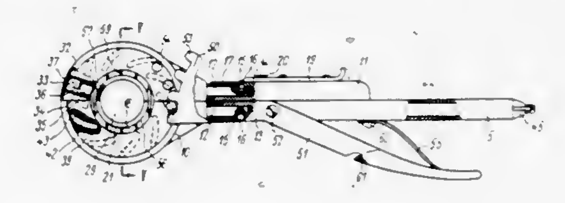
Willi J. Schmidt, Hahn/Taunus; Wolfgang Kornelli, and Eberhard Werner, both of Wiesbaden-Biebrich, all of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany
Continuation-in-part of Ser. No. 825,658, May 19, 1969, abandoned. This application Oct. 22, 1970, Ser. No. 83,218
Claims priority, application Germany, May 21, 1968, 1774310
Int. Cl. B65h *23/00*
U.S. Cl. 226—195 **5 Claims**

This invention relates to a method and apparatus for equalizing longitudinal variations in the running of a web under tension, wherein the web is passed over a support therefor which is at least partially oscillatable in accordance with the longitudinal variations of the web and the oscillatable portions of which are of such low inertia that they oscillate in phase with the oscillating web, and the non-oscillating portions of the web are supported.



3,790,057
SURGICAL INSTRUMENT FOR SUTURING BLOOD VESSELS WITH U-SHAPED STAPLES

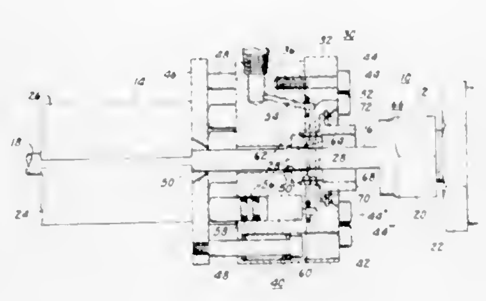
Mikhail Mikhailovich Razgulov, ulitsa Trudovaya, 1-a, kv. 18, Elektrostal Moscovskoi Oblasti; Georgy Vasilievich Astafiev, Rizhsky proezd, 7, kv. 108, and Ivan Alexandrovich Korolkov, Polyarnaya ulitsa, 52, korpus 2, kv. 174, both of Moscow, all of U.S.S.R.
Filed Jan. 28, 1972, Ser. No. 221,656
Int. Cl. A61b *17/12*
U.S. Cl. 227—19 **4 Claims**



A surgical instrument for suturing blood vessels with U-shaped staples, has two supporting semibushes whose cylindrical surface has depressions for staples to be deformed, and two staple semibushes that embrace the supporting semibushes from outside so that an annular gap is left therebetween to accommodate the walls of the blood vessel being sutured. The staple semibushes are provided with radial slots, wherein staple-magazines are movably mounted; the magazines have staple recesses and staple ejectors located inside said magazines. The instrument is provided with mechanical actuators to impart radial motion to the magazines and staple ejectors. The end of a blood vessel is everted as a cuff on the assembled supporting semibushes and on the blood-vessel end so everted, the other end of the blood-vessel to be sutured on is disposed in overlapping relation, whereupon the staple semibushes are assembled embracing the overlapping region of the blood-vessel ends. Suturing is performed in a single motion by causing U-shaped staples to eject from the staple magazines. The ejected staples penetrate the overlapping walls of the blood-vessel and get deformed by impinging against the depressions on the supporting semibushes. Suturing performed, the semibushes are disassembled and the surgical instrument withdrawn.

3,790,058
APPARATUS FOR SHEARING WELD FLASH

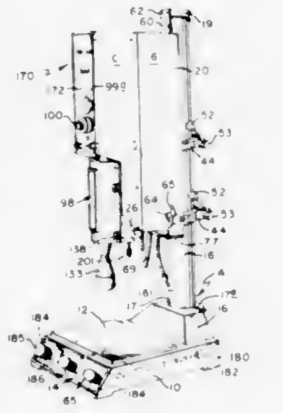
Robert L. Filkorn, New Philadelphia, Ohio, assignor to General Electric Company, Schenectady, N.Y.
Filed May 12, 1972, Ser. No. 252,638
Int. Cl. B23k *27/00*
U.S. Cl. 228—2 **5 Claims**



The present invention deals with a process and apparatus for removing the weld flash from two workpieces that have been butt-welded together. More particularly, the weld flash is removed with a shearing action that is commenced before the weld has cooled sufficiently to introduce any further hardening of the workpieces. A particular shearing mechanism is employed which pre-positions the shearing tool adjacent to the weld location to facilitate the desired objective. A concentric shearing tool is also employed in the flash removal mechanism to remove all the flash in a single action.

3,790,059
ULTRASONIC APPARATUS

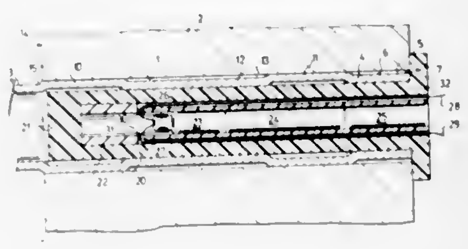
Stanley E. Jacke, Ridgefield, and John Jugler, Danbury, both of Conn., assignors to Branson Instruments, Incorporated, Stamford, Conn.
Continuation of Ser. No. 140,700, May 6, 1971, abandoned. This application Feb. 14, 1973, Ser. No. 332,356
Int. Cl. B23k *1/06*
U.S. Cl. 228—1 **14 Claims**



An ultrasonic apparatus for welding or assembling thermoplastic parts is constructed in modular fashion. The apparatus comprises a base having platform adapted to receive a workpiece, a vertical post extending from the base, a first enclosure means containing a power supply, and a second enclosure means containing motive means for an electro-acoustic converter. Both enclosure means, in modular fashion, are connected to each other and supported from the post at an adjustable height from the platform. The base is provided with pushbutton means. The construction shown eliminates the separate power supply and interconnecting cabling. Also, the converter is mounted for quick electrical disconnect and mechanical displacement.

3,790,060
APPARATUS FOR MOUNTING A PIPE IN A PERFORATED PLATE

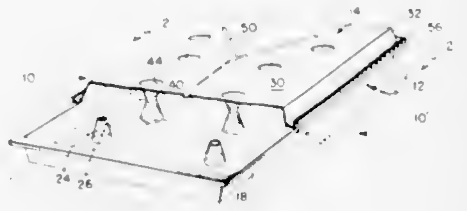
Rene T. Feiss, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland
Division of Ser. No. 69,703, Sept. 4, 1970, Pat. No. 3,698,067. This application June 23, 1972, Ser. No. 265,606
Claims priority, application Switzerland, Sept. 23, 1969, 14236/69
Int. Cl. B23k *21/00*
U.S. Cl. 228—3 **11 Claims**



The pipe is fitted with at least a pair of explosive members, one of which serves to weld the pipe to the perforated plate while the other serves to expand the pipe into bearing contact with the plate. The detonation of the two members takes place in the same operation. A third explosive member can also be fitted in the pipe for welding the pipe to an opposite side of the plate.

3,790,061
REUSABLE CONTAINER

James M. Pignato, 5819 N. Artesian, Chicago, Ill.
Filed Apr. 16, 1971, Ser. No. 134,666
Int. Cl. B65d *1/00, 85/00*
U.S. Cl. 229—2.5 **3 Claims**

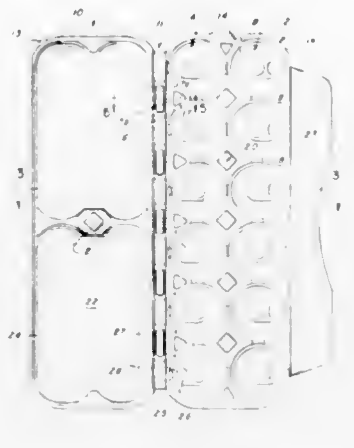


A reusable open tray-like container, preferably plastic, for use with one or more similar containers to provide a lower and an upper portion forming a relatively large volume closed container providing a substantially sealed space for shipment of commestibles, all of said tray containers being nestable for compact storage. Each of said tray containers further including centrally located support means which also serve as locating means for preventing lateral movement between two opposed tray portions or containers. Additionally each tray container includes lateral seal means for sealing two mating positions forming the entire closed container.

3,790,062
CARTON CONSTRUCTION

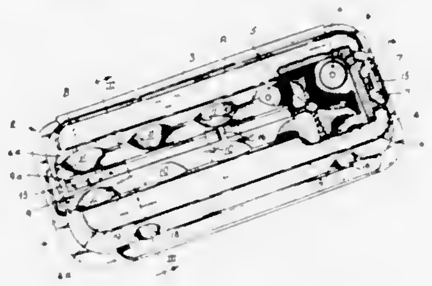
James W. Boyd, Crown Point, Ind., assignor to Packaging Corporation of America, Evanston, Ill.
Filed Sept. 27, 1971, Ser. No. 183,938
Int. Cl. B65d *85/32*
U.S. Cl. 229—2.5 **7 Claims**

A carton is provided wherein the cover thereof is connected to the tray by an elongated hinge panel. One elongated edge of the panel is connected to the tray and forms a first hinge-line and the opposite elongated edge of the panel is connected to the cover and forms a second hinge-line. The first hinge-line has greater flexibility than the second hinge-line. Complemental means are formed on said tray and hinge panel whereby, upon closing of the carton, the cover and hinge panel initially move as a unit about the first hinge-line as an axis through a predetermined arc and then the cover moves relative to the hinge panel about the second hinge-line as an axis through a further predetermined arc into an overlying closed position with respect to the tray.



3,790,063
CARTON FOR FRAGILE OBJECTS

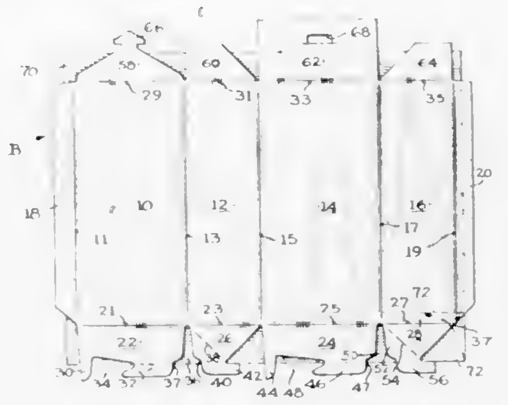
Bent Moller, Lyngby, Denmark, assignor to Aktieselskabet Brodrene Hartmann, Lyngby, Denmark
Filed Nov. 2, 1972, Ser. No. 303,200
Claims priority, application Denmark, Nov. 17, 1971, 5650/71
Int. Cl. B65d *85/32*
U.S. Cl. 229—29 M **5 Claims**



An article-revealing carton for fragile objects, particularly eggs, consisting of a container section and a cover section hinged thereto, said container section having a plurality of article-receiving compartments arranged in at least two parallel rows and upwardly extending projections located between said rows of compartments, said cover section having at least two upwardly projecting gable portions extending parallel with the rows of compartments and between two neighbouring gable portions a recessed roof portion interconnecting the lowermost edges of opposed sides of the neighbouring gable portions and moreover there is provided a number of apertures corresponding to the compartments in the container section, said apertures being formed in the recessed roof portion and in the sides of the gable portions adjoining thereto and being arranged so as to coincide with the respective compartments in the container section when the carton is closed, and wherein the recessed roof portion has a downwardly projecting rib extending in the longitudinal direction of the roof portion and being shaped as a groove with at least one denesting projection provided therein, the rib and the projections of the container section being so formed and arranged relative to each other that the rib rests on the top of the projections when the carton is closed.

3,790,064
SIMULATED PREWRAP CARTON AND AUTOMATIC LOCK BOTTOM ARRANGEMENT

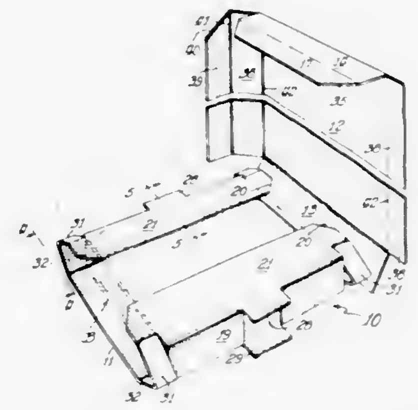
Robert G. Kramer, Cincinnati, Ohio, assignor to Diamond International Corporation, New York, N.Y.
Filed Jan. 12, 1972, Ser. No. 217,100
Int. Cl. B65d *5/10*
U.S. Cl. 229—39 R 7 Claims



A carton member erectable from a collapsed condition comprising a bottom construction which automatically unfolds itself and locks the carton in erected condition on application of force to opposite folded edges thereof and a blank for assembly of such a carton member. The carton is provided with outer wrapping material adhered to the outer surfaces of the blank to afford a simulated gift wrapped package when the carton member is in erected condition.

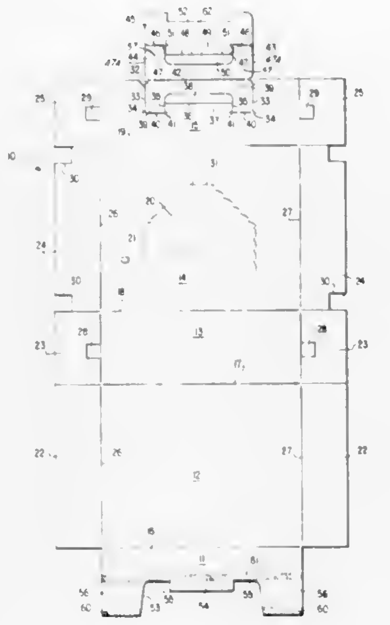
3,790,065
CUSHIONED FOLDER

John L. Carpenter, Anderson, Ind., assignor to Container Corporation of America, Chicago, Ill.
Filed Jan. 17, 1972, Ser. No. 218,066
Int. Cl. B65d *5/06*
U.S. Cl. 229—40 3 Claims



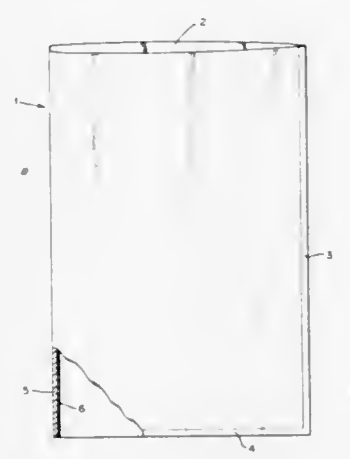
A cushioned folder for a flat article such as a book or the like is provided with protecting cells on the four boundaries thereof. The folder is formed from a cut and scored blank of paperboard or the like to provide foldably interconnected major and minor walls connected as a tubular sleeve. A cavity is defined in the folder for a flat article and consists of first and second flaps connected to opposite sides of one of the major walls, the flaps being foldable into position to embrace opposite sides of the flat article. The first and second flaps partly define cells for protecting opposite ends and sides of the article, one of the major walls and one of the flaps defining extensions upon folding of the flaps to position, these extensions being embraced by closure flaps which are folded to define a pair of opposing protecting cells. The first and second flaps and one of said major walls are slit to provide tab elements cooperating with the minor walls for defining protecting cells for the ends of the article.

3,790,066
FOLDING CARTON AND BLANK THEREFOR
Edward Stephen Malinowski, Yorkville, Ill., assignor to Georgia-Pacific Corporation, Portland, Oreg.
Filed Mar. 27, 1972, Ser. No. 238,556
Int. Cl. B65d *5/46*
U.S. Cl. 229—52 B 14 Claims



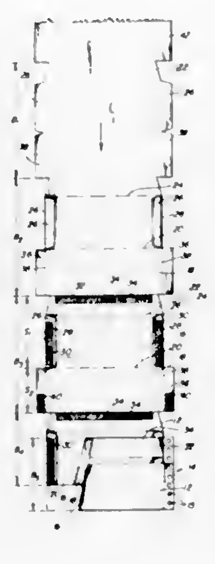
A carton blank and a carton formed therefrom, said carton having a bottom wall, a pair of opposed side wall panels and a pair of top wall panels. A folding double handle having a U-shaped opening therein extends from one of said top wall panels. The other top wall panel overlaps and is secured to said one top panel and is provided with a recess for receiving the handle. A tongue extending from the base of the recess overlaps tongues extending from each side of the base of the handle. The end of a handle element in one carton blank nests within the recess in the top panel of another blank to conserve material when forming a plurality of blanks from a paperboard sheet.

3,790,067
CONTAINER
Stanley C. Scheier, 21 Maple Leaf Ln., Doylestown, Pa.
Filed Dec. 4, 1970, Ser. No. 95,140
Int. Cl. B65d *33/00*
U.S. Cl. 229—55 6 Claims



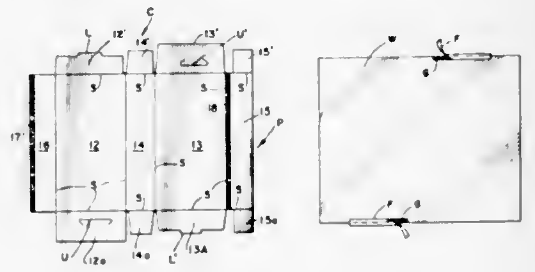
A container having an inner layer of water-insoluble polymeric material and an outer layer of a water soluble polymeric material. The outer layer comprises the load-bearing member and the inner layer is sufficiently thin to be shredded under normal atmospheric forces or by the weight of material in the container.

3,790,068
CONTINUOUS FORM ENVELOPE ASSEMBLY
William Stutz, Springfield, Mass., assignor to United States Envelope Company, Springfield, Mass.
Filed May 20, 1971, Ser. No. 145,412
Int. Cl. B65d *27/10*
U.S. Cl. 229—69 17 Claims



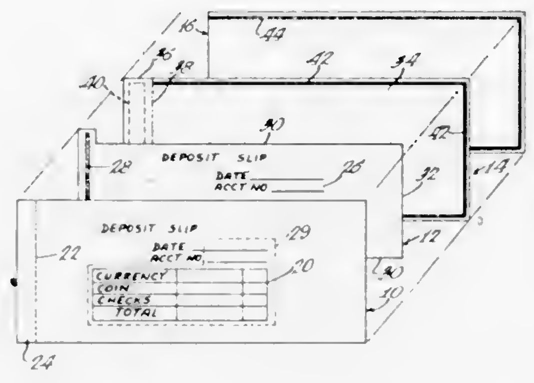
A continuous form envelope assembly made by cutting, folding and joining associated portions of a single web of sheet material and comprising a longitudinal series of connected envelopes arranged in shingled or overlapping relation and further connected together by a pair of longitudinally extending marginal carrier strips. Each envelope in the series has a sufficient portion of the front panel thereof exposed to permit a name and address to be printed thereon when the assembly is fed through a computer-printer or the like. Lines of weakening on the assembly permit separation of the envelopes from the carrier strips and from each other.

3,790,069
UNIQUE PREWRAPPED BOX STRUCTURE AND UNIQUE METHOD OF MAKING SAME
Armand E. Straccamore, 216 Summer St., Buffalo, N.Y.
Filed May 17, 1972, Ser. No. 254,311
Int. Cl. B65d *65/14*
U.S. Cl. 229—87 R 7 Claims



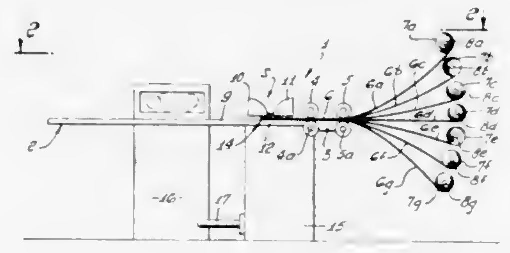
The prewrapped box includes a separate ornamental wrapper permanently affixed externally thereon. The method is directed to the permanent fixing of the separate ornamental wrapper on the box blank; the collapsed box with wrapper thereon; said ornamental wrapper being on the box as sold and used.

3,790,070
COMBINATION RECORD AND ENVELOPE ASSEMBLY WITH SEVERABLE RECEIPT
David H. Schnitzer, Arlington Heights, and Howard K. Absler, Skokie, both of Ill., assignors to Uarco Incorporated, Barrington, Ill.
Filed July 17, 1972, Ser. No. 272,361
Int. Cl. B65d *27/00*
U.S. Cl. 229—92.8 5 Claims



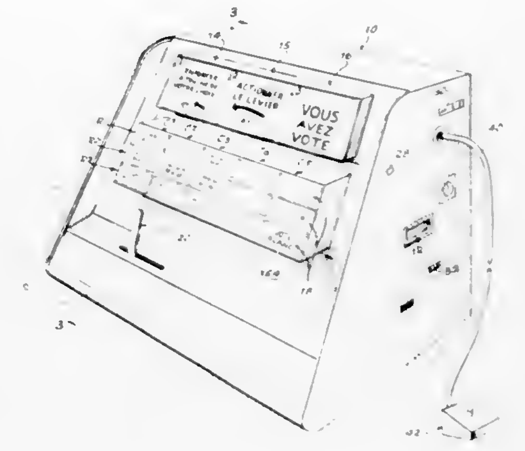
A combination record, envelope and severable receipt structure defined by four sheets of paper or the like and for use in operations such as banking operations wherein a deposit or the like may be inserted in and sealed within the envelope with the record sheet remaining with the envelope to record the deposit and the receipt sheet being severed from the structure to be retained by the depositor. Two separate sheets, one longer than the other, define an envelope, the longer sheet including an envelope flap with adhesive means thereon for sealing against the shorter sheet. Secured to one side of such envelope structure is an indicia bearing record sheet having a line of perforation adjacent one marginal edge. A receipt sheet, having indicia on one side thereof is secured to the rear side of the record sheet and has marginal edges recessed from corresponding marginal edges of the record sheet. The latter is also secured to the envelope structure in such a way that the marginal edges of the receipt sheet are free from the resulting configuration so that, by breaking the structure along the line of perforation, the receipt sheet may be severed therefrom for retention by the person using the structure.

3,790,071
FABRIC CUTTER AND METHOD
Estephan Der Estephanian, 2452 Boulder Rd., Altadena, Calif.
Filed Jan. 20, 1972, Ser. No. 219,317
Int. Cl. B26d *3/00*; A41h *43/00*
U.S. Cl. 234—1 20 Claims



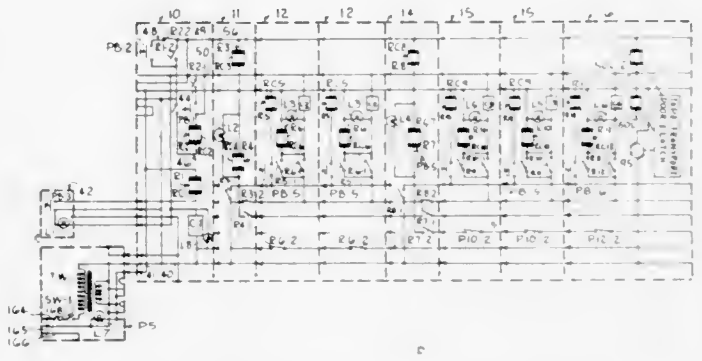
Fabric cutting by means of multiple individually and independently actuable cutting blades selectively operable to sequentially effect pinking cuts in successive increments of fabric, to progressively cut a piece therefrom according to a predetermined pattern.

3,790,072
VOTING MACHINE
Michael Terrance Moldovan, Jr., Lakewood, N.Y., assignor to AVM Corporation, Jamestown, N.Y.
Filed June 28, 1971, Ser. No. 157,366
Int. Cl. G07c *13/00*
U.S. Cl. 235—54 R 1 Claim



An improved mechanical voting machine embodying means facilitating the making of a single selection from a plurality of available ballot choices; such choices being presented as indicia carried on the faces of a plurality of voter operated push button selectors. The machine features an election official operated "entrance" control; means for preventing the voter from causing the machine to record more than one vote, while requiring that such vote be cast before he leaves the machine; and means for printing the election results on required numbers of print out sheets.

3,790,073
VOTING MACHINE
Roy A. Martin, and Clarence E. Pittman, both of Atlanta, Ga., assignors to Lectra Data, Inc., Atlanta, Ga.
Division of Ser. No. 755,688, Aug. 27, 1968, abandoned. This application Apr. 28, 1972, Ser. No. 248,657
Int. Cl. G07c *13/00*
U.S. Cl. 235—54 F 5 Claims



Apparatus for selectively producing electrical pulses representative of a particular selection made by the operator of the apparatus. The apparatus is disclosed in the form of a voting machine built up of modular components which fit together to form any of a plurality of different voting arrangements. The voting machine is substantially tamper-proof and has the following basic components: an input module, a frame assembly, a first control module, a first vote module, a second control module, a second vote module, a terminal module, a write-in module, a slave input module, and a third control module. The modules may be placed together in selected fashion to define a voting machine for voting in any type of political race and which will prevent overvoting. The different modules fit together in such manner that they cannot be

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3,790,076

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apparatus comprises a bottom plate which extends in the lon-

3,790,080

separated without a key to unlock the same, thereby reducing the possibility of tampering with the election results. Moreover, each module is constructed in such manner that the module may be checked prior to assembly of the voting machine to insure proper functioning of the module once it is assembled.

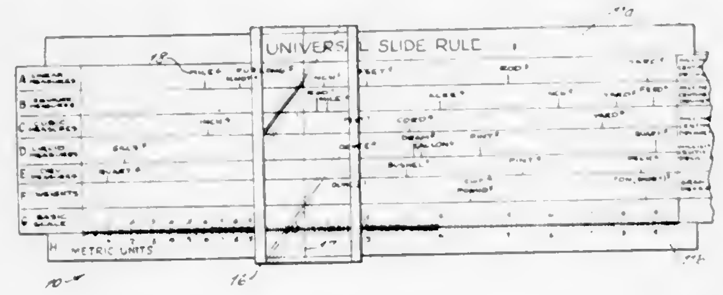
3,790,074

UNIVERSAL UNIT-CONVERTING SLIDE RULE

Rudolph Zemanek, and Elena Zemanek, both of Box 297, South International Falls, Minn.

Filed Apr. 12, 1973, Ser. No. 350,314
Int. Cl. G06c *3/00*

U.S. Cl. 235—89 R **2 Claims**



This is a slide rule for quickly converting from one unit of measure to another and includes scale indicia for accurately and quickly determining the position of the decimal point in the computed answer.

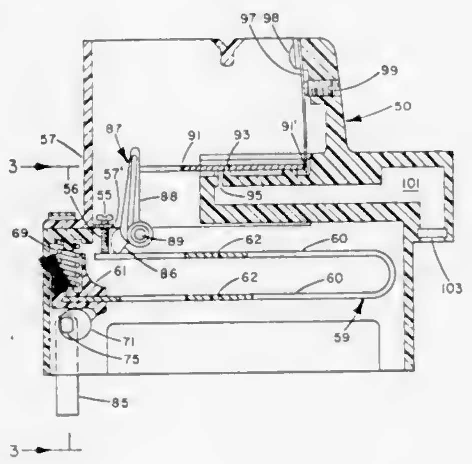
3,790,075

THERMOSTAT ASSEMBLY

Ernest Rifkin, Dewitt, N.Y., and Richard C. Dreibelbis, Fair Lawn, N.J., assignors to Carrier Corporation, Syracuse, N.Y.

Filed July 12, 1972, Ser. No. 270,914
Int. Cl. F24f *3/06*

U.S. Cl. 236—49 **5 Claims**



A ceiling air terminal serving as part of an air conditioning system for a building and adapted to discharge conditioned air into an area to be treated. The terminal is provided with a bleed-type thermostat employing a bimetallic element movable in response to temperature variations in the air passing over the element from the area served by the ceiling terminal. The bimetallic element is adjustably supported for movement relative to the housing of the thermostat. The adjustable support includes a calibration member formed of a thermoplastic material. The calibration member journals a control rod. The position of the control rod is selectively varied to regulate the operation of the terminal to obtain a desired temperature in the area. A resilient spring member cooperates with the calibration member so the member is maintained in intimate contact with the control rod, thereby preventing the rod from self rotating.

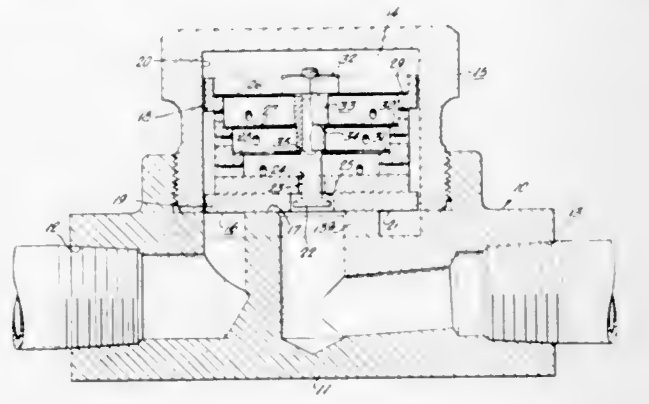
3,790,076

PILOT-OPERATED STEAM TRAPS

Alejandro Wichtel, Wyncote, Pa., assignor to Yarway Corporation, Blue Bell, Pa.

Continuation of Ser. No. 200,810, Nov. 22, 1971, abandoned. This application Apr. 27, 1973, Ser. No. 355,274
Int. Cl. F16t *1/08*

U.S. Cl. 236—54 **6 Claims**



A pilot-operated steam trap is provided with a series of bimetallic elements which operate sequentially to control the opening and closing of the pilot valve of a pilot-operated steam trap. Each separate series of the bimetallic elements have their outer edges on separate shoulders within the valve member and have central openings through which the stem of the pilot valve passes. Separate shoulders are provided on the stem of the pilot valve, each adapted to be engaged by one of the series of bimetallic elements to prevent transmission of the force of one bimetallic element to the next adjacent bimetallic element.

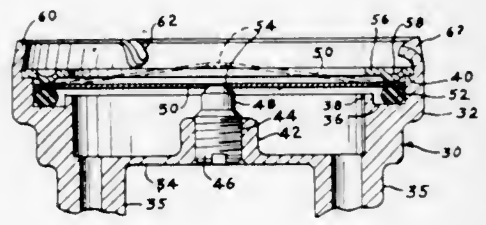
3,790,077

TEMPERATURE-SENSITIVE BLEED VALVE

Thomas William Wisyanski, Bristol, and Richard Alfred Northrop, Jr., Cheshire, both of Conn., assignors to Scovill Manufacturing Company, Waterbury, Conn.

Filed Mar. 12, 1973, Ser. No. 340,596
Int. Cl. G05d *23/08*

U.S. Cl. 236—101 **5 Claims**



Temperature-sensitive bleed valve has bimetallic disc mounted between O-ring and retainer ring to accommodate variations in casting of valve housing and to hold firmly despite vibrations. The valve operates effectively irrespective of its mounting position.

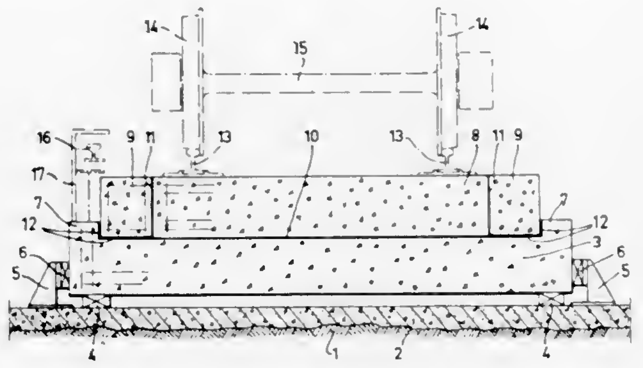
3,790,078

VIBRATOR DAMPING OF VEHICLE PATH

Bo Malte S. Egerbork, Ekero; Goran R. Gadefelt; Gunnar Ingemar Hagbjer, both of Stockholm, and Kjett Knut I. Spang, Vallingby, all of Sweden, assignors to Akustikbyran Ab, Stockholm, Sweden

Filed May 25, 1971, Ser. No. 146,777
Claims priority, application Sweden, May 28, 1970, 7356/70
Int. Cl. E01b *1/00*

U.S. Cl. 238—2 **5 Claims**



Track supporting apparatus for vehicles to dampen vibrations arising as a result of vehicle movement on the track. The apparatus comprises a bottom plate which extends in the longitudinal direction of the track and which is supported by an elastic support means. At least one upper plate is disposed on the bottom plate, with a damping layer interposed between the bottom plate and the upper plate. A further means is provided for inhibiting relative lateral movement between the bottom plate and the upper plate. The damping layer may comprise a layer of viscoelastic material which is very thin relative to the thickness of the plates.

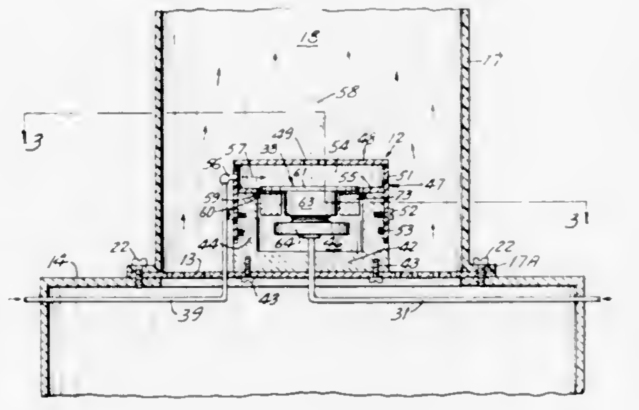
3,790,079

METHOD AND APPARATUS FOR GENERATING MONODISPERSE AEROSOL

Richard N. Berglund, St. Paul, and Benjamin Y. H. Liu, Minneapolis, both of Minn., assignors to RNB Associates, Inc., Minneapolis, Minn.

Filed June 5, 1972, Ser. No. 259,374
Int. Cl. B05b *5/00, 7/00, 17/06*

U.S. Cl. 239—3 **38 Claims**



A vibrating orifice monodisperse aerosol generator usable as a basic aerosol standard having a liquid feed system, a droplet generator, a droplet dispersion system and an aerosol flow system. The liquid feed system is a syringe pump operable to feed liquid into the droplet generator. The liquid is discharged from the droplet generator through a small orifice as a liquid jet. The jet disturbed at a constant frequency with an oscillating piezoelectric ceramic breaks up into uniform droplets. The droplets are dispersed by a turbulent air jet and diluted into a monodispersed aerosol.

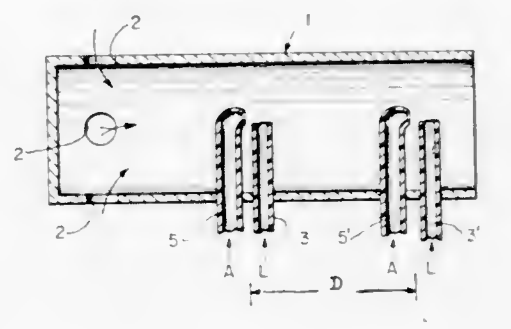
3,790,080

METHOD OF SPRAYING

Robert S. Babington, 1113 Ingleside Ave., McLean, Va.

Filed May 22, 1972, Ser. No. 255,686
Int. Cl. B05b *7/00*

U.S. Cl. 239—8 **5 Claims**



Improved performance of known techniques of spraying liquids to form extremely dense liquid sprays or aerosols can be obtained by pre-saturation of the carrier gas at a given location before final introduction of the product to be aerosolized into the spraying system.

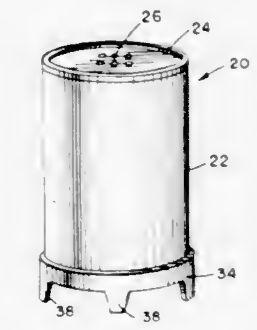
3,790,081

VAPOR DISPENSING DEVICE

James C. Thornton, and Donald E. Whyte, both of Racine, Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Filed June 26, 1972, Ser. No. 266,163
Int. Cl. A61l *9/04*

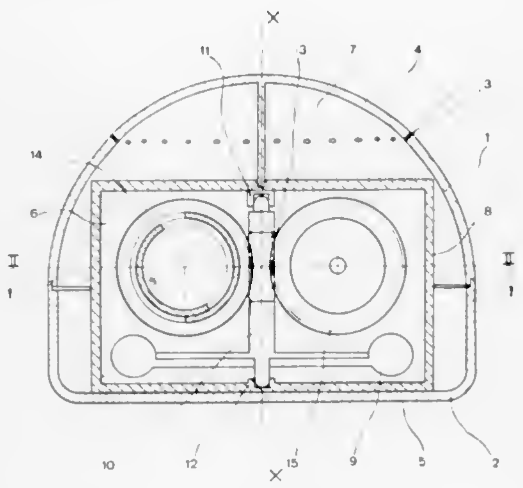
U.S. Cl. 239—55 **27 Claims**



A device for dispensing a vaporizing composition to the surrounding atmosphere characterized by a hollow tubular body with end members sealing the open ends and apertures through the end members, a porous core member impregnated with a vaporizing composition, having a multiplicity of passages defined through the core member communicating between the end members and having end surfaces displaced from the end members, and a mounting means to maintain the device in a position such that there is free access of the atmosphere through the apertures of both ends. The device provides a continuous dispensing of a vaporizing composition and can provide a greatly increased dosage to the atmosphere as required from time to time. One specific feature of a preferred embodiment of our invention is a pumping means to further aid in rapid dispensing of vapors. A primary application is the deodorizing of a room.

3,790,082
SPRINKLER

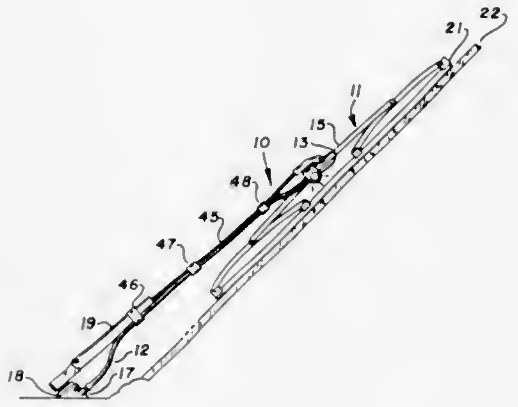
Michel Adrien Pochard, Thonon Les Bains, France, assignor to Establissements Carpano & Pons S.A., Cluses, France
Filed Mar. 15, 1972, Ser. No. 234,715
Claims priority, application France, Mar. 30, 1971, 71.11182
Int. Cl. B05b *3/04*
U.S. Cl. 239—240 **11 Claims**



A liquid sprinkler comprises a hydraulic turbine driven by a supply of pressurized liquid, the turbine in turn driving two pairs of relatively rotatable coaxial cylinders. Each pair of cylinders comprises a pair of cooperating slots adapted, during relative rotation of the cylinders, to provide a variable passageway for delivering liquid to a respective outlet compartment provided with a set of outlet orifices, the sum of the passageway areas remaining constant to provide a constant overall liquid output, with varying outputs through the orifices of each compartment.

3,790,083
WINDSHIELD WASHER SYSTEM

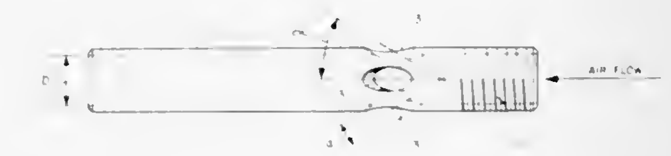
Robert B. Redifer, 6339 Nicollet Ave., Minneapolis, Minn.
Filed Nov. 9, 1971, Ser. No. 197,023
Int. Cl. B05b *1/14*
U.S. Cl. 239—284 **3 Claims**



An improved nozzle means for spraying washer fluid on the surface of an automobile windshield, the nozzle means being arranged for use in combination with an automobile windshield wiper and washer system, the wiper being the standard reciprocating wiper, the washer system including a reservoir to retain a supply of washer fluid, and pressure means to provide a source of such fluid under pressure. Conduit means are arranged to deliver fluid under pressure to said nozzle means. The nozzle means comprises a head having an inlet port and a plurality of outlet ports, with the plurality of outlet ports being generally equally arcuately spaced, one from another, and being disposed so as to impinge upon the surface of said wiper at spaced intervals thereon. Bracket means are provided for mounting the nozzle means on the back of the wiper blade assembly.

3,790,084
SAFETY AIR NOZZLE

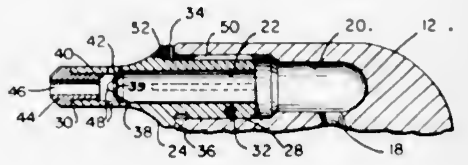
George R. Kinsley, Wilmington, Del., assignor to Scott Paper Company, Delaware County, Pa.
Filed July 14, 1972, Ser. No. 271,921
Int. Cl. B05b *1/28*; **A62c** *13/52*
U.S. Cl. 239—291 **3 Claims**



Disclosed is a safety air nozzle which can be used to inexpensively adapt a standard air blow gun to comply with the provisions of the Occupational Safety and Health Act, Section 1910.242(b). The nozzle consists of a single piece of pipe threaded on one end for attachment to a standard air blow gun and having lateral ports through the tube wall equally spaced circumferentially about the pipe. Each lateral port extends in a direction inclined outwardly toward the discharge end of the nozzle. The lateral ports allow escape of air to form an air shield which guards the air gun operator from chips blown back toward him and also to form pressure relief holes which prevent excessive pressure buildup in the event the discharge end of the nozzle become obstructed.

3,790,085
SAFETY NOZZLE FOR AIR BLOW-GUNS

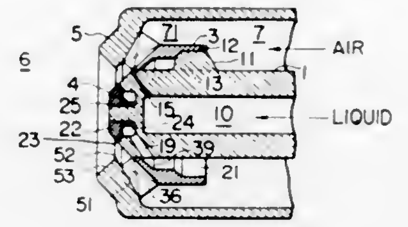
Lloyd M. Ayer, Hamden, Conn., assignor to High Precision Incorporated, Hamden, Conn.
Filed Feb. 14, 1973, Ser. No. 332,353
Int. Cl. B05b *1/28*
U.S. Cl. 239—291 **3 Claims**



An improved safety nozzle for air blow-guns which prevents pressure build-up in the nozzle in case the tip of the nozzle is obstructed in any manner and which also provides protection against possible injuries that could be inflicted by the air vented from the nozzle when such obstruction takes place. The invention is applicable to those guns which prevent pressure build-up by recessing the nozzle tip within an extension of the nozzle so that the tip is inaccessible and by providing radial vent openings in such extension, through which the air can escape when the outer end of the extension is blocked. Auxiliary air jets aligned with the vent openings deflect the air from the vents away from the operator.

3,790,086
ATOMIZING NOZZLE

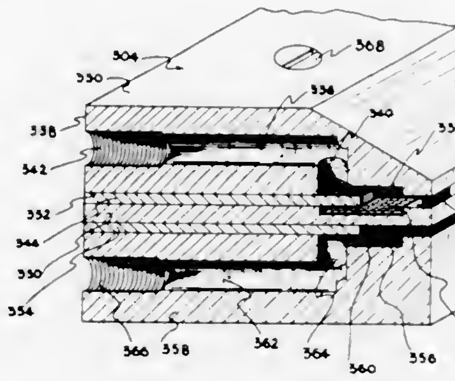
Tadahisa Masai, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed May 24, 1972, Ser. No. 256,372
Claims priority, application Japan, May 24, 1971, 46/35757
Int. Cl. B05b *7/10*
U.S. Cl. 239—406 **15 Claims**



The atomizing nozzle atomizes liquids such as heavy oil to be burned with the energy of a moving gas stream to make fine liquid particles and avoid the phenomena of recombination of the liquid. Gas is generally conically swirled along the front face of a nozzle end while liquid is ejected into the gas flow, in combination with means for preventing the recombination of the liquid to a liquid stream along the nozzle surface adjacent the liquid ejection ports. The recombination is particularly prevented by gas ejection downstream from the liquid ejection and the downstream projection of the recombination surface into the whirling gas flow. Further, the gas boundary layer along the liquid ejection surface is sucked off, particularly for downstream ejection, to increase the gas flow velocity adjacent the liquid ejector.

3,790,087
BURNER APPARATUS FOR FORMING A FINISH ON A GLASS CONTAINER

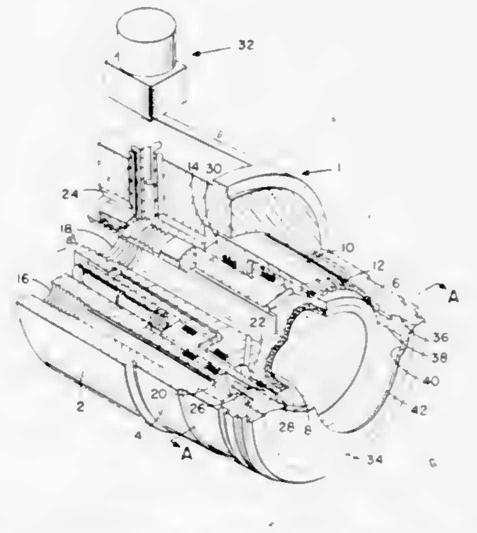
John D. Banyas, Toledo, and Edward A. Ross, Waterville, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Division of Ser. No. 77,425, Oct. 2, 1970, Pat. No. 3,726,559. This application Aug. 29, 1972, Ser. No. 284,565
Int. Cl. F23d *11/10, 13/40, 15/00*
U.S. Cl. 239—418 **2 Claims**



A burner apparatus for forming a finish on a hollow glass article on a production line, such as a glass container. Glass containers having an integrally formed moil portion on the upper end of the container body portion are loaded in sequence on a continuously moving endless conveyor which carries the containers in line through a heating zone. During their transit through the heating zone, the containers pass between a linear row of opposed burners which direct a high intensity row of flame jets accurately against a narrow portion of the container body to first thermally sever the moil portion from the body and to subsequently form a beaded finish on the container. The containers are rotated during their passage through this set of burners at a controlled rate to achieve the desired finish formation. The burner assembly includes top and bottom housings and an intermediate shim plate that define together plural slots connected to a fuel chamber that is in a recess longitudinally of the burner housing. Air and fuel are supplied to the recess chamber for combustion upon exit from said slots.

3,790,088
PROPELLANT SPLASH PLATE HAVING FLOW DIRECTING MEANS

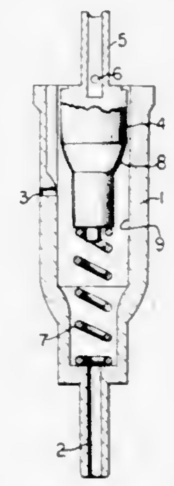
Ben F. Wilson, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Aug. 29, 1967, Ser. No. 665,199
Int. Cl. B05b *7/06*
U.S. Cl. 239—432 **5 Claims**



An improved propellant splash plate for use with splash plate type injectors, e.g., an annular serrated pintle, variable thrust type injector for controlling the flow of liquid propellants in the combustion chamber of reaction motors. The improvement resides in the provision of flow directing means in the form of either grooves or ribs which are preferably spirally formed for increasing the retention or "stay" time of the liquid propellants on the plate. High combustion efficiency is attained due to the increased "stay" time and improved overall mixing of the propellants in the combustion chamber. This improved mixing includes breakup, atomization, and vaporization of the liquid sheets on the plate.

3,790,089
AEROSOL VALVE CONSTRUCTION

John Frangos, 244 Hudson Ter., Fort Lee, N.J.
Filed Jan. 27, 1972, Ser. No. 221,144
Int. Cl. B65d *83/14*
U.S. Cl. 239—573 **2 Claims**



A push-button aerosol valve for varying droplet size of the liquid to be dispensed comprising a cylindrical valve body provided with a bore therethrough, a spring biased valve core located in said bore, the valve core having a tapered portion which in conjunction with a wall portion of the bore acts to vary the cross-sectional area between the wall portion and the tapered portion when the core is depressed to create a venturi effect.

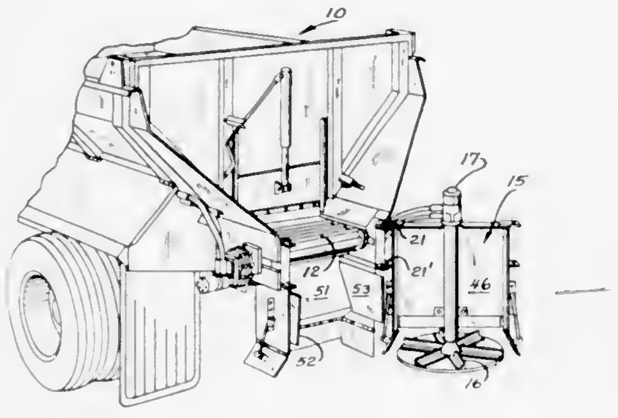
3,790,090
TRUCK BODY

Allan L. Lorenc, Fairfax, and John E. Blumer, Cedar Rapids, both of Iowa, assignors to Highway Equipment Company, Cedar Rapids, Iowa

Filed Mar. 12, 1973, Ser. No. 340,564

Int. Cl. A01c *19/00;* **E01c** *19/20*

U.S. Cl. 239—666 **5 Claims**



A truck body of the hopper type including a bottom longitudinally extending conveyor and a rear end gate arranged for pivotal opening for dumping without tilting of the truck body and with a metering feed gate in the end gate for use in spreading. The body is further equipped with a spreader of the spinner type which receives material from the conveyor, the spreader being selectively pivotable to one side to facilitate dumping. The conveyor is equipped with a hydraulic power system providing the use of two motors in parallel for high torque and the same two motors in series for high speed.

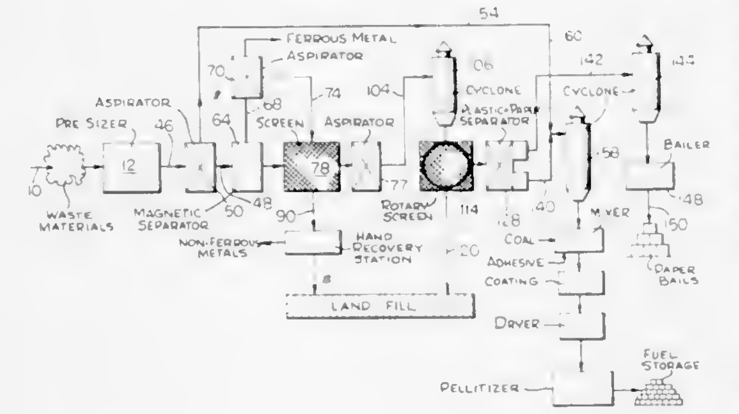
3,790,091
SOLID WASTE SEPARATING METHOD AND CLASSIFICATION OF MATERIAL

Edward Law, Fort Wayne, Ind., and James H. Moore, Dallas, Tex., assignors to National Recycling Inc., Fort Wayne, Ind.

Filed June 7, 1971, Ser. No. 150,671

Int. Cl. B02c *18/40*

U.S. Cl. 241—24 **16 Claims**



A method for separating solid waste material into identifiable classifications by recycling the solid waste material obtained from industrial or domestic source through a number of devices which reduces the solid waste material to a uniform workable particle size; separating the presized particles by weight, size and magnetic properties; transferring the classified material to a number of disposal areas wherein the materials such as heavy paper material may be baled, the light paper and plastic may be pelletized for use as fuel, the metal and glass shipped to reprocessing plants, and the remainder of the solid waste material may be disposed of by land fill or incineration.

The invention further relates to an anti-pollution method for solid waste material which conserves the virgin natural resources by reclaiming useful material and minimizing areas needed for land filling, and reduces the solid waste management problem.

3,790,092
GRINDING APPARATUS

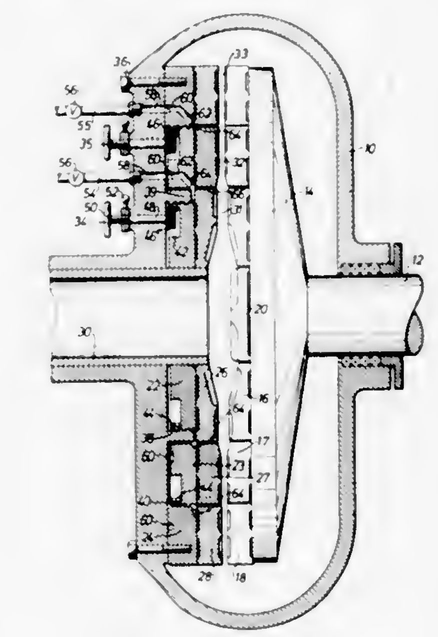
Rolf Bertil Reinhall, Killingevagen 16, Lidingo, Sweden

Filed Feb. 29, 1972, Ser. No. 230,393

Claims priority, application Sweden, Mar. 16, 1971, 3397/71

Int. Cl. B02c *7/06*

U.S. Cl. 241—38 **3 Claims**



The invention relates to a grinding apparatus of the type having grinding discs arranged in a housing of which at least one is rotatable and which between themselves form a grinding space for the grinding produce such as wooden chips fed dispersed in an aqueous vehicle to the centre of the space to be forced therethrough in outward direction under strong axial grinding pressure. Under this procedure the temperature of the vehicle is increased which results in evaporation of water which in turn unfavourably affects the produce such as the wooden chips the fibres of which may be locally overheated and miscoloured. To counteract this evaporation of water, ducts are formed in the grinding discs, at least the stationary one for supply of water to the grinding space between the discs. This arrangement is particularly useful when the grinding discs are composed of concentrical elements defining an outwardly decreasing grinding space permitting a highly advanced desintegration of the starting material.

3,790,093
GRANULATOR

John W. McIntyre, Attleboro, Mass., assignor to Cumberland Engineering Company, Inc., Pawtucket, R.I.

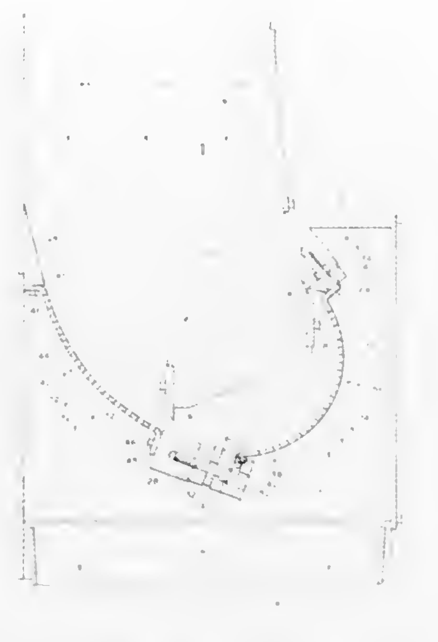
Filed Nov. 18, 1971, Ser. No. 200,130

Int. Cl. B02c *18/06, 13/13*

U.S. Cl. 241—73 **8 Claims**

A granulator for synthetic plastic and other material such as cans made of thin steel or aluminum in which, instead of one

screen to permit the exit from the machine of material cut to size, a second screen is also provided, the second screen being



mounted adjacent the inlet side of the cutting element of the granulator and at the bottom of a vertical chute for feeding materials to the granulator.

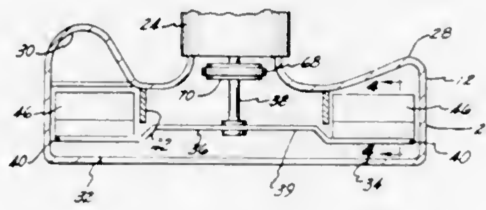
3,790,094
MOBILE LEAF PULVERIZER

John J. Spicer, 43872 Shearer Dr., Plymouth, Mich.

Filed Mar. 22, 1972, Ser. No. 236,820

Int. Cl. B02c *18/12*

U.S. Cl. 241—101.1 **11 Claims**



A mobile leaf pulverizing apparatus having a pick-up blade in an open-bottomed housing. The pick-up blade is rotated parallel to and above the ground to provide an upward air current that removes leaves and the like from the ground. The leaves pass through the pick-up housing to a cylindrical pulverizer having a rotary cutter. Although the pulverizer housing has a plurality of openings for passing the air received from the pick-up housing, certain of the openings are formed to prevent the passage of leaf particles except through the remainder of the openings. The pulverizer can be disconnected from the pick-up housing when the leaves are to be only transferred from one ground area to another.

3,790,095
PULVERIZER WITH SATELLITE SPACER ASSEMBLY

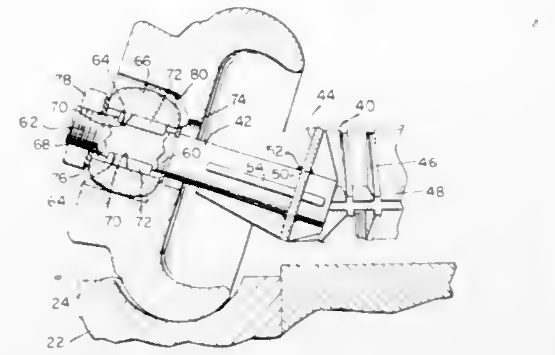
Robert Paul Gillette, R.D. 3, Radtke Rd., Shongum Lake, Randolph, N.J.

Filed Apr. 28, 1972, Ser. No. 248,707

Int. Cl. B02c *15/04*

U.S. Cl. 241—103 **4 Claims**

Apparatus is provided for pulverizing raw coal feed stock into comminuted particles which can be conveyed to the combustion chamber of a furnace. A satellite spacer assembly is positioned above the pulverizer table and mounted on the pulverizer rollers such that the rollers are separated from each other to prevent skidding.



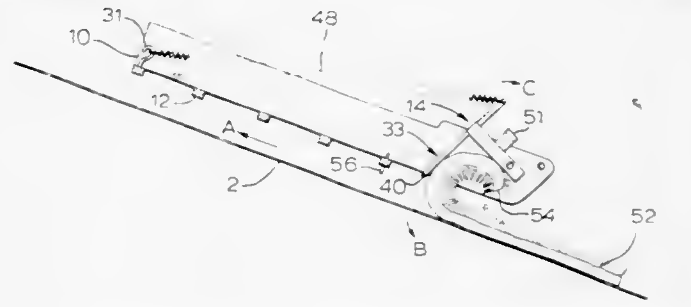
3,790,096
DEVICE FOR STARTING A TURN IN THE END OF A SOD STRIP

Gerardus Johannes Brouwer, Keswick, Ontario, Canada, assignor to Brouwer Turf Equipment Limited, Keswick, Ontario, Canada

Filed Feb. 8, 1973, Ser. No. 330,489

Int. Cl. B65h *75/02, 17/02*

U.S. Cl. 242—55 **10 Claims**



A device for starting a turn in the end of a sod strip advancing up a conveyor, in which a tray is loosely mounted above the conveyor for front to back rocking movement and for movement towards and away from the conveyor. An L-shaped blocking member is pivotally mounted at the front of the tray and has a blocking portion normally hanging in the path of the advancing sod. When the sod hits the blocking portion, the blocking member pivots upwardly to a limited extent against a spring bias, turning the end of the sod strip and permitting the turned end to pass thereunder while holding the turned end tight. The turned end then passes under the remainder of the tray, rolling as it progresses. The tray rises at this time to allow the turned end passage. Rolling of the sod is then completed by conventional rolling means. The device will also start a turn in the end of a sod strip lying on the ground.

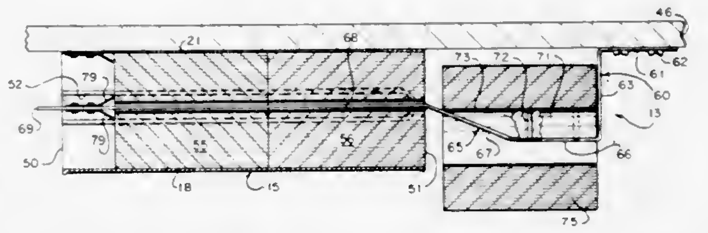
3,790,097
TOILET TISSUE ROLL STORAGE DEVICE

Thaddaues H. Wormly, 1218 Liberty St., Camden, N.J.

Filed Jan. 5, 1973, Ser. No. 321,358

Int. Cl. B65h *19/00*

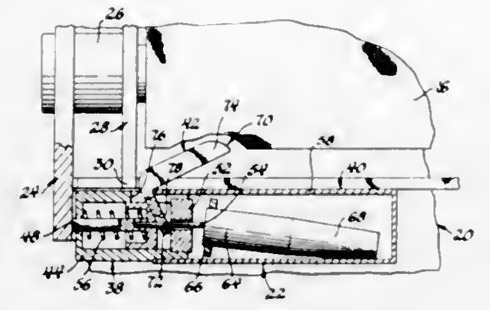
U.S. Cl. 242—55.53 **10 Claims**



An elongate open ended enclosure for snug passage therethrough of a transversely flattened or oblate toilet paper roll, and a carrier for endwise engagement into a roll exiting from the enclosure to rotatably support the roll.

3,790,098
SEAT BELT RETRACTOR APPARATUS

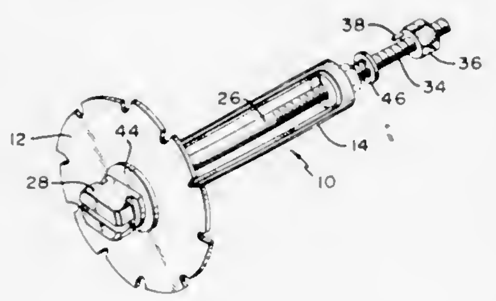
Gerald F. Lewis, 1850 Columbia, Berkley, Mich.
Filed Mar. 8, 1972, Ser. No. 232,823
Int. Cl. A62b *35/00;* **B65h** *63/04*
U.S. Cl. 242—107.4 **14 Claims**



Seat belt retractor apparatus incorporating a latch bar for locking the belt in a selected retracted position. The latch bar is maintained in an unlatched position by a holding mechanism which is responsive to inertia forces. The holding mechanism has a locking device which combines with a magnet device in a set position thereof to hold the latch in the unlatched position until inertia forces acting on the magnet device exceed a certain magnitude whereupon the magnet device is forced to an unset position and the latch bar is released by the locking device. The locking device and the magnet device are returned to their respective latch holding positions by a reset device which is actuated by the belt as it is rewound by the retractor.

3,790,099
ENERGY ABSORBING RETRACTOR

Herbert R. Beller, Mt. Clemens, Mich., assignor to Allied Chemical Corporation, New York, N.Y.
Filed May 10, 1972, Ser. No. 252,057
Int. Cl. A62b *35/00;* **B65h** *63/00*
U.S. Cl. 242—107.4 **10 Claims**

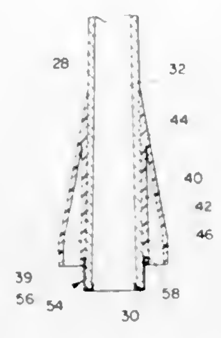


An energy absorbing seat belt retractor of the automatic locking or inertia locking type which includes an energy absorbing system that allows a belt shaft to rotate with respect to a locking wheel at a predetermined applied load so that belting is paid out. After a predetermined amount of rotation of the belt shaft, an increased load is required to further pay out the belting. Kinetic energy of an occupant moving forward from his seated position into contact with the belting is absorbed during the initial rotation of the shaft at the predetermined load and during any further rotation at a higher level.

3,790,100
BOBBIN

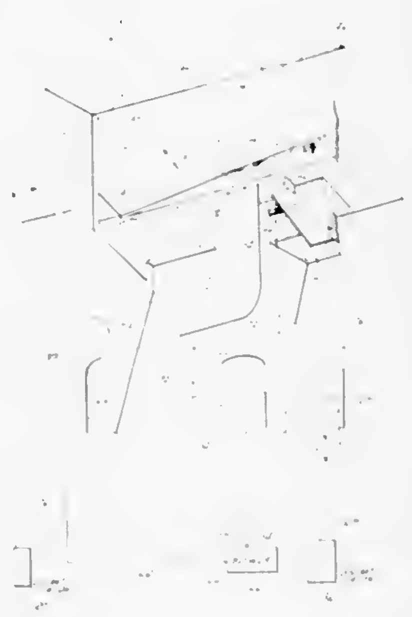
Herbert Kilduff, Warwick, R.I., assignor to Leesona Corporation, Warwicke, R.I.
Filed May 21, 1971, Ser. No. 145,726
Int. Cl. B65h *75/10, 75/28*
U.S. Cl. 242—118.32 **5 Claims**

A yarn collecting bobbin comprising an elongated, tapered tube having a frustro-conical skirt affixed thereto is disclosed. The skirt encircles generally the base section of the bobbin, with a relatively short extension from the tube projecting beyond the lower end of the skirt. The skirt is firmly secured to the tube by any of several different techniques and is notched so as to entrain a yarn end adjacent thereto and commence winding of the yarn on the bobbin.



3,790,101
COMBINED TRANSMIT AND RECEIVE TERMINAL FOR PNEUMATIC TUBE SYSTEM

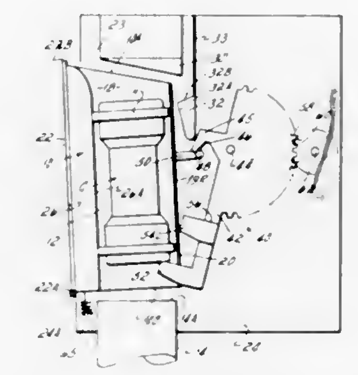
Adam Weissmuller, Kinnelon, N.J., assignor to The Mosler Safe Company, Hamilton, Ohio
Filed Nov. 8, 1972, Ser. No. 304,754
Int. Cl. B65g *51/32*
U.S. Cl. 243—19 **6 Claims**



A pneumatic tube system terminal including *a*) a receive chamber in which a received carrier, in the course of sliding or rolling over an underlying spring-biased flap, deflects the flap to seal the vacuum line which connects to the receive chamber, enabling opening of the receive chamber door normally closed by the vacuum, the flap once being deflected remaining so under the action of the vacuum in the line which is now sealed by the flap in its deflected position, and *b*) a transmit chamber connected to a pressure line, having an actuator linked to a valve in the vacuum line, which actuator (1) upon insertion of a carrier into the chamber for transmission is tripped to momentarily close the valve in the vacuum line, in turn releasing the spring-biased receive chamber flap, and (2) upon passage of the inserted carrier into the transmit tube opens the valve in the vacuum line to restore vacuum/pressure in the system and transmit the carrier.

3,790,102
PNEUMATIC TUBE TRANSMIT AND RECEIVE TERMINAL

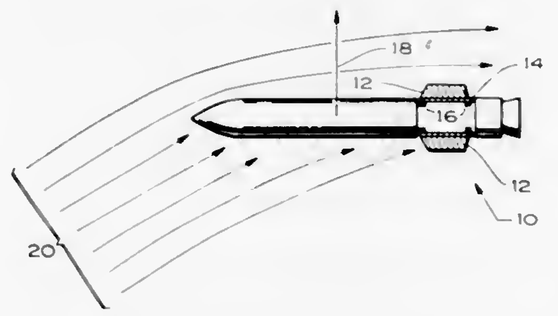
David Tearne, Ridgewood, and Adam Weissmuller, Kinnelon, both of N.J., assignors to The Mosler Safe Company, Hamilton, Ohio
Filed Jan. 2, 1973, Ser. No. 320,546
Int. Cl. B65g *51/32*
U.S. Cl. 243—19 **11 Claims**



A combined transmit and receive terminal for pneumatically transported carriers including a housing communicating with an upwardly directed pneumatic tube and having an opening therein, a latch within the housing located above the mouth of the tube to suspend a received carrier from its upper end, a hopper with an open top and bottom hinged along its lower edge to the housing and movable between a closed or vertical position overlying the pneumatic tube with the open hopper bottom aligned with the mouth of the tube and an open or pivoted position extending through the terminal opening, and a multi-function rotary actuator which, upon rotation to its open position following receipt of a carrier, (1) disengages an inwardly projecting extension of the hopper to unlock it, (2) cams open the hopper, and (3) engages the bottom of a suspended carrier to lift it upwardly and at least partially out of the hopper as the latter is cammed toward its open position. Carrier insertion into the terminal for transmission is accomplished by reversing the foregoing unlocking, lifting and door camming steps.

3,790,103
ROTATING FIN

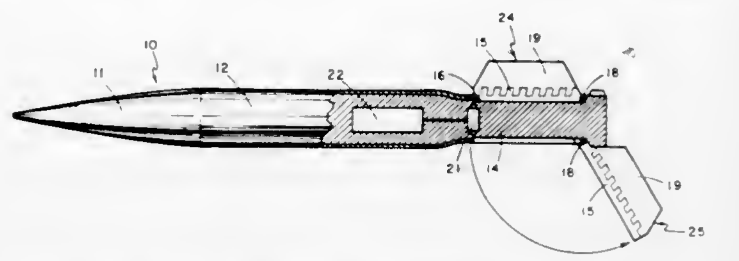
John R. Peoples, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Continuation-in-part of Ser. No. 118,266, Feb. 24, 1971, abandoned. This application Aug. 21, 1972, Ser. No. 282,525
Int. Cl. F42b *15/14*
U.S. Cl. 244—3.23 **2 Claims**



A rotatable sleeve with attached clipped double delta shaped fins for mounting on a missile body so that the fins may achieve a position of symmetry with respect to incident air flow thereon without spinning-up.

3,790,104
HIGH/LOW ASPECT RATIO DUAL-MODE FIN DESIGN

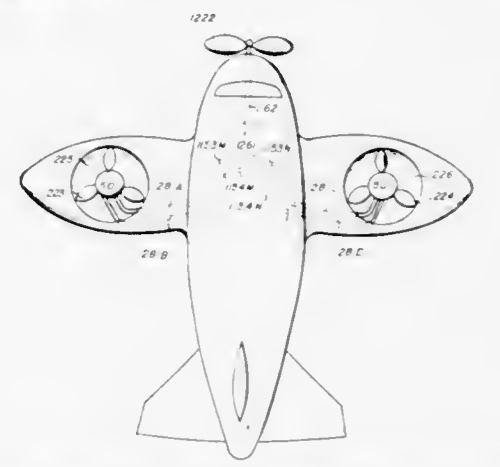
Daniel A. Jones, Fredericksburg, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Mar. 12, 1973, Ser. No. 340,123
Int. Cl. F42b *13/32*
U.S. Cl. 244—3.27 **5 Claims**



A dual-mode fin design for gun-launched, rocket-assisted, guided projectiles in which, from a flush position against the body, the fins rotate radially at launch to deploy in the low aspect-ratio mode for stability during the supersonic fly-out phase with transition to the high aspect-ratio mode for the transonic termianl maneuvering phase. Deployment of the fins to high aspect-ratio mode is effected by shearing restraining pins which allow the fins to rotate rearwardly about pivot pins and under the air stream influence.

3,790,105
HYDRAULICALLY CONTROLLED FLUID STREAM DRIVEN VEHICLE

Karl Eickman, 2420 Isshiki Hayama-machi, Kanagawa, Japan
Continuation of Ser. No. 782,349, Dec. 9, 1968, which is a continuation-in-part of Ser. Nos. 328,395, Dec. 5, 1963, and Ser. No. 551,023, May 18, 1966, abandoned. This application Apr. 6, 1971, Ser. No. 131,782
Int. Cl. B64c *29/00*
U.S. Cl. 244—12 R **12 Claims**



A hydraulic fluid driving arrangement for land, water or air vehicles includes rotary hydraulic motors driving respective propellers. The motors are arranged in pairs, with the two motors of each pair being on respective opposite sides of the longitudinal axis of the vehicle. One or more hydraulic pumps are driven by a prime mover and deliver hydraulic fluid under pressure to two or more separate outlets, with the flows in all outlets being either proportionate or equal to each other, and the outlets being completely separate from each other. One outlet supplies fluid to the motors on one side of the vehicle axis and the other supplies fluid to the motors on the other side of the vehicle axis. Respective flow adjustment means are operably associated with each outlet, and may be operated either independently or conjointly. Alternatively, control of the motor speeds may be provided by bypasses. Two or more outputs of the hydraulic pumps may be combined to supply two or more motor supply lines with equal or proportionate flows, with check valves being provided to prevent reverse flow. The two motors of each pair may be connected in series to receive the same fluid flow.

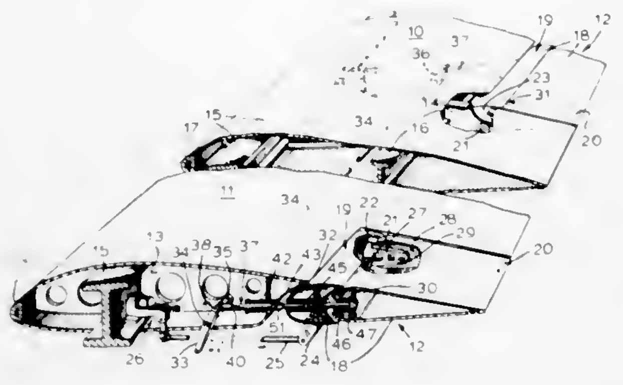
3,790,106
FLAP SYSTEM

Thomas E. Sweeney, 95 Hartley Ave., Princeton, N.J.; William S. Schweizer, 58 Larchmont Rd., Elmira, N.Y., and James J. Morris, 108 Meadow Brook Ln., Brookhaven, Pa.

Filed Jan. 24, 1973, Ser. No. 326,393

Int. Cl. B64c *3/38*

U.S. Cl. 244—42 CB **10 Claims**



A flap system for improving the lifting capabilities of aircraft wings and for alleviating the effects of wind gusts acting upon aircraft including flaps pivotally mounted near the trailing edges of the aircraft's wings, which each have a separate and distinctive leading edge portion and a trailing portion which are pivotally connected. Locking apparatus are provided which can be actuated to lock the leading edge portion and the trailing edge portion of each flap together, and to maintain the leading edge portion of each flap in a stationary position relative to the wing when the trailing flap portion is disengaged from the leading edge flap portion. When the leading edge flap portion and the trailing edge flap portion are locked together, the flap serves as a high lift flap and when the leading edge flap portion is held in a stationary position with respect to the wing and the trailing edge flap portion is disengaged from the leading edge flap portion, the trailing edge flap portion is freely floating and acts as a gust alleviation flap.

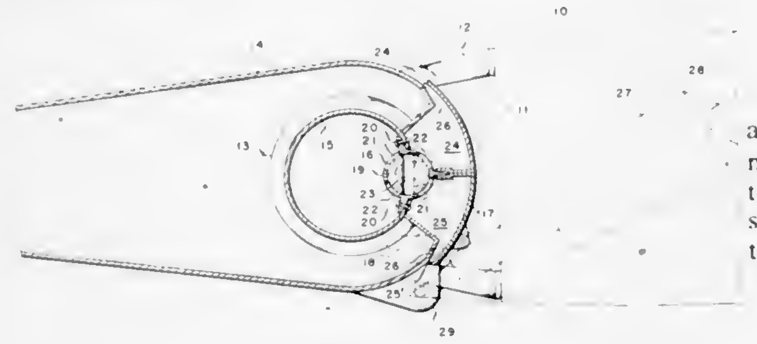
3,790,107
BOUNDARY LAYER AIR CONTROL MECHANISM FOR AIRCRAFT

John H. Renshaw, Marietta, Ga., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Mar. 16, 1973, Ser. No. 342,253

Int. Cl. B64c *21/08*

U.S. Cl. 244—42 CC **5 Claims**



Pressurized air is provided from an onboard aircraft source to a duct within an external control surface where it is selectively metered through a control valve to nozzles located on each side of the control surface. Movement of the control surface in one direction concurrently moves the control valve to pass the air exclusively to the nozzles on one side of the surface while movement of the control surface in the opposite direction concurrently moves the control valve to pass the air exclusively to the nozzles on the other side of the surface. Thus boundary layer air control is provided to the desired side of the control surface automatically from a single duct.

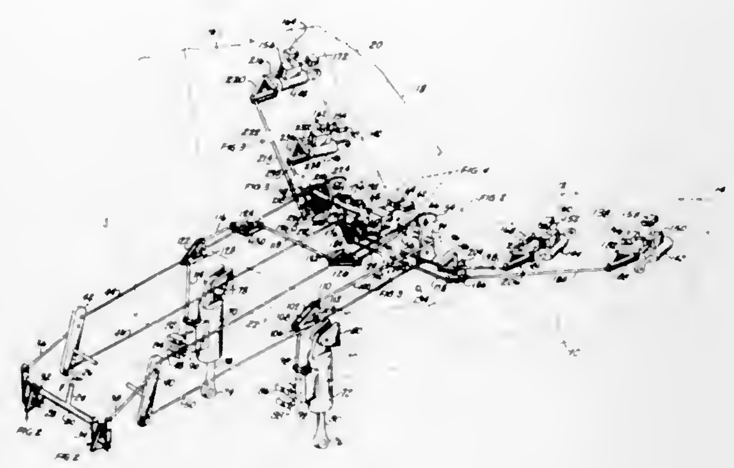
3,790,108
REDUNDANT STABILIZER CONTROL

John W. Bock, Long Beach, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Nov. 13, 1972, Ser. No. 306,377

Int. Cl. B64c *13/04*

U.S. Cl. 244—83 D **9 Claims**



A redundant control system for operating two flight control surfaces such as a rotatable stabilizer and an elevator rotatably mounted thereon whereby in the event of either control surface mechanically jamming, the preselected control system may still be used to actuate the unjammed control surface.

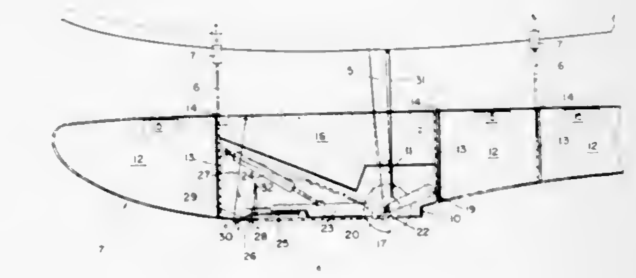
3,790,109
AMPHIBIOUS UNDERCARRIAGE FOR AIRCRAFT

C. Fink Fischer, 369 Mercer Rd., Princeton, N.J.

Filed Mar. 15, 1971, Ser. No. 124,029

Int. Cl. B64c *25/54*

U.S. Cl. 244—105 **6 Claims**



The invention is an amphibious undercarriage for aircraft and is also an undercarriage for seaplanes providing improvements which reduce the maximum landing and takeoff structural loads in the aircraft, reduce the weight and drag of the seaplane, and provide capability for seaplane undercarriages to alight on snow.

3,790,110
AIR CUSHION TYPE UNDERCARRIAGE

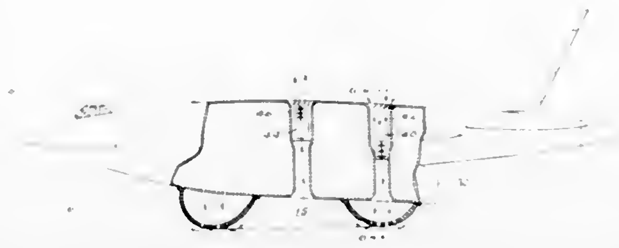
T. Desmond Earl, Buffalo, N.Y., assignor to Textron Inc., Providence, R.I.

Filed May 25, 1972, Ser. No. 257,005

Int. Cl. B60v *3/08*

U.S. Cl. 244—110 H **9 Claims**

An improved ground-run deceleration and landing acquisition and temporary hold-down system for aircraft equipped with an air cushion type undercarriage. The invention employs means for the rapid withdrawal of air from the cushion cavity, whereby the time to decelerate the airplane is greatly decreased, and whereby an improved landing acquisition and temporary on-board hold-down facility is provided. The invention, therefore, has particular application to the problem in association with VTOL aircraft of "acquiring" and holding to a firm landing on pitching/rolling landing pads, and/or incidental to landings under adverse surface wind conditions.



3,790,111
APPARATUS FOR DOCKING A HELICOPTER

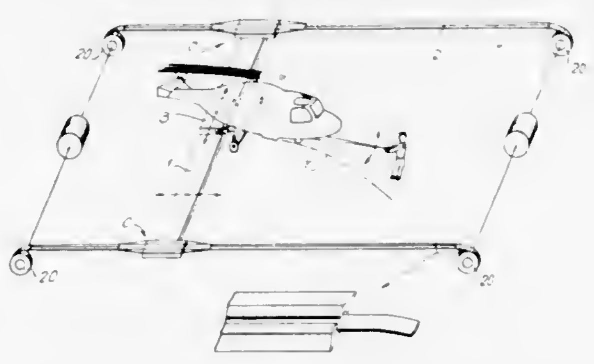
Jean Dominique Francois Gerard Mesnet, Vaucresson; Philippe Marie Antoine Jacques Remon-Beauvais, Ris Orangis; Jean Francois Barbarin, Ruelle; Raymond Louis Le Guennec, Lorient, and Georges Edouard Louis Leon Dadon, Kremlin-Bicetre, all of France, assignors to Etat Francais, Paris, France

Filed Oct. 2, 1972, Ser. No. 294,002

Claims priority, application France, Oct. 1, 1971, 71.35383

Int. Cl. B64f *1/12*

U.S. Cl. 244—116 **11 Claims**



A device for displacing an object on a horizontal surface, which can tilt and oscillate, along a desired trajectory between any two points. The trajectory is derived from a lengthwise motion of a cross beam, generated by a driving mechanism entirely independent of the cross beam and by a transverse motion of a cross slide on the cross beam, the transverse motion being obtained from the load component acting upon the cross beam due to a manual or mechanical orientation of the load itself. The orientation is obtained, as required, by a means external to the device.

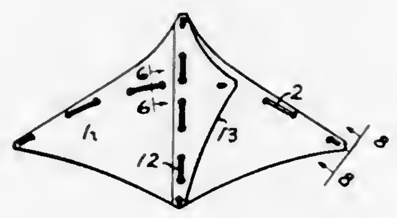
3,790,112
KITES

Raymond Prunty Holland, Jr., 1702 W. Third St., Roswell, N. Mex.

Filed Nov. 11, 1971, Ser. No. 197,838

Int. Cl. B64c *31/06*

U.S. Cl. 244—153 R **2 Claims**



A kite uses wooden sticks having a figure-8 cross section made of two round sectioned sticks glued together side by side, producing freedom from stick breakage and uniformity of stick bending deflection, using materials available commercially in large quantities. The construction applies most advantageously to kites having strongly bent sticks and to kites of high aspect ratio and especially to kites as taught in U.S. Pat. No. 3,335,984.

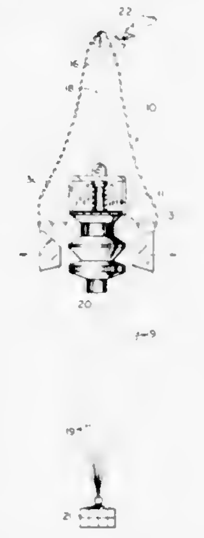
3,790,113
PARACHUTE ARRANGEMENT

Osyp Nimylowycz, Philadelphia, Pa., and George Lorenz, Clinton, Iowa, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 20, 1972, Ser. No. 316,954

Int. Cl. B64d *17/54*

U.S. Cl. 244—149 **5 Claims**



A parachute arrangement having a mechanical parachute spreader positioned internally of the canopy skirt and connected at one end by a lanyard to the canopy apex. An initiator firing pin mounted in the lower end of the spreader is connected by a firing lanyard to a load when deployed. A plurality of wedge-shaped slugs, each attached to parachute suspension lines, are initially latched within the mechanical spreader. An annular piston, actuated by pressure gases generated from a propellant charge, releases and ejects the slugs radially outward to assist the suspension lines in opening the parachute canopy skirt.

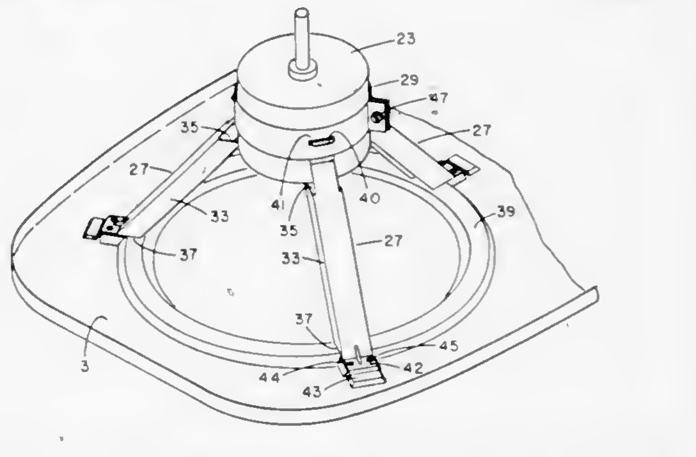
3,790,114
FAN MOTOR MOUNT

Frank Italiano, Liverpool; Curtis L. Tobin, Chittenango; William C. Martin, Jr., Syracuse, and Fred V. Honnold, Jr., North Syracuse, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jan. 10, 1972, Ser. No. 216,398

Int. Cl. F16m *11/04*

U.S. Cl. 248—13 **3 Claims**



A motor mounting assembly for securing and accurately positioning a motor relative to a base member, the elements of the mounting assembly being secured to the motor, the base member and to each other by a single fastener.

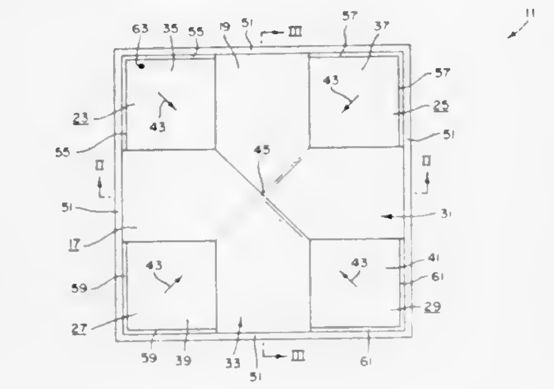
3,790,115
BASE FOR AIR CONDITIONING CONDENSER APPARATUS

Charles S. Fox, Germantown, Tenn., and Ralph E. Easterday, P.O. Box 17622, Memphis, Tenn., assignors to said Easterday by said Fox

Filed Jan. 11, 1972, Ser. No. 217,020

Int. Cl. F16m *5/00*

U.S. Cl. 248—19 **10 Claims**



A base for restingly supporting an operative air conditioning condenser apparatus. The base is intended to be restingly placed on a level planar support surface and includes a main body member having a canted upper surface which slopes downwardly and outwardly in several directions from a centrally located high point. The base also includes a plurality of elevated support pads which support the condenser apparatus in a manner that allows for air circulation subjacent the condenser apparatus. The upper surface of the support pads are canted to slope inwardly and downwardly and include self-lubricating structure to cause the condenser apparatus to slidably gravitate to a substantially level position. An anchoring and/or grounding rod is included which is received in a vertical extending aperture in the base and may be driven into certain of the support surfaces, e. g., the earth.

3,790,116
EXPANDABLE SUPPORT

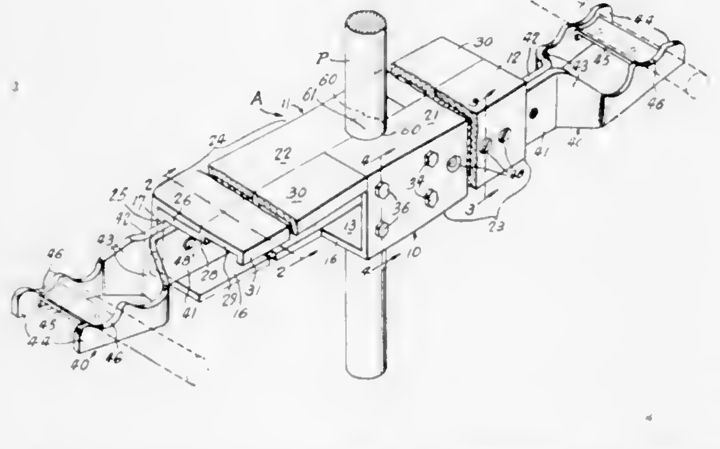
Abraham J. Schulman, 4488 Circle Rd., Montreal 248, Quebec, Canada

Filed Nov. 1, 1971, Ser. No. 194,661

Claims priority, application Great Britain, Jan. 5, 1971, 375/71

Int. Cl. F16m *13/02*

U.S. Cl. 248—124 **11 Claims**



A supporting structure which is comprised of a pair of cooperating support members engageable with each other in abutting and staggered relationship and secured to form a unitary structure. The upwardly presented surfaces of each of the cooperating support members are presented in coplanar relationship to form a relatively flat surface for supporting shelves or other panel forming members. Extension members may be connected to each of the support members in order to complete the upwardly presented flat planar surface. A pair of oppositely located mounting arms which can be telescoped within the support member to a desired length may be secured to the support members and to an existing structural member. The support members may also be provided with an enlarged aperture for disposition about and securement to an existing pole, strut, or the like.

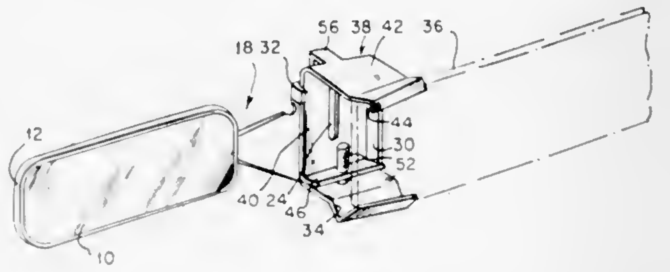
3,790,117
AUXILIARY REAR VIEW MIRROR

Charles Winkler, 21 Devon St., Malverne, N.Y.

Filed May 8, 1972, Ser. No. 251,175

Int. Cl. B60r *1/04*

U.S. Cl. 248—481 **5 Claims**



An auxiliary rear view mirror in which a mirror is pivoted on one end of an arm whose other end forms a stationary clamp member that telescopically guides a cooperating clamp member formed with integral means for retaining it on the stationary clamp member; the two clamp members are engageable over opposed edges of a main rear view mirror and are movable towards one another to adjust the space between them for fitting over main rear view mirrors of varying sizes.

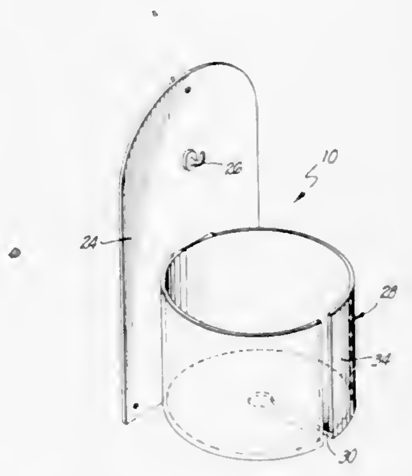
3,790,118
DOUCHE BAG HOLDER

Chris W. Warren, and Evelyn J. Warren, both of 2535 S. Mountain Ave., Duarte, Calif.

Filed Mar. 1, 1972, Ser. No. 230,846

Int. Cl. A47k *3/22*

U.S. Cl. 248—311 **2 Claims**



A douche bag holder having a mounting base for attachment to a supporting surface, a hanger on the base for releasable attachment to the neck of the bag, and a cup-shaped support on the base below the hanger for receiving and supporting the bottom of the bag both vertically and laterally. The bag support has a slot which extends from the center of the bottom support wall radially outward through the edge of the wall and then upwardly through the support side wall to and through the upper edge of the latter wall for receiving the douche bag tube in a position wherein the tube hangs freely below the bottom wall.

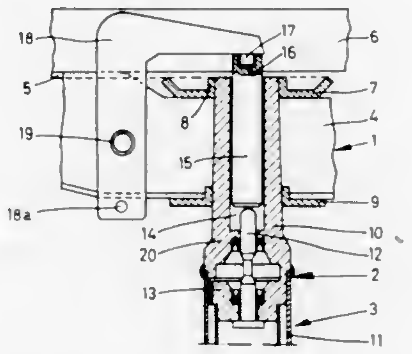
3,790,119
ENERGY STORING DEVICE, PARTICULARLY A BLOCKABLE PNEUMATIC SPRING

Fritz F. Bauer, Schulzstrasse 14, 8503 Altdorf B. Nbg., Germany

Filed Aug. 31, 1971, Ser. No. 176,533. The portion of the term of this patent subsequent to Apr. 18, 1989, has been disclaimed.

Int. Cl. F16m *11/00*

U.S. Cl. 248—400 **5 Claims**



An energy storing device for installation in a column base for height adjustable furniture provided with a member having a conical aperture attached to the piece of furniture, a cone provided at the upper end of the device for frictional engagement with the aperture, a release pin extending into said member, the cone being formed in one piece on the housing of the device and having a transition zone between the external conical part and the housing.

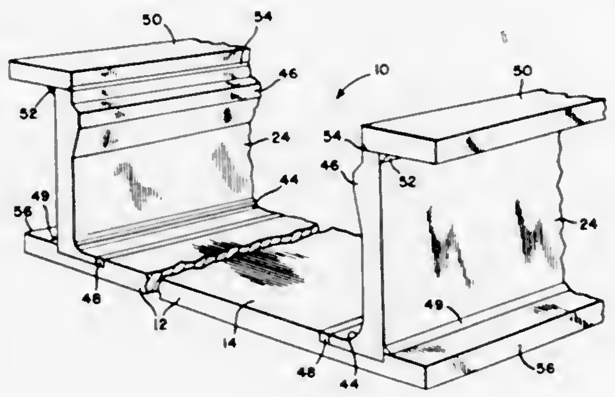
3,790,120
COMPOSITE SLAB CASTING FORM

Mark J. Wise, Brookville, Ohio, assignor to The Flexicore Co., Inc., Dayton, Ohio

Filed Dec. 13, 1971, Ser. No. 207,190

Int. Cl. B28b *7/22*

U.S. Cl. 249—50 **17 Claims**



A form for casting prestressed concrete slabs which are intended to provide an integral, finished ceiling when installed. The base or pan of the form is constructed as a relatively heavy plate to resist deflection, particularly transversely of a form, when the form is filled with concrete. The upper surface of the pan is machined with great accuracy to provide a pair of notches each having straight, flat walls extending longitudinally of the pan. A pair of side plates are machined to provide each with a side leg joined by a smoothly curved section to an inwardly extending base leg, and the side plates are positioned in the notches. Aligning forces are applied to the side plates in the direction of the outer side walls and bottom walls of the notches to straighten the side plates and pan, if necessary, and the plates are then fixed in the pan by welding. When the side plates are thus assembled on the pan the base legs extend inwardly of the form from the curved sections and the inner ends of the base legs, together with inner side walls of the notches, define cavities which are filled with a welding material. The welding material is then ground flat to provide a smooth transition surface between the upper surface of the pan and the upper surface of the base leg. Because the base legs extend a distance inwardly of the form from the curved sections, the welding material in the cavities may be ground without gouging the curved connecting sections or other surfaces of the form.

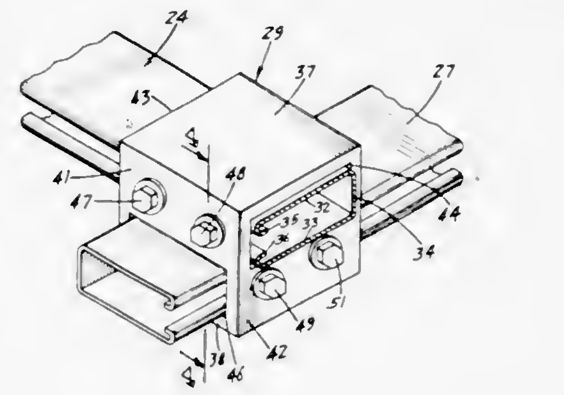
3,790,121
COLUMN FORM AND CLAMP ASSEMBLY

Wally O. Sels, and Alfred L. Paul, both of Minneapolis, Minn., assignors to Brock-White Co., Minneapolis, Minn.

Division of Ser. No. 145,333, May 30, 1971, Pat. No. 3,724,801. This application Nov. 15, 1972, Ser. No. 306,700

Int. Cl. E04g *13/02*

U.S. Cl. 249—219 R **4 Claims**



A form usable to construct a concrete column is held in a closed position by a number of clamp assemblies surrounding the form. Each clamp assembly has two pairs of channel bars held in adjustable right angle relationship with a corner bracket unit. A single pivot joins one bar of each pair of bars together. A quick release connector holds the other bars of each pair of bars together.

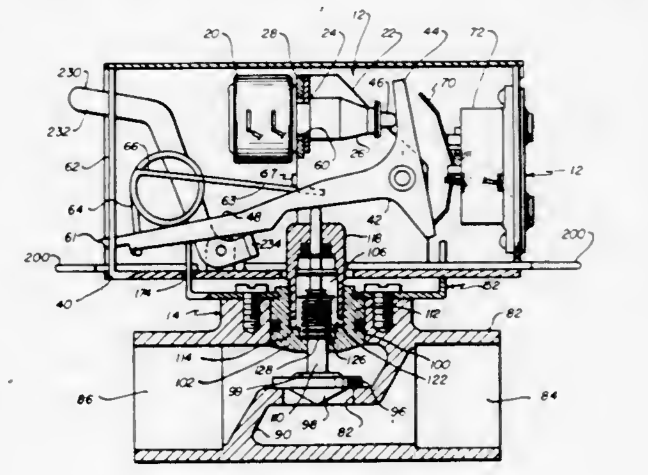
3,790,122
ZONE CONTROL VALVE ASSEMBLY

Richard Weinstein, Evanston, Ill., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 80,011, Oct. 12, 1970, Pat. No. 3,711,060. This application Apr. 17, 1972, Ser. No. 244,709

Int. Cl. F16k *31/00*

U.S. Cl. 251—11 **6 Claims**



Valve assembly for zone control valves of the type employed in hydronic temperature control systems. The valve incorporates a control unit which can readily be separated from the valve structure without emptying fluid from the system. An improved sealing structure protects the valve itself and allows the separation noted above and permits sealing structure itself to be replaced without emptying system fluid. In this way, the control unit and the valve seals can be replaced readily in the field, are long-lived, and capable of continuous trouble-free usage. Variations in the control of the heating system are also shown.

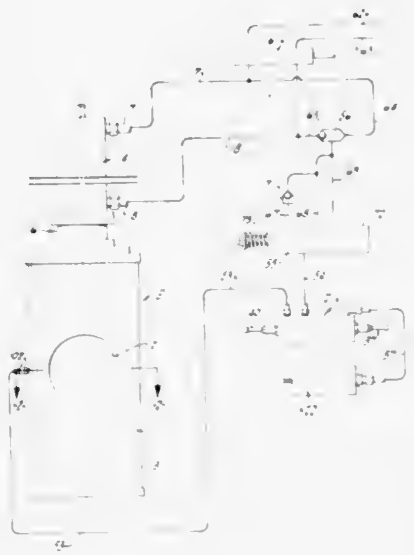
3,790,123
VALVE APPARATUS AND METHOD

Marvin H. Grove, and Rodney A. Wailes, both of Houston, Tex., assignors to M & J Valve Company and M & J Development Company, both of Houston, Tex.

Continuation-in-part of Ser. No. 162,806, July 15, 1971, abandoned. This application Apr. 17, 1972, Ser. No. 244,398

Int. Cl. F16k *39/04*

U.S. Cl. 251—31 11 Claims



Valve apparatus and method using a valve (gate or ball type) which has one or more seat rings together with means for jacking the rings against the movable valve member. The jacking means is operatively connected to a loading device exterior of the valve body and arranged whereby the jacking force can be relieved to facilitate operation of the valve. Various embodiments are shown involving both manual and automated operation in conjunction with power means for operating the valve.

3,790,124
TOGGLE LINKAGE VALVE ACTUATOR

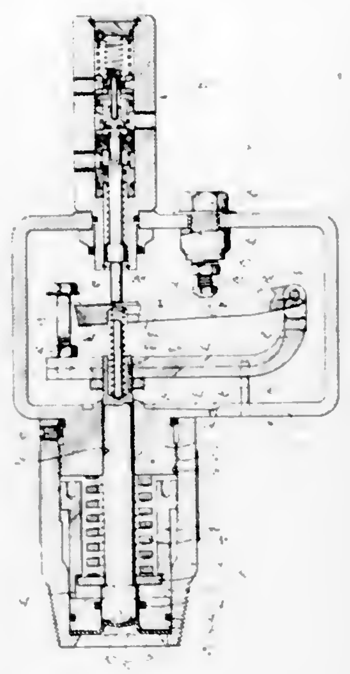
James R. Ellett, 9211-75th St., Edmonton, Alberta, Canada

Filed Oct. 3, 1972, Ser. No. 294,749

Int. Cl. F16k *31/165*

U.S. Cl. 251—58 8 Claims

A toggle linkage valve actuator actuates a valve so as to obtain from the valve identical responses to above-maximum and below-minimum conditions as sensed by the actuator. The sensed condition is translated into mechanical movement of a piston and yoke assembly to which is pivotally attached a toggle bar biased away from the yoke but limited in its separation therefrom by a first adjustment means. Movement of the assembly away from the valve elicits the desired response as the toggle bar is mechanically connected to the valve. Movement of the assembly towards the valve brings the toggle bar into contact with a second adjustment means which reverses the direction of the toggle bar movement, thereby eliciting the same desired response from the valve.



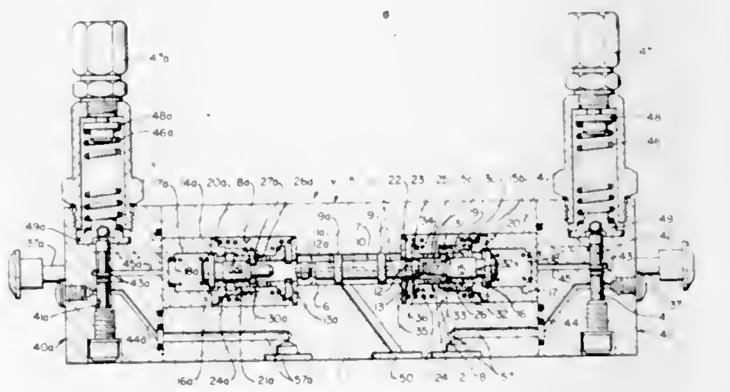
3,790,125
CONTROL VALVE WITH POWER ACCUMULATING, SNAP ACTION, SPOOL DRIVE

Eugene E. Swatty, Euclid, Ohio, assignor to Fluid Controls, Inc., Mentor, Ohio

Filed Oct. 31, 1972, Ser. No. 302,488

Int. Cl. F16k *31/56*

U.S. Cl. 251—75 10 Claims



The spool of a fluid control valve is movable axially from a first position to a second position with a snap action by a power accumulator to which predetermined external power is applied. While the spool remains in its first position, the accumulator is driven by the externally applied force to a firing position. As it progresses toward firing position it accumulates and stores a progressively greater amount of power in condition for instant application. The amount of the stored power which it has accumulated when it has reached firing position is sufficient so that, upon firing, it drives the spool with a snap action from the first position, to the second position. The spool is returned to the first position upon release of the external power applied to the accumulator. The return of the spool may be effected by a spool return member driven by a return spring which has been energized by the accumulator as the accumulator has moved to its firing position. In such case, the return member and return spring act as a second accumulator. Firing of the first accumulator latches the return member and holds the spring in energized condition. Upon discontinuance of the application of power to the first accumulator after firing, the first accumulator is restored to its original position and, upon restoration, unlatches the spool return member. Thereupon the return spring fires and drives the spool to its first position with a snap action. Alternatively, instead of the return of the spool by the spool return member and return spring, the spool may be returned by another accumulator which corresponds functionally to the first accumulator and operates in sequential relation to the first accumulator so that the spool is driven with a snap action from the first position to the second position by one accumulator and is returned from the second position to the first position by the other accumulator. The accumulators can be controlled for automatic successive repetitive reversals of the spool.

3,790,126
SINGLE POINT REFUELING NOZZLE

Paul R. Ostand, and Robert W. Guertin, both of Cincinnati, Ohio, assignors to Dover Corporation, New York, N.Y.

Filed Nov. 3, 1971, Ser. No. 195,173

Int. Cl. F16k *35/00*

U.S. Cl. 251—89.5 16 Claims

A single point refueling nozzle for cooperatively engaging the adapter on an aircraft wing so as to permit fueling or defueling of the aircraft is disclosed. The single point refueling nozzle provides cooperatively locking members which prevent opening of the nozzle poppet valve until engaged with the wing adapter. A floating dual cylinder configuration permits sealing engagement of the refueling nozzle poppet valve plus sealing engagement of the nozzle and the underwing adapter by use of a novel nose seal, mounted in the cylinder, which is easily replaceable when damaged or worn. An over-the-center lever arm construction permits locking the poppet valve in the open and closed position.

3,790,127
HYDRAULIC VALVE

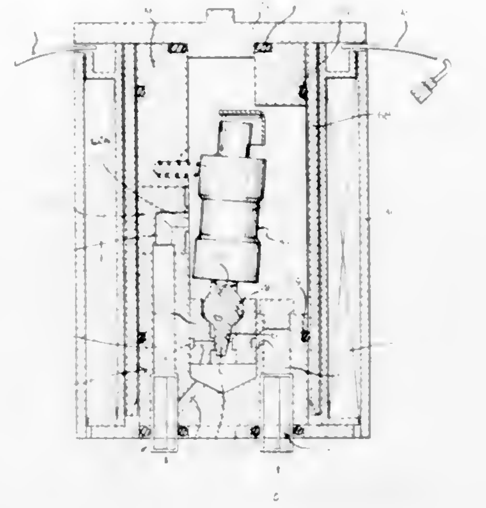
Raymond G. Reip, Clarendon Hills, Ill., assignor to Vapor Corporation, Chicago, Ill.

Filed Nov. 3, 1972, Ser. No. 303,354

Int. Cl. F16k *31/02*

U.S. Cl. 251—129 13 Claims

An intrinsically safe hydraulic valve including a first stage in the form of pilot valves and a second stage in the form of a poppet valve assembly. The poppet valve assembly includes first and second pairs of piston operated poppets which, when selectively operated, control the drive direction of a fluid motor. The pilot valves are electrically controlled through an electromagnet arrangement wherein the valves are closed when the electromagnet is de-energized and opened when it is energized. When the pilot valves are selectively opened, they apply a pilot pressure to one or the other of the pairs of piston operated poppets to drive the fluid motor.



3,790,128
DEVICE FOR TRANSFERRING FLUIDS

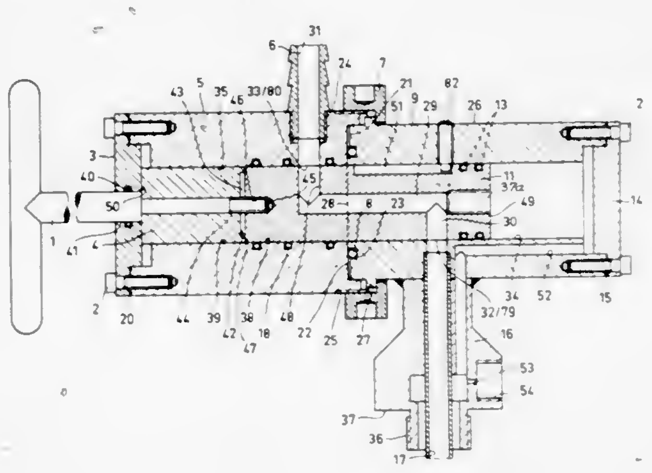
Wilhelm Hempelmann, Leopoldshafen; Gunter Waldenmeier, Karlsruhe, and Manfred Kienhofer, Leopoldshafen, all of Germany, assignors to Argus Gesellschaft mbH, Ettlingen/Baden, Germany

Filed Oct. 21, 1971, Ser. No. 191,364

Claims priority, application Germany, Mar. 4, 1971, 2110320

Int. Cl. F16l *35/00*

U.S. Cl. 251—148 8 Claims



A device for transferring fluids, either in liquid or gaseous form, from one space to another comprises two hollow cylindrical valve bodies, each provided with a radial nipple serving as inlet and outlet respectively, and releasably connected with each other in axial alignment and containing each an axially movable piston releasably connected with each other by a thread on one end of a rod which projects axially from one end of one of said hollow cylindrical valve bodies and has a handle on the outwardly projecting end for manually pushing the combined pistons, which are provided with channels, from one end position in which the channels connect said two nipples with each other to another end position in which said channels are out of communication with said nipples.

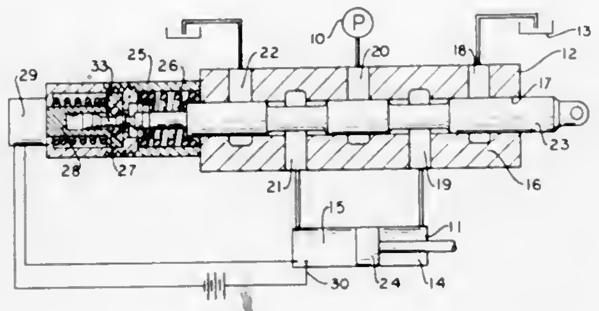
3,790,129
VALVE DETENT MECHANISM

Charles W. Pauls, Norman, Okla., assignor to The Cessna Aircraft Company, Wichita, Kans.

Filed July 15, 1971, Ser. No. 162,876

Int. Cl. F16k *31/04*

U.S. Cl. 251—297 **6 Claims**



A solenoid-operated detent mechanism for a spool valve having a spring centered neutral position and a detented operating position. The mechanism includes a locking device in the form of a movable solenoid armature having a cam surface locking the detent balls in engagement with grooves in the spool in the detented position and releasable when energized to permit the spool centering spring to return the spool to neutral. One embodiment contemplates a longitudinally moving armature spring biased in one direction to urge detent balls radially into a spool detent groove and pulled oppositely by the solenoid upon actuation to release the balls. Another embodiment has a rotating armature that through a cam surface lifts radially spring-pressed detent pawls from the spool groove.

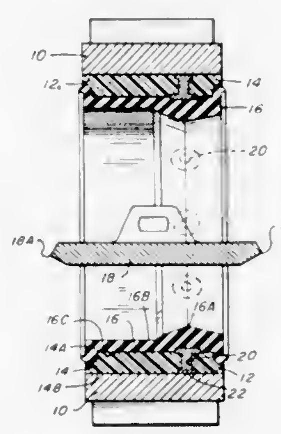
3,790,130
SEAT FOR BUTTERFLY VALVES

John A. Getty, Jr., Tulsa, Okla., assignor to Dover Corporation, Tulsa, Okla.

Filed May 30, 1972, Ser. No. 257,950

Int. Cl. F16k *1/226*

U.S. Cl. 251—306 **6 Claims**



An improved seat for a valve having an outer tubular liner of relatively hard, inflexible material, an inner tubular member of resilient material bonded to the outer liner internal circumferential surface and thermal communication means between the outer circumferential surface of the liner and the inner member whereby in securing the inner member to the outer liner improved bonding is obtained.

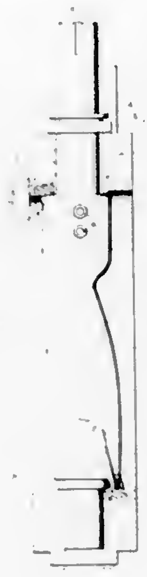
3,790,131
BUTTERFLY VALVE

Donald K. Hagar, Macungie, Pa., assignor to Masser Industries Incorporated, Allentown, Pa.

Filed Sept. 1, 1972, Ser. No. 285,931

Int. Cl. F16k *1/226*

U.S. Cl. 251—306 **10 Claims**



A butterfly valve comprising a valve casing, an annular seat within the casing, a rotatable shaft journaled in the casing, and a valve disc carried by the shaft for opening and closing the valve cooperatively with said seat, is improved by the seat being the inner face of a four-faced, closed sealing ring of trapezoidal cross-section positioned within an annular groove in the inner wall of the casing, a four-faced, closed retaining ring of trapezoidal cross-section being wedged in the annular groove beside the sealing ring, the sealing and retaining rings being so oriented in the groove that the parallel sides of their trapezoidal cross-sections are parallel to the axis of the casing, with the long parallel side of the retaining ring's trapezoidal cross-section being closer to the axis than the short parallel side of the retaining ring's trapezoidal cross-section, and the short parallel side of the sealing ring's trapezoidal cross section being closer to the axis than is the long parallel side of the sealing ring's trapezoidal cross-section.

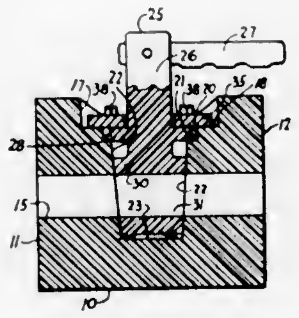
3,790,132
VALVE

Emil S. Schmitt, P. O. Box 493, 400 Old Penllyn Pk., Penllyn, Pa.

Filed July 14, 1972, Ser. No. 271,834

Int. Cl. F16k *5/04*

U.S. Cl. 251—312 **7 Claims**



A corrosion resistant valve of the stopcock type is provided, the valve body and valve plug preferably being of Teflon, the plug being tapered with an integral resilient cup or flange at the lower end engaging an inner face in the valve body, a clamping plate urging the valve plug downwardly against the resilient action of the lower end flange by engagement with an upper shouldered flange which is seated in a bore in the body.

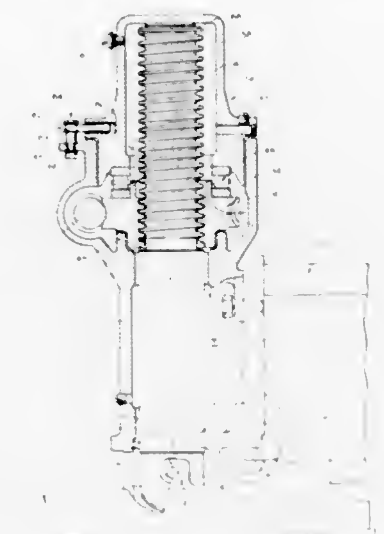
3,790,133
OUTRIGGER JACK ASSEMBLY

Cecil E. Jones, Columbus, Ohio, assignor to Clark Equipment Company, Buchanan, Mich.

Filed Dec. 27, 1971, Ser. No. 211,892

Int. Cl. B60s *9/02*

U.S. Cl. 254—86 R **6 Claims**



Material handling apparatus is hereby provided with a plurality of laterally extendable outriggers for increasing the stability of the apparatus. Each outrigger includes a beam which is provided at each end with a vertically adjustable jacking mechanism. Each jack includes a vertical shaft which has a screw thread at its upper end and carries a ground engaging float at its lower end. The threaded end of the shaft is received in an internally threaded drive ring which has a worm gear on its exterior. A hydraulic motor drives a worm that meshes with the worm gear to extend and retract the shaft, and thus raise and lower the float. The combination of the screw thread on the vertical shaft and the worm drive mechanism results in the jack being locked when the motor is off and thus avoids slipping in the jack mechanism under load.

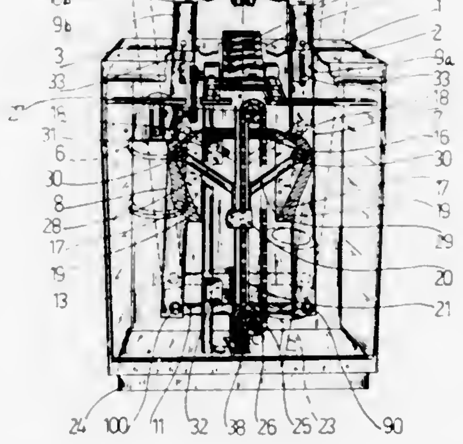
3,790,134
APPARATUS FOR INSPECTING AND CHECKING THE CONDITION OF A TIRE CASING

Claudio Matteuzzi, n. 15/6 Via Olmetola, Bologna, Italy

Filed Mar. 22, 1972, Ser. No. 236,903

Int. Cl. B60c *25/14*

U.S. Cl. 254—50.2 **3 Claims**



An improvement in a tire casing inspection machine having a continuous moving belt on which the tire is supported in perpendicular relation and rotated and gripping means resting on the bead move the side wall of the casing outwardly or inwardly by means of moving arms.

An adjusting unit is provided which is movable upwards and downwards on a vertical rod perpendicular to the moving belt. Inclined planes are machined into the moving arms, which are secured to a brace, the movement of the said unit determining, in an initial stage, the linear translation of the moving arms and of the brace to which they are secured. The consequent vertical positioning of the grippers is thereby controlled with respect to the moving belt and, in a second stage, the synchronized opening and closing of the moving arms and the consequent identical action of the grippers is controlled on a horizontal plane.

Means are provided whereby the force applied to force apart the side walls of the casing is proportioned to the flexibility of these walls.

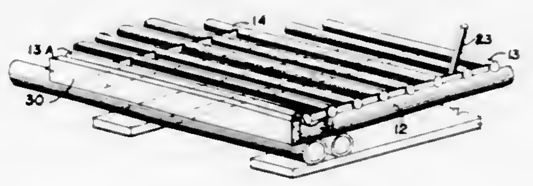
3,790,135
CATTLE GUARD

Lee H. Christianson, 43 Holly St., N.W., Calgary, Alberta, Canada

Continuation-in-part of Ser. No. 152,755, June 14, 1971, abandoned. This application Oct. 24, 1972, Ser. No. 300,247

Int. Cl. A01k *3/00;* **E01b** *17/00*

U.S. Cl. 256—17 **4 Claims**



A plurality of spaced and parallel cross member pipes are secured at right angles to a plurality of sill members. A steel gusset is vertically situated between adjacent cross member pipes and upon each sill member and is welded thereto thus preventing the cross member pipes from breaking away from constant battering received from logging trucks and the like using the cattle guards. The gussets have concave ends which fit around the periphery of the pipes and engage the pipes well above the horizontal centre line thus giving a structure which is virtually incapable of being broken in use.

3,790,136
DIE CASTING MACHINE

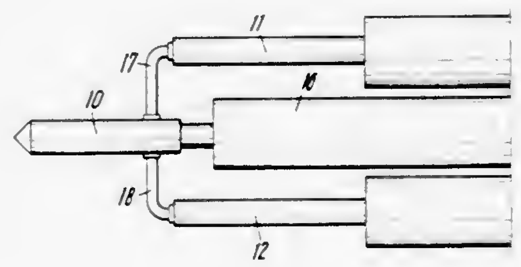
Friedrich Koch, and Hubert Zeug, both of Achim, Germany, assignors to Desma-Werke GmbH, Achim, Germany

Filed Jan. 26, 1972, Ser. No. 220,771

Claims priority, application Germany, Jan. 29, 1971, P 21 04 087.9

Int. Cl. B01f *7/08*

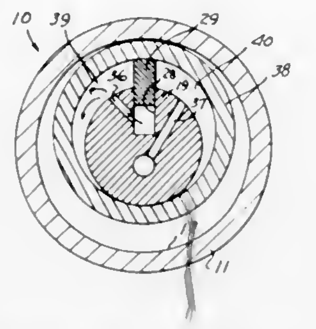
U.S. Cl. 259—192 **2 Claims**



A die casting machine is intended for sprayable materials, particularly artificial materials. The material is plastified in separate devices, particularly in an extruder and is supplied therefrom to a spraying aggregate which sprays the plastified material through an injection piston into the hollow space of a die cast mould. The invention is particularly characterized in that the injection piston is a rotary worm piston.

3,790,137
ROTATING PNEUMATIC VIBRATOR

Theodore S. Wadensten, 28 Snyder Ave., Ramsey, N.J.
Continuation-in-part of Ser. No. 42,791, June 2, 1970, Pat. No. 3,638,914. This application May 14, 1971, Ser. No. 143,451. The portion of the term of this patent subsequent to Feb. 1, 1989, has been disclaimed.
Int. Cl. B01f *11/00;* **F01c** *21/02*
U.S. Cl. 259—1 R **6 Claims**

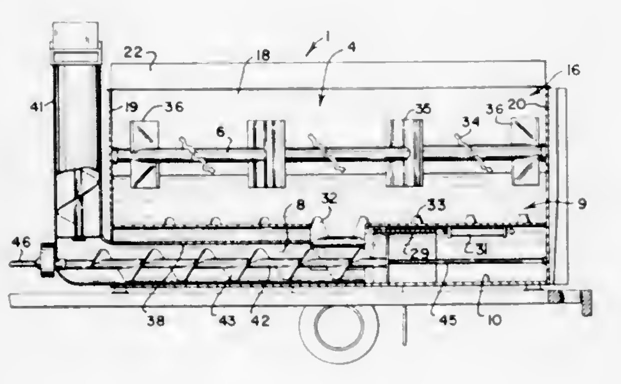


A rotating pneumatic vibrator in which a cylindrical housing is provided with an axial shaft spaced inwardly from the walls of the housing to provide a circular space between the shaft and the housing. A cylindrical rotor having a diameter greater than the shaft and smaller then the housing is mounted on the shaft for movement thereabout. A longitudinally extending radially moveable vane is mounted in the shaft and is arranged to be pneumatically pressed against the rotor. Air forces the vane against the rotor and escapes into the chamber formed between the shaft and the rotor, the air forces the rotor to move about the shaft and then escapes to the atmosphere with the rotor and vane returned to their beginning point. The motion is continuous and produces vibrations due to the movement of the rotor on the shaft.

Replaceable circular wear plates are fitted in each end of the housing to seal the ends of the rotor to prevent leakage.

3,790,138
FEED MIXER

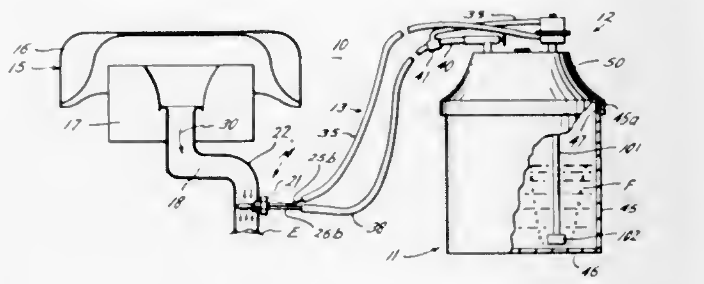
Benjamin R. Neier, Dodge City, Kans., assignor to B/J Manufacturing Co. Inc., Dodge City, Kans.
Filed June 19, 1972, Ser. No. 263,962
Int. Cl. B01f *7/04, 15/02, 7/08*
U.S. Cl. 259—41 **12 Claims**



A material mixing apparatus for mixing a mass of materials to form a feeding ration for animals includes spaced elongated augers within a lower portion of a mixing chamber and spaced elongated agitators within an upper portion of the mixing chamber and having at least two sets of paddles thereon. The augers each have flights thereon to move materials along a bottom portion of the mixing chamber and toward an area of mutual convergence located adjacent a normally closed entrance to a passage having a conveyor therein to discharge mixed materials received from the mixing chamber. The augers and agitators are rotated at different speeds to thoroughly blend the mass of material within the mixing chamber and direct same toward a portion of the mixing chamber between said agitators.

3,790,139
INJECTOR APPARATUS

Robert A. Stephenson, Houston, and Robert M. Zoch, Jr., Dickinson, both of Tex., assignors to Enercon Corporation International, South Houston, Tex.
Filed July 22, 1970, Ser. No. 57,227
Int. Cl. Fo2m *25/02*
U.S. Cl. 261—18 A **4 Claims**



The present apparatus has different combined elements depending on the pressure differential developed between a tube positioned in an air intake manifold system for a compression engine and the ambient atmosphere.

If the pressure differential is adequate to provide fluid flow through the fluid reservoir into the air manifold, a regulator member is positioned with the container to control the fluid flow.

If the pressure differential is not adequate to provide fluid flow through the fluid reservoir into the air manifold, a flow tube connected with the container is positioned in the air manifold to develop sufficient pressure differential.

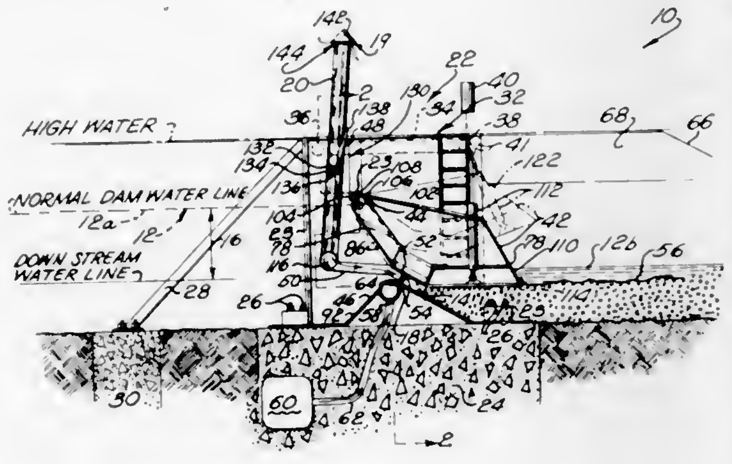
If the air manifold pressure is greater than that of the ambient atmosphere, an impact tube connected with the container is placed upstream of the flow tube to develop adequate pressure differential by forcing air into the fluid container.

Additionally, a check valve may be positioned with the container to prevent fluid flow from the air manifold to the fluid container.

Finally, a needle valve may be positioned with the container to constantly regulate the fluid flow from the fluid reservoir to the engine air manifold.

3,790,140
APPARATUS FOR AERATING WATER

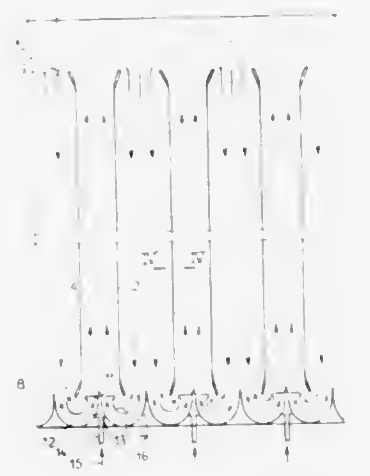
Robert W. Conway, 7450 Brecksville Rd., Independence, Ohio
Filed Jan. 22, 1971, Ser. No. 108,790
Int. Cl. B01f *3/04*
U.S. Cl. 261—62 **3 Claims**



Apparatus for aerating a stream of water under a natural pressure head that comprises a venturi including upper and lower gate members connected to the atmosphere for restricting the flow of water. One of the gate members is movable with respect to the other. A foraminous air diffuser is positioned between the upper and lower gate members. A screen is positioned downstream of the upper gate for retarding movement of the air bubbles produced to the water surface.

3,790,141
APPARATUS FOR PRODUCING A FLOW IN A LIQUID MIXTURE

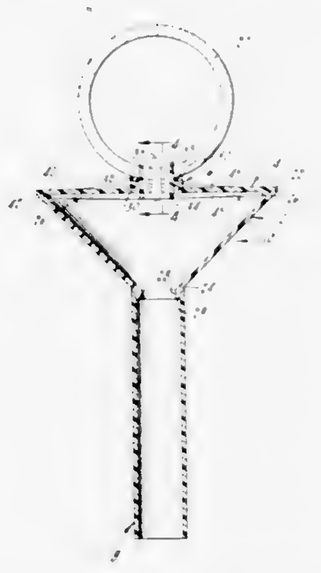
Andre Champeau, Paris, France, assignor to Creusot-Loire, Paris, France
Filed July 19, 1971, Ser. No. 163,765
Int. Cl. B01f *3/04*
U.S. Cl. 261—77 **9 Claims**



Apparatus for circulating a liquid mixture such as a water/paraffin mixture for aerobic fermentation, which includes a parallelepiped vessel, parallel vertical partitions spaced from the top and bottom of the vessel and defining flow paths, gas injection means at the foot of some flow paths to establish upward flow therein and guide vanes to promote flow from flow paths of one direction to the flow paths for return flow.

3,790,142
GAS DIFFUSER

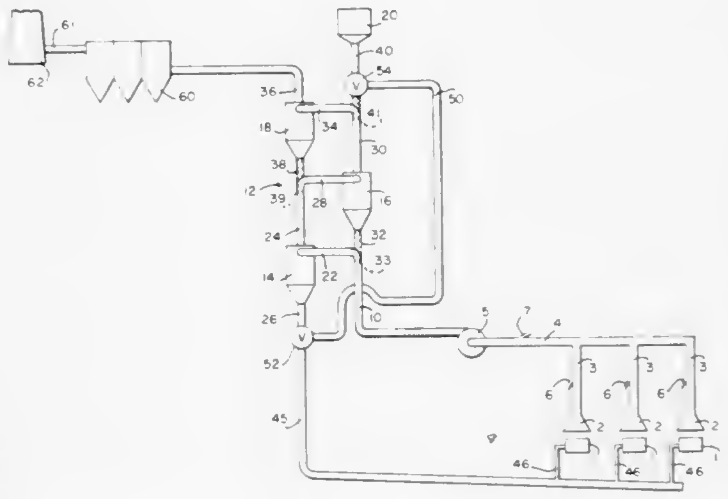
Brian L. Goodman, Overland Park; Robert B. Higgins, Olathe, and Frank M. Denham, Overland Park, all of Kans., assignors to Ecodyne Corporation, Chicago, Ill.
Filed May 26, 1972, Ser. No. 257,123
Int. Cl. B01f *3/04*
U.S. Cl. 261—124 **10 Claims**



A gas diffuser including a conically-shaped diffuser cone having a plurality of openings formed along the base circumference of the cone for liberating small gas bubbles. Connected to an opening formed in the apex of the cone is a hydrostatic leg depending therefrom. The length of the hydrostatic leg is designed such that during normal operation no gas will pass therethrough. The openings in the diffuser cone include an outer entrance opening and a recessed inner entrance opening. The inner opening is of square shape to release a small bubble. The top of the diffuser cone includes a unique seat and latch connecting arrangement that enables the diffuser to be installed in an opening in gas header pipes of varying diameters.

3,790,143
REMOVAL OF FLUORIDES FROM GASES

Thomas B. Nix, Baton Rouge, La., assignor to Fuller Company, Catasauqua, Pa.
Filed July 31, 1972, Ser. No. 276,492
Int. Cl. C22b *21/06*
U.S. Cl. 266—16 **4 Claims**

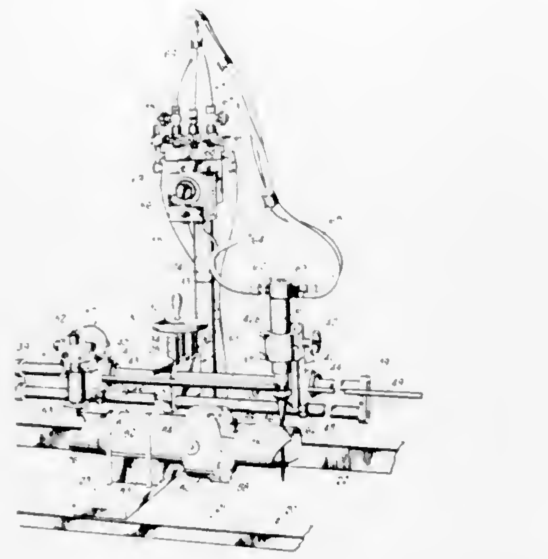


A method and apparatus for removing gaseous fluorides from gases evolved from an aluminum smelting furnace. Basically, the fluorides are removed by achieving intimate contact between finely divided particles of alumina and the fluoride-containing gases. This is achieved by feeding the particles of alumina into a stream of gases collected from the aluminum smelting furnaces countercurrent to the flow of gases. The particles of alumina adsorb the fluorides. The particles of alumina and adsorbed fluorides are then separated in a gas-solids separator, such as a cyclone and the alumina may then be fed to the smelting furnaces. Preferably, two stages are used. The gases supplied to the second or last cyclone in the direction of gas flow are supplied with new alumina countercurrent to the flow of gases. The alumina particles removed in this second cyclone are conveyed to the gas stream supplied to the first cyclone in the direction of gas flow. In a two-stage apparatus, these gases will be those evolved from the smelting furnace. The alumina separated from the first cyclone may be either conveyed to the smelting furnace or recirculated or a portion may be recirculated and a portion conveyed to the smelting furnace. The gases separated in the first cyclone are conveyed to the second cyclone.

3,790,144
TUBE AND PIPE CUTTING MACHINE

David W. Waldron, Valdosta, Ga., assignor to Lowndes Engineering Co., Inc., Valdosta, Ga.
Filed Jan. 10, 1972, Ser. No. 216,394
Int. Cl. B23k *7/04*
U.S. Cl. 266—23 E **2 Claims**

Apparatus for use in making a predetermined cut on a tubular workpiece corresponding to pattern control means. The apparatus includes a base frame for supporting a workpiece and a pattern in fixed relationship with each other, with the supporting means detailed to permit coordinated movement of the workpiece and pattern relative to the base frame means. A carriage assembly is supported on the base frame for movement relative thereto and movement relative to the workpiece and pattern. The carriage assembly includes a drive means operatively associated with the pattern for effecting the coordinated movement of the pattern and workpiece and for effecting movement of the carriage in a cutting operation. Cutting means is supported on the carriage and is detailed for movement relative the workpiece in response to the coordinated movement effected by the drive means. The cutting means is operable for making a predetermined cut in the workpiece corresponding to the pattern control means.



3,790,145

DEVICE IN A MELTING OR HOLDING FURNACE FOR FACILITATING THE CHARGING THEREOF

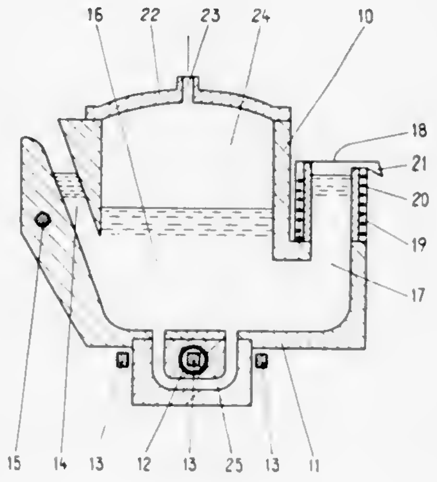
Kuido Gering, Vasteras, Sweden, assignor to Granges-Essen AB, Vasteras, Sweden

Filed June 7, 1971, Ser. No. 150,595

Claims priority, application Sweden, June 10, 1970, 8065/70

Int. Cl. C21c *5/52*

U.S. Cl. 266—33 R **5 Claims**



A device in a melting or holding furnace for facilitating the charging of the furnace, said device comprising an upwardly directed charging duct ouside of the furnace and in communication with the frunace at the lower portion thereof, the charging duct at its upper end being provided with a device for stirring of the molten material in the charging duct.

3,790,146

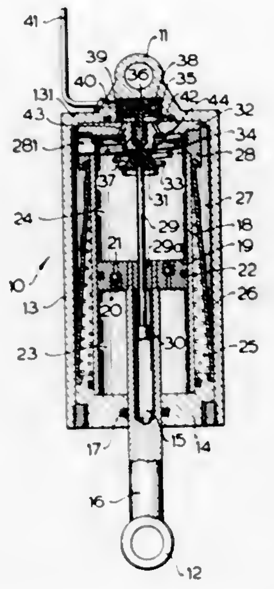
FLUID FILLED SUPPORTING LEG

Hans-Juergen Hoffmann, Schalksmuehle-Heedsfeld; Manfred Loehr, Letmathe, and Hubert Pfannkuche, Lichtendorf, all of Germany, assignors to Hoesch Werke AG, Dortmund, Germany

Filed Oct. 24, 1972, Ser. No. 300,377

Int. Cl. B60g *15/12*

U.S. Cl. 267—64 R **10 Claims**



A fluid filled supporting leg or shock absorber has a cylinder with an end wall having duct means connecting a valve chamber into which a pressure conduit opens, with a working chamber formed in the cylinder by a piston having throttling ducts therethrough. A lifting valve for up-regulation is located in a duct and has a portion in the working chamber cooperating with a control valve for down-regulation, which is coupled with the piston in a predetermined relative position of piston and cylinder. The lifting valve is held in an open position by the control valve during up-regulation so that fluid flows into the working chamber until the control valve is coupled with the piston, and is moved away from the lifting valve which stops the flow into the working chamber. When the piston is moved during down-regulation to reduce the working chamber, fluid flows therefrom into the pressure conduit until the control valve is moved by the piston to a position closing the duct means.

3,790,147

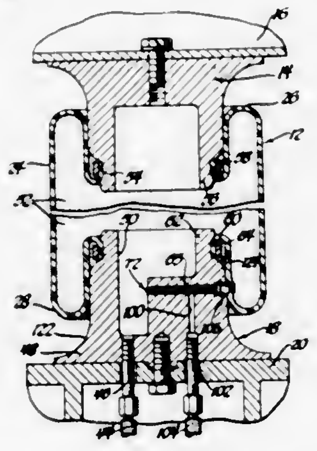
HEIGHT CONTROL VALVE FOR AIR SPRING WITH END PISTON-BOOT OPERATED

Robert E. Owen, Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 17, 1972, Ser. No. 307,218

Int. Cl. F16g *5/00*

U.S. Cl. 267—65 B **5 Claims**



A height control valve assembly for a vehicle leveling system includes an air spring having a resilient rolling lobe which rolls onto and off of a bell-shaped surface of an air spring piston. A height control valve in the piston is operated by the air spring lobe as it rolls onto and off of the piston to control the amount of air pressure within the air spring.

3,790,148

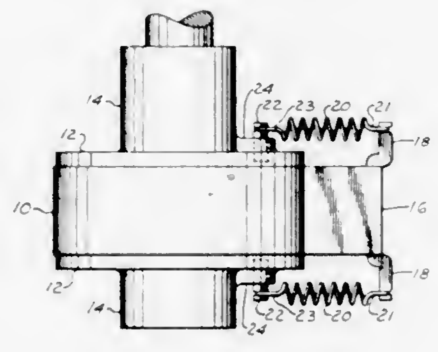
TENSION RING FOR COMPRESSOR VANE

Thomas J. Bellmer, Stanhope, N.J., assignor to Fedders Corporation, Edison, N.J.

Filed Mar. 31, 1972, Ser. No. 240,251

Int. Cl. F16g *1/12*

U.S. Cl. 267—73 **10 Claims**



A hollow cylindrical body and two end walls define a compression chamber in which a rotor is disposed. Hubs are formed on the outer sides of the end walls for receiving a pair of tension rings. A vane is disposed in a radial opening formed in the body and engages the rotor for dividing the chamber into high and low pressure sides. The vane is held in engagement with the rotor by a pair of coil springs disposed between the outer end of the vane and the tension rings.

3,790,149

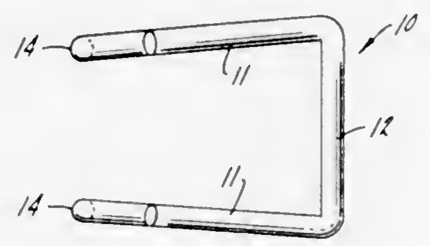
SPRING CONSTRUCTION

Lawton H. Crosby, Lake Bluff, Ill., assignor to Morley Furniture Spring Corporation, Chicago, Ill.

Filed Apr. 26, 1971, Ser. No. 137,563

Int. Cl. F16f *1/46*

U.S. Cl. 267—110 **36 Claims**



Attachment apparatus for joining sinuous spring bands to the frame rails in furniture or the like. Anchor link members and radius link members are employed, alone or in combination with each other, to connect the free ends, either plain or Zee-hooked, to the rail at or below the rail top. The link members are color-coded according to length and stocked in a multi-compartment working container having corresponding color-coded compartments. Any desired length link or combination of links are readily selected by color reference.

3,790,150

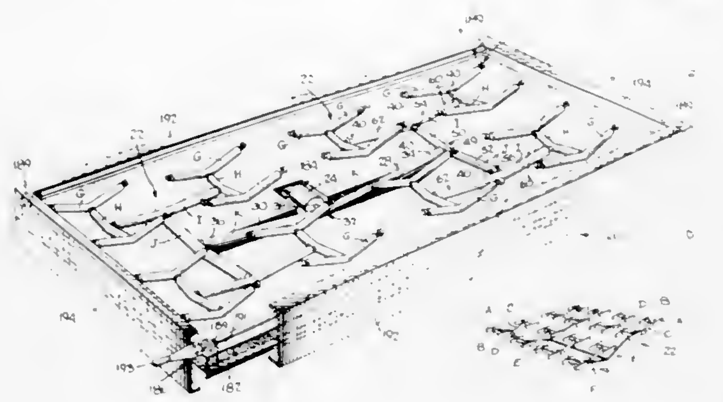
MECHANICAL SUPPORT SYSTEM

Donald Ernest Lippert, Woolwich, Maine, assignor to Deres Development Corporation, Greenwich, Conn.

Filed Sept. 25, 1970, Ser. No. 75,373

Claims priority, application Great Britain, Oct. 4, 1969, 48860/69

U.S. Cl. 267—151 **58 Claims**



A non-liquid mechanical support system having a displaceable support surface, comprising displaceable support means, to simulate a liquid support system (such as a water container) and to have similar properties of load displacement featuring a tree-like arrangement of branched levers forming a plurality of displaceable load support points.

3,790,151

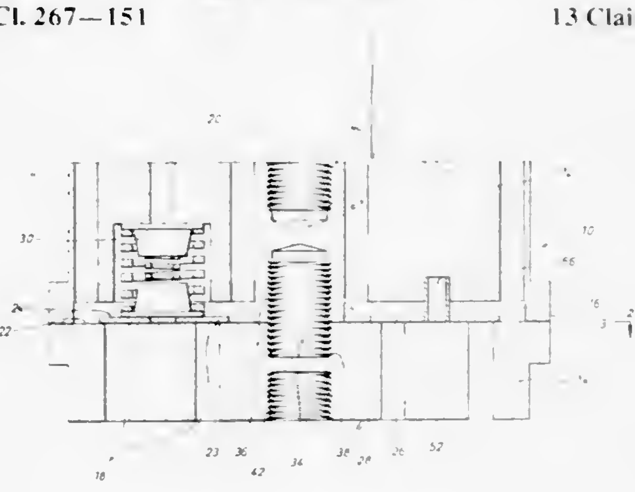
COMPRESSOR VALVE ASSEMBLY

Bernard L. Schwaller, 28 Hedwig Cir., Houston, Tex.

Filed May 11, 1972, Ser. No. 252,367

Int. Cl. F16f *3/02*

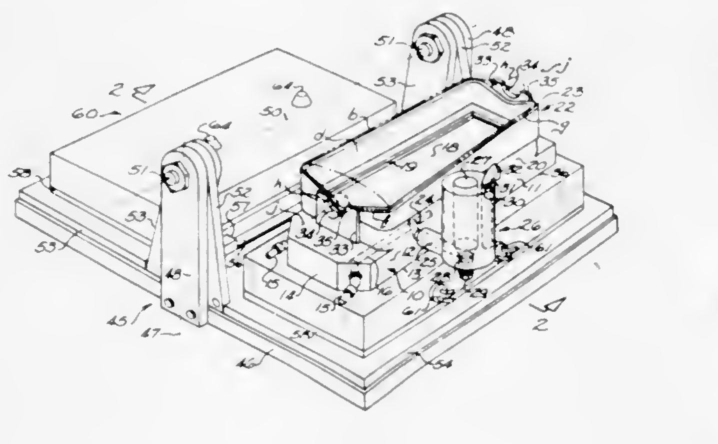
U.S. Cl. 267—151 **13 Claims**



A compressor valve assembly comprising a guard body member and a seat body member that cooperate to form a valve chamber and to define flow passages extending through the valve that are disposed in intersecting relation with the valve chamber. The seat body portion of the valve defines seating surfaces that are engaged by a pair of ring closure elements that are urged into seating relation with the seat surfaces by spring elements. A plurality of guide elements are retained within a guide retaining groove formed in the guard member and are disposed between the ring closure elements and serve to guide both of the ring closure elements during movement thereof. The guide elements also serve to properly position the ring closure elements in the closed position thereof to obstruct the flow of fluid through a valve assembly. Each of the guide elements comprises a strip of wear and heat resistant resilient sheet material bent back upon itself to define curved elongated portions adapted for guiding engagement with peripheral guide surfaces formed on the ring closure elements. The guide elements are structured to cooperate with the guard element in such manner that lateral movement of the guide elements is prevented during operation of the valve. The free extremities of the elongated portions of the guide elements may be curved away from the respective ring closure member thereby presenting a rounded surface to the ring closure member that prevents excessive wear and provides effective guiding.

3,790,152
MELTABLE MATRIX CHUCKING APPARATUS

John T. Parsons, 205 Wellington, Traverse City, Mich.
Filed Apr. 1, 1971, Ser. No. 130,218
Int. Cl. B23q *3/00*
U.S. Cl. 269—7 **10 Claims**

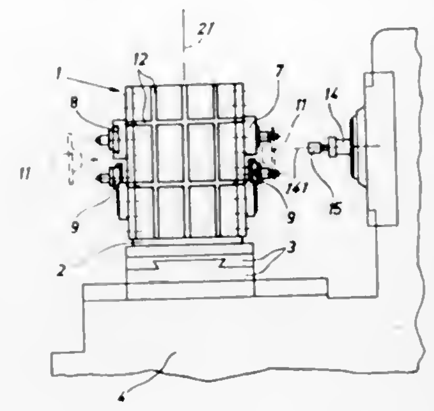


Chucking apparatus of the meltable matrix type. A first heat-conductive metal chuck body, fenced with rubber, has a workpiece locator support which establishes an axis below which molten matrix metal is filled, and relative to which two opposite surfaces of a workpiece may be successively machined, as by programmed machine tools. The workpiece is not released from the first chuck until its exposed surface, having been machined, is embedded in the matrix material of a second chuck. To do this, the first chuck is inverted over the second chuck and maintained cool while molten matrix metal is filled into the second chuck. To permit use of matrix metal which would not adhere directly to metal workpieces, surfaces of the workpiece to be embedded are first coated with a heat curable adhesive, which is cured by the heat of the cooling matrix metal.

3,790,153
EQUIPMENT FOR HOLDING WORKPIECES

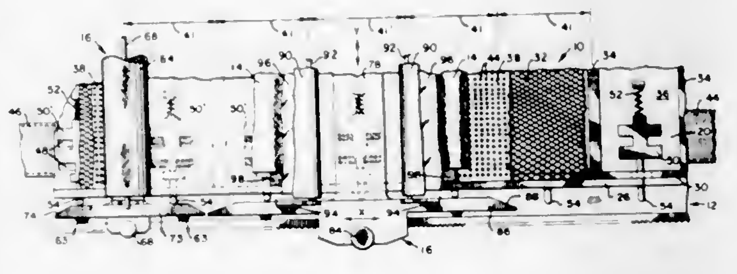
Heinz Seidenfaden, Varel/Oldb, Germany, assignor to Vereinigte Flugtechnische Werke-Fokker Gesellschaft mit beschrankter Haftung, Bremen, Germany
Filed Oct. 24, 1972, Ser. No. 299,996
Claims priority, application Germany, Oct. 27, 1971, 2153463
Int. Cl. B25b *11/00*
U.S. Cl. 269—21 **8 Claims**

Equipment for mounting workpieces in relation to a machine tool axis as pertaining to the spindle of a cutting, milling or drilling tool or the like, and on a machine tool table which can be placed in particular position relative to the tool. A support table is mounted on the machine tool table for turning on a second axis, which can be placed by the machine tool table in particular relation to the tool axis; a prism is mounted with one end face on the support table, so that at least two of the prism sides have similar distance from the second axis; at least two of the sides are provided each with an array of threaded fitting bores arranged in regular spacing along two coordinates on the respective side, the bores of the arrays being arranged to have similar position for similar dispositions of the two sides in relation to the tool. The prism sides have second bores respectively between four of the fitting bores as forming a quadrilateral, and suction into the second bores is provided for; the sides have grooves interconnecting the second bores; upon turning the table, each of the prism sides is selectably placeable into the same particular position in relation to the tool axis.



3,790,154
APPARATUS FOR HOLDING SHEET MATERIAL AND OTHER OBJECTS DURING WORKING

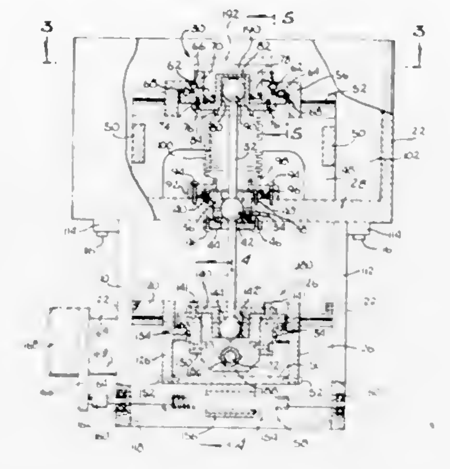
Heinz Joseph Gerber, and David R. Pearl, both of West Hartford, Conn., assignors to Gerber Garment Technology, East Hartford, Conn.
Continuation of Ser. No. 7,462, Feb. 2, 1970, abandoned, which is a continuation-in-part of Ser. No. 821,780, May 5, 1969, Pat. No. 3,495,492. This application Dec. 17, 1971, Ser. No. 209,394
Int. Cl. B23q *3/06*, **B26d** *7/02*
U.S. Cl. 269—22 **17 Claims**



Apparatus for holding sheet material and other objects during cutting or other work thereon includes a vacuum hold-down device having a supporting surface including a plurality of vacuum openings passing therethrough. A vacuum chamber associated with the supporting surface applies a vacuum through the vacuum openings to the sheet material or other object or objects received thereon. A sheet or panel of substantially air-impervious sheet material, such as a sheet of thin polyethylene, is spread over the exposed surface of the work and cooperates with the vacuum to draw the work toward the supporting surface and, if it is compressible, into a more compact condition. The air-impervious panel used with the vacuum may be an expendable sheet of such material spread entirely over the surface of the work prior to working thereon and/or may be one or two continuous belts of such material located in front of and/or behind an associated tool. In cases where the work is a layup of garment fabric, the vacuum and air-impervious panel may also be used to hold the layup in a compact condition for a long period of time between the laying up process and the cutting or other work process to prevent the various layers of the layup from shifting, flowing or otherwise moving relative to one another so as to depart from their relative positions as initially laid up.

3,790,155
X-Y TABLE FOR VACUUM SYSTEMS

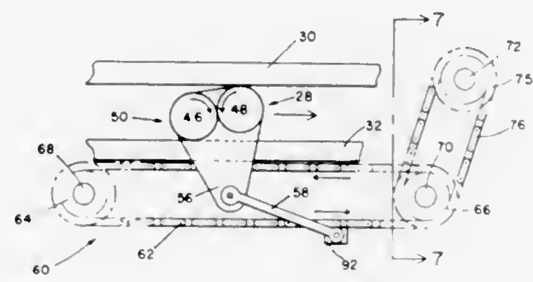
Robert Gail Longamore, Newbury Park, Calif., assignor to Radiant Energy Systems, Inc., Newbury Park, Calif.
Filed July 17, 1972, Ser. No. 272,430
Int. Cl. B23q *3/18*
U.S. Cl. 269—60 **13 Claims**



X-Y tables for use in a vacuum system whereby accurate two dimensional movement of a table within the vacuum system may be readily achieved in a repeatable and reliable manner without distrupting or contaminating the vacuum environment. The table within the vacuum system is mounted so as to be translatable in orthogonal directions and is coupled to an external drive system so as to be driveable by conventional means such as lead screws and the like. Integrity of the vacuum system is maintained by a bellows isolating the external drive system to the internal X-Y table, thereby eliminating the need for lubricants, small clearances and other sources of contamination within the vacuum system.

3,790,156
TEXTILE FOLDING MACHINE

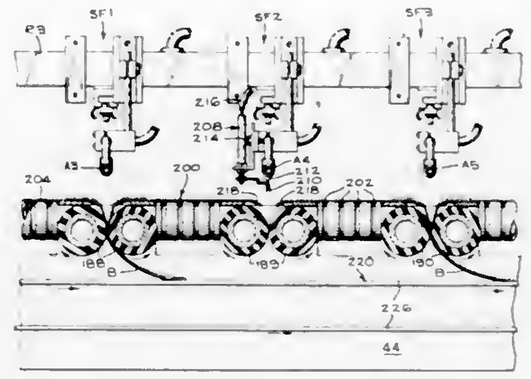
Warren Hogendyk, 4017 Bell N.E., Grand Rapids, Mich.
Filed Feb. 1, 1971, Ser. No. 111,257
Int. Cl. B65h *29/46*
U.S. Cl. 270—30 **19 Claims**



This disclosure relates to a folding machine and specifically to an apparatus for folding textile or like products in a serpentine or sinuous fashion. Textile products, after having been processed and normalized in the conventional fashion, may be folded for storage, shipment, or further processing purposes. This is accomplished in a folding machine having a pair of rollers arranged for reciprocating movement above a table surface to lay the fabric in a serpentine fashion on the table. The reciprocating rollers are driven by a pair of drive wheels at the ends of the rollers and mounted in horizontal track members having top and bottom drive wheel engaging surfaces. The drive wheels are pivotal within the track member on a yoke assembly so that the direction of travel of the rollers with respect to each other remains constant even as the direction of travel of the yoke assembly changes.

3,790,157
FOLDING MACHINE

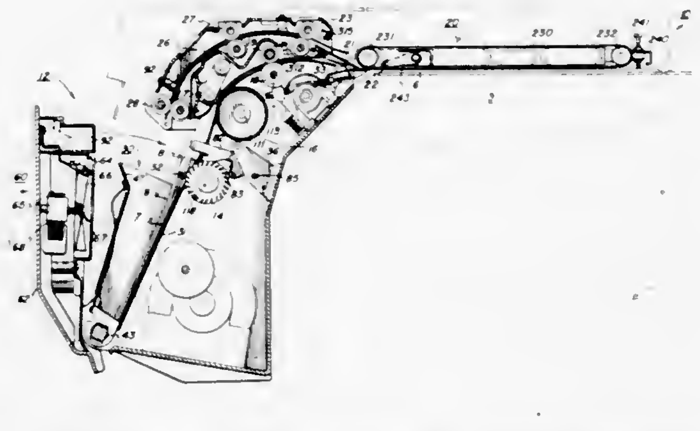
Donald C. Crawford, and Orrin H. Besserdich, Green Bay, both of Wis., assignors to FMC Corporation, San Jose, Calif.
Filed May 7, 1971, Ser. No. 141,127
Int. Cl. B65h *45/12*
U.S. Cl. 270—62 **1 Claim**



An article folding machine, especially adapted to fold either a single or multiple lane input of plastic film bags, and capable of multiple folding modes by integral programming controls. Air jets force preselected fold line portions of the moving bags into nip rolls to successively fold each bag upon itself in preselected proportions and in two different directions. Selected folding operations can be bypassed.

3,790,158
AUTOMATIC DOCUMENT HANDLER

James E. Summers, Fairport, and Michael J. Elwood, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed May 22, 1972, Ser. No. 255,336
Int. Cl. B65h *7/14*
U.S. Cl. 271—4 **4 Claims**



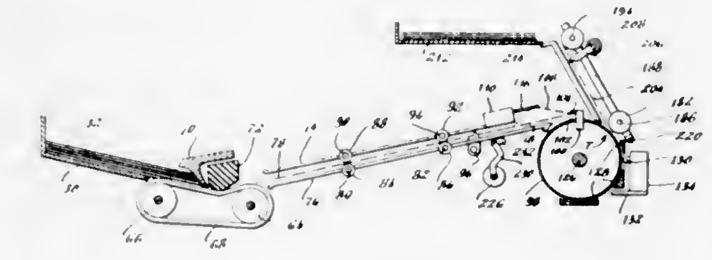
An automatic document handler for supplying documents singly to the platen of a processing apparatus such as a copying machine. Following copying, each document is returned to the document supply where the used documents are kept separated from documents awaiting copying by means of a resettable bail bar. A photoreceptor is used in the return document portion of the document supply area, to determine that each returned document is properly arranged and the feed path is clear for the receipt of the next document. Should the return path become obstructed with a misoriented document, the photodetector operates to stop the document feed system.

To position the documents properly for copying, the document handler includes a register against which the document trailing edge is abutted through reversal of the platen transport belt. To allow the document to be removed and the platen cleared for the next document, means are provided to remove the register and lower a document deflector into an intercept position, the deflector then serving to guide the document into a predetermined return path back to the document supply without interfering with movement of the next document forward. The platen transport comprises an endless belt conveyor supported for substantially single line contact with the platen surface at a point adjacent to and parallel with the register.

3,790,159
AUTOMATIC DOCUMENT HANDLING DEVICE

John F. Hatzmann, Rochester, and Donald P. Miller, Webster, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed May 16, 1972, Ser. No. 253,721
Int. Cl. B65h *3/04, 29/22*
U.S. Cl. 271—4 **26 Claims**



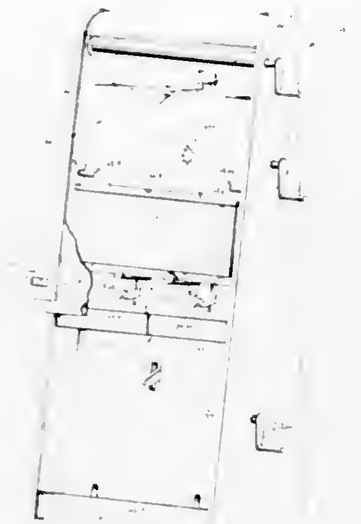
An automatic document handling device is described for use primarily with facsimile transmission systems wherein accurate document positioning is required. A processing drum is provided with a document retention gripper positioned on the surface. In response to an actuation signal the document retention gripper in its retracted position is rotated along with the document processing drum until it is located at a target location. Upon proper positioning the document retention gripper is opened and a document is fed from a supply source to the retention gripper. Suitable switches located along the document feeding path verify the accurate positioning and location of the documents. Upon receipt by the gripper, the gripper is retracted and the document retained. The operating drum surface then rotates through a processing stage for facsimile reception or transmission. At the end of the processing stage, the gripper is opened, a suitable pickoff mechanism rejects the document and the cycle is repeated.

3,790,160
DAYLIGHT FILM HANDLING SYSTEM

Gunter Schmidt, Malibu, Calif., assignor to Production, Inc., Los Angeles, Calif.

Filed July 7, 1970, Ser. No. 52,848
Int. Cl. B65h *3/30*
U.S. Cl. 271—18 R **11 Claims**

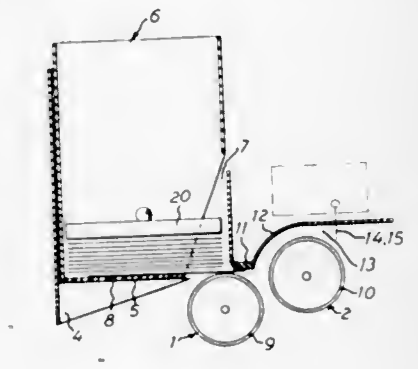
A system for enabling X-ray films, of the type primarily used in the dental and medical fields, to be handled in daylight for exposure to X-rays. The system utilizes identical film sheets emulsion coated on one or both faces, each sheet having a notch, displaced from the sheet center line, formed in one edge thereof. A stack of sheets is packed in an opaque envelope with the sheets being alternated so that all of the notches lie along a common stack edge arranged in two parallel rows, the notches in adjacent sheets lying in different rows. The system includes a light tight dispenser which receives the envelope and is capable of being operated to strip the envelope from the film sheet stack. The dispenser includes a pair of rotatable selector cams, each aligned with a different row of notches. A spring mounted back-up plate urges the film sheet stack against the selector cams with the two selector cams respectively bearing against notched and unnotched portions of the top sheet. Means are provided for alternately rotating the two cams so as to successively release the top sheet from the stack into a cassette removably engaged with the dispenser. The cassette includes parallel screens normally spring urged together in light tight relationship when disengaged from the dispenser. Engagement of the cassette with the dispenser in light tight relationship urges the screen plates apart to enable the released film sheet to fall therebetween. The cassette in turn operatively cooperates with a processor to enable the film sheet therein to be transferred to the processor.



3,790,161
APPARATUS FOR INDIVIDUALLY FEEDING SHEETS, CARDS, BANKNOTES AND THE LIKE

Konrad E. Ericsson, Stockholm, Sweden, assignor to Arbman Development AB, Stockholm, Sweden

Filed Feb. 14, 1972, Ser. No. 225,910
Claims priority, application Sweden, May 12, 1971, 6143/71
Int. Cl. B65h *3/06*
U.S. Cl. 271—117 **5 Claims**



An apparatus for feeding sheets, cards, banknotes and the like from a stack comprises a rotary roll which engages the lowermost sheet, card or banknote in the stack, a further roll spaced from and preferably slightly above the first roll, and a strip having a rough coating and so arranged between the two rolls as to extend inside a plane tangent to the peripheries of the rolls.

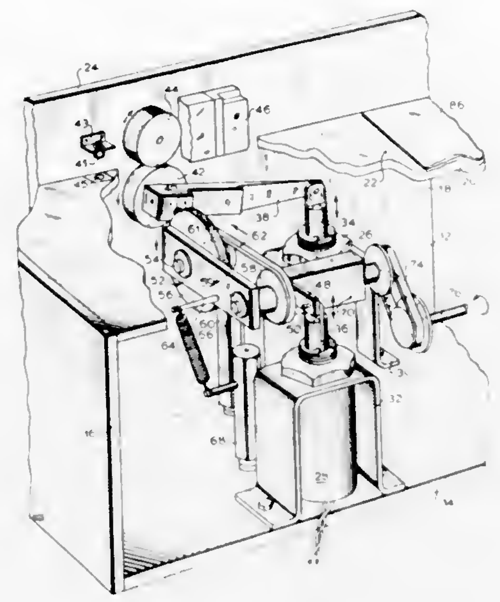
3,790,162
PICKING AND TRANSPORTING APPARATUS AND METHOD

Silas Ray Halbert, 481 Monaco Dr., Melbourne, Fla.

Filed May 15, 1972, Ser. No. 253,594
Int. Cl. B65h *3/06*
U.S. Cl. 271—118 **15 Claims**

Apparatus comprising a member having a surface adapted to receive a stack of articles. Means are provided for rotating

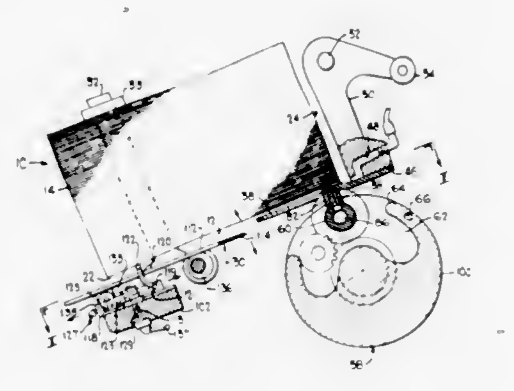
each bottommost article about an axis which is substantially normal to the plane of the surface and then feeding that article away from the stack, while any remaining articles are restrained in the stack.



3,790,163
DEVICE FOR MAINTAINING UNINTERRUPTED FEEDING OF BLANKS FROM THE BOTTOM OF A STACK

Herbert W. Helm, Hollidaysburg, Pa., assignor to F. L. Smithe Machine Company, Inc., Duncansville, Pa.

Filed Mar. 23, 1972, Ser. No. 237,356
Int. Cl. B65h *1/06, 3/08*
U.S. Cl. 271—165 **5 Claims**



In a device for feeding envelope blanks from the bottom of a stack, the bottom blank is removed from the stack by engaging the front edge of the bottom blank with a blank engaging assembly which engages the front edge and guides it into engagement with a feed cylinder which thereafter transports the bottom blank to other transfer cylinders in the device. Uninterrupted timely engagement of each successive bottom blank in the stack by the engaging assembly is provided by adjustment of a supporting plate while the device is in operation. The plate is arranged to support the stack of blanks and is pivotally connected to the frame of the device. Eccentric adjustment members contacting the underside of the support plate rotate to raise and lower a portion of the plate relative to the disc elements of the blank engaging assembly and prevent movement of the stack of blanks in the forward direction or in the other extreme rearward movement or push back of the bottom sheet by the disc elements.

3,790,164
THERAPEUTIC EXERCISE DEVICE

Charles Dennis Flanigan, San Jose, Calif., assignor to Overly Manufacturing Company, Greensburg, Pa.

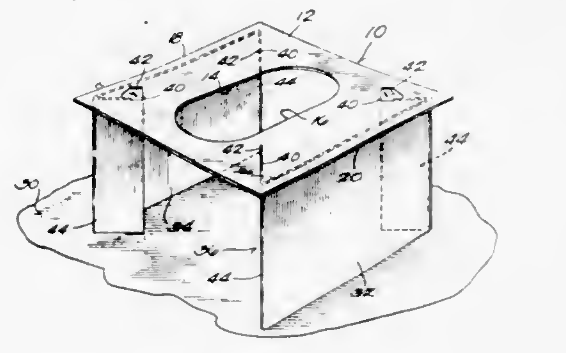
Filed Feb. 21, 1973, Ser. No. 334,372
Int. Cl. A63b *23/02*
U.S. Cl. 272—57 R **6 Claims**

An improved therapeutic exercise device combining three independently adjustable support means, specifically, independently adjustable foot supports, knee supports, and midriff support, so as to enable accommodation of exercisers of varying sizes. A broad support base is provided including means for engaging and receiving telescoping mast means. The telescoping mast includes a fixed mast portion rigidly engaging the base and a vertically movable mast portion which is vertically adjustable to selected fixed locations on the fixed mast portion. The vertically adjustable mast portion carries at the upper end thereof a horizontal midriff support bar adapted to abut the midriff of an exerciser. Spaced-apart foot support means are provided in the support base and are laterally adjustable to selected locations in said base. Knee support means are provided and are adapted to fixedly engage the fixed mast portion at selected varying vertical locations thereon. Exercisers of varying sizes may thus use the therapeutic exerciser with feet and knees properly supported while exercising by midriff bending about the vertically adjustable midriff support bar.

3,790,165
APPARATUS FOR A THUMB WRESTLING GAME

Robert P. Schmidt, 3223 Monaco Dr., Milwaukee, Wis., and Richard S. Menke, 4047 N. 85th St., Milwaukee, Wis.

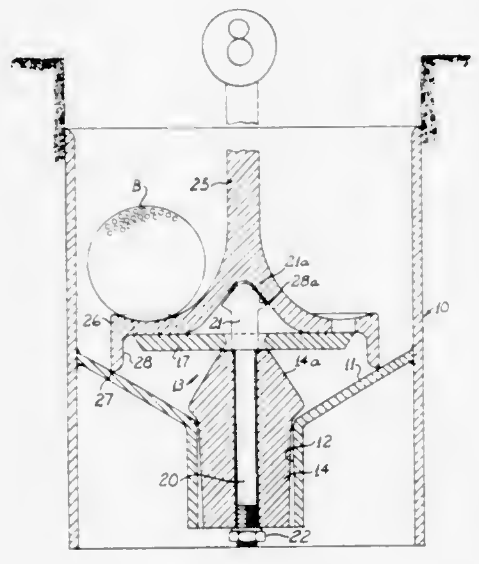
Filed June 26, 1972, Ser. No. 266,117
Int. Cl. A63b *71/04*
U.S. Cl. 273—1 R **6 Claims**



Game apparatus for playing a game of thumb wrestling employing the thumbs of two opponents includes flexible thumb jackets which snugly interfit on the thumbs of the opponents and which include representations of wrestling characters. The apparatus also includes a game ring which localizes the wrestling activity of the opponents and interlocks the hands with the ring to keep the ring in physical association with the hands of the players irrespective of movement of the players.

3,790,166
GOLF BALL EJECTOR AND FLAG POST FOR PUTTING CUPS

Georges Edmond Hamilton, 7400 Sherbroke St., West, Apt. 607, Montreal, and William Horace Hamilton, 30 Lakeshore Rd., Apt. 606, Pointe Claire, Quebec, both of Canada
Filed Mar. 14, 1973, Ser. No. 340,938
Int. Cl. A63b *57/00*
U.S. Cl. 273—34 A **9 Claims**

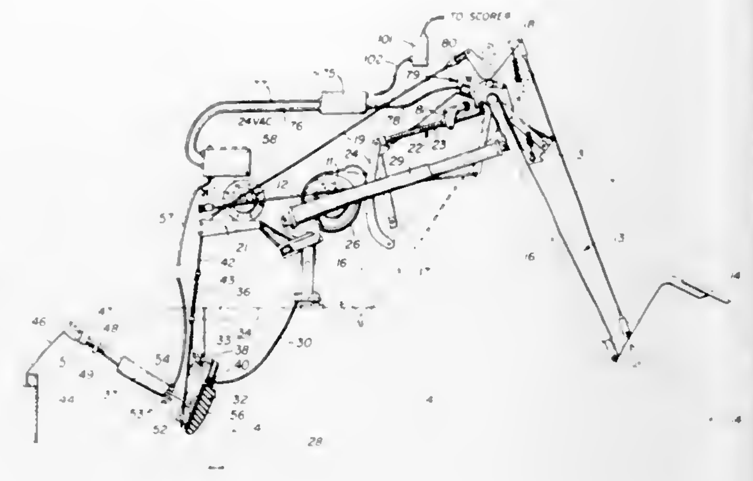


A cylindrical plug is inserted in the central opening in the sloping bottom of a conventional putting cup, the upper portion of the plug projecting above the bottom and terminating in an annular upper edge. An ejector plate in the cup has a central aperture, the edge of which rests rockably on the upper edge of the plug-thus providing a universal fulcrum which permits the plate to be tilted in any direction to eject a golf ball from the cup. A central locating post at the upper end of the plug extends loosely through the aperture in the plate to prevent displacement of the latter. A removable flag post may be used with the cup, the flag post having a circular base which rests on the cup bottom. The base is provided at its underside with a recess which accommodates the ejector plate and the locating post on the plug. When the flag post is removed from the cup, its base enables it to stand upright on the ground. The flag post may also be used with the plug in the putting cup, but without the ejector plate.

3,790,167
CONTROL SYSTEM AND CUSHION MOUNT FOR BOWLING MACHINES

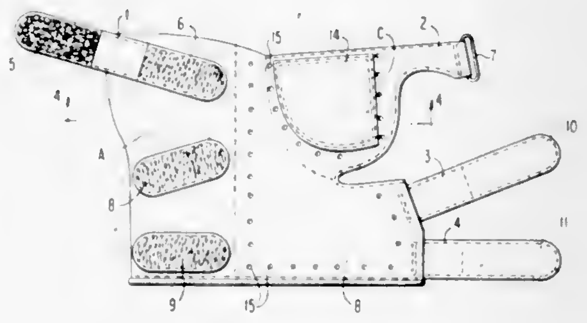
Ronald A. Lenhart, and Timothy W. Rickard, both of Lakewood, Colo., assignors to Zot Manufacturing Company, Lakewood, Colo.
Filed July 3, 1972, Ser. No. 268,394
Int. Cl. A63d *5/00*
U.S. Cl. 273—43 R **11 Claims**

A mechanism for use on automatic pinsetter bowling machines to initiate and regulate the cyclic operations thereof and to better absorb the impact of bowling balls and pins directed against a pit cushion pivotally held in impact absorbing position by improved mounting components. The pressures in a dashpot cylinder on the pit cushion are changed at time of impact, and the pressure change is used to activate control circuits that may include time delay elements, solenoids, etc. for regulating cyclic machine operations, such as lane clearing, ball and pin retrieval, game scoring and similar functions.



3,790,168
BOWLER'S WRIST SUPPORT

Yoshio Hashimoto, 3-11, 2-chome, Sakuragi-cho, Seima-ku, Kobe-shi, Japan
Filed May 29, 1973, Ser. No. 364,922
Int. Cl. A63h *71/14*
U.S. Cl. 273—54 B **9 Claims**



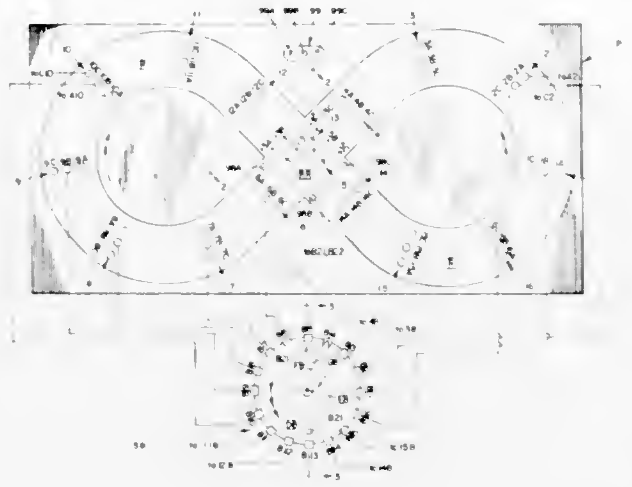
A bowler's wrist support has a rigid core member curved longitudinally and laterally to cover both the wrist and back of the hand and having fastening bands and fastening members for securing the wrist support over the upper and lower portions of the back of the hand and over the wrist portion.

3,790,169
APPARATUS FOR SIMULATING CROSSROADS VEHICULAR TRAFFIC

Richard L. Brown, 1812 Pelton Ave., Bellevue, Nebr.
Filed Oct. 2, 1972, Ser. No. 294,381
Int. Cl. A63f *9/14*
U.S. Cl. 273—86 R **11 Claims**

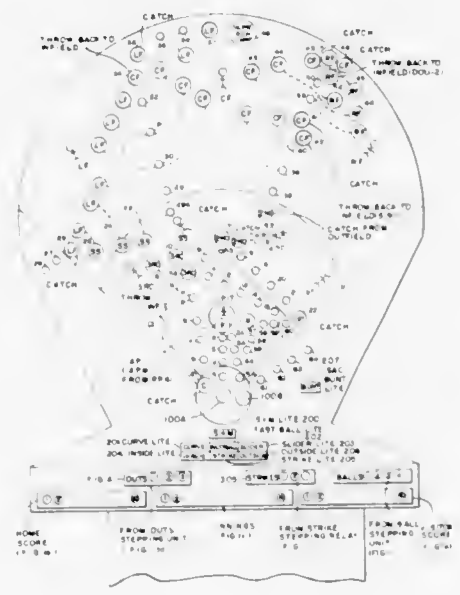
There is provided amusement apparatus having some roadway system layout including at least two cross-wise intersecting roadway segments that together define one or more roadway crossroads portion, there being a plurality of simulated vehicles movably traveling along the roadway and merging towards the crossroads and preferably from cross-wise directions whereby the potential for vehicular collision exists thereat, speed variation means assigned to individual simulated vehicles and manipulatable remotely from the roadway whereby the operator assigned to an individual vehicle can

control its ability to negotiate crossroads traffic, collision-indication means to apprise an operator whenever his assigned vehicle and another have substantially simultaneously merged at the crossroads, and means for allowing apparent collision victims to survive and thereafter travel along the roadway.



3,790,170
AUTOMATIC ELECTRIC BASEBALL GAME

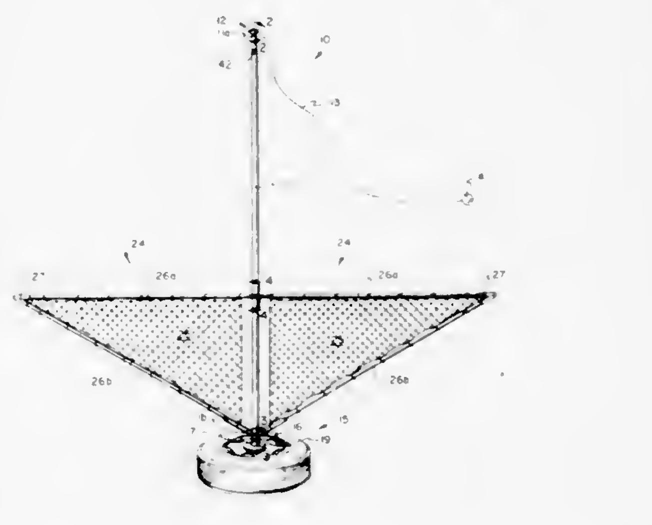
Delbert S. Alexander, Jr., Evanston, Ill., assignor to Small Business Administration, Washington, D.C.
Division of Ser. No. 48,505, June 22, 1970, Pat. No. 3,655,189, which is a continuation of Ser. No. 683,885, Nov. 17, 1967, abandoned. This application Apr. 3, 1972, Ser. No. 240,671
Int. Cl. A63f *9/00*
U.S. Cl. 273—88 **5 Claims**



A baseball game apparatus includes a defensive control unit with pitch selection switches manually controlled by a player serving as pitcher, and an offensive control unit with pitch anticipation switches on which a player serving as batter selects and swings at or passes an anticipated pitch. A mixer stepping unit randomly selects the resulting play from a category of plays determined by the degree of correspondence between the defensive and offensive pitch switches. The selected play controls sequential energization of a series of lights under a translucent playing field to simulate the movement of a batted ball. A player stepping unit energizes a further series of lights to animate men which converge towards the batted ball flight path. A base running relay energizes lights arranged in a diamond-shaped pattern to animate runners advancing around a base path. Interlocking relays allow one runner to be held on a base while another runner advances. A motor driven play animation unit energizes further series of lights to simulate the ball being returned to the infield. A plurality of stepping relays records the progress of the game, and in response to predetermined positions, such as third out, control energization of the relays and lights to modify the game condition then being displayed.

3,790,171
TETHER BALL APPARATUS INCLUDING ROLLER BEARING AND VERTICAL BARRIER

Leonard R. Anderson, 77 1st Ave., Midvale, Utah
Filed Nov. 22, 1971, Ser. No. 201,027
Int. Cl. A63b *71/02*
U.S. Cl. 273—95 A **4 Claims**

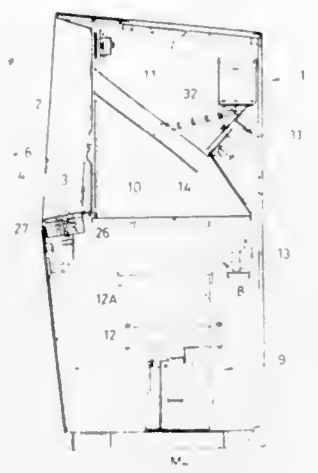


A versatile game apparatus which lends itself to the playing of a number of different skill games between two competing players or for individual game practice. The apparatus consists of an upright pole having a bearing on its top to which a line is attached. A game object, such as a tennis ball, baseball, shuttlecock, football, or the like, is tethered to the other end of the line. The bearing mounting allows the line to rotate freely about the pole such that players opposite to, or alongside, one another can strike the tethered game object back and forth. A simple base mounting arrangement is provided to connect the pole axially to an automobile wheel and tire so as to provide a support for the pole. A collapsible net releasably coupled to the upright pole is provided to form a barrier over which a game of skill associated with the apparatus of the invention is played. The upright pole also has a fixed hole proximate to its top, for attachment of a standard tether ball line thereto.

3,790,172
SIMULATED BOMBING APPARATUS

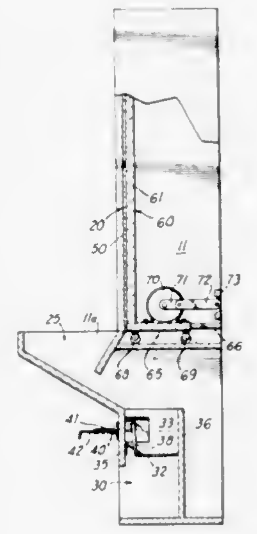
Masaya Nakamura, Tokyo, Japan, assignor to Kabushiki Kaisha Nakamura Seisakujo, Tokyo, Japan
Filed Oct. 27, 1971, Ser. No. 193,056
Claims priority, application Japan, Sept. 18, 1971, 46-72164; Sept. 18, 1971, 46-72165
Int. Cl. A63f *9/02*
U.S. Cl. 273—101.2 **8 Claims**

A game of the type in which images of flying bodies are projected on a viewing screen. A player aims at the image of the bodies and fires a simulated projectile thereat. The apparatus includes a semi-spherically shaped, semi-transparent dome supporting a flying body. A screen is positioned above the dome having a sight formed thereon. Motion is imparted to the dome while the operator attempts to allign the sight with the image of the flying body.



3,790,173
COIN OPERATED DART GAME

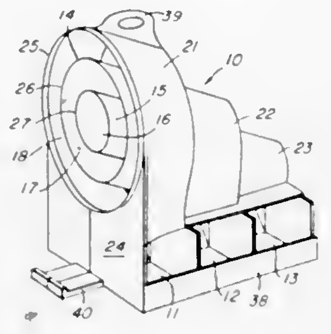
James W. Callaway, 730 Mt. Paron Rd., Atlanta, Ga.
Filed Apr. 17, 1972, Ser. No. 244,367
Int. Cl. F41j *3/02*
U.S. Cl. 273—102.2 R **7 Claims**



A coin operated dart game wherein darts are propelled into piercing contact with a target assembly having a scoring register for accumulating the results of the areas of the target assembly penetrated by the darts. The target apparatus is located behind a fixed screen member and is supported on a carriage for cyclic movement by an electric motor from a forward dart receiving position to a rearward dart removing position, with the motor being cyclically driven in response to a dart penetrating the target apparatus. A collector is operatively associated with the dart game for collecting the removed darts in a container, with the container being operated from a dart storing position to a dart dispensing position in response to operation of a coin deposit.

3,790,174
CONCENTRIC TARGET ASSEMBLY HAVING SIDE STORAGE COMPARTMENTS

John A. Skillern, 132 State St., Framingham, Mass.
Filed Nov. 5, 1971, Ser. No. 196,134
Int. Cl. F41j *1/04*
U.S. Cl. 273—105 A **13 Claims**



A target capable of capturing and segregating projectiles comprising a series of generally concentric tubular members of different sizes describing target areas and arranged to receive projectiles. The tubular members are arranged so that projectiles entering the target face defined by the tubular members are deflected rearwardly and downwardly into separate storage compartments associated with the respective target areas described by the tubular members. The storage compartments are located along the side of the target

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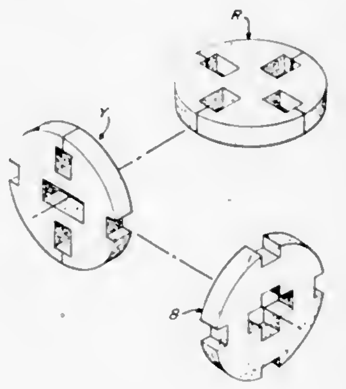
3,790,175
PUZZLE BALL

Richard W. Ragnow, Excelsior, Minn., assignor to Funforms Inc., Excelsior, Minn.
Filed Dec. 30, 1971, Ser. No. 213,888
Int. Cl. A63f *9/12*
U.S. Cl. 273—160 **2 Claims**

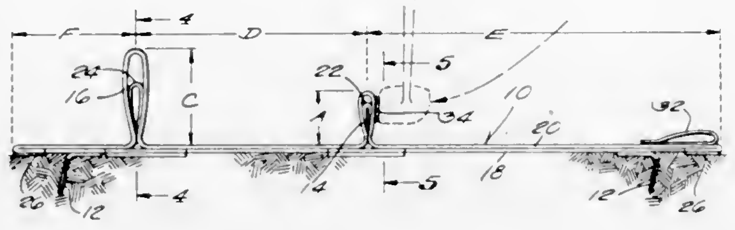


An improved puzzle ball made of elastic, compressible members of uniform thickness, and configured to give peripheral as well as central interlocking.

3,790,176
GOLF SWING GROOVING DEVICE

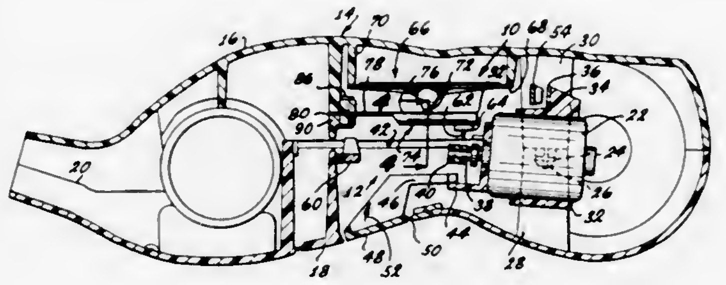
Adelbert E. Rietz, 1306 N. 63rd Ct., Milwaukee, Wis.
Filed Apr. 9, 1973, Ser. No. 350,217
Int. Cl. A63b *69/36*
U.S. Cl. 273—186 R **5 Claims**

A flat, elongated strip of belting material reinforced by a metal backing is adapted to be anchored to the ground by downwardly-projecting prongs. Two flexible uprights, in the form of integral loops of the belting material, extend upwardly from the strip at longitudinally-spaced locations. A target mark which may be shaped and colored to simulate a golf ball is borne by one of the uprights. The other upright is dimensioned and positioned so that a properly swung golf club which strikes the simulated golf ball will also strike the other upright, thereby making two slapping sounds, while an improperly swung golf club which strikes the simulated golf ball will miss the other upright, thereby making only one slapping sound, thus audibly indicating the difference between a properly swung golf club and an improperly swung golf club. The elongated strip is dimensioned to comfortably fit within a golf bag containing golf clubs. The prongs on the elongated strip are inclined at an angle toward the direction of club head travel.



3,790,177
MECHANICAL COUPLING FOR CONNECTING A SOUND PICKUP TO A SOUND AMPLIFIER

George W. Sioles, Palos Verdes Estates, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Mar. 24, 1972, Ser. No. 237,848
Int. Cl. G11b *3/00, 25/04*
U.S. Cl. 274—1 A **4 Claims**

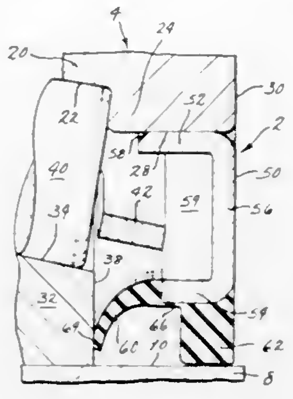


Audio beam has one end fixed in a phonograph housing and extends over the recorded-message portion of a phonograph record in contact with a speaker cone and is slideably engaged by a tone arm in all rotated positions thereof. The fixed end of the beam has a compliance which increases the total stiffness of the system by a very small amount. On the other hand, the overall beam construction is made sufficiently stiff to minimize loss of high frequencies.

3,790,178
BEARING SEAL

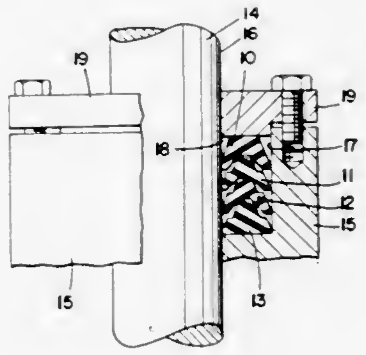
Robert W. Cameron, Canton, Ohio, assignor to The Timken Company, Canton, Ohio
Filed Jan. 17, 1972, Ser. No. 218,440
Int. Cl. F16j *15/32*
U.S. Cl. 277—95 **11 Claims**

A seal for a tapered roller bearing includes a mounting insert having concentric axial walls interconnected by a radial wall. The inner of the two axial walls is pressed onto the thrust rib of the bearing cone until the radial wall is flush with the cone back face. Hence, the insert does not obstruct the back face of the cone and therefore has no effect on the adjustment of the bearing. An elastomeric deflection member is bonded to the free end of the outer axial wall, and this deflection member extends obliquely toward the cup front face, with which it is engaged. A dirt excluder is also bonded to the outer axial wall and projects outwardly therefrom. The outer diameter of the dirt excluder is slightly less than the outer diameter of the bearing cup so that the dirt excluder does not engage the wall of the housing bore into which the cup is fitted. Thus, friction exists only between the deflection member and cup front face so that seal drag is minimized.



3,790,179
PACKING

John B. Scannell, Long Beach, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Jan. 10, 1972, Ser. No. 216,696
Int. Cl. F16j *15/18, 15/32*
U.S. Cl. 277—124 **4 Claims**



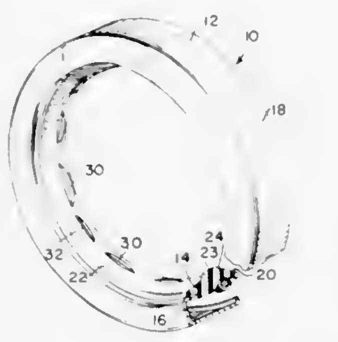
An annular generally V shaped sealing ring for use in multi-ring packing assemblies for hydraulic sealing applications, the ring having a flat base and a flat seat on the opposite side of the ring for accommodating the base of a similar, adjacent sealing ring. The ring also having two sealing lips, the inner and outer sides of each lip extending from the radially corresponding inner and outer edges of the base and seat, and the lips being formed such that, when the base of one ring is abutting the seat of another, the lips of the one ring do not contact the lips of the other except at high system fluid pressures.

3,790,180
FLUID SEAL WITH PUMPING ACTION

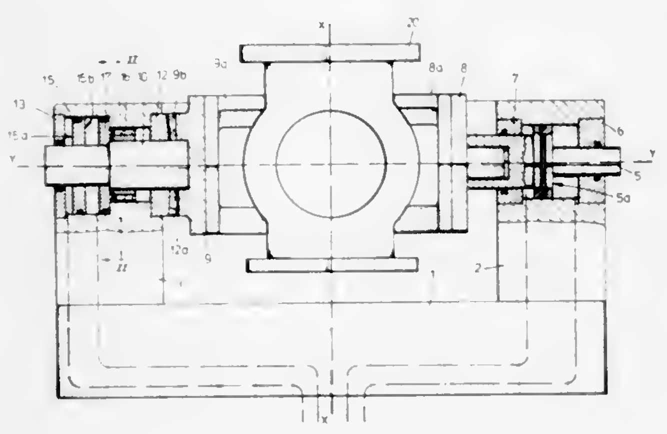
William O. Heyn, and Glenn W. Peisker, both of Barrington, Ill., assignors to Chicago Rawhide Manufacturing Company, Chicago, Ill.
Filed May 28, 1971, Ser. No. 147,949
Int. Cl. F16j *15/54, 9/00*
U.S. Cl. 277—134 **6 Claims**

An oil or like fluid seal acting upon rotation of an associated element to pump oil lying on the associated element into the region being sealed. The described forms of seals include a primary lip and a plurality of individual, wedge-like pumping elements, with the elements having the working surfaces thereof lying substantially parallel to the associated element so as to overlie the element along a substantial portion thereof.

The actual working surface comprises only a portion of the entire surface of the pumping element which is directed toward the associated element, with contact being formed along a large area of generally truncated eliptical pattern. The pumping element is formed so that the face thereof is flat, or of substantially different radius than the associated element, causing gradual radial convergence between a given portion of the associated element and the working face of the element as relative rotation occurs. In the preferred form, several of the pumping elements are radially spaced relative to one another and thereby adapted for successive operative engagement with the shaft or other element only after at least portions of the other elements have been worn in use. Accordingly, a succession of elements is inherently brought into working engagement with the movable element to provide continued pumping action throughout an extended life of the seal unit. The seals are made by a simple process using a mold core which is in turn manufactured by a simple method.

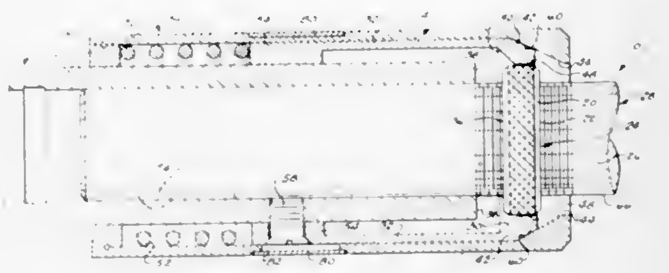


3,790,181
SWIVEL CHUCK FOR MACHINING WORKPIECES WITH A PLURALITY OF AXES CROSSING EACH OTHER
Hans Scharfen, Buderich, Germany, assignor to Paul Forkardt Kommanditgesellschaft, Dusseldorf, Germany
Filed June 6, 1972, Ser. No. 260,108
Claims priority, application Germany, June 9, 1971, P 21 28 618.0
Int. Cl. B23b *31/30, 31/34*
U.S. Cl. 279—4 **12 Claims**



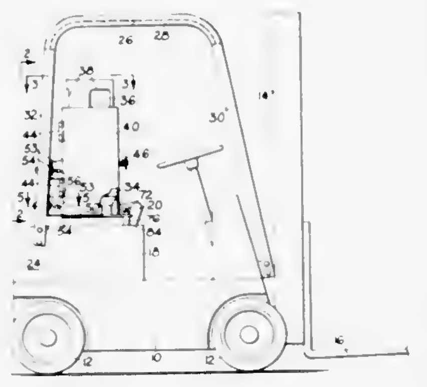
A chucking device in which a chuck body has aligned opposed jaws reciprocable toward and away from each other on a common axis and rotatable on the axis. Respective actuators are provided for the jaws to effect the reciprocation of the jaws on the axis. One jaw locks to the chuck body in an outermost position while the actuator therefor develops a greater thrust than the actuator for the other jaw.

3,790,182
TOOLHOLDER
Ralph Henry Schuman, Euclid, Ohio, assignor to The Warner & Swasey Company, Cuyahoga, Ohio
Filed June 5, 1972, Ser. No. 259,736
Int. Cl. B23b *31/20*
U.S. Cl. 279—43 **12 Claims**



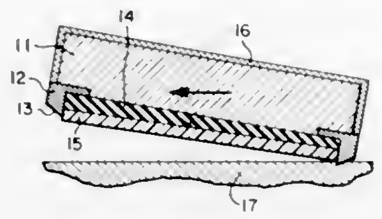
An improved toolholder includes a collet which engages a presetting or adjusting nut on the shank of a tool to retain the tool against movement relative to a spindle. The collet has jaws with gripping surfaces which are disposed in abutting planar engagement with a conical chamfer surface on an axially outer face of the presetting nut when the collet is in a closed condition. The collet is operated between the open and closed conditions by a sleeve having camming surfaces which are pressed against outer surfaces of the collet jaws under the influence of a biasing spring when the collet is in the closed condition. In one specific embodiment of the invention, an ejector is provided to move the tool outwardly as the collet is opened. The collet may be retained in the open condition by a locking assembly which is automatically released upon insertion of a tool into the collet.

3,790,183
PRESSURIZED FUEL TANK SUPPORT FOR VEHICLES
William R. Price, 3607 S.E. 130th Ave., Portland, Oreg.
Filed Nov. 6, 1972, Ser. No. 304,249
Int. Cl. B60p *3/00*
U.S. Cl. 280—5 A **13 Claims**



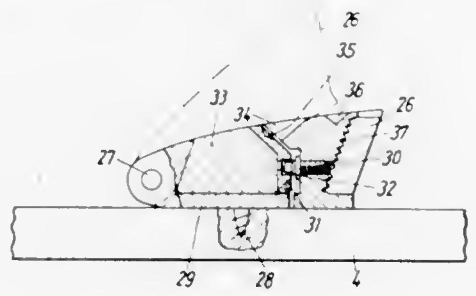
A pressurized fuel tank for a vehicle engine is confined removably in a protective case formed of a pair of hinged half shells to one of which a tank supporting base is secured. A hinge assembly, secured to one of the half shells, is adapted for attachment to a frame member of a vehicle, such as a lift truck, for supporting the case for pivotal adjustment between a retracted position within the perimeter of the vehicle, for protection of the fuel tank during operation of the vehicle, and an extended position projecting outwardly of the perimeter of the vehicle, for enabling opening of the case and replacement of the fuel tank.

3,790,184
SKI CONSTRUCTION
James F. Bandrowski, 382 Berkshire Rd., Ridgewood, N.J.
Filed Dec. 13, 1972, Ser. No. 314,906
Int. Cl. A63c *5/04*
U.S. Cl. 280—11.13 J **8 Claims**



An improved snow ski comprising a rigid core, downwardly extending running edges affixed to the core, a block of resilient material disposed between the running edges and affixed to the core, and a planar bottom member, slidably disposed between the running edges and affixed to the resilient block of material. During turning, the weight of the skier and centrifugal forces acting upon the ski compress the resilient block of material so that the bottom of the ski slides inwardly past the running edge of the ski disposed on the inside of the turn and the running edge protrudes past the bottom of the ski and engages the snow or ice on which the ski is moving.

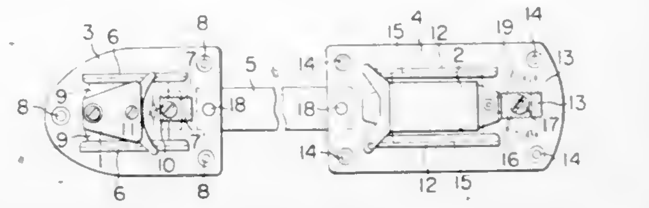
3,790,185
SKI SAFETY BINDING
Reinhold Sommer, Essen, Germany, assignor to Hans Muller, Kettwig, Germany, a part interest
Division of Ser. No. 67,080, Aug. 26, 1970, Pat. No. 3,687,471. This application May 1, 1972, Ser. No. 249,251
Claims priority, application Germany, Aug. 27, 1969, P 19 43 518.8
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **5 Claims**



A ski safety binding for connection to a ski board with heel holding means for clamping the heel of a ski boot, in which magnetic means supported by base plate means cooperate with a soft iron plate which has connected thereto heel grasping means comprising tongue means for supporting a ski boot from below and also comprising a clamping member for grasping a ski boot heel from behind and holding the same in position.

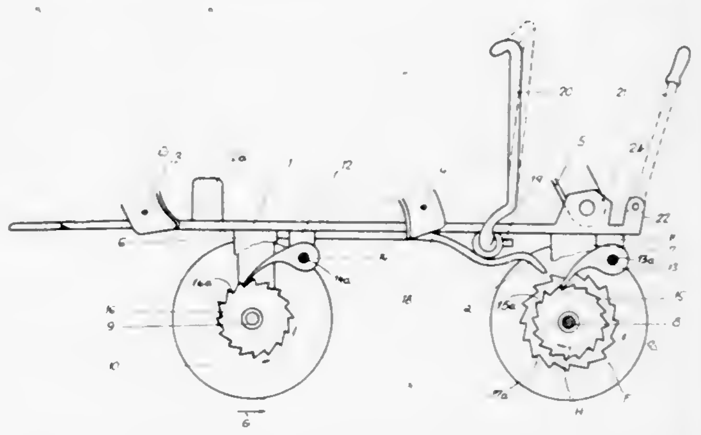
3,790,186
CLAMPING IRON FOR SKI BOOTS
Hiroaki Kanno, No. 4-17, 3-chome, Machiya, Arakawa-ku, Tokyo, Japan
Filed Mar. 28, 1972, Ser. No. 238,883
Claims priority, application Japan, Sept. 6, 1971, 46/68664; Dec. 29, 1971, 46/2925
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 C **11 Claims**

Clamping irons for ski boots, comprising a pair of toe-iron and heel-iron connected by means of a metalic band plate fixedly or detachably and adjustably, or by means of a coiled spring detachably and adjustably. Both of such connecting



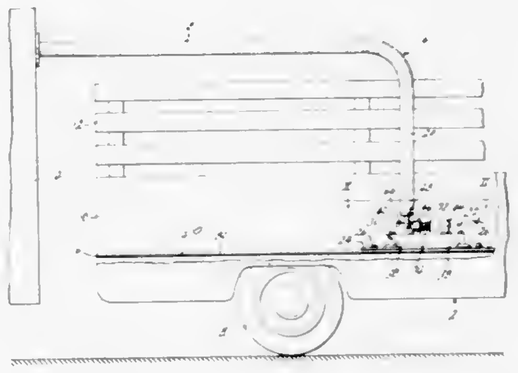
means can be bent vertically but cannot be bent horizontally, thus the ski boots can be easily and exactly clamped to the ski plate, removing any trouble at the time of ski running.

3,790,187
WALKING SYSTEM FOR PARAPLEGICS
Gheorghe Radu, Aleina Negreni 4, and Alexandru Aldea, Str. Justinian nr. 18, Sector 2, both of Bucharest, Romania
Filed Dec. 1, 1971, Ser. No. 203,528
Int. Cl. A63c *17/14*
U.S. Cl. 280—11.2 **4 Claims**



A walking system for paraplegic and like patients incapable of use of the leg and foot muscles comprises a skate having a front and a rear pair of rollers with parallel axes inclined to the longitudinal axis of the skate and horizontally offset in the longitudinal direction. Pawl-and-ratchet arrangements prevent reverse rolling of the wheels of both pairs while a lever-operated pawl is designed to prevent rolling of at least one of the pairs of wheels in the forward direction upon deflection of a lever in response to the position of the patient's leg.

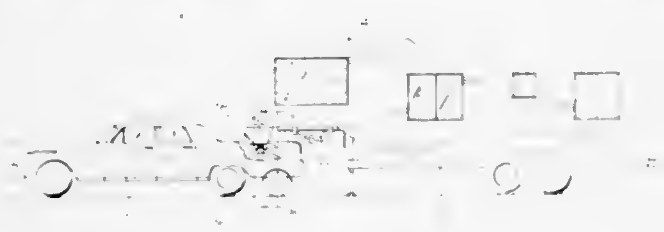
3,790,188
GOOSENECK TRAILER HITCH FIXTURE FOR PICK-UP TRUCKS
John H. Johannes, Rt. 1, Robinson, Kans.
Filed Mar. 27, 1972, Ser. No. 238,418
Int. Cl. B60d *1/00*
U.S. Cl. 280—423 **2 Claims**



A gooseneck trailer hitch fixture for pick-up trucks consisting of a mounting plate adapted to be secured to the floor of a pick-up truck bed, a carrier releasably affixed to the mounting plate, and a hitch ball and a hitch socket secured to the carrier in horizontally spaced apart relation for selective use with trailers equipped with either type of hitch element, the carrier being attachable to the mounting plate selectively in either of two positions to place either of the two hitch elements carried thereon in position for use.

3,790,189
TRAILER HITCH FOR PASSENGER MOTOR VEHICLE

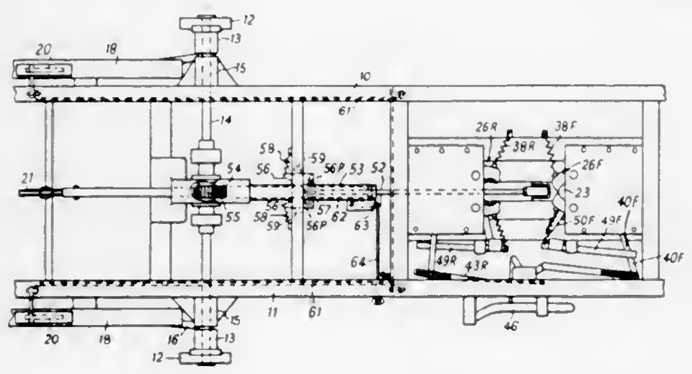
Charles M. Winter, 2580 W. Philadelphia St., York, Pa.
Filed Aug. 25, 1972, Ser. No. 283,822
Int. Cl. B62d *53/00*
U.S. Cl. 280—423 R **13 Claims**



Trailer hitch mechanism attachable to the trunk area of a passenger type motor vehicle to support and provide means to connect a fifth-wheel type trailer thereto and provide mobile living quarters for people. Auxiliary supporting wheel means of a variety of types and embodiments are connectable to the passenger vehicle to augment the supporting capacity of the conventional rear wheels of the vehicle and thereby enable such vehicle, as distinguished from a pick-up truck, to support the relatively heavy weight of the forward end of said fifth-wheel type trailer without undue strain on the passenger vehicle, while providing the more comodious travel facilities of such passenger vehicle to accommodate a full contingent of occupants for which the vehicle normally is designed. Quick detachment of the trailer and auxiliary supporting wheel means from the vehicle readily restores the vehicle to the normal appearance of the vehicle with a minimum of effort.

3,790,190
KING-PIN ACTUATED LANDING GEAR FOR ROAD-HAULAGE SEMI-TRAILERS

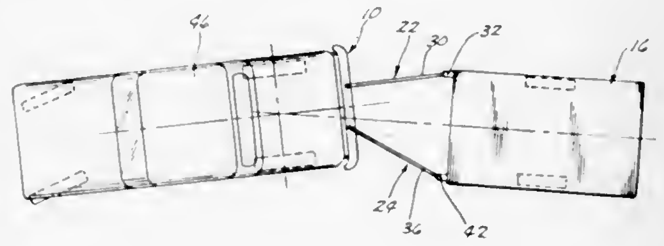
Carlton John Davis, 101, Chesterfield Rd., Leyton, London, England
Filed Apr. 13, 1972, Ser. No. 243,812
Claims priority, application Great Britain, Apr. 15, 1971, 9,535/71
Int. Cl. B62d *53/12*
U.S. Cl. 280—430 **9 Claims**



A road-haulage semi-trailer having a sliding king-pin for lifting the landing legs to the retracted position, the landing legs being spring-biassed towards the retracted position and coupled to the king-pin through a rack and pinion to give rapid lifting of the legs with a small king-pin movement. The king-pin is disengageable to move independently of the landing legs over a large distance between front and rear clamps which enable it to be locked in either a front or a rear position for travelling.

3,790,191
TRAPEZOIDAL TRAILER HITCH

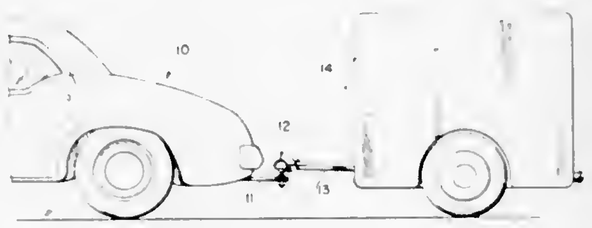
Norman W. Gallatin, 609 S. Capitol, Iowa City, Iowa
Filed Oct. 7, 1971, Ser. No. 187,350
Int. Cl. B62d *53/00*
U.S. Cl. 280—456 **5 Claims**



A trapezoidal trailer hitch comprising first and second, spaced apart hitch members pivotally connected at their rearward ends to the forward end of the trailer and pivotally connected at their forward ends to the rearward end of a truck or the like.

3,790,192
TRAILER HITCH SAFETY DEVICE

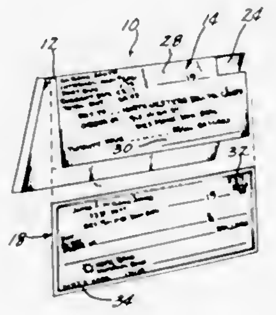
Edgar E. Green, Rt. 2, Box 55A, Shelbyville, Tex.
Filed July 14, 1972, Ser. No. 271,890
Int. Cl. B60d *1/06*
U.S. Cl. 280—507 **5 Claims**



Apparatus for locking a trailer hitch socket to a ball carried by a propelling vehicle to prevent separation of the ball and socket in the event that the conventional connecting means should fail or if the ball should fracture.

3,790,193
COMBINATION STATEMENT AND CHECK AND METHOD OF MAKING A NEGOTIABLE CHECK

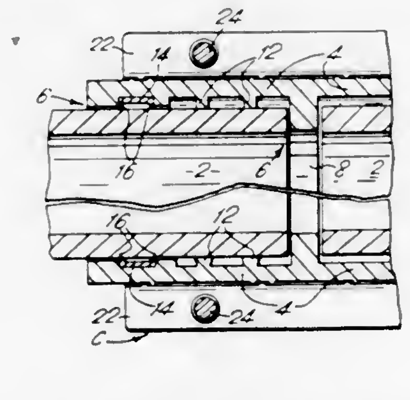
Robert L. McBride, 1300 Woodhollow, Houston, Tex.
Filed Oct. 26, 1971, Ser. No. 192,230
Int. Cl. B42d *15/00*
U.S. Cl. 283—57 **3 Claims**



A statement includes an overlay check detachably connected thereto along a fold line. The check overlay is folded into overlapping relationship on the statement and an end guide flap extends upwardly adjacent the end of the check overlay. A complete check form is placed between the check overlay and the statement against the end flap and fold line. The overlay is pressed into engagement with the check form to permanently bond the two adhesively together. The check overlay includes in machine readable indicia amount, date, payer and payee information and the complete check form has payer account identification and check form number exposed. The assembled check is separated from the statement by the check overlay being torn along the fold line. The check overlay may include a detachable marginal portion which includes the payer's account identification and check number such that the check overlay becomes a complete check in and of itself and needs no separate check form.

3,790,194
PIPE COUPLING

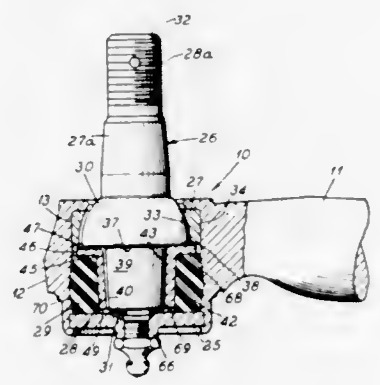
Stanley H. Kimberley, Shelburne, Ontario, Canada, assignor to Kelstan Plastic Products Limited, Weston, Ontario, Canada
Filed Aug. 2, 1972, Ser. No. 277,413
Int. Cl. F16l *21/06*
U.S. Cl. 285—373 **4 Claims**



A coupling for rigid piping formed of incisable pipe materials including a rigid sleeve having open ends respectively providing mating for a pair of ends of piping to be coupled in flow-through relation; a clamp for releasably clamping said sleeve to constrict it about and to grip the piping ends mating therewith; means for effecting sealing between said sleeve and said piping ends when the sleeve is constricted as aforesaid, and anchor elements disposed to be sandwiched between the mating sleeve and piping ends; at least one of said anchor elements being sharpened enabling it to bite into a piping end when the sleeve is constricted as aforesaid whereby to interlock the sleeve and the piping.

3,790,195
SOCKET JOINT

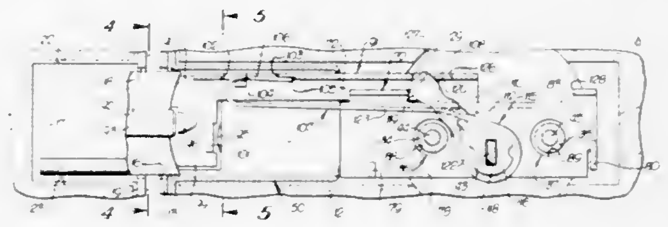
Edward J. Herbenar, Detroit, Mich., assignor to TRW Inc., Cleveland, Ohio
Filed June 27, 1972, Ser. No. 266,550
Int. Cl. F16c *11/06*
U.S. Cl. 403—124 **4 Claims**



A ball seat socket joint primarily for rotational movement with a stud projecting from an internal cavity housing, the stud having a half sphere bulged section received in the housing seated against a spherical face seat adjacent the projecting point of the stud from the housing. The stud has an axial extension beyond the half sphere within the housing; the axial extension is received in a bearing with a resilient member entrapped between the wall of the cavity and the bushing. The opposite end of the housing cavity from the point of projection is closed by a cap which applies a preload to the axial end of the stud within the cavity and to the resilient member.

3,790,196
DEAD BOLT LATCH

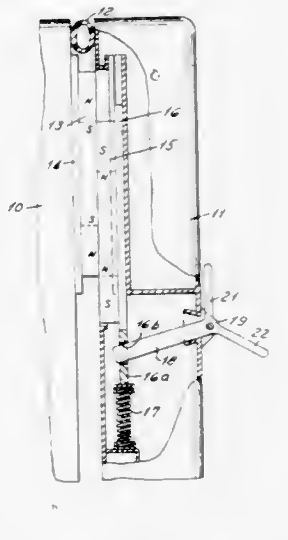
Vernard W. Sanders, Los Angeles, Calif., and William J. Fane, North Vancouver, B.C., Canada, assignors to Norris Industries, Inc., Los Angeles, Calif.
Filed Feb. 7, 1972, Ser. No. 224,056
Int. Cl. E05c *1/06*
U.S. Cl. 292—140 **10 Claims**



A dead bolt latch for a door has a cam action for extending the bolt, the cam having the form of a pivoted arm and rotated by the tail piece of lock device. The pivot axis is near one edge of a lock case extension and engages a cam opening in an actuating slide at the opposite side of the case extension. The actuating slide is attached to a latch bolt and shifts the latch bolt between extended and retracted positions when the cam is rotated.

3,790,197
MAGNETIC LATCH

Rollin James Parker, Greenville, Mich., assignor to General Electric Company
Filed June 22, 1972, Ser. No. 265,294
Int. Cl. E05c *19/16*
U.S. Cl. 292—251.5 **5 Claims**



A magnetic latch has a pair of substantially coextensive permanent bar magnets which can be arranged for mutual attraction positioning to maintain a hinged member in a closed position. One of the magnets is made axially movable with respect to the other so as to assume a mutual repulsion position with the other which will enable the magnets to assist in opening the hinged member. The movable magnet is actuated by a manually operable member such as a lever bar mounted on a pivot on which manually actuated bars are also mounted to enable the movable magnet to be positioned by manual operation of the actuating bars. A biasing spring to reduce the force necessary to be applied to move the magnet is also provided.

3,790,198
SELF-LOCKING SAFETY SEAL AND METHOD OF IDENTIFYING TAMPERING THEREWITH

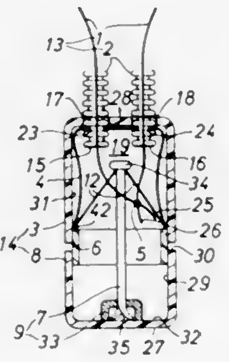
Armin Theodor Hagen, Karlsruhe, Germany, assignor to Gesellschaft fur Kernforshung mbH, Karlsruhe, Germany

Filed June 2, 1971, Ser. No. 149,140

Claims priority, application Germany, June 11, 1970, P 20 28 672.0

Int. Cl. B65d *33/34*

U.S. Cl. 292—317 **7 Claims**



A self-locking safety seal composed of a body, a holding device, a holder and a loop. The body includes two main parts made of light transmitting material with one of the main parts supporting the holding device and the other main part supporting the holder.

The holder engages and locks with the holding device in the assembled condition of the body. The loop includes a corrugated tube which has two ends secured in the holding device.

The method of detecting tampering with a self-locking safety seal including placing identification marks on inner parts of the body, photographically recording by means of an original photograph, the identification marks, photographically recording the identification marks during inspection of the seal and comparing the photographs.

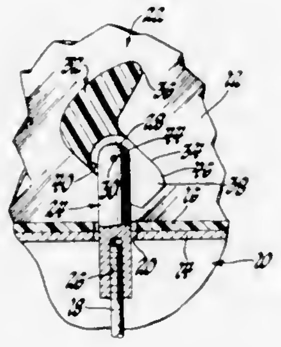
3,790,199
GARNISH BUTTON ASSEMBLY

Richard P. Ballou, Howell, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 17, 1972, Ser. No. 244,681

Int. Cl. E05c *19/00*

U.S. Cl. 292—336.3 **3 Claims**



A garnish button assembly for installation as a shift rod associated with the latch system on an automobile vehicle type door and adapted to thwart attempts to manipulate the latch system by a hook-like tool from without the vehicle, the button assembly including a body portion rigidly attached to the shift rod and an enlarged head pivotally supported on the body portion above the door garnish panel. Attempted manipulation of the garnish button assembly by a hook-like tool applies a force asymmetrically to the head thereby to initiate free pivotal movement of the latter for preventing the tool from gaining a firm hold on the button assembly.

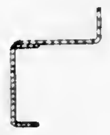
3,790,200
VEHICLE BUMPER

Carl L. Kalitta, Adrian, Mich., assignor to Dura Corporation, Southfield, Mich.

Filed Mar. 24, 1972, Ser. No. 237,711

Int. Cl. B60r *3/00, 19/04;* **B61f** *19/04*

U.S. Cl. 293—98 **4 Claims**



A vehicular bumper construction has a bumper bar having a lip offset to form a trough for receiving the mating portions of a platform member. The parts are joined by welds, the complete assembly is painted and the remaining portions of the trough are filled with a sealer having the same color as the finished paint coat whereby a waterproof sealer is provided between the bar member and the platform member to prevent bleeding of rust onto the show surface of the construction.

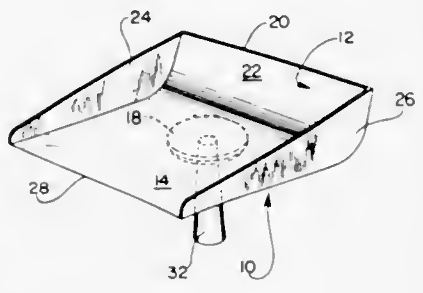
3,790,201
HAWK

Frank Peter Morsilli, James St., Orchard Acres, Greenville, R.I.

Filed Jan. 12, 1973, Ser. No. 325,944

Int. Cl. E04g *21/16*

U.S. Cl. 294—3.5 **6 Claims**



A hawk adapted to hold a supply of material such as mortar for delivery onto a material receiving surface is disclosed. The hawk includes a base member having opposed upper and lower surfaces. The base member is provided with a front wall which includes an arcuate surface merging with the upper surface of the base member and being upturned therefrom. Separate side walls are connected with respective first and second sides of the base member and front wall. Thus, a material containing reservoir is defined by the upper surface of the base member and the arcuate surface of the front wall, in the zone intermediate the side walls. A handle is provided on the bottom surface of the base member for holding the hawk.

3,790,202
PECAN RETRIEVER

C. Rudolph Nagel, 1305 Ainsworth, Gonzales, Tex.

Continuation-in-part of Ser. No. 860,926, Sept. 25, 1969, Pat. No. 3,600,029. This application Nov. 12, 1970, Ser. No. 88,637. The portion of the term of this patent subsequent to Aug. 17, 1988, has been disclaimed.

Int.,Cl. A01d *11/02*

U.S. Cl. 294—19 A **4 Claims**

This specification discloses a device intended to be used in retrieving pecans from the ground with a pick up action. The device comprises an elongate rod having an open bottom receptacle secured to its lower end. This receptacle has parallel side walls. A spring of general U shape includes side legs and a straight back. The upper ends of the legs are anchored to the side walls on their outer faces and the back spans the open bottom between the lower edges of the sides. A roller is rotatably mounted on the back and is adapted to engage a pecan with a rolling action as the open end of the receptacle is forced thereover.

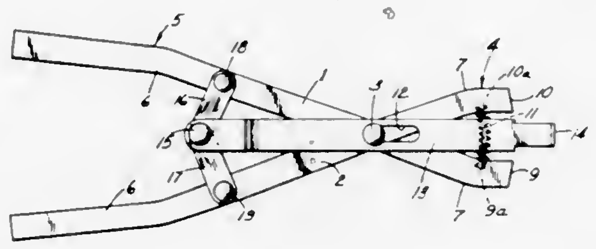
3,790,203
PARTS HANDLING MEANS

Ernest J. Urbas, Richmond Heights, Ohio, assignor to Guarantee Specialty Manufacturing Company, Cleveland, Ohio

Filed Sept. 5, 1972, Ser. No. 286,555

Int. Cl. A47j *45/00*

U.S. Cl. 294—31 R **1 Claim**



The disclosure hereof is of parts handling means comprising a scissor-like unit having a handle portion and a part engaging section with a reciprocating member operable by connections with the handle portion, and including a part engaging element which, upon manipulation will move the part engaging element toward the part engaging section whereby parts may be gripped therebetween and manipulated thereafter in the gripped condition, obviating the necessity for an operator of a dangerous machine or the like to place his hand in the line of movement of anything which would possibly injure the hand, whereas the handling means of this invention will manipulate the part readily.

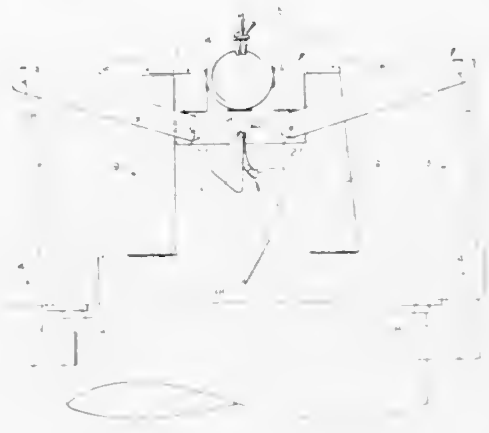
3,790,204
GRAPPLE WITH SEMI-AUTOMATIC LATCH

Charles H. Lighthipe, Jr., Liverpool, and Robert R. Andrews, Syracuse, both of N.Y., assignors to Morse Manufacturing Co., Inc., Syracuse, N.Y.

Filed Jan. 11, 1973, Ser. No. 322,614

Int. Cl. B66c *1/42*

U.S. Cl. 294—110 R. **3 Claims**



A grapple has a cross beam adapted to rest on the flat top of a drum extending diametrically thereacross and a slide adapted for limited movement up or down with respect to the beam and secured to hoist means. The beam has a lever pivotally secured thereto at each end, the upper end of each lever being pivotally connected to one end of a link and the lever lower ends being provided with grip means for engaging the side of the drum. The other ends of the links are pivotally secured to the slide so that when the slide is raised the grip means move toward and grip the drum sides. A hook and a triangular weight are rotatably mounted on a bolt projecting from the beam at its center, the pin passing through a hole in the top of the hook and a hole in one corner of the weight. The hook has a pin projecting therefrom for engaging the weight on one side or the other as the weight is swung arcuately around the bolt. A bar secured to the beam has a lower end engageable by the hook. When the weight is on one side of the hook pin it biases the hook to automatically release the load when the load is next lowered. When the weight is on the other side it biases the hook for automatic pick-up of a load.

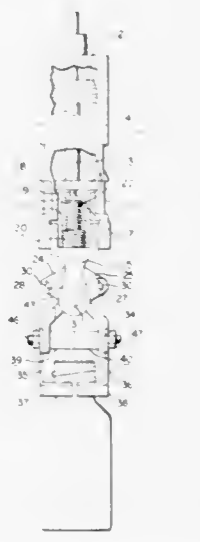
3,790,205
TAKEOUT TONG ASSEMBLY

William Wenz, 427 Carton Ave., Millville, N.J.

Filed Sept. 25, 1972, Ser. No. 291,735

Int. Cl. B66c *1/28*

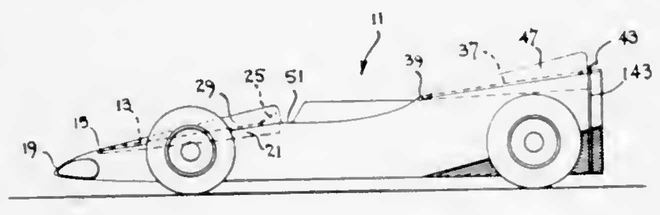
U.S. Cl. 294—115 **1 Claim**



Improvements to conventional apparatus commonly known as takeout tong holders for removing bottles and the like from glass molding machines. Conventional takeout tong holders include first and second opposed tong holders and tongs which are pivotly disposed on a common horizontal axis and actuated through arcuate paths between open and closed positions. The improvement includes alignment and stop blocks either formed integrally with or bolted to each of the tong holders midway of their length. The alignment and stop blocks project inwardly toward one another from the tong holders and are of a complementary configuration, one to another, and so dimensioned as to effect tong alignment during actuation of the tongs and also to provide a predetermined stop position for the tongs in closed position.

3,790,206
VEHICLE STABILIZING MEANS AND METHOD

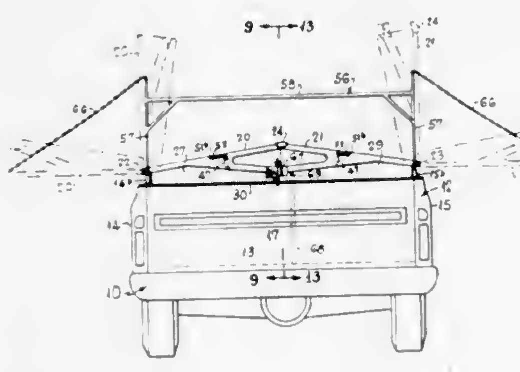
Henry J. Backowski, 716 Indiana Ct., Apt. 40, El Segundo, Calif.
Filed July 17, 1972, Ser. No. 272,691
Int. Cl. B62d *37/02*
U.S. Cl. 296—1 S **17 Claims**



A device for stabilizing vehicles, particularly racing cars, and a method of stabilization utilizing same which comprises a flat movable pressure plate which is hinged at adjacent the front of a vehicle and can be controllably moved upward or downward in accordance with the air pressure exerted thereon. A pivotal pressure plate is connected to the rear of the flat pressure plate and can move in accordance wherewith to maintain air pressure on the flat pressure plate. Movable side fences are additionally provided to confine air onto the top surface of the flat pressure plate and act as four rudder stabilizers at all times. A similar flat movable pressure plate arrangement with a second pivotal pressure plate and side fences is provided at the rear of the car behind the driver and the top rear surface of the vehicle. Air deflectors, particularly at the rear of the car, are also provided.

3,790,207
COMBINATION ROOF AND SIDEWALL EXTENSIONS FOR VEHICULAR HAULING BEDS

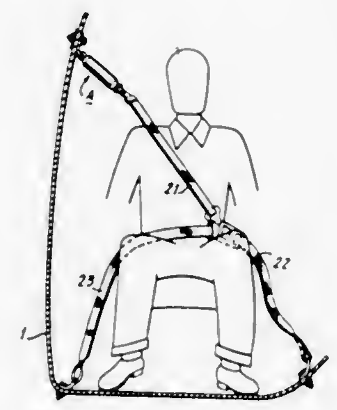
Dennis Anderson, Box 252, Rt. 1, Barnum, Minn.
Filed Mar. 15, 1972, Ser. No. 234,700
Int. Cl. B60p *3/34*
U.S. Cl. 296—23 G **4 Claims**



A collapsible vehicular hauling bed construction wherein a pair of panels are respectively hinged along parallel axes to two opposed sidewalls of a rectangular truck bed and swingable inwardly to inclined abutting positions to form an inverted U-shaped roof, and swingable outwardly to upright positions to form extensions of the opposed sidewalls, in combination with a third panel hinged along a third axis normal to at least one of the two first-named axes, said third panel adapted to rotate between a collapsed position beneath the abutting roof panels and an upright position forming an extension of one of the remaining bed sidewalls, and means for releasably connecting the upright third panel between said upright pair of panels to thereby form a continuous wall extension for three sidewalls of the hauling bed.

3,790,208
SAFETY BELT

Noboru Komatsu; Choji Nozaki; Toshio Kurauchi, and Toshihiko Sakai, all of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya, Japan
Continuation-in-part of Ser. No. 97,989, Dec. 14, 1970, abandoned. This application June 7, 1972, Ser. No. 260,615
Int. Cl. A62b *35/60*
U.S. Cl. 297—386 **17 Claims**



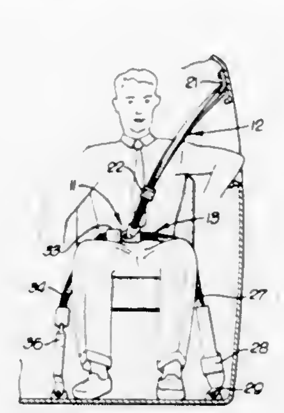
A safety belt for tightly holding an occupant of a seat for vehicles such as an automobile, said safety belt being equipped with a shock absorbing means having a rigid plastics foam body, a receptacle with a uniform cross-section and a bottom plate, and a pusher having a tapering face the projected area of which is less than 70 percent of the cross-sectional area of said plastics foam body, said foam body being held in said receptacle between the pusher and the bottom plate, said pusher being movable toward said bottom plate when a tension is generated by the movement of an occupant supported by the belt so that said plastics foam body is deformed and displaced by the passage of said pusher and the kinetic energy developed by the movement of the occupant is absorbed.

3,790,209
NON-DETACHABLE SNAP-LOCK CONNECTOR FOR COMBINATION SHOULDER AND LAP SAFETY HARNESS

Joseph C. Littmann, Northridge, Calif., assignor to American Safety Equipment Corporation, New York, N.Y.
Filed Sept. 14, 1972, Ser. No. 289,079
Int. Cl. A62b *35/60*
U.S. Cl. 297—389 **9 Claims**

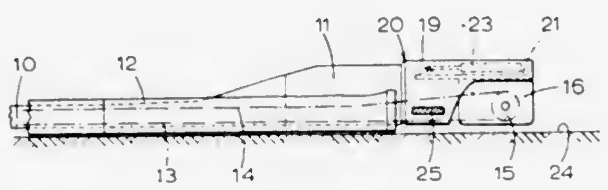
A non-detachable snap-lock connector is provided to facilitate installation of a combination shoulder harness and lap harness vehicle restraint system, in which the shoulder and lap harness assemblies may be manufactured, shipped and mounted in a vehicle as separate unconnected components and as a final assembly step the shoulder harness is irreversibly permanently snap-locked to the lap unit by means of the provided connector. In this safety restraint system, the shoulder harness must be worn along with the lap restraint, thus necessitating a permanent non-detachable connection of an end of the shoulder harness to the lap buckle or tongue plate such

that the user does not have the option of disconnecting the shoulder strap and using only the lap harness. By means of the disclosed non-detachable snap-lock connector, installation is completed by a quick coupling engagement of fitting means forming the connector and carried by the portions of the shoulder and lap harnesses to be permanently joined. The connector itself is provided by a first fitting affixed to one of the harnesses, such as the shoulder strap, and a second fitting carried by a tongue plate of a buckle tongue plate combination in the lap restraint unit, and a unidirectional spring lock means disposed therebetween and functioning to irreversibly lock the fittings together upon movement thereof into coupling engagement.



3,790,210
LONGWALL MINING INSTALLATION WITH DRIVE CHAIN TENSION CONTROL

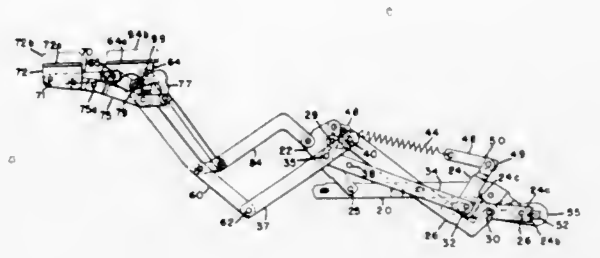
Werner Georg, Altlunen, Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Wethmar bei Lunen, Westfalia, Germany
Filed July 3, 1972, Ser. No. 268,912
Claims priority, application Germany, July 14, 1971, P 21 35 164.4
Int. Cl. E21c *29/16*
U.S. Cl. 299—43 **16 Claims**



A mineral mining installation with a longwall scraper-chain conveyor having a chain at one side for driving a mineral winning machine. The conveyor is detachably affixed at one end to a frame of a drive station for the chain. The drive station has a frame attached to the conveyor which frame has a top wall which is provided on its underside with two guide tubes. These guide tubes slidably support a constructional unit composed of a drive motor and gearing. The gearing has an output shaft which carries a sprocket wheel engaged with the chain and disposed close to the floor of the working. The upper and lower runs of the chain are guided onto the sprocket wheel with little or no angular deviation from their normal rectilinear course parallel to the conveyor. A piston and cylinder device is used for displacing the unit along the guide tubes to vary the tension in the chain.

3,790,211
FOOTREST MECHANISM

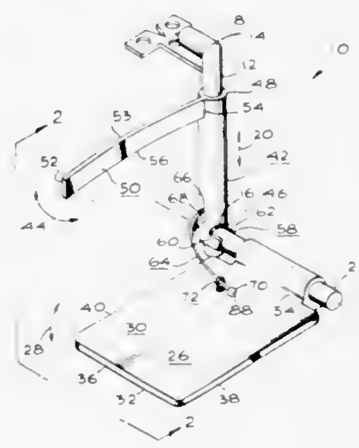
Robert J. Caldwell, 496 Kennedy Blvd., Bayonne, N.J.
Filed June 11, 1971, Ser. No. 152,256
Int. Cl. A47c *1/02*
U.S. Cl. 297—75 **3 Claims**



A footrest mechanism having primary and secondary footrest members. The primary footrest and secondary footrest have a nested position and an extended position and are so constructed and operated that the secondary footrest member slides out under the primary footrest when being moved to its extended position. The mechanism also has an overload safety feature to prevent deformation of its structural members in the event of excessive force being applied to the footrest when in its extended position.

3,790,212
FOOT SUPPORT FOR WHEELCHAIRS

Shigemitsu Suyetani, 22461 Gravino, Lawndale, Calif.
Filed Mar. 27, 1972, Ser. No. 238,401
Int. Cl. A47c *7/50*
U.S. Cl. 297—429 **10 Claims**



A leg rest arrangement for wheelchairs of the type in which a foot rest is pivotally mounted on a supporting member and movable from a foot rest position to a closed position. There is provided a leg support spaced vertically from the foot rest for supporting the back of the leg of the user when the foot is resting on the foot rest. The leg support is operatively connected with the foot rest so that when the foot rest is pivoted to the closed position the leg support is also pivoted to the closed position and is compactly and closely adjacent to the foot rest in the closed position.

ERRATUM

For Class 299—43 see:
Patent No. 3,790,210

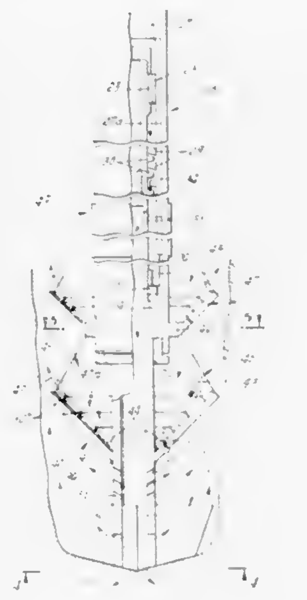
3,790,213
SUB-SURFACE PARTICLE RECOVERY

Donovan B. Grable, Long Beach, Calif., assignor to Wasteland Reclamation Corporation, Long Beach; Bill C. Laney, Torrance and William W. Haefliger, San Marino, all of, Calif., part interest to each

Filed Mar. 5, 1973, Ser. No. 338,151

Int. Cl. E02d *1/00*; **E21c** *41/14*

U.S. Cl. 299—8 **28 Claims**



Metal particles, as for example gold, are recovered from sub-surface locations without requiring removal of the overburden. In particular, recovery of gold particles from cracks in underground or underwater bedrock is enabled.

A process and apparatus is disclosed in which a hose is provided to lower a collector means to a sub-surface locality and deliver a stream of water. Means are also provided to rotate the collector to separate valuable material and recover same and cutter is included to cut into the formation at the locality.

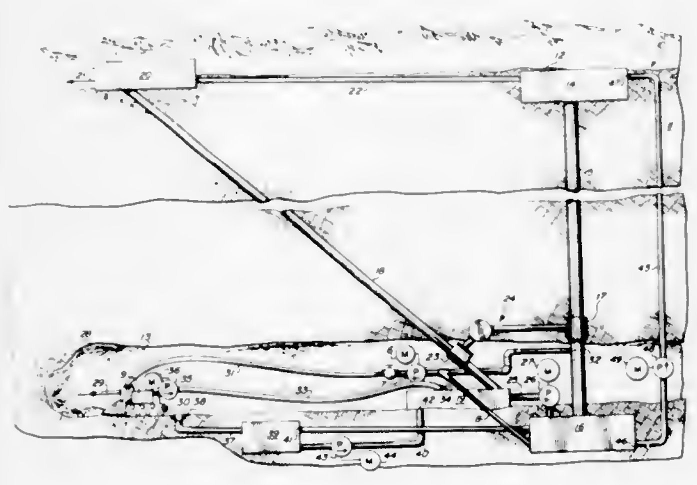
3,790,214
HYDRAULIC MINING SYSTEM

Oliver B. Kilroy, 5 Calle Corta St., Tucson, Ariz.

Filed Sept. 29, 1972, Ser. No. 293,401

Int. Cl. E21c *41/00, 45/00*

U.S. Cl. 299—8 **18 Claims**



This specification discloses an hydraulic mining system including a method and apparatus whereby energy derived from a downflowing column of water utilized to conduct underground mining operations is mechanically transferred to a pump which drives a column of slurry containing mined ore upwardly to a separator on the ground surface.

3,790,215
RECOVERY OF ORES AND MINERALS WHILE USING ICE AS MEANS OF SUPPORT IN MINED ROOMS

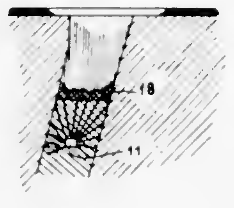
Henning Fangel, Langoddveien 89, Snaroya, Norway

Filed May 3, 1972, Ser. No. 250,052

Claims priority, application Norway, June 11, 1971, 2209/71; Sweden, Dec. 17, 1971, 16199/71

Int. Cl. E21c *41/00*

U.S. Cl. 299—11 **9 Claims**



For supporting lateral or hanging rock walls in mines it is proposed to make ice flow into the mine rooms freshly worked, according as the mining proceeds to constantly lower levels, so as to protect miners without having to leave pillars requiring second mining.

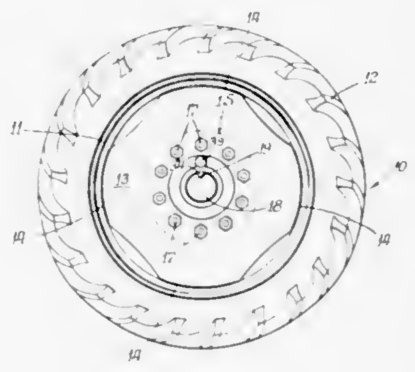
3,790,216
WEDGE LOCKING WHEEL MOUNTING

Walter R. Peterson, Plainfield, Ill., assignor to Peterson Manufacturing Company, Plainfield, Ill.

Filed Nov. 21, 1972, Ser. No. 308,504

Int. Cl. B60b *37/04, 27/06*; **F16d** *1/08*

U.S. Cl. 301—1 **9 Claims**



A mounting construction for a wheel to an axle wherein a hub assembly on the wheel includes wedge members arranged for axial separation by a differential bolt to thereby effect a radial gripping of the wedge members with the axle. The wheel is thus securely locked to the axle and yet may be conveniently removed even after extended periods of time when the wedges are in locked position.

3,790,217
CLAMP LUGS AND CARRIER RING FOR A RIM AND WHEEL ASSEMBLY

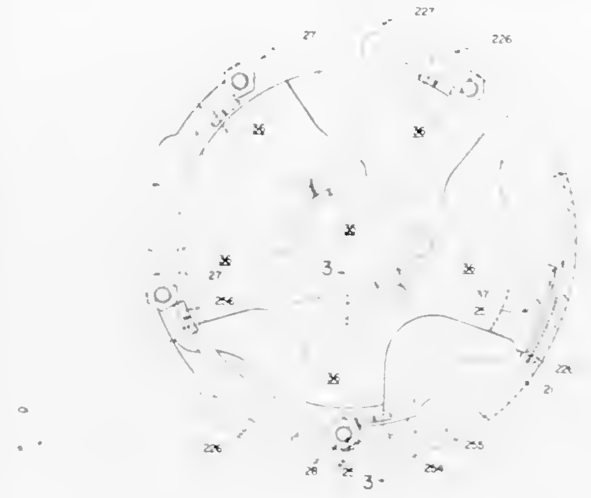
Robert A. DeRegnaucourt, Centerville, Ohio, assignor to The Dayton Steel Foundry Company, Dayton, Ohio

Continuation-in-part of Ser. No. 252,411, May 11, 1972. This application June 29, 1972, Ser. No. 267,435

Int. Cl. B60b *23/00*

U.S. Cl. 301—12 R **2 Claims**

A rim and wheel assembly including a series of axially inner clamp means and a series of axially outer clamp lugs on an annular, full-circle, carrier ring to cooperatively engage the mounting flange of a rim. The wheel has means thereon for positive retention of the clamp lugs. The clamp means are supported by fastening elements extending axially through the wheel. The fastening elements carry fastening means which draw the clamp means toward the clamp lugs to seat the rim flange. The carrier ring has means thereon so that the clamp lugs may be rotated onto the positive retention means without removal of the fastening means from the fastening elements. The carrier ring may also have stop means thereon so that the clamp lugs will not be rotated off the positive retention means should the fastening means become loose or untightened during operation.



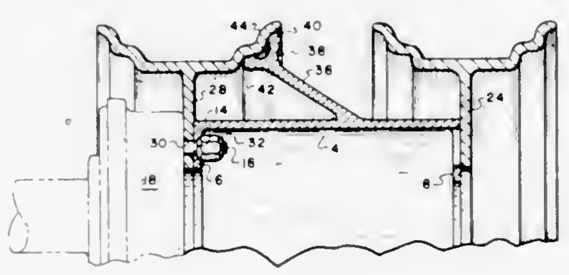
3,790,218
DUAL WHEEL MOUNTING DEVICE

Reed L. Johns, 6733 South 2345 East, Holladay, Utah

Filed Apr. 6, 1972, Ser. No. 241,616

Int. Cl. B60b *11/00*

U.S. Cl. 301—36 R **4 Claims**



A device for mounting dual wheels, said device comprising a generally cylindrical member with radially projecting flanged portions at each end thereof, a plurality of apertures extending through the flanged portion at one end of said cylindrical member and positioned to receive the wheel mounting studs of a vehicle hub, and a plurality of externally threaded shafts projecting outwardly from the flanged portion at the opposite end of said cylindrical member extending parallel to the axis of said cylindrical member and positioned to mate with the mounting apertures of a vehicle wheel. Several forms of the invention are disclosed.

3,790,219
WHEEL

Gerald Alfred Watts, Moreton Morrell, England, assignor to Magnesium Elektron Limited, Swinton, Manchester, England

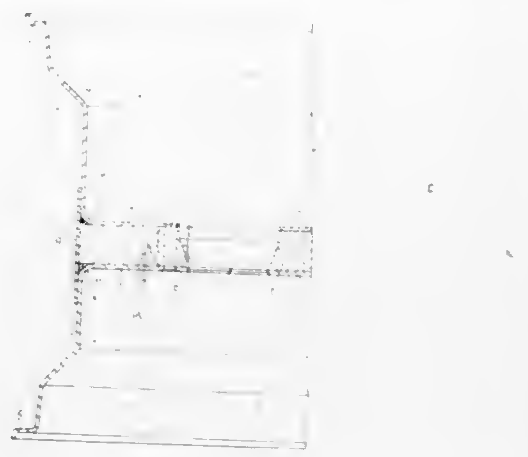
Filed Feb. 16, 1972, Ser. No. 226,765

Claims priority, application Great Britain, Feb. 17, 1971, 4,826/71

Int. Cl. B60b *3/08*

U.S. Cl. 301—63 DD **15 Claims**

The present invention relates to a vehicle wheel and more particularly to a light-weight wheel for high performance cars such as racing and sports cars. The wheel is constructed from wrought metal, which is better able to withstand stresses than the same metal which have been cast, by securing together, base to base, two generally dish-shaped members with a lightweight spacer means located between the bases.



3,790,220
WHEEL FOR VEHICLE TIRES

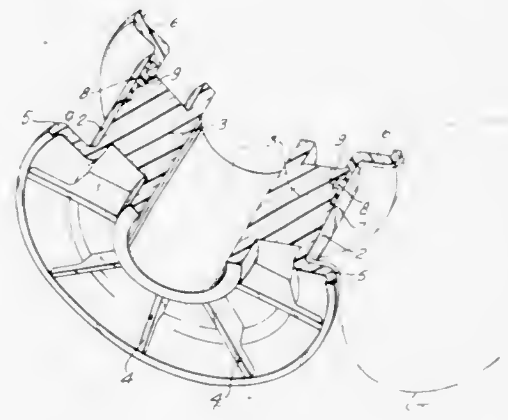
August Manss, Ochshauser Strasse 11-25, Kassel-B, Germany

Filed May 7, 1970, Ser. No. 35,426

Claims priority, application Germany, May 13, 1969, 1924485

Int. Cl. B60b *5/02*

U.S. Cl. 301—63 D **1 Claim**



A wheel for vehicle tires comprising a hub of synthetic plastic material having opposite axial ends. In the region of one of these axial ends, a first flange of synthetic plastic material and being of one piece with the hub, projects radially from the latter. A second flange also consists of synthetic plastic material and projects radially from the hub in the region of the other axial end. The second flange is in form of a circumferentially almost complete ring the inner surface of which is provided with a circumferentially extending radially inwardly projecting rib. The ring is to be sprung onto the hub and the rib then becomes lodged in a circumferentially extending groove provided in the outer circumferential surface of the hub. The ring can thus be removed when desired.

3,790,221
BRAKE PROPORTIONING VALVE WITH BLEND BACK

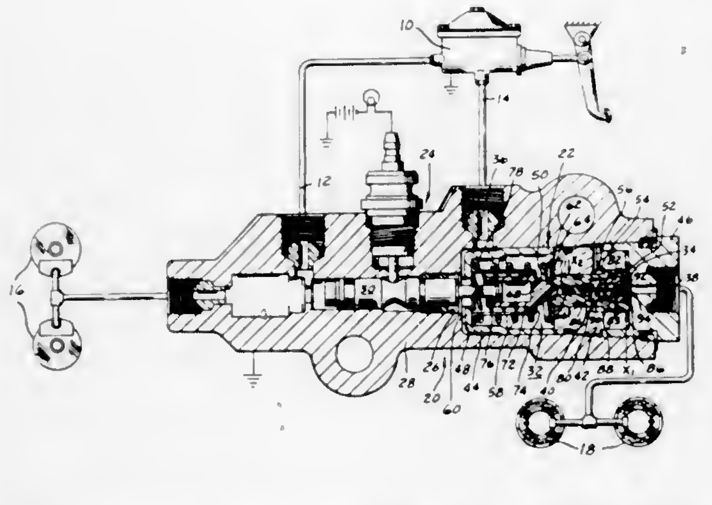
Keith H. Fulmer, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Aug. 24, 1972, Ser. No. 272,265

Int. Cl. B60t *8/26*

U.S. Cl. 303—6 C **6 Claims**

A proportioning valve located in the hydraulic system of a vehicle to control the braking force on the rear wheels with respect to that on the front wheels. The valve includes a housing which is provided with an inlet chamber connected to one line of the vehicle's dual master cylinder, and an outlet chamber in communication with the rear brakes of the vehicle. The valve is normally open, permitting unimpeded fluid flow between the inlet and outlet chambers, during an initial brake application. However, when the pressure level in the outlet chamber reaches a first value, the valve reacts to restrict the flow between the two chambers so that the pressure level in the inlet chamber rises more rapidly than the



pressure level in the outlet chamber up to a second value of pressure level within the outlet chamber. Upon attaining the second value of pressure level, the valve is acted upon by a pressure responsive member which causes the pressure level in the outlet chamber to increase at a greater rate than the pressure level in the inlet chamber. This pressure level in the outlet chamber continues to build up at this new accelerated rate until the chamber pressures are substantially the same, at which time the valve opens to establish substantially uninterrupted flow between the chambers.

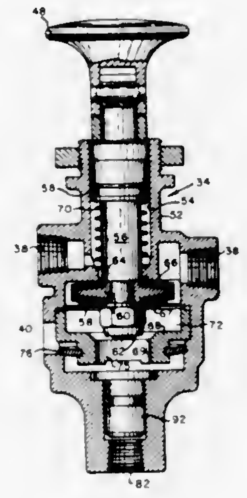
3,790,222
EMERGENCY RELEASE SYSTEM FOR FLUID PRESSURE BRAKES

Richard C. Fannin, Grafton, Ohio, assignor to The Bendix Corporation, South Bend, Ind.

Filed July 24, 1972, Ser. No. 274,137

Int. Cl. B60t *13/10*

U.S. Cl. 303—9 **11 Claims**



In a fluid pressure vehicle brake system of the type having a spring-applied fluid pressure released brake actuator and including conventional service and emergency reservoirs of fluid pressure and wherein the brake actuator is automatically spring-applied upon reduction of service pressure to a predetermined value, the provision of a single manually operable valve for selectively controlling the application of fluid pressure to and from the brake actuator under normal parking conditions and for releasing a spring brake emergency actuation of the actuator when the pressure in the service reservoir drops to the predetermined value.

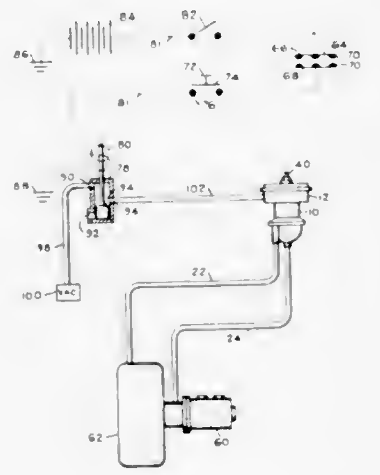
3,790,223
CONTROL SYSTEM FOR BRAKES

John G. Fontaine, 4119 N.E. 6th Ave., Fort Lauderdale, Fla.

Filed Sept. 26, 1972, Ser. No. 292,282

Int. Cl. B60t *7/14*

U.S. Cl. 303—19 **12 Claims**



A control system for controlling the brakes of a motor vehicle including a seat switch for incorporation in the driver's seat of the vehicle, a second switch to be controlled by another function of the vehicle, and a solenoid valve to control a vacuum circuit. The two switches and the coil of the solenoid valve are connected to the battery of the vehicle so that the coil is energized when both switches close and deenergized when either of the switches opens. A vacuum operated metering valve and the solenoid valve are connected in a vacuum circuit with a vacuum source such that deenergization of the coil of the solenoid valve in response to opening of either or both of the switches operates the solenoid valve and the metering valve to apply the main brakes of the vehicle. Thus, if the driver of the vehicle should leave his seat, the brakes are automatically applied. Likewise, if the other predetermined function causes the second switch to be actuated, the brakes are automaticaly applied. This function might be the opening of a door, such as the door of a school bus, or the removal of a nozzle from its cradle on a gas or gasoline truck, by way of example.

3,790,224
MODULATOR FOR ADAPTIVE BRAKING SYSTEM

Irving R. Ritsema, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

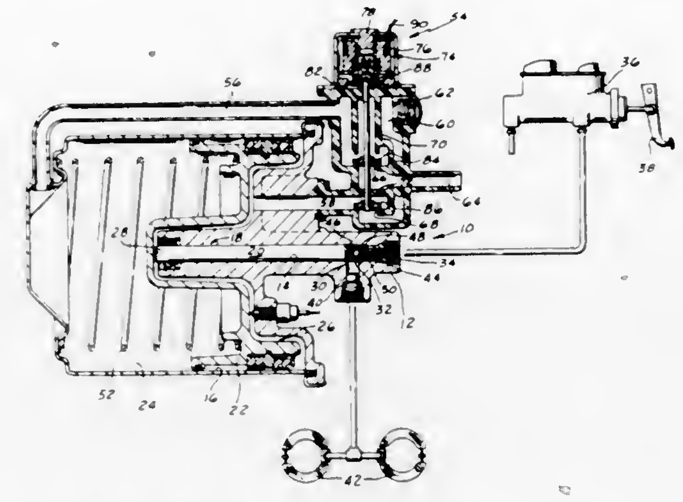
Filed Sept. 14, 1972, Ser. No. 289,194

Int. Cl. B60t *8/02*

U.S. Cl. 303—21 F **2 Claims**

A modulator for an adaptive braking system is disclosed which relieves braking pressure in the brakes of the wheels controlled by the system when an incipient skidding condition is sensed. The modulator includes the usual differential pressure responsive piston slidably mounted within a housing and movable to a position terminating fluid communication to the controlled brakes and thereafter relieving braking pressure when the modulator is actuated. The modulator is controlled by an electrically operated valve which is responsive to the output of the logic controller used in the adaptive braking system. The electrically operated valve normally communicates a pressure differential across the differential pressure

responsive piston which assists the spring which maintains the differential pressure responsive piston in a position permitting fluid communication to the vehicle brakes. However, when an incipient skidding condition is sensed and the electrically



operated valve means is actuated, the latter reverses the pressure differential across the differential pressure responsive piston to urge the latter in opposition to the resilient means to first terminate the braking pressure communication to the controlled brakes and to thereafter relieve braking pressure.

3,790,225
ELECTRICALLY ACTUATED VEHICLE BRAKE SYSTEM

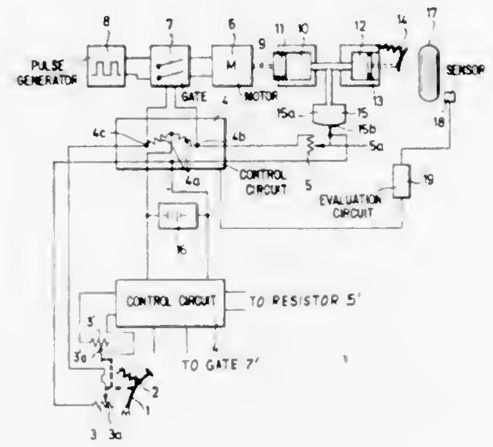
Heinz Wehde, Heidelberg, Germany, assignor to Teldix G.m.b.H., Heidelberg, Germany

Filed Feb. 9, 1972, Ser. No. 224,670

Claims priority, application Germany, June 7, 1971, 2128169

Int. Cl. B60t *8/10, 8/12*

U.S. Cl. 303—21 F **24 Claims**



A brake system for a vehicle has devices responsive to electrical signals for causing the wheel brake cylinders to respond. An electrical position generator which is actuated by a driver during braking produces electrical control signals to initiate brake actuation. Each wheel to be braked has an associated hydraulic unit which defines a variable brake fluid volume and is connected to the respective wheel brake cylinder, so that a change in the brake fluid volume of the hydraulic unit influences the brake pressure in the wheel brake cylinder. A separate measuring device is provided for determining the force exerted on the brake of each wheel to be braked and for producing a corresponding electrical output signal. A separate control signal producing device is operatively arranged to respond to both the signal from the position generator and to the output signal from the separate associated measuring device for producing a control signal. A separate brake actuation device is provided for each wheel to be braked, each of the brake actuation devices being responsive to the control signal from a separate one of the control signal producing devices. Each of the brake actuation devices is operatively arranged to change the brake fluid volume defined by an associated one of the hydraulic units.

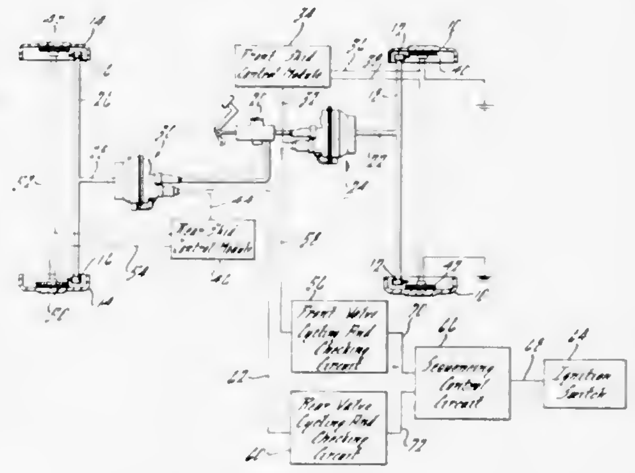
3,790,226
SKID CONTROL SYSTEM INCLUDING CYCLING AND CHECKING CIRCUIT FOR PLURAL MODULATING VALVES

John V. Liggett, Plymouth, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Mar. 1, 1972, Ser. No. 230,852

Int. Cl. B60t *8/00*

U.S. Cl. 303—21 AF **18 Claims**


Front Skid Control Module
Rear Skid Control Module
Front Valve Cycling And Checking Circuit
Rear Valve Cycling And Checking Circuit
Sequencing Control Circuit
Ignition Switch
34
56
66
64
72

A skid control system including a first brake pressure modulating valve for the front wheels, a second brake pressure modulating valve for the rear wheels and an apparatus for automatically cycling and checking the valves in sequence independently of the skid control function in order to prevent deterioration of the valve from inaction. The cycling sequence is established so that both valves are not cycled simultaneously whereby the braking pressure to all of the brakes will not be simultaneously relieved.

3,790,227
BRAKE CONTROL SYSTEM

Leonard C. Dozier, Birmingham, Mich., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed June 30, 1972, Ser. No. 268,070

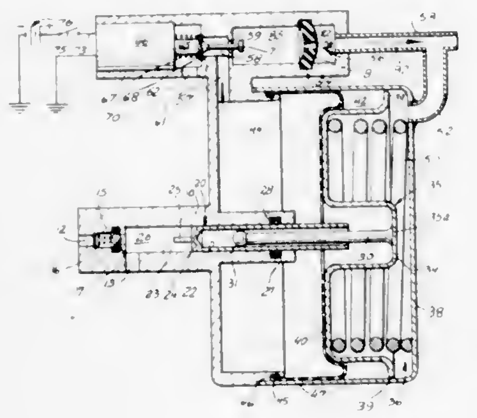
Int. Cl. B60t *8/12*

U.S. Cl. 303—21 BE **7 Claims**

A vehicle brake control system effective to modulate braking torque in response to wheel acceleration and deceleration signals to provide an average braking torque to establish a desired slip ratio between the vehicle tires and the road surface. Upon detection of excessive wheel deceleration during braking, the braking torque is reduced sufficiently to permit the wheel to accelerate. After a predetermined time or upon detection of a predetermined wheel acceleration the braking torque is re-established either at the full level selected by the operator or at a programmed lower level which is increased upon detection of decreased wheel acceleration. The reapplication of braking torque will ordinarily cause the wheel to decelerate with a repetition of the cycle.

3,790,228
BRAKE PRESSURE MODULATOR

Carmeli Adahan, 1930 Vine, No. 303, Berkeley, Calif.
Filed Aug. 11, 1972, Ser. No. 279,934
Int. Cl. B60t *13/68*
U.S. Cl. 303—21 F **10 Claims**

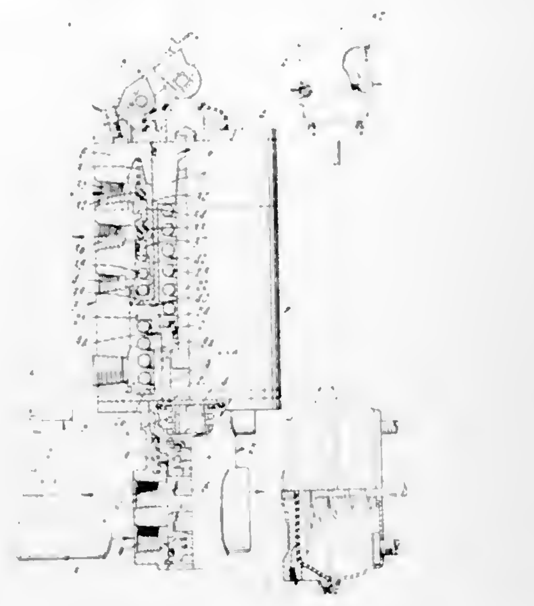


A brake pressure modulator for use in a skid control system in which a sliding plunger controls communication between the master cylinder and the wheel cylinders and also the release and reapplication of brake pressure in response to signals indicating the presence or absence of a potential wheel locked condition. The plunger is supported for movement by a diaphragm assembly in a manner permitting rapid response to differential pressures acting thereon; the differential pressure following release of the brakes in response to an impending wheel lock signal being governed to provide an initially rapid rise in brake pressure which is followed by a more gradual rise at a rate which reflects the surface conditions on which the vehicle is being operated.

3,790,229
EMERGENCY APPLICATION BRAKE VALVE ASSEMBLY AND SYSTEM

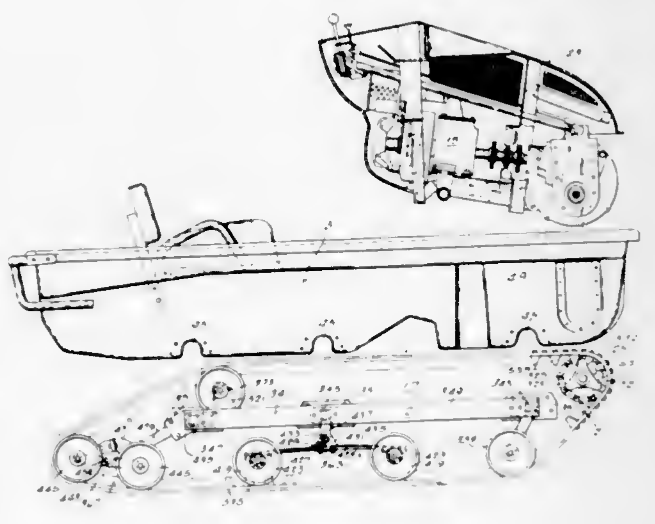
Curtis L. Brown, West Dundee, Ill., assignor to The Berg Manufacturing Company, Des Plaines, Ill.
Filed Aug. 14, 1972, Ser. No. 280,512
Int. Cl. B60t *15/06*
U.S. Cl. 303—52 **6 Claims**

A brake application valve assembly and system having emergency brake application and control elements operable with each operation of the application valve. The brake valve assembly includes a treadle, a service valve structure, an emergency valve structure between the treadle and the service valve structure, and a shaft movable in response to movement of the treadle and extending into the emergency valve structure. In addition, the brake assembly includes a piston positioned in the emergency valve structure for movement in response to movement of the shaft and against elements in the application valve structure to operate the application valve structure.



3,790,230
ALL-TERRAIN VEHICLE

Herbert A. Jespersen, Lincoln, Nebr., assignor to Outboard Marine Corporation, Waukegan, Ill.
Division of Ser. No. 857,494, Sept. 12, 1969, abandoned. This application Nov. 27, 1970, Ser. No. 93,474
Int. Cl. B62d *55/16*
U.S. Cl. 305—22 **7 Claims**

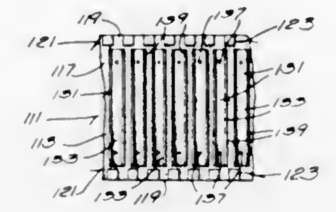


Disclosed herein is an all-terrain vehicle including a track suspension system affording both transverse and lateral resiliently flexible support to an endless track and a releasably locked and pivotally mounted rear bogie wheel assembly which, when pivoted from its normal operating position, affords assembly of or removal of the endless track relative to the sprocket and bogie wheels.

3,790,231
SNOWMOBILE TRACK

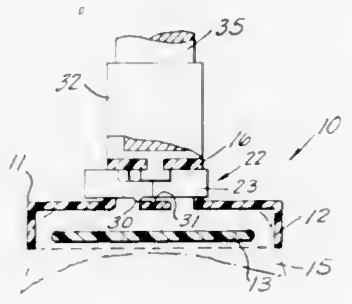
Edgar Rose, Glencoe, Ill., assignor to Outhoard Marine Corporation, Waukega, Ill.
Filed July 7, 1971, Ser. No. 160,408
Int. Cl. B62d *55/24*
U.S. Cl. 305—35 EB **1 Claim**

Disclosed herein is a vehicle track comprising an elongated flexible belt having parts extending from the belt side edges and projecting outwardly from the main weight supporting belt outer surface, together with a plurality of rigid traction bars which extend transversely of the belt between the outwardly projecting belt parts and which include a web portion secured to the belt outer surface and a pair of spaced flanges extending from the transversely extending edges of the web portion and outwardly from the belt outer surface. In one embodiment, the outwardly projecting parts comprise, along each belt edge, a row of uniformly longitudinally spaced lugs and the traction bars extend with their ends received between and in abutting relation to adjacently located pairs of lugs in each row of lugs.



3,790,232
HANDLE CONNECTION

Vicente Alvarez, San Jose 102-4° C, Zarogoza, Spain
Filed June 4, 1971, Ser. No. 149,919
Int. Cl. B25g *3/04*
U.S. Cl. 403—192 **2 Claims**



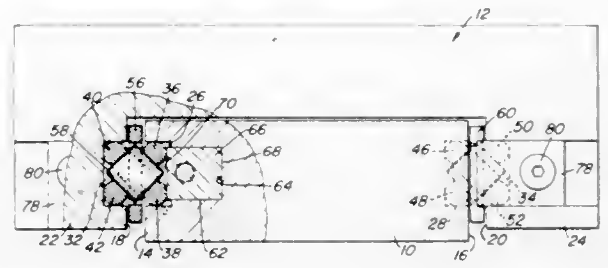
A handle connection having a socket to receive the end of the handle and carrying a male bayonet fitting thereon. A head for a device such as a mop has a female bayonet socket thereon to receive the male bayonet connection member and a lock is adapted to be releasably engaged in a groove extending across the male bayonet member to lock the male bayonet member in the female socket. A plate is detachably connected to the head for securing a mop member to the head.

In modified forms of the invention the bayonet lock members are secured in engaged position by rings detachably engaged over the connection.

3,790,233
ANTIFRICTION SLIDE ASSEMBLY

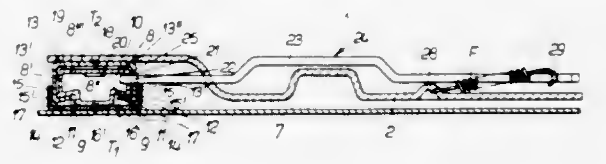
Edward C. Polidor, Rochester, N.Y., assignor to Automation Gages, Incorporated, Rochester, N.Y.
Filed Nov. 10, 1971, Ser. No. 197,313
Int. Cl. F16c *21/00*
U.S. Cl. 308—6 R **1 Claim**

This antifriction slide assembly comprises two members slidable relative to one another and mounted on roller bearings which roll on the flat surfaces of diagonally opposite rods mounted in confronting grooves of the two members. Alternate rollers are disposed so that their axes are inclined in opposite directions; and all the rollers are hollow. Pre-load on the rollers is achieved by longitudinal adjustment of a wedge member that contacts the pair of rods in a groove of one member.



3,790,234
RAIL GUIDING DEVICE FOR VEHICLE SEATS

Wolfgang Fuelling, Solingen, and Werner Osenberg, Opladen, both of Germany, assignors to Bremsley AG, Solingen-Ohligs, Germany
Filed May 23, 1972, Ser. No. 256,112
Claims priority, application Germany, Nov. 18, 1971, P 21 57 232.7
Int. Cl. F16c *29/00*
U.S. Cl. 308—6 R **7 Claims**

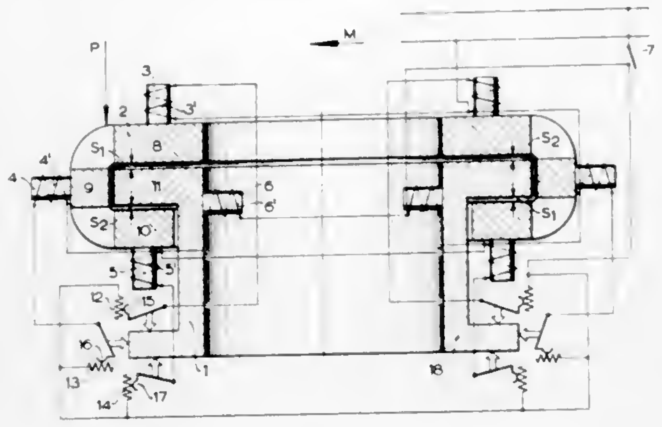


A rail guiding device for a vehicle seat comprising a first rail part which is to be fixed in position, and a second rail part which can move in relation to it, one of said parts at least partially enveloping the other, the enveloping rail part extending into longitudinal grooves in the enveloped rail part to provide an interlocking action, the rail part having the longitudinal grooves being made in box girder form, and fixed externally placed support faces are provided for two opposite limbs of the enveloping rail part. The support surfaces are preferably formed by the limbs, overlapping the side flanks of the enveloping rail part, of an outer, third rail, the third rail being U-shaped in cross-section and having a web which is connected with the wall section of the enveloped rail part extending between the longitudinal grooves in the enveloped rail part.

3,790,235
CENTRALLY FREE GIANT BEARING

Theodor Kaiser, Hagen-Kabel, Germany, assignor to Hoesch Werke Aktiengesellschaft, Dortmund, Germany
Filed Dec. 18, 1972, Ser. No. 316,139
Int. Cl. F16c *39/06*
U.S. Cl. 308—10 **2 Claims**

A centrally free giant bearing for absorbing axial and radial loads as well as loads caused by moments, in which a protrusion of a nose ring is embraced on three sides by a two-sectional supporting ring which at its bearing surfaces is provided



with circumferentially distributed controllable electromagnets, whereas the nose ring is provided with circumferentially distributed non-variable electromagnets.

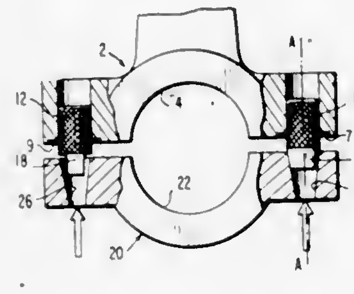
3,790,236
ALIGNMENT MEANS AND METHOD

Bernard N. Pierce, West Hartford, Conn., assignor to The Merrow Machine Company, Hartford, Conn.

Filed Mar. 6, 1972, Ser. No. 231,806

Int. Cl. F16c *43/00*

U.S. Cl. 308—23 **16 Claims**



Two separable members are aligned by bringing them together while guiding one side of both members into alignment with respect to a linear axis, and guiding the other side of the members into an aligned position in an arcuate path centered about the aforesaid linear axis without interfering with movement in a direction normal to the linear axis. Guidance with respect to the linear axis is performed by an axial alignment pin frictionally retained in one of the bearing segments and having a projecting conical surface for engaging within an aperture in the other member. Guidance in the arcuate path is performed by a tapered lateral positioning pin frictionally retained in one of the members and engaging an aperture in the other member only at spaced apart portions so as not to interfere with the guiding function performed by the first pin. On the first occasion when the members are assembled, the untapered end of the pins are forced into their supporting member to locate accurately the projecting tapered portion.

3,790,237
ELASTIC PIVOT BEARING

Henri Quaile, and Paul Piguet, both of La Chaux-de-Fonds, Switzerland, assignors to Portescap, La Chaux-de-Fonds, Switzerland

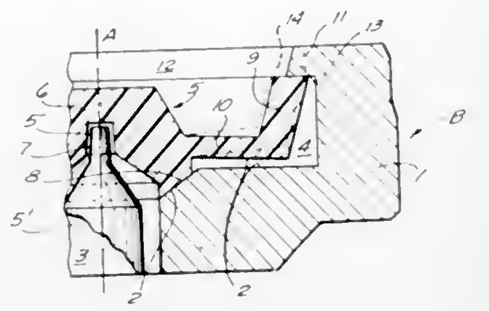
Filed Dec. 26, 1972, Ser. No. 318,562

Claims priority, application Switzerland, Dec. 23, 1971, 18810/71

Int. Cl. F16c *27/08, 33/00*

U.S. Cl. 308—159 **12 Claims**

An anti-shock bearing assembly has a relatively rigid housing in which a one-piece elastic bearing element is positioned and held in a stressed condition due to the relative configurations of the housing and bearing element. The housing and bearing element also have centrally located complementary



conical surfaces which cooperate to return the bearing element to its proper-centered position in the housing, after a shock, under the influence of the stress forces imposed on the bearing element by the housing configuration.

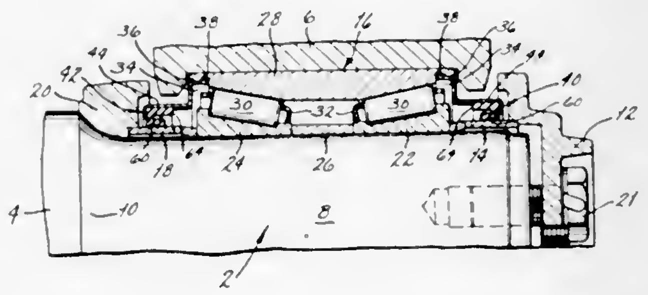
3,790,238
BEARING SEAL ASSEMBLY

Dennis L. Otto, Malvern, Ohio, assignor to The Timken Company, Canton, Ohio

Division of Ser. No. 135,168, April 19, 1971, Pat. No. 3,729,789. This application Sept. 15, 1972, Ser. No. 289,690

Int. Cl. F16c *33/78*

U.S. Cl. 308—187.1 **12 Claims**



A bearing seal assembly includes a seal case having large and small diameter circumferential walls, a radial connecting wall interconnecting the circumferential walls, and a radial end wall at the outermost end of the small circumferential wall. The free end of the large circumferential wall is press fitted into a socket at the end of a bearing cup so that the small diameter wall projects away from the bearing cup and the bearing cone encircled by that cup. The seal assembly further includes an elastomeric seal having a supporting portion which is bonded to the inner surfaces of the small circumferential wall and the radial end wall. The supporting portion is joined to a seal lip through a web, and that lip engages a wear surface as the cone and cup of the bearing rotate relative to one another. The supporting portion is provided with a shoulder which faces the interior of the bearing and provides a seat against which a removal tool bears for detaching the seal assembly from the bearing cup. The supporting portion is bonded to the seal case for substantial distances on each side of the shoulder so that the removal force does not separate the seal case and the seal.

3,790,239
SELF-LUBRICATING ANTI FRICTION BEARINGS

Raymund Wilhelm Laux, and Reinhold Sauer, both of c/o Dow Corning G.m.b.H., Munich, Germany

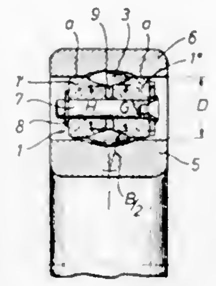
Filed June 15, 1972, Ser. No. 263,324

Int. Cl. F16c *33/00*

U.S. Cl. 308—206 **2 Claims**

Self-lubricating roller and ball bearing structures are described in which the ball or roller elements are lubricated by

means of rotatable spacing inserts positioned between the balls or rollers in sliding contact therewith. The spacing inserts



are made of a polymeric self-lubricating composite containing dry lubricants interspersed throughout the polymer.

3,790,240
ROLLING BEARING ASSEMBLY WITH A REDUCED OPERATIONAL CLEARANCE

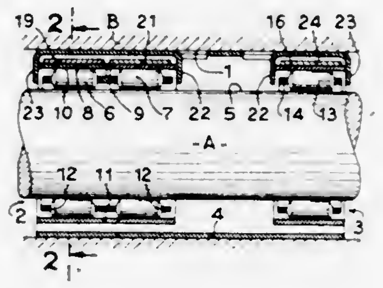
Alfred Pitner, Paris, France, assignor to Nadella, Malmaison, France, a part interest

Filed Dec. 21, 1972, Ser. No. 317,218

Claims priority, application France, Jan. 10, 1972, 7200597

Int. Cl. F16c *13/00*

U.S. Cl. 308—207 **23 Claims**



Radial rolling bearing assembly comprising a bore which supports, in angularly spaced regions, at least two respectively rigid and resilient supports for two adjoining bearing rings defining two outer raceways respectively for two annular rows of rolling elements guided in cage apertures. The resilient and rigid supports reduce the radial clearance for the rolling elements between the two outer raceways and a shaft.

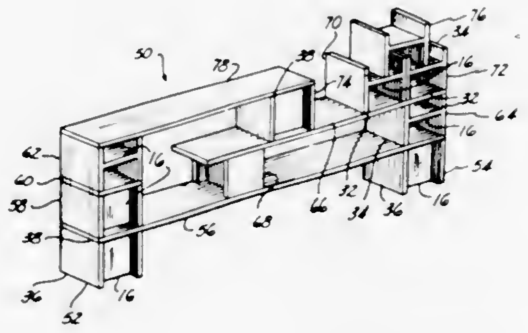
3,790,241
MODULAR FURNITURE STRUCTURE

Joseph T. Messina, General Delivery, Normantown, W. Va.

Filed July 20, 1972, Ser. No. 273,410

Int. Cl. F16b *12/00;* **A47b** *77/00*

U.S. Cl. 312—111 **11 Claims**



A modular furniture structure comprising a plurality of furniture modules, each module having a pair of square sidewalls connected at a point offset from their mid-section by a transverse wall member to form a cubic envelope having an H-shaped cross section. The furniture modules may be stacked one upon the other with the edges of the sidewalls of one furniture module being adapted to support the edges of the module thereabove with a selected number of the modules being disposed at different orientations with respect to adjacent furniture modules to define different shelf depth and shelving configurations with at least one horizontally disposed transverse shelf member being carried between a pair of horizontally spaced furniture modules. The furniture modules may be so arranged as to have their sidewalls interlocking in a selected manner with the upper edges of the sidewalls supporting a horizontally disposed member to form a table, desk or the like.

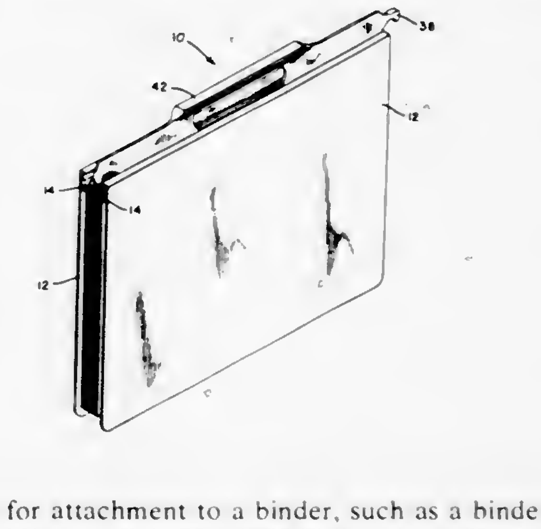
3,790,242
BINDER CARRIER AND SUPPORT STRUCTURE

John L. Sullivan, Floral Park, N.Y., assignor to The Mead Corporation, Dayton, Ohio

Filed Jan. 24, 1972, Ser. No. 220,276

Int. Cl. B42f *15/04*

U.S. Cl. 312—184 **7 Claims**



A carrier for attachment to a binder, such as a binder for computer print-outs, and supporting structure for the carrier. The carrier includes a carrying handle, a first pair of hooks for engaging the binder posts without opening the binder, and a second set of hooks for engaging a rack. The handle includes an enlarged portion extending along an edge of the carrier and a cutout beneath the enlarged portion which can be used either to accomodate the fingers of a person holding the carrier or for engagement with a supporting rack. A specially designed support structure may be used with the carrier which includes a channel having inwardly directed, spaced side wall edges adapted to engage the enlarged portion of the carrier handle.

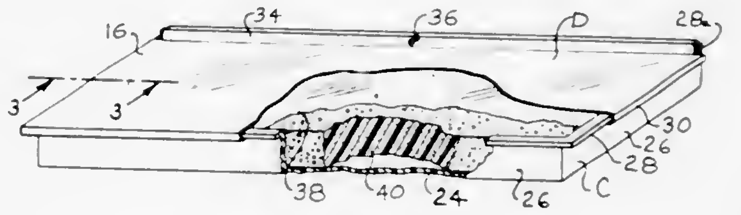
3,790,243
CLOSURE FOR REFRIGERATED HOUSING

Robert B. Whorton, III, Spartanburg, S.C., assignor to Beverage-Air Sales Company, Spartanburg, S.C.

Filed Mar. 30, 1972, Ser. No. 239,469

Int. Cl. F25d *17/00, 23/06*

U.S. Cl. 312—214 **1 Claim**



A closure for a refrigerated housing and the like, having a rectangular opening in an upper wall thereof. A planar door having opposed flanges extending from opposite sides rides on glide strips carried adjacent the rectangular opening. The planar door includes a lower member, and an upper member with insulation carried therebetween. The upper member is attached to the lower member so that the upper member can expand to a different degree from said lower member without said door buckling. A thin plastic sheet is carried between the upper member and the insulation so as to permit the upper member to substantially float when expanding relative to the lower member.

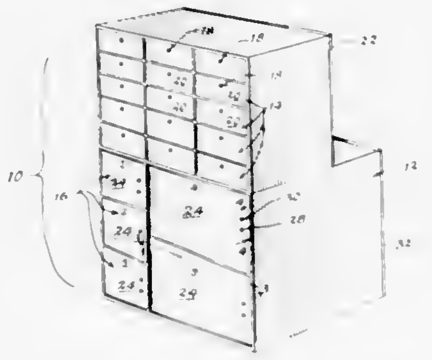
3,790,244
MAILBOX UNIT

Wells F. Stackhouse, Ashville, N.Y., assignor to American Locker Company, Inc., Jamestown, N.Y.

Filed Aug. 10, 1972, Ser. No. 279,636

Int. Cl. E05b *65/46*

U.S. Cl. 312—215 **3 Claims**



A mailbox unit permitting delivery and safe storage until pickup of both letters and packages to tenants of multiple tenant buildings. The unit employs conventional tenant key controlled letter boxes in combination with large sized package storage cabinets, which may be opened by a tenant with a special key placed in his letter box by the mailman.

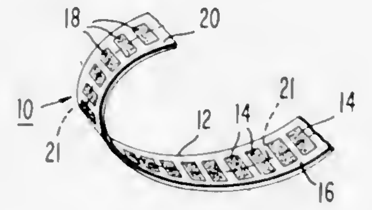
3,790,245
DOUBLE-SIDED HOLOGRAPHIC REPLICAS

William James Hannan, Palm Beach Gardens, Fla., and Joseph Ralph Frattarola, Hightstown, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 12, 1972, Ser. No. 296,861

Int. Cl. G02b *27/00*

U.S. Cl. 350—3.5 **6 Claims**



A double-sided, holographic replica comprises a web of transparent, thermoplastic, sheet material having a separate series of off-axis-recorded, phase-modulated holograms pressed into each of the opposite surfaces, respectively, of the web. Oppositely disposed (front and rear) holograms are such as to provide angularly displaced reconstructed images, respectively, when a monochromatic read-out beam is transmitted through the web. The double-sided holographic replica is made by first pressing the web and a first holographic master between a first pair of heated calender rollers to form one replica on one surface of the web, and then pressing the web, while thermoplastically adhered to the first master, and a second holographic master between a second pair of heated calender rollers to form another replica on the other surface of the web. The first and second masters are subsequently cooled and separated from the web.

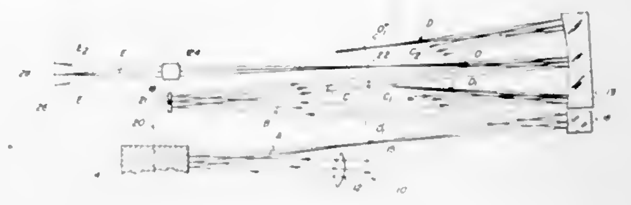
3,790,246
X-Y OPTICAL SCANNING SYSTEM

Royce Dean Pickering, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 26, 1971, Ser. No. 192,452

Int. Cl. G02b *17/00*

U.S. Cl. 350—7 **9 Claims**



A system for X-Y scanning and recording on a light responsive storage medium. The system comprises a suitably modulated light source, a first rotating deflecting element, for example, a flat faceted mirror wheel, and a second rotating deflecting element, for example, a flat or concave mirror. The axes of rotation of the two rotating deflecting elements are substantially mutually perpendicular. Alternatively the axes of rotation can be at another chosen angle to one another. Operatively disposed along the optical axis between the first and second rotating deflecting elements is a first field mirror which is preferably of the concave spherical type. Operatively disposed between the second rotating deflecting element and the recording medium is a second field mirror which is also preferably concave spherical. The concave mirrors serve to image both scanning mirrors at the entrance pupil of a final lens. This arrangement allows all of the incident light to pass through the final lens. Small mirror faces can be used and a small stationary beam such as from a laser is easily scanned. An image which is essentially free of distortion and curvature of field can be obtained on a flat storage medium.

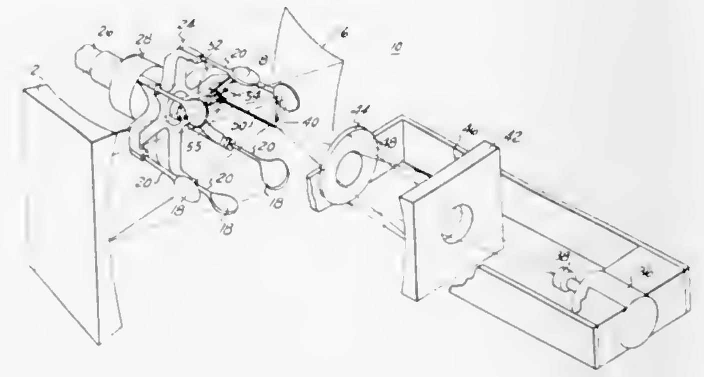
3,790,247
ALL REFLECTIVE IMAGE SPACE SCANNING DEVICE

Dietrich Korsch, Ann Arbor, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed June 9, 1972, Ser. No. 261,461

Int. Cl. G02b *17/00*

U.S. Cl. 350—7 **5 Claims**



The illustrated scanning device includes a rotatable wheel having six scanning mirrors mounted thereon disposed between a spherical primary mirror and the image provided by the primary mirror. The portion of the wheel nearest the image approximates a hyperbola having a front focal point offset from the center of the wheel. As the wheel rotates and sequentially moves the scanning mirrors along the hyperbola, each mirror reflects image information along a line across the image to the front focal point of the hyperbola. A small mirror is disposed at the focal point to reflect light toward a remote detector.

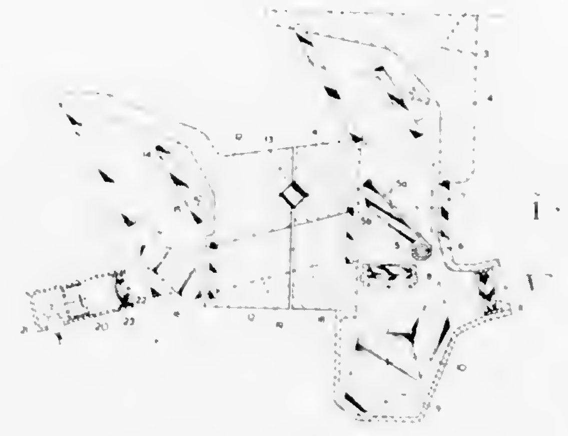
3,790,248
TARGET SIGHTING SYSTEMS

Allan Neville Kellow, 124, Selbourne Ave., New Haw, Weybridge, Surrey, England

Filed Sept. 7, 1971, Ser. No. 178,204

Int. Cl. G02b *27/32, 23/08*

U.S. Cl. 350—10 **9 Claims**



A target sighting system, principally for a fighting vehicle having a main armament which can be aimed by a gunner by means of a sighting periscope rotatable in azimuth, is provided with a separate periscope, principally for a vehicle commander, which can be independently rotated in azimuth, and optical passageways in each periscope system which provide a direct optical path between the periscopes when they are aligned in azimuth so that the view through the gunner's periscope can be observed through the other periscope.

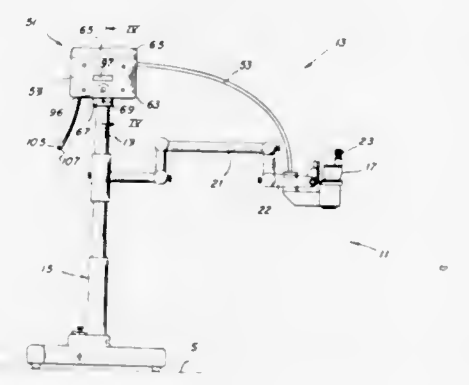
3,790,249
ILLUMINATING MEANS FOR OPERATING MICROSCOPE

Harry T. Treace, Germantown, Tenn., assignor to Richards Manufacturing Company, Inc., Memphis, Tenn.

Filed Oct. 2, 1969, Ser. No. 863,062

Int. Cl. G02b *21/06*

U.S. Cl. 350—91 **7 Claims**



An illuminating system for an operating microscope having a stand, a head assembly including an optical system and an arm supporting the head assembly. The illuminating system includes a light source located in spaced relationship to the head assembly and an elongated flexible fiber optic light guide having one end located adjacent the light source and the other end mounted on the head assembly for transmitting light from the light source to the head assembly for use in illuminating the operating area.

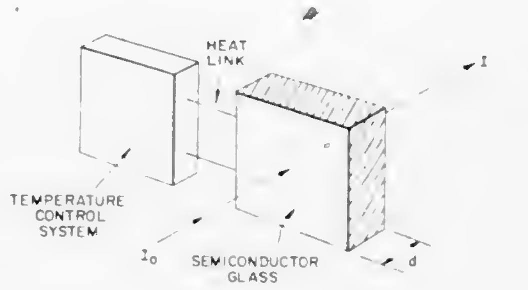
3,790,250
THERMALLY-ACTIVATED OPTICAL ABSORBER

Dean L. Mitchell, Oxon Hill, Md.; Stephen G. Bishop, Arlington, and Craig Taylor, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 25, 1971, Ser. No. 174,828

Int. Cl. G02f *1/36*

U.S. Cl. 350—160 R **9 Claims**



An optical device comprising a glassy material which exhibits temperature-dependent optical absorption properties. The intensity of radiation beams which are transmitted through the material is thermally controlled so that the device can attenuate, modulate, or become opaque to the transmitted radiation.

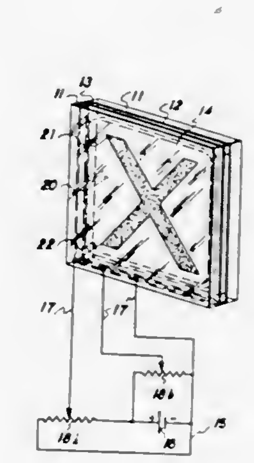
3,790,251
HOLDING FIELD TO IMPROVE THE IMAGE RETENTION OF A CHOLESTERIC NEMATIC PHASE TRANSITION LIQUID CRYSTAL IMAGING SYSTEM

Joseph J. Wysocki, Webster; James H. Becker, Penfield, and Gary A. Dir, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 47,698, June 19, 1970, abandoned. This application Nov. 29, 1971, Ser. No. 202,746

Int. Cl. G02f *1/16*

U.S. Cl. 350—160 LC **22 Claims**



An imaging system including an imaging layer comprising cholesteric liquid crystalline material in an electrical field capable of having field strengths in the cholesteric nematic phase transition field strength range or the Grandjean to focal-conic texture transformation field strength range of the liquid crystalline imaging material. The imaging material is typically imaged by placing an imagewise phase-transition or texture-transformation inducing electrical field across a layer of imaging material. The present invention controls such an imaging system by maintaining a substantially uniform holding field across the entire surface of the imaging material, said holding field typically being maintained across the imaging material after it has been imaged. The holding field may be applied in the form of various phenomena. The particular type of holding field applied has field strengths below the cholesteric-nematic phase transition or the Grandjean to focal-conic texture transformation field strength thresholds of the imaging material. The imaging system, and especially its image memory and image relaxation characteristics are controlled by varying the strength of the holding field, and by applying field pulses in imagewise configuration to image the liquid crystalline imaging material, or by pulsing the field uniformly across the entire surface of the imaging material to field strengths above the phase-transition threshold or the texture transformation threshold, thereby enhancing the image already formed in the imaging material.

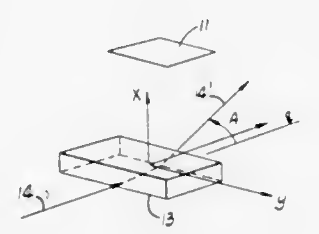
3,790,252
LIGHT CONTROLLED LIGHT BEAM DEFLECTOR

Yoh-Han Pao, Cleveland Heights, Ohio, assignor to Case Western Reserve University, Cleveland, Ohio

Continuation-in-part of Ser. No. 7,609, Feb. 2, 1970, abandoned. This application Feb. 23, 1972, Ser. No. 228,635

Int. Cl. G02f *1/32*

U.S. Cl. 350—160 R **27 Claims**



Deflection of a light beam is achieved by changing in a spatially non-homogeneous manner the refractive index of an interaction medium through which a controlled light beam and a controlling light beam pass at an angle to each other. The interaction medium is a substance in which large and rapid reversible changes in the refractive index may be produced by optical means. More specifically, the interaction medium consists of optically saturable dyes which may be either in liquid form that is in solution or in solid solution that is cast in plastics or may consist of suitable photoconductors. Optical pumping by the controlling beam at one frequency causes large changes in refractive index over a broad wavelength region and the changes may occur and decay in as short a time as 10^{-12} seconds.

3,790,253
Patent Not Issued For This Number

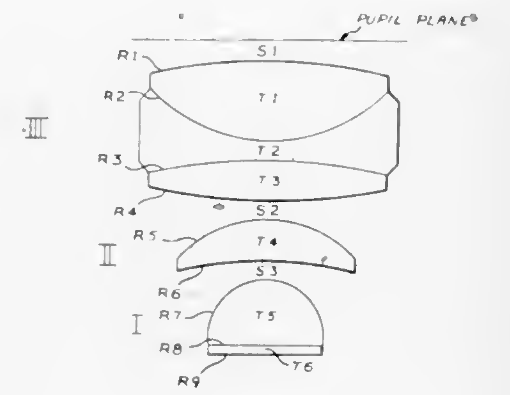
3,790,254
MICROSCOPE CONDENSER SERIES

Edward B. Rybicki, Buffalo; Milton H. Sussman, Amherst, and Robert B. Tackaberry, Williamsville, all of N.Y., assignors to American Optical Corporation, Southbridge, Mass.

Filed Sept. 7, 1972, Ser. No. 287,133

Int. Cl. G02b *21/08*

U.S. Cl. 350—183 **10 Claims**



A related series of interchangeable phase condensers of substantially the same focal length having compatible parfocality, but having different working distances. The series of condensers being of such a design that ordinary correction of the image plane is within at least two wave lengths of light; the condensers being well corrected for field aberration including coma, and pupil aberration including coma; said condensers having their respective pupil positions substantially external to the glass thereof. By "substantially external" is meant all of the condensers have their annulii, aperture stops and focal plane positions substantially coincident.

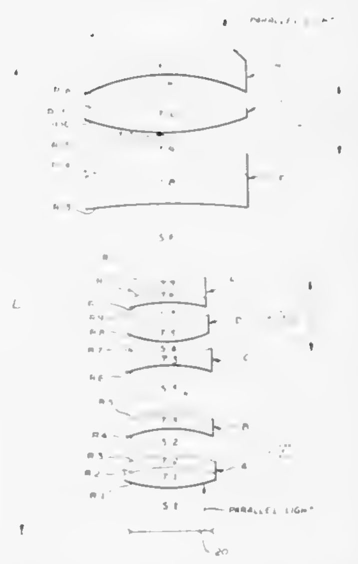
3,790,255
ZOOM LENS SYSTEM

Arthur H. Shoemaker, E. Aurora, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Filed Sept. 11, 1972, Ser. No. 288,231

Int. Cl. G02b *15/16*

U.S. Cl. 350—184 **3 Claims**



An eight component afocal zoom system is provided characterized by extremely short length considering the zoom range and its field and aperture size. A substantially flat image field is obtained through a zoom range of substantially to 2.54.

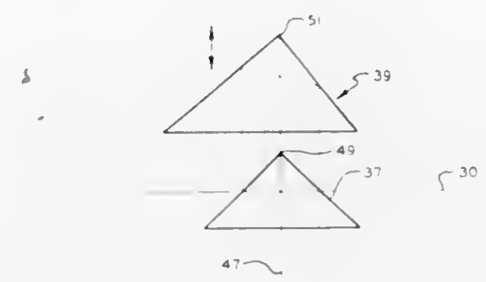
3,790,256
ROLL AND FOCUS APPARATUS

Richard A. Mecklenborg, Binghamton, and Richard E. McClenahan, Johnson City, both of N.Y., assignors to The Singer Company, Binghamton, N.Y.

Filed Dec. 13, 1971, Ser. No. 207,035

Int. Cl. G02b *7/18*

U.S. Cl. 350—287 **9 Claims**



A silvered right-angle prism and a corner cube prism are combined to form an optical device capable of introducing image roll, a change in path length for focusing and optical oxis offset. Incident rays are reflected by one side of the right angle prism to the corner cube prism where after three internal reflections they exit to reflect off the other side of the right angle prism. By controlling the distance between the two prisms path length is changed. Movement of the prisms with respect to each other in the other two translational degrees shifts the optical axis and rotation of the combined prisms will result in image roll.

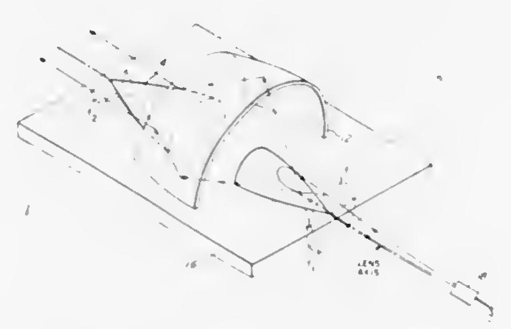
3,790,257
CONDUCTIVELY COOLED CATOPTRIC LENS ARRANGEMENT

Irving Goldstein, Lexington, and Werner R. Rambauske, Carlisle, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 1, 1971, Ser. No. 203,811

Int. Cl. G02b *5/10*

U.S. Cl. 350—294 **1 Claim**



A catoptric lens arrangement which is adapted to use with high power radiant energy, as from a laser, is shown. The entrance mirror of the contemplated lens arrangement has a convex reflective surface so that the radiative flux density at the entrance mirror is less than the radiative flux density in a laser beam. The various mirrors in the contemplated lens arrangement further are arranged so that each such mirror may be conductively cooled with aperture blockage reduced to a minimum or eliminated altogether.

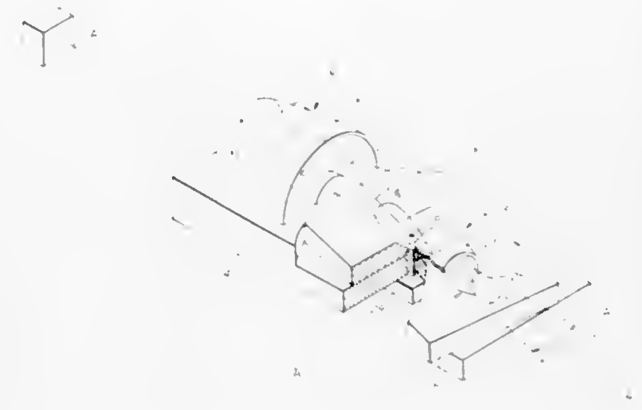
3,790,258
STEERABLE CATOPTRIC LENS ARRANGEMENT

Werner R. Rambauske, Carlisle, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Apr. 20, 1972, Ser. No. 246,045

Int. Cl. G02b *5/10*

U.S. Cl. 350—294 **6 Claims**



Catoptric lens arrangements for changing the direction of a beam of wave-propagated energy are shown. In one class of embodiments, the beam is directed through an entrance lens assembly toward a first focal point. A steering lens assembly, the first mirror therein having a focal point coincident with the first focal point, is arranged to be moved relative to the entrance lens assembly to affect the desired steering. In another class of embodiments, the entrance beam lens assembly is adapted to produce a collimated beam at a fixed angular deviation from the entrance beam and the steering lens assembly is adapted to be moved relative to such collimated beam to effect the desired steering.

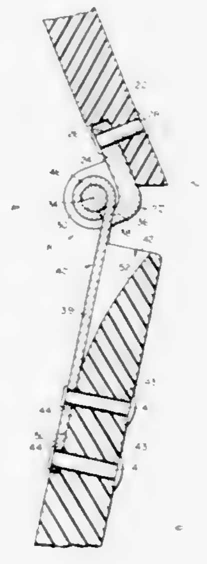
3,790,259
EYE PROTECTION FRAME ASSEMBLY

Conrad L. Leblanc, Leominster, Mass., assignor to Foster Grant Co., Inc., Leominster, Mass.

Filed Aug. 14, 1972, Ser. No. 280,297

Int. Cl. G02c *5/16, 5/22;* **E05d** *3/02*

U.S. Cl. 351—113 **4 Claims**



An eye protection frame assembly including means for connecting a pair of temple members to a front lens retaining portion. The temple members are each pivoted to an open position and then further spread apart by applying biasing force against a spring member so that they may slip around the wearers head. The spring members then urge the temples back toward one another resulting in a snug fit on the wearers head.

3,790,260

HIGH STRENGTH OPHTHALMIC LENS

David C. Boyd, Corning, and Joseph M. Williams, Horseheads, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 215,075, Jan. 3, 1972, abandoned. This application July 31, 1972, Ser. No. 276,725

Int. Cl. G02c *7/02*

U.S. Cl. 351—159 **4 Claims**

An ophthalmic glass lens has an internal zone in which the tensile stress is less than three kg./mm.^{2} and a compressively stressed, ion-exchanged surface zone that is at least four mils in depth and in which the compressive stresses generate a modulus of rupture greater than 35,000 psi. The lens is molded from a preferably lime-free, alkali silicate glass containing, by weight on the oxide basis, 12–20% Na_2O plus K_2O, 10–20% ZnO plus MgO plus TiO_2, and 1–5% Al_2O_3, and is chemically strengthened by an exchange of potassium ions for sodium ions in the surface layer of the lens at a temperature below the strain point of the glass. A surface abraded lens will withstand fracture from the impact of a 5/8 inch diameter steel ball dropped from a height of 50 inches, but if broken by a point impact, has a breakage pattern of a few large pieces.

3,790,261

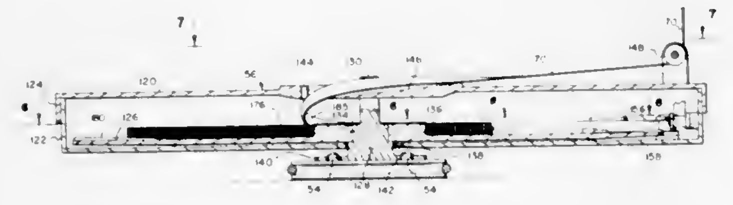
LONG PLAY FILM CARTRIDGE AND PROJECTOR

Richard James Threlkeld, 6736 Tobias, Van Nuys, Calif.

Filed May 17, 1973, Ser. No. 361,283

Int. Cl. G03b *23/02*

U.S. Cl. 352—72 **17 Claims**



A long play film cartridge and projector wherein an endless loop of film may be nine hundred to 5,000 feet or more in length and which may be used to project a series of pictures continuously; the cartridge having a novel dish shaped film holding rotor of a material having a particular coeficient of surface friction with radiating film supporting ridges having upper surfaces declining downwardly from the outer periphery towards a central hub which is surrounded by a flat ring shaped surface portion with which the inner ends of said ridges are substantially flush, whereby a large spiral roll of film is carried on said film holding rotor and is fed therefrom near said hub where the relative center of said spiral roll is automatically maintained in loosely packed convolutions; said projector operated at a lower linear film rate than the linear film rate of said film holding rotor and the film holding rotor is actuated intermittently in response to tension on displacement of said film created by demand of said projector.

3,790,262

CAMERA CONTROL SYSTEM

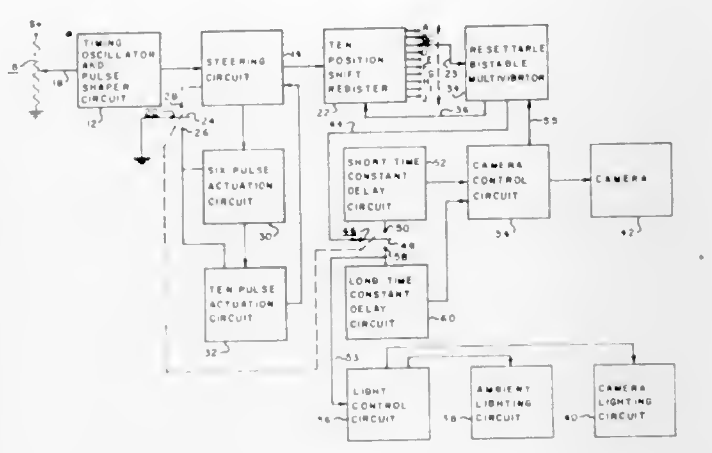
Glen A. Van Derwater, Jr., Penfield, N.Y., assignor to Photographic Sciences Corporation, Rochester, N.Y.

Filed May 9, 1972, Ser. No. 251,778

Int. Cl. G03b *21/32*

U.S. Cl. 352—84 **13 Claims**

A camera control system for time lapse photography includes an adjustable frequency timing oscillator coupled through a steering circuit to a shift register. The shift register has a pluarity of output terminals which are sequentially energized in response to input signals from the steering circuit. A control circuit is connected to a selected register output terminal and controls the operation of a camera function, in addition to the ambient lighting and camera lighting when the selected terminal is energized. The steering circuit and an associated pulse actuation circuit are adjustable for two modes of operation. In the first mode of operation, an input signal is applied to the shift register for every cycle of the oscillator output signal, and in the second mode of operation, an input signal is applied to the shift register for every sixty cycles of the oscillator output signal.


TIMING OSCILLATOR AND PULSE SHAPER CIRCUIT
STEERING CIRCUIT
TEN POSITION SHIFT REGISTER
RESETTABLE BISTABLE MULTIVIBRATOR
SIX PULSE ACTUATION CIRCUIT
TEN PULSE ACTUATION CIRCUIT
SHORT TIME CONSTANT DELAY CIRCUIT
LONG TIME CONSTANT DELAY CIRCUIT
CAMERA CONTROL CIRCUIT
CAMERA
LIGHT CONTROL CIRCUIT
AMBIENT LIGHTING CIRCUIT
CAMERA LIGHTING CIRCUIT
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3,790,263

MOTION PICTURE CAMERA WITH FADING MEANS

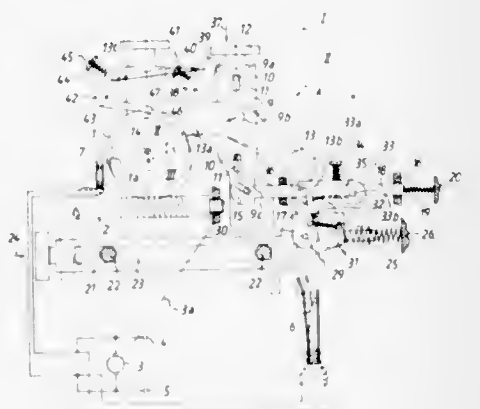
Siegfried Werz, Munich, and Johann Zanner, Jr., Unterhaching, both of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 28, 1972, Ser. No. 238,763

Claims priority, application Germany, Mar. 29, 1971, 2115207; Aug. 14, 1971, 2140813

Int. Cl. G03b *21/36*

U.S. Cl. 352—91 **23 Claims**



A motion picture camera wherein the fading means is prepared for operation by a setting unit which can be actuated by hand to thereby change the condition of the fading means to a condition of readiness. The making of trick shots begins in response to return movement of the camera release element to its idle position; an adjusting device of the fading means is then operatively connected with the diaphragm so that the size of the light-admitting aperture of the diaphragm changes whereby the camera makes exposures with fade-out or fade-in effect, or first with fade-out and thereupon with fade-in effect.

3,790,264

MOVIE CAMERA RELEASE CONTROL CIRCUIT WITH VOLTAGE STABILIZATION

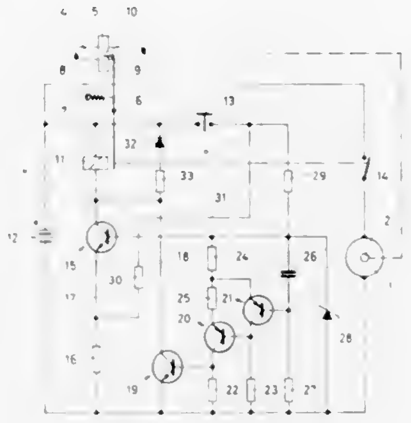
Frank-Armin Heinrich, Korb, Germany, assignor to Robert Bosch Photokino GmbH, Stuttgart, Germany

Filed June 8, 1972, Ser. No. 261,039

Claims priority, application Germany, July 7, 1971, 2133704

Int. Cl. G03b *1/00*

U.S. Cl. 352—174 **7 Claims**



Activation of the camera release button causes a first transistor to become fully conductive, furnishing a high energizing current to the release magnet. A timing circuit connected to the transistor causes cut-off of the transistor after a predetermined time interval. A second transistor furnishing a decreased holding current then becomes activated. A Zener diode serves to stabilize the voltage for both transistors, causing the circuit to be independent of battery voltage variations.

3,790,265

AUDIO-VISUAL APPARATUS

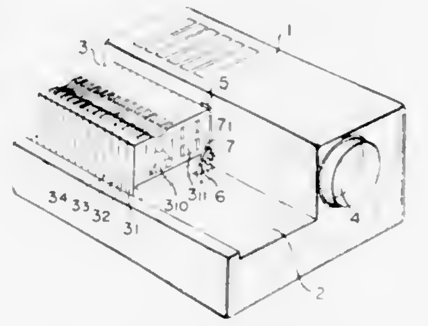
Mitsutoshi Ogiso; Kazuo Tshikawa, both of Kawasaki, and Yoshihiro Shigeta, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 18, 1971, Ser. No. 189,869

Claims priority, application Japan, Oct. 20, 1970, 45/92181

Int. Cl. G03b *31/06*

U.S. Cl. 353—19 **10 Claims**



An apparatus for presenting visual information and corresponding audio information simultaneously utilizes an audio-visual slide which includes a transparency for projection and a movable endless magnetic tape of relatively great recording capacity. The apparatus includes projecting means for the transparency of the slide, driving means for moving the slide to the projecting position in the projecting means and returning the slide to its original position, tape driving means for driving the magnetic tape in the slide when the slide is in the projecting position, and reproducing means adapted to be urged into contact with the magnetic tape to reproduce audio information on a spiral track of the tape with the aid of a magnetic head.

3,790,266

MICROFICHE PROJECTING APPARATUS

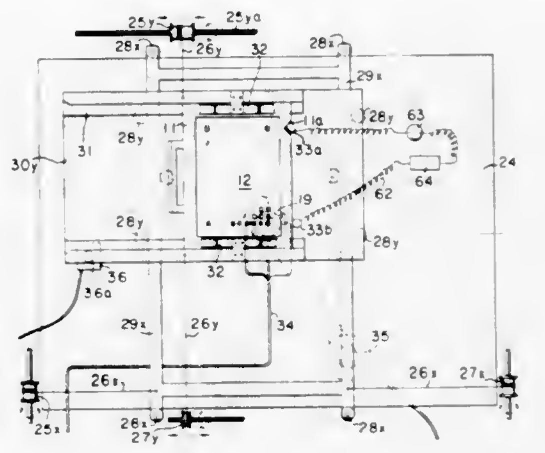
Hiroyuki Ueda, and Yukio Sawano, both of Asaka, Japan, assignors to Fuji Shashin Film Kabushiki Kaisha, Kanagawa-ken, Japan

Filed Oct. 12, 1971, Ser. No. 188,228

Claims priority, application Japan, Oct. 24, 1970, 45/93662; Nov. 5, 1970, 45/97350

Int. Cl. G03b *23/08, 1/52, 21/28*

U.S. Cl. 353—27 **8 Claims**



In an apparatus for projecting a microfiche, a microfiche holder is demountably mounted on a stage which is movable in a horizontal plane. The microfiche holder is formed with a notch and positioned on the stage, with said notch being engaged by a stopper pin provided on said stage. In changing the microfiche holder, the stage is fixed and a focal plane determining member for retaining the microfiche on the focal plane is moved out of contact with the microfiche.

3,790,267

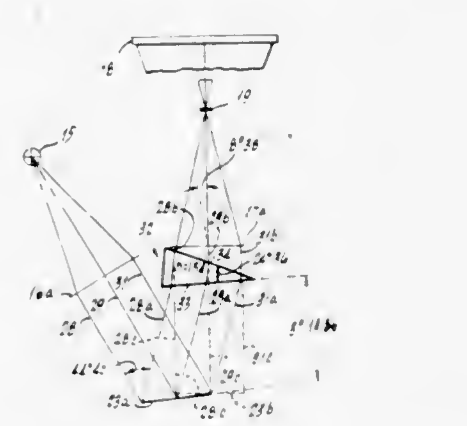
OPTICAL SYSTEM FOR ORTHOGONALIZING IMAGE FIELD OF PROJECTION LENS

Edward G. Ramberg, Southampton, Pa., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 17,412, March 9, 1970, abandoned. This application July 14, 1972, Ser. No. 271,934

Int. Cl. G03b *21/00, 21/14*; **G02f** *1/30*

U.S. Cl. 353—70 **11 Claims**



Light from an unmodulated source is collimated and angularly directed to a target reflecting surface which is deformable to represent a subject and from which it is directed by a schlieren projection system including a projection lens and a stop at the focal point of the lens for the subject representative light which is angularly reflected from the target surface. A prism is placed between the target and the projection lens to effectively render the image represented by the principal light rays reflected from the target substantially orthogonal to the principal plane of the lens. For monochromatic light a simple triangular prism is used and for polychromatic or white light a compound prism of trapezoidal shape and comprising at least two components with different indices of refraction is used. A preferred form of the compound prism is of trapezoidal shape and comprises three components, two of the components having a third component having a different index of refraction. In one of the three-part compound prisms the components are of glass materials and in another form of such a prism the components are of optical plastic materials.

3,790,268
SLIDE CHANGING DEVICE FOR SLIDE PROJECTORS

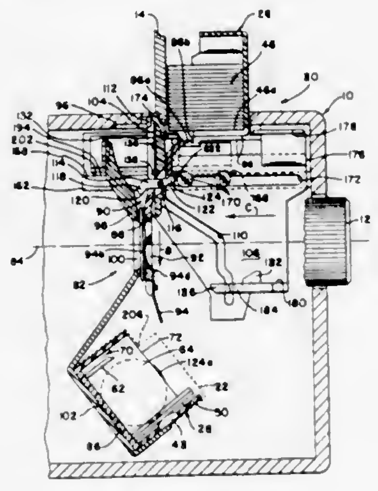
Clemens Hopener, Ruit, and Wolfgang Ort, Stuttgart-bad Cannstatt, both of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 26, 1971, Ser. No. 202,359

Claims priority, application Germany, Jan. 22, 1971, P 21 02 927.6

Int. Cl. G03h *23/02*

U.S. Cl. 353—111 **6 Claims**



A slide projector includes means for receiving a vertical slide stack. A device for indexing the lowermost slide to a film gate and then to a receptacle for receiving viewed slides includes a first slide member which is movable vertically past the gate to push slides out of the gate toward the receptacle. A second slide member is movable horizontally to index the lowermost slide of the stack to a chute. The slide drops along the chute into the film gate. The first and second slide members are interconnected so that movement of the first slide member in a vertical direction moves the second slide member in a horizontal direction.

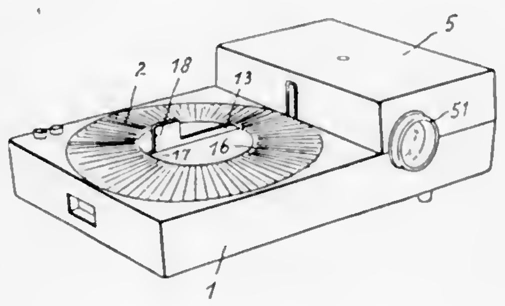
3,790,269
SLIDE PROJECTOR FOR RING MAGAZINES

Reinhard Sobotta, Mascherode, Germany, assignor to Roller-Werke Franke & Heidecki, Brannschweig, Germany

Filed Sept. 14, 1971, Ser. No. 180,400

Int. Cl. G03b *23/06*

U.S. Cl. 353—117 **4 Claims**



A slide projector for use with ring-shaped magazines arranged horizontally for rotation about a vertical axis offset laterally from the horizontal optical axis. As the magazine rotates step by step, an inclined ramp raises the slide which is to be projected so that its bottom edge will clear the rather low marginal wall of the ring-like magazine. A pusher member which extends beneath the bottom of the magazine, then up through the central stationary hub around which the magazine rotates, then radially toward the projection window, engages the edge of the slide, and pushes it radially into the projection window or gate on the optical axis, through a guide member which is beveled horizontally to receive the advancing edge of the slide and align it properly, and which is pivotally mounted and beveled vertically so as to be thrust aside by vertical axial movements of the magazine when the magazine is inserted in or removed from the projector.

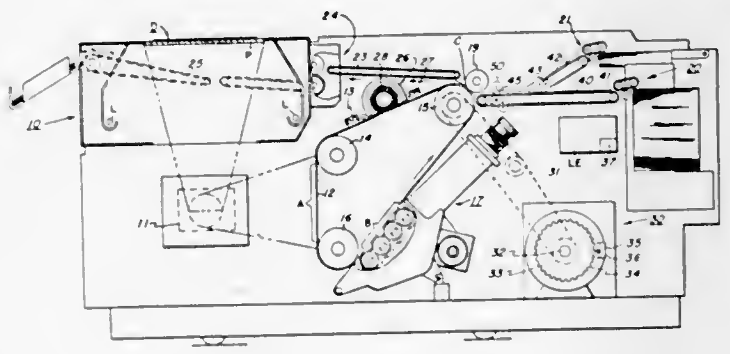
3,790,270
REGISTRATION RESET SYSTEM

James M. Donohue, Rochester, N.Y., assignor to Xerox Company, Stamford, Conn.

Filed Aug. 30, 1972, Ser. No. 284,831

Int. Cl. G03g *15/00*

U.S. Cl. 355—14 **8 Claims**



A programming control system for controlling the processing steps of an electrostatic printing machine of the type employing an endless photoreceptor belt. A sheet position sensitive element in the form of a registration finger is utilized for resetting a complete machine timing cycle for processing operation. This cycle, called pitch is applied to the belt and comprises a predetermined number of electrical pulses some of which control machine events.

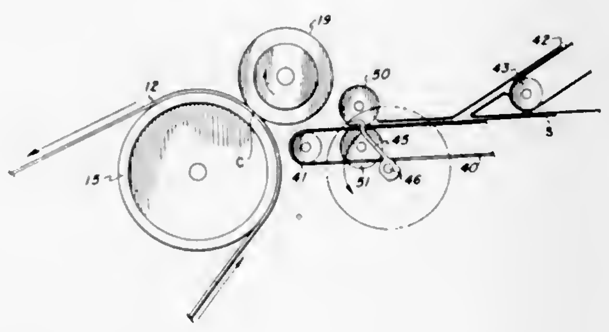
3,790,271
PROCESSING CONTROL SYSTEM FOR PRINTING MACHINES

James M. Donohue, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 30, 1972, Ser. No. 284,835

Int. Cl. G03g *15/00*

U.S. Cl. 355—14 **3 Claims**



A processing control system for controlling one or more processing steps of an electrostatic printing machine of the type employing an endless photoreceptor belt and a drive motor for imparting processing movement to the belt. A photoreceptor motion sensitive element in the form of a rotatable member mounted on the drive shaft of the drive motor and a magnetic pickup device arranged to be actuated when aligned with each tooth of the gear serve to generate a plurality of control pulses. Series of these pulses, called pitch, are established by a reset arrangement, and are associated with the movement of the belt. Each series comprises a predetermined number of discrete electrical pulses some of which control machine events and processing steps.

3,790,272
COPYING APPARATUS

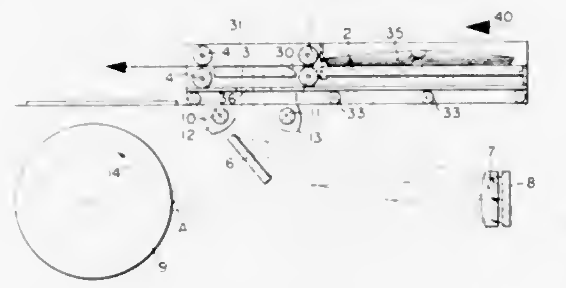
Wilhelm Knechtel, Biebertal; Gerhard Petersdorf, Pohlheim, and Winfried Sandner, Rechtenbach, all of Germany, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed July 13, 1972, Ser. No. 271,514

Claims priority, application Germany, July 19, 1971, P 21 35 979.5

Int. Cl. G03b *27/48, 27/50, 27/70*

U.S. Cl. 355—51 **12 Claims**



This specification discloses improvements in a copying apparatus of the type wherein sheet originals or thicker books may be selectively moved along a copying window and wherein a conventional transport mechanism for sheet originals is connected to a transparent book support positioned on an extension of the transport mechanism, said transport mechanism for sheet originals and said book supporting being selectively moved in common. The improvements consist in a fully automatic drive mechanism for moving the book support and the transport mechanism. The drive mechanism is arranged to impart preferably one reciprocal movement to the book support and the transport mechanism for sheet originals.

3,790,273
ELECTROPHOTOGRAPHIC DUPLICATOR OF THE TRANSFER TYPE

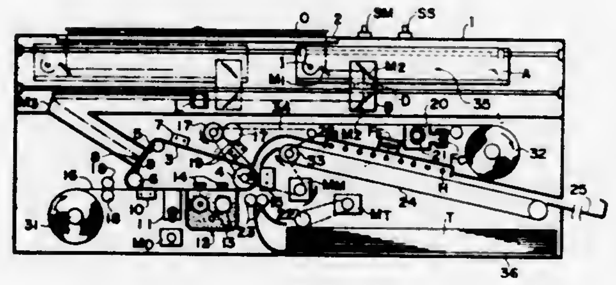
Susumu Tanaka, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan

Filed Dec. 29, 1971, Ser. No. 213,308

Claims priority, application Japan, Dec. 30, 1970, 45/126791

Int. Cl. G03g *5/02*

U.S. Cl. 355—16 **4 Claims**



In an electrophotographic duplicator of the transfer type an image projected onto a photosensitive surface is transferred onto the surface of a transparent dielectric film superposed with respect to the photosensitive surface. The transfer is accomplished by an AC corona discharge and a uniform irradiation of the superposed dielectric film and photosensitive surface to stabilize the image. Subsequently, a transfer paper and the transparent dielectric film are superposed and the image transferred to the transfer paper by application of a toner and a corona discharge of the opposite polarity of the toner. The image on the transfer paper is then fixed by heating.

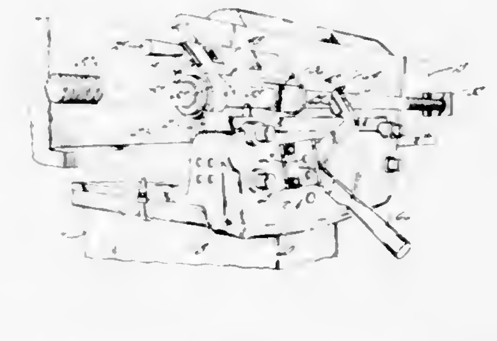
3,790,274
CARRIAGE ADJUSTING MECHANISM FOR CAMERA

Charles W. Smoot, Skokie, and Arvids Saldenais, Palatine, both of Ill., assignors to Apeco Corporation, Evanston, Ill.

Filed Mar. 16, 1973, Ser. No. 341,995

Int. Cl. G03b *27/52*

U.S. Cl. 355—55 **8 Claims**



An adjusting mechanism for a camera used for exposing photographic plates and the like having a frame for the slidable mounting of a lens carriage and a copy board carriage. Power operated feed screws are captively journaled on the frame. The feed screws have respective traveling nuts permanently threaded thereon. Each nut has a keyed connection with the associated carriage. Each feed screw is calibrated in terms of carriage position. The yoke is swingable away from the carriage to break the keyed connection to permit rapid manual sliding of the carriage to a new position and swingable toward the carriage for subsequent engagement of the keyed connection for normal operation of the screw and with automatic reestablishing of the calibration. A clamp including a toggle is provided for clamping the yoke tightly to the carriage during normal operation of the feed screw. An interlock switch is provided to enable driving of the feed screw only when the yoke is firmly clamped in seated position.

3,790,275
METHOD AND APPARATUS FOR SENSING RADIATION DERIVED FROM INFORMATION BEARING MEDIA

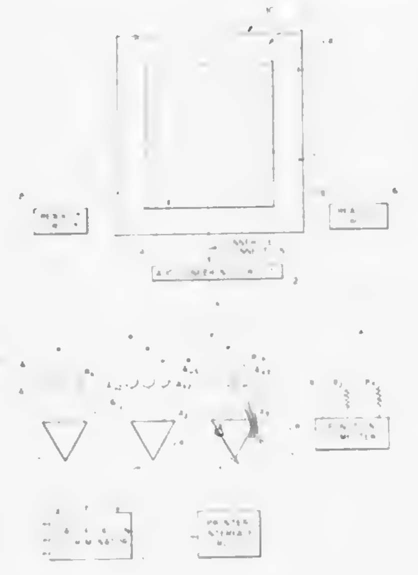
Robert W. Huboi, Webster; Osmond F. Palmer, Rochester, and Edward M. Waz, Hilton, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 67,331, Aug. 27, 1970, abandoned. This application Mar. 24, 1972, Ser. No. 237,940

Int. Cl. G03b *27/76*

U.S. Cl. 355—68 **9 Claims**

Method and apparatus for sensing radiation derived from an image or scene on information bearing media or originals so that the original, which may take the form of a negative or positive, may be appropriately classified and be printed (or reproduced) onto a record media or photosensitive copy material. In an illustrative embodiment of this invention, the apparatus includes a radiation sensitive assembly having a first radiation sensitive element for sensing the peripheral portion of the original and a second radiation sensitive element responsive to radiation derived from the subject or centrally disposed portion of the original. Further, the peripheral or first element includes a first radiation sensitive device for receiving radiation from a first or upper portion of the peripheral portion corresponding to the background of the scene on the original and a second radiation sensitive device for sensing radiation derived from a corresponding second or lower foreground portion of the scene on the original. First and second signals are developed by the first and second radiation sensitive devices, respectively. The second radiation sensitive element includes a plurality of radiation sensitive devices each responsive to radiation derived from a discrete sub-portion of the subject or centrally disposed portion of the original to produce a corresponding plurality of third signals. The plurality of third signals derived from the second radiation sensitive element are applied to an auctioneering circuit for providing a selected third signal indicative of that discrete sub-portion of the centrally disposed or subject portion on having the highest density. The first, second and selected third signals are applied to apparatus for producing first, second and third classification signals indicative of backlighted, normal or frontlighted scenes. The first and second signals are also applied to apparatus for deriving an exposure control signal corresponding to one of the first, second and third classification signals in accordance with the characteristics of the first and second signals. The original is reproduced under the control of the selected exposure control signal.



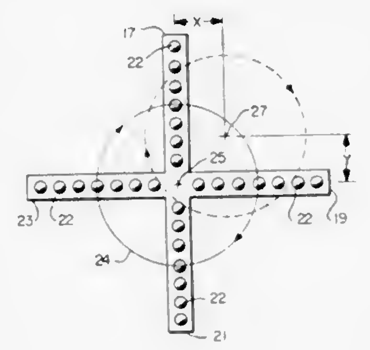
3,790,276
DIRECT MEASUREMENT OF SHIP BODY DISTORTION USING A LASER BEAM

George W. Cook, McLean, Va., and David T. Milne, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 7, 1971, Ser. No. 131,969

Int. Cl. G01b *11/26*

U.S. Cl. 356—152 **4 Claims**



A laser light beam is directed to a cruciform target containing a series array of photo detectors on each arm. The light beam is perpendicular to the cruciform and is orbited about the cruciform center. A differential pulse width modulated (DPWM) wave is generated by the signals emitted from the photo detectors each time they are illuminated by the light beam, as the output of the photo detectors are connected to bi-stable flip-flops which are triggered into positive and negative states and whose pulse width depends upon the time for the rotating laser beam to travel between two arms displaced from each other by a 180° of arc. Angular distortions in the X axis and the Y axis are separately measured by two pairs of arms, the arms of each pair being displaced 180° from each other. The width of the pulse is proportional to the angular distortion.

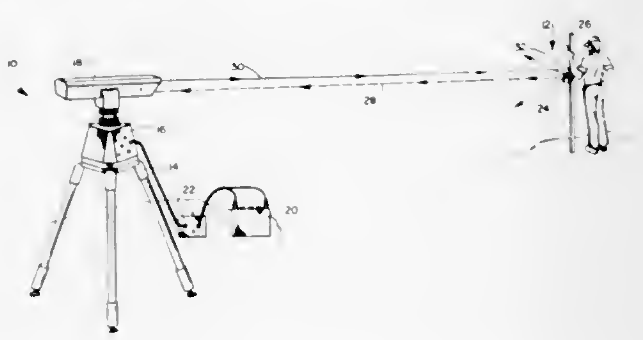
3,790,277
OPTICAL INSTRUMENT TRACKING SYSTEM

William M. Hogan, North Little Rock, Ark., assignor to Blount & George, Inc., Jacksonville, Ark.

Filed Sept. 20, 1971, Ser. No. 181,839

Int. Cl. G01b *11/26*

U.S. Cl. 356—152 **10 Claims**



The specification discloses an automated optical instrument system which includes a support pedestal rotatably supporting a housing on the upper end thereof. The housing includes a laser for directing a collimated beam of light for use in surveying and also includes an infrared detector system mounted therein. A portable beacon which emits infrared waves is adapted to be attached to a surveying stadia rod or to earth moving equipment or the like. The infrared detector system detects the position of the beacon and operates a motor to pivot the housing such that the laser beam is continuously maintained in alignment with the stadia rod. In case the path between the beacon and the infrared detector system is interrupted, circuitry is provided to continuously cycle the housing until the beacon is again sensed by the infrared detector system.

3,790,278
PEAKED POWER COHERENT PULSED LASER TRANSMITTER/RECEIVER SYSTEM

Carl J. Buczek, Manchester; Michael L. Skolnick, West Hartford, and Gary E. Gurski, Manchester, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Apr. 26, 1972, Ser. No. 247,678

Int. Cl. G01c *23/00*; G01s *9/44*

U.S. Cl. 356—28 **1 Claim**

In a coherent pulsed laser radar system employing state-of-the-art laser technology, optical technology and microwave radar video signal processing technology, the radar receiver is provided with a bandwidth which is commensurate with doppler frequencies in radar return signals resulting from unresolved target return signal doppler shifts. These unresolved doppler shifts are on the order of magnitude of those resulting from targets having ground speeds on the order of tens of miles per hour. The above said bandwidth being orders of magnitude larger than that required for the data rate of return signals. The pulsewidth of the transmitter is designed to be matched (substantially the reciprocal) to the aforementioned

large bandwidth, whose function is determined by the shape of the transmitted pulse. The PRF is chosen to be the lowest possible commensurate with the data rate. In one embodiment, a 10.6 micron carbon dioxide laser transmitter is passively Q-switched by a low pressure gas saturable absorber, such as a sulfer hexafluoride cell, giving an output pulse having a pulsewidth on the order of roughly one tenth microsecond to one microsecond, and the receiver has bandwidth of approximately one half to three MHz, operating at a nominal IF center frequency of 30 MHz, with receiver information rates on the order of 20-50 KHz, the local oscillator being adjusted with respect to the ground velocity of the laser radar so as to provide radar video at substantially the IF frequency falling within the bandwidth, as described hereinbefore.

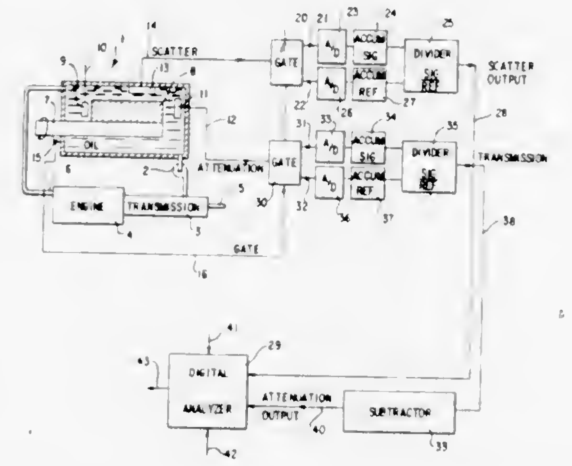
3,790,279
OIL CONTAMINATION MONITOR WITH DIGITAL SIGNAL PROCESSING

George Frank Skala, Scotia, N.Y., assignor to Environment/One Corporation, Schenectady, N.Y.

Filed Sept. 28, 1971, Ser. No. 184,477

Int. Cl. G01n *33/28, 21/26*

U.S. Cl. 356—70 **17 Claims**



The circuit for digitally processing the analog signals from an oil contamination monitor includes analog to digital converters, digital accumulators for accumulating the thus converted signals over a predetermined period of time and digital comparators, preferably dividers for forming ratios of the thus accumulated digital signals to produce a comparison output. When a single analog signal corresponding to the light scattering effect a reference material and the oil to be monitored have upon light is to be processed, gate means first separates the analog signal corresponding to only the light scattering effect of the oil and a second analog signal corresponding only to the light scattering effect of the reference material; and when a single analog electrical signal corresponding to the light attenuation effect the reference material and oil have upon light is to be processed, gate means separates the single signal into a first analog signal corresponding only to the light attenuation effect of the oil and a second analog signal corresponding only to the light attenuation affect of the reference material. Each of the thus separated analog signals is processed by an analog to digital converter whose output is accumulated over a predetermined period of time and fed to a respective one of two digital dividers, with the first digital having an output corresponding to the ratio of the light scattering effect of the oil and the light scattering effect of the reference, and the second digital divider having an output corresponding to the light transmission effect of the oil and the light transmission effect of the reference material. The ratio output of the first digital divider is fed directly to the digital analyzer while the ratio output of the second digital divider, corresponding to light transmission, is first fed to a digital subtractor where it is subtracted from a predetermined higher digital standard corresponding to complete light transmission so as to produce an attenuation ratio output that is fed directly to the digital analyzer. The digital analyzer may give representative values to the amount of contamination within the oil or the chemical breakdown or the like of the oil, or have warning lights as to excessive contamination or oil breakdown.

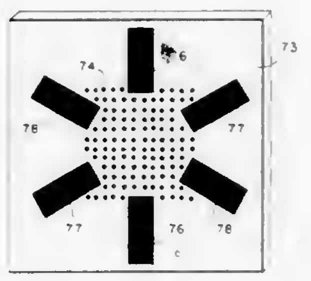
3,790,280
SPATIAL FILTERING SYSTEM UTILIZING COMPENSATING ELEMENTS

Robert Alfred Heinz, Flemington Twp., Hunterdon County, and Robert Charles Oehrle, Edgewater Park Twp., Burlington County, N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed May 3, 1972, Ser. No. 249,984

Int. Cl. G01n *21/32*; G02b *27/38*

U.S. Cl. 356—71 **18 Claims**



A spatial filtering system for inspecting integrated circuit photomasks, and the like. The system includes a spatial filter comprising a matrix-like array of opaque regions on a transparent field, as well as one pair of opaque compensating elements for each element edge orientation in the photomask to be inspected. The opaque regions block the d.c. and lower spatial frequencies of the periodic photomask feature information, while the compensating elements block the corresponding higher spatial frequencies (i.e., the edge information). Use of the system significantly improves the signal-to-noise ratio of the filtered image.

3,790,281
COMBINED SYSTEM FOR ACOUSTICAL-OPTICAL MICROSCOPY

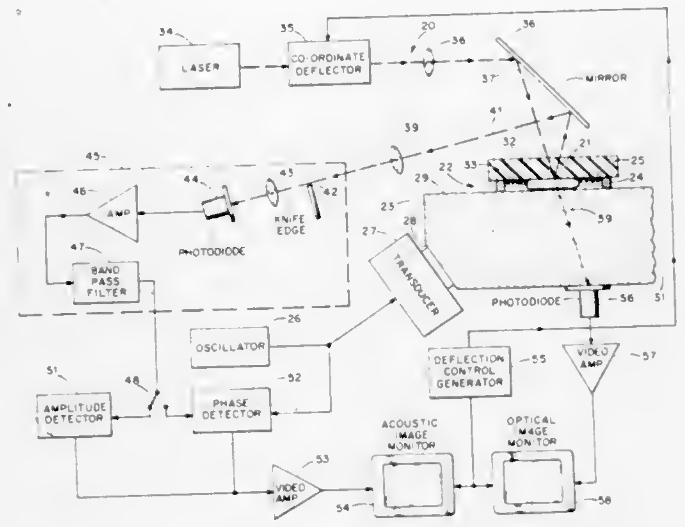
Lawrence W. Kessler, Glenview, and Adrianus Korpel, Prospect Heights, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Feb. 26, 1973, Ser. No. 335,854

Int. Cl. H04b *11/00*

U.S. Cl. 356—72 **15 Claims**

A combined acoustical-optical inspection system, operating at microscopic levels, in which an object to be studied is immersed in water or other sonic fluid propagation medium in close proximity to a partially-metallized semi-reflective mirror formed on an elastically deformable interface surface of a faceplate that engages the sonic propagation medium. The object is insonified with high-frequency acoustic energy, preferably at 100 MHz or more, from the side opposite the interface surface, producing a ripple pattern on the interface



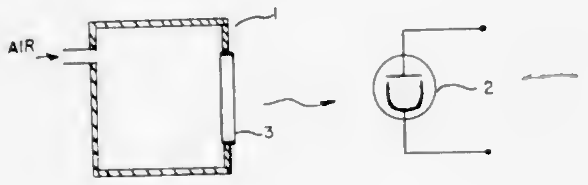
surface representative of the acoustic properties of the object. The object is scanned with a laser beam, through the interface; a reflected fraction of the beam is utilized to develop an acoustic image of the object and a transmitted fraction of the beam is employed to develop a precisely correlated optical image of the object. The two images may be superimposed for interpretation purposes.

3,790,282

FLAME-IN-ENGINE PHOTOMETER DETECTOR AND ALARM FOR PHOSPHORUS AND OTHER ELEMENTS

George H. Fielding, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 23, 1972, Ser. No. 237,428
Int. Cl. G01j *3/30*
U.S. Cl. 356—86 8 Claims



An apparatus and method for determining the concentration of pollutants in air by exciting atoms of the pollutant in a pressure chamber and measuring the intensity of the characteristic light emitted by the excited atoms.

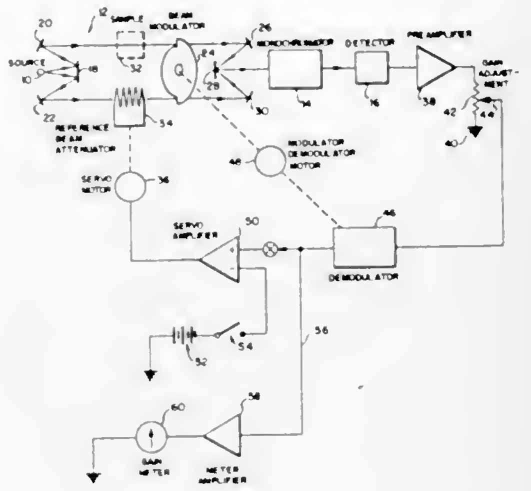
3,790,283

TOTAL LOOP GAIN INDICATOR FOR OPTICAL NULL SPECTROPHOTOMETER

Allan S. Way, Irvine, and William J. Hayman, Fullerton, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jan. 31, 1973, Ser. No. 328,477
Int. Cl. G01j *3/42*
U.S. Cl. 356—89 4 Claims

An optical null spectrophotometer having means for setting up the instrument gain for optimum response prior to insertion of a sample in the sample beam, the means including a voltage source to provide an unbalancing voltage to close the reference beam attenuator, a gain adjustment potentiometer in the detector output circuit and a visual readout device for indicating optimum gain with the reference beam attenuator in a closed position.

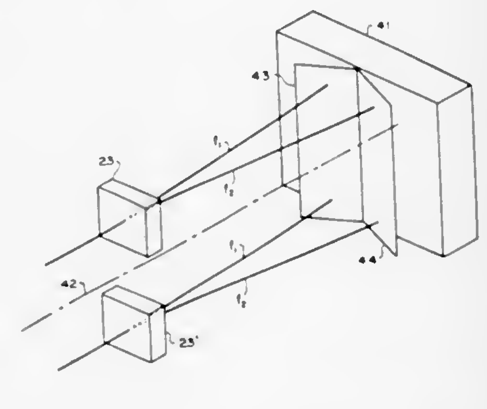


3,790,284

INTERFEROMETER SYSTEM FOR MEASURING STRAIGHTNESS AND ROLL

Richard R. Baldwin, Saratoga, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 8, 1972, Ser. No. 250,903
Int. Cl. G01b *9/02*
U.S. Cl. 356—106 9 Claims



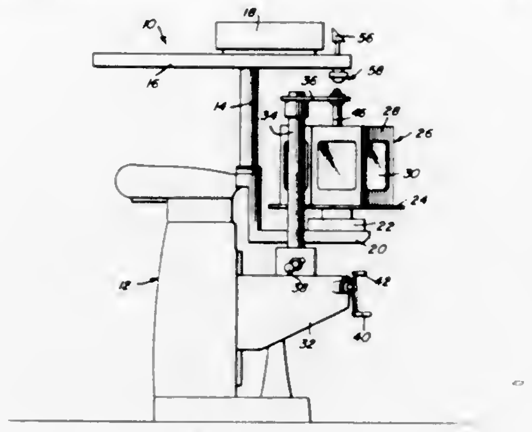
An interferometer system for measuring straightness including a light source for producing a beam of light, preferably a two frequency laser with the two frequency components linearly polarized and orthogonal to one another, the light beam being directed through a Wollaston prism where the beam is split into two separate paths which deviate, in opposite paths, from the original beam direction by a small angle. The two separate beams are transmitted over two separate paths to associated ones of two separate reflective surfaces which are mounted in a mutually fixed relationship and at an angle to each other. The two beams are reflected back into the prism from the associated reflective surfaces where they are recombined. Photodetector means are provided for detecting any changes in the fringes resulting from a change in one optical path length relative to other optical path length as the two mirrors move relative to the prism, said change in path lengths resulting from deviations from straightness in such movement. A dual system is disclosed for measuring rotational motion, i.e., roll.

3,790,285

SCATTERED LIGHT POLARISCOPE

Weldon F. Swinson, Auburn, Ala., assignor to Harmon White & Associates, Inc., Opelika, Ala.

Filed July 19, 1971, Ser. No. 163,744
Int. Cl. G01r *21/40*
U.S. Cl. 356—115 10 Claims



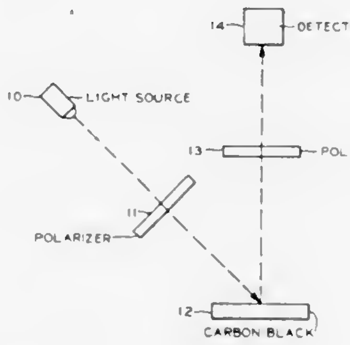
A photoelastic model is fixedly positioned in a body of fluid within an octagonal tank. The planar sides of the tank are provided with windows and the tank is supported for angular movement about a vertical axis relative to the model until desired fringe patterns are visible through one or more of the windows. Laser or polarized light beams scattered or transmitted by the model produce the fringe patterns for analysis of the model under different operational modes.

3,790,286

CARBON BLACK TESTING BY ANALYZING NON-SPECULARLY REFLECTED POLARIZED LIGHT

Gerhard Kraus, Bartlesville, Okla., assignor to Phillips Petroleum Company, Washington, D.C.

Filed Apr. 21, 1972, Ser. No. 246,329
Int. Cl. G01n *21/48*
U.S. Cl. 356—118 1 Claim



A dry reflectance test is carried out with incident light polarized in the plane of reflection and an analyzer is inserted into the remitted beam, crossed with respect to the incident radiation.

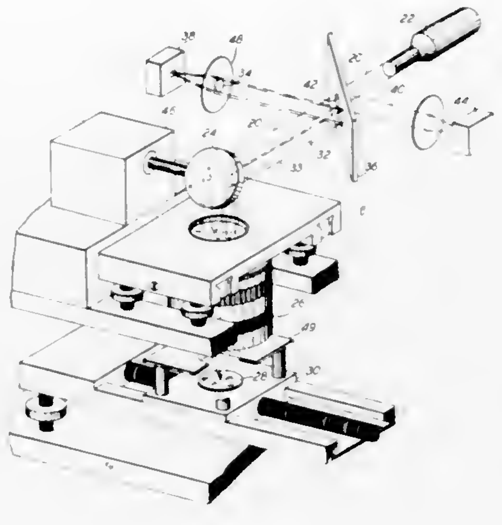
3,790,287

SURFACE INSPECTION WITH SCANNED FOCUSED LIGHT BEAMS

John David Cuthbert, Bethlehem; Richard George McMahon, Allentown, and David Farnham Munro, Wescoesville, all of Pa., assignors to Western Electric Company, Incorporated, New York, N.Y., by said McMahon and Bell Telephone Laboratories, Incorporated, Murray Hill, N.J., by said Cuthbert and Munro

Filed Mar. 31, 1972, Ser. No. 239,900
Int. Cl. G01n *21/16*
U.S. Cl. 356—120 17 Claims

A surface inspection system uses a highly focused spot of light moved rapidly over the surface to perform an inspection. This permits a ready location of the defects, gives some indication as to their size, and permits a high resolution inspection to be performed in a relatively short time. An optical arrangement is employed in which a scanned beam is brought back through the same lens system used in generating the scan to produce an immobilized return signal beam. A stop or spatial filter is used on the return beam to permit only the light scattered from defects to reach a detector.

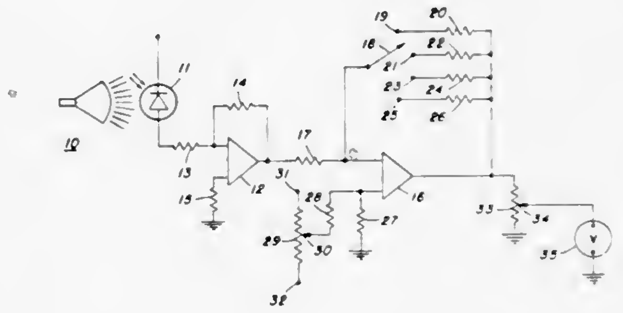


3,790,288

PHOTOMETER INCLUDING VARIABLE AMPLIFICATION AND DARK CURRENT COMPENSATION

Joseph A. Hostetter, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 22, 1971, Ser. No. 210,966
Int. Cl. G01j *1/44*
U.S. Cl. 356—226 6 Claims



Apparatus for measuring the illumination from a source of light is disclosed in accordance with the teachings of the present invention wherein a photodiode exhibiting a substantially uniform spectral sensitivity within a defined range generates a current proportional to the intensity of illumination thereon. Operational amplifier means including a first operational amplifier having a constant closed loop amplification factor connected in series relationship with a second operational amplifier exhibiting a selectively variable closed loop amplification factor amplifies the current generated by said photodiode to provide a voltage that is proportional to the intensity of the illumination of said photodiode. Indicating means may be coupled to said operational amplifier means to provide an indication of the intensity of said illumination.

3,790,289
GAS TURBIDITY MEASURING APPARATUS

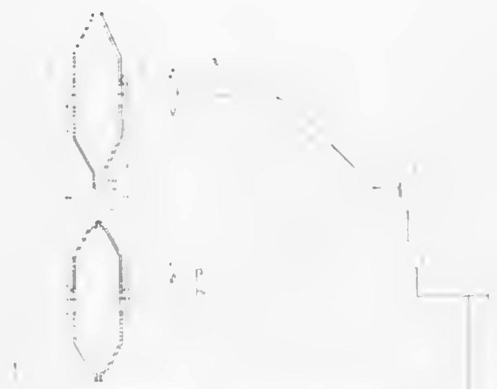
Ulrich Schmidt, Bad Homburg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Feb. 5, 1973, Ser. No. 329,381

Claims priority, application Germany, Mar. 8, 1972, P 22 11 073.2

Int. Cl. G01n *21/22, 21/12*

U.S. Cl. 356—205 **29 Claims**



The turbidity of exhaust gases of an internal combustion engine is measured by comparing light transmission through the gases with light transmission through an equivalent body of clean air. In order to prevent accumulation of dirt or soot on the light source, photocell, and optical path element, a pair of transparent rotating discs is used to close off the opening through which light enters and leaves the test chamber, allowing a small gap for a laminar boundary layer of clean air. One of the discs has opaque sectors and functions also as a shutter,so that the light may pass alternately through the test chamber and through another chamber containing clean air.

3,790,290
SINGLE MODULATED LIGHT BEAM PHOTOMETER

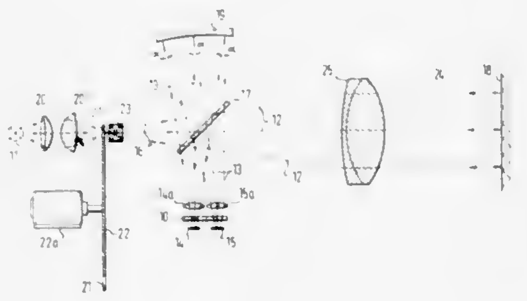
Joachim M. Muller, Pullach, and Adolf J. Triller, Munich, both of Germany, assignors to Erwin Sick Optik-Elektronik, Waldkirch, Germany

Filed Aug. 3, 1972, Ser. No. 277,615

Claims priority, application Germany, Aug. 11, 1971, P 24 40 335.0

Int. Cl. G01j *3/46,* **G01n** *21/22,* **G01j** *1/10*

U.S. Cl. 356—195 **14 Claims**



A photometer in which a light beam is split by a mirror into measurement and reference portions, the reference portion of the beam being reflected back through the beam splitting mirror to a photoelectric device. The measurement portion of the beam is reflected back to the beam splitting mirror from which it is reflected to the photoelectric device. The photoelectric device compares intensities of the two received beam portions and provides indication representative of transmission, extinction and remission.

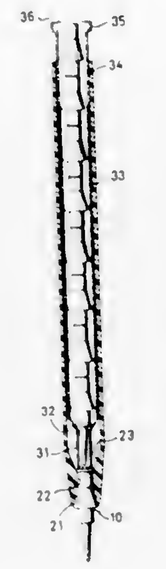
3,790,291
USEFUL WRITING INSTRUMENT

Ya-Mei Hung, 52, Sec. 1, Shing N. Rd., and Yen-Ping Hsiao Liu, 33, Ln., 170 Twng. Hwa St., both of Taipei, China /Taiwan

Filed July 17, 1972, Ser. No. 272,095

Int. Cl. B43k *21/02, 21/22*

U.S. Cl. 401—57 **8 Claims**



A writing instrument comprises a tubular casing with a writing unit which is frictionally interfitted with the front end of the casing, and an ejector means for ejecting the writing unit from the casing as its writing point becomes blunt for replacement by a sharpened unit. Each writing unit carries a sharpened lead pencil element or the like at its front portion and includes a suddenly enlarging and gradually reducing portion at its middle portion, while its rear portion has substantially the same shape as the front section. The ejector means further comprises a tubular casing in which the remaining writing units of a plurality of writing units are stored, with an ejector at its closed end and a plurality of annular flexible projections at its opened end to prevent the stored writing units therein from slipping out from behind the ejector tube.

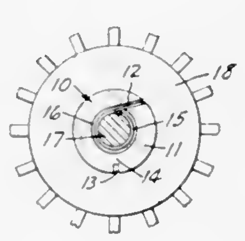
3,790,292
SELF-TIGHTENING COUPLER

Leonard R. Nestor, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 5, 1972, Ser. No. 295,161

Int. Cl. F16d *1/06*

U.S. Cl. 403—351 **15 Claims**



A radially expandable body having a cylindrical bore and longitudinally slotted to provide access thereto is coupled to a smooth shaft within said bore by tangential insertion of a thin flexible filler strip. The body may fit within a hub for coupling said hub to said shaft.

ERRATUM

For Class 403—124 see:
Patent No. 3,790,195

ERRATUM

For Class 403—192 see:
Patent No. 3,790,232

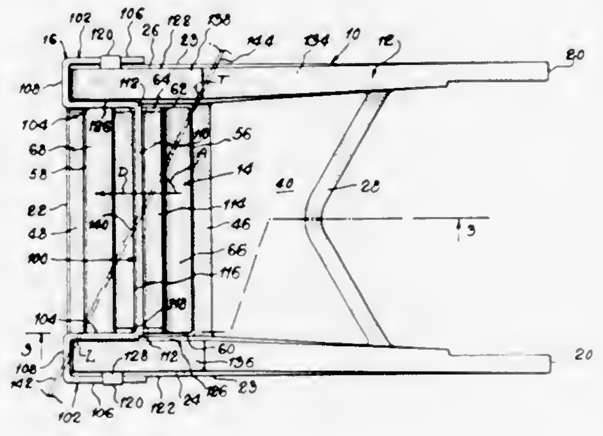
3,790,293
PAVEMENT MARKER REFLECTOR MEMBER AND ASSEMBLY

Sidney A. Heenan, Park Ridge, and Norbert Majewski, Elk Grove Village, both of Ill., assignors to Amerace Esna Corporation, New York, N.Y.

Filed Oct. 4, 1972, Ser. No. 294,810

Int. Cl. E01f *11/00*

U.S. Cl. 404—15 **14 Claims**



A pavement marker reflector member having a shell-like body of synthetic resin material, a filler material within the shell-like body and a base plate affixed to the shell-like body and including lowermost surface portions establishing a basal support for the reflector member. The reflector member may be affixed to a base member, in which case the lowermost surface portions of the base plate engage corresponding portions of the base member in a pavement marker assembly.

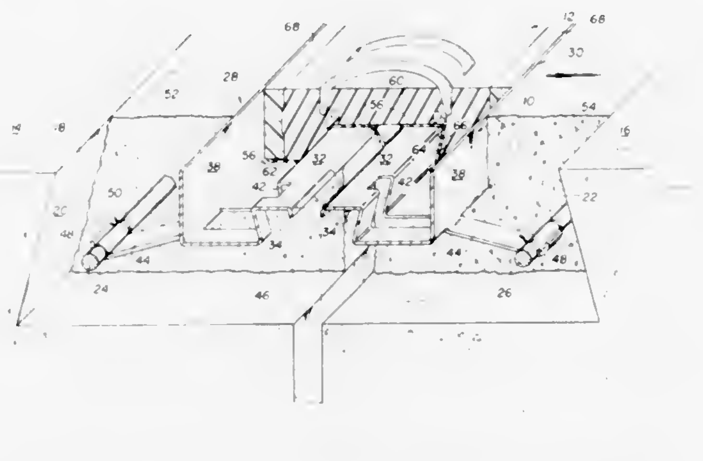
3,790,294
ELASTOMERIC SEAL POSITIONING SUPPORT CONSTRUCTION

Mario R. Trieste, 37, Variek Ct., Rockville Centre, N.Y.

Filed June 12, 1972, Ser. No. 261,902

Int. Cl. E01c *11/04*

U.S. Cl. 404—68 **4 Claims**



A mounting support for a shaped elastomeric seal for a roadway or the like, wherein the support is readily mounted in a clearance position within the roadway expansion joint or void and cement is poured in situ about said support preparatory to the positioning of the elastomeric seal thereon. Eliminated are pre-cast cement blocks and the like which heretofore complicated field installation of the elastomeric seal.

3,790,295
BORING DEVICE FOR SECURING HINGES AND THE LIKE

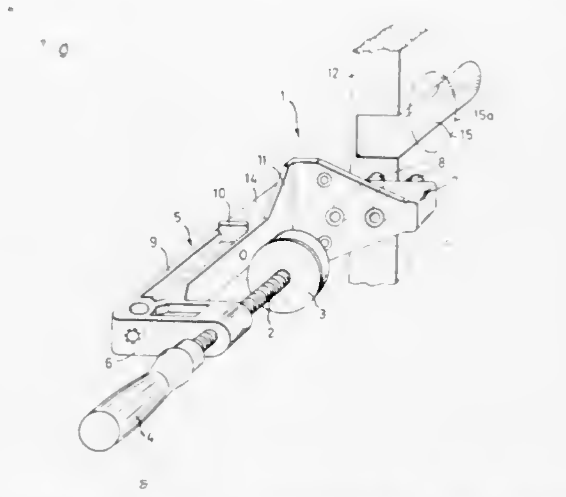
Hellmuth Grunert, Hoffnungsthal, Germany, assignor to Prameta Prazisionsmetall-und Kunststafferzeugnisse G. Baumann & Co., Cologne, Germany

Filed May 12, 1972, Ser. No. 252,801

Claims priority, application Germany, May 18, 1971, 7119369

Int. Cl. B23b *49/00*

U.S. Cl. 408—103 **7 Claims**



A boring device for use in positioning and fastening hinge members between a door and frame member where the door panel has a mounting recess for receiving at least a part of the hinge. The device includes a screw clamp adapted to be positioned around an outer edge of the frame and guides for boring mounting holes in the frame. The clamp is provided with interchangeable U-shaped adaptor pieces for insertion within the mounting recess of the door panel. Various adaptor pieces for circular and elongated recesses of various sizes are provided to permit universal application of the boring device.

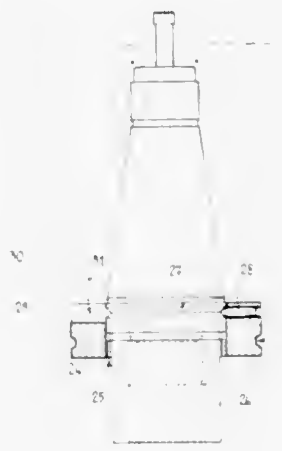
3,790,296
DEVICE FOR THE DRIVING OF A TOOL BY MEANS OF THE SPINDLE OF A MACHINE-TOOL

Andre Mottu, and Arnold Heimann, both of Geneva, Switzerland, assignors to Societe Genevoise D'Instruments De Physique, Geneva, Switzerland

Filed Oct. 12, 1971, Ser. No. 188,214

Int. Cl. B23b *31/04*

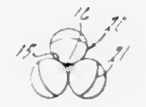
U.S. Cl. 408—239 **1 Claim**



Device for the driving of a tool by means of the spindle of a machine-tool in which one of the two elements — spindle-tip of the machine and tool — is provided with at least one axial lug engaging in a matched groove of the other element so as to ensure the driving of the tool by means of the spindle independently of the friction drive which exists between the taper of the tool and the tapered bore of the spindle, characterized by the fact that one of the elements — spindle-nose and tool — carries a part set up onto it so as to be angularly adjustable, this part being provided with said lug or groove, the whole being so arranged that the angular position of the spindle relative to the tool is adjustable when the latter is set up into the spindle and when said lug fits into said groove.

3,790,297
MICRO DRILL AND METHOD OF CONSTRUCTION

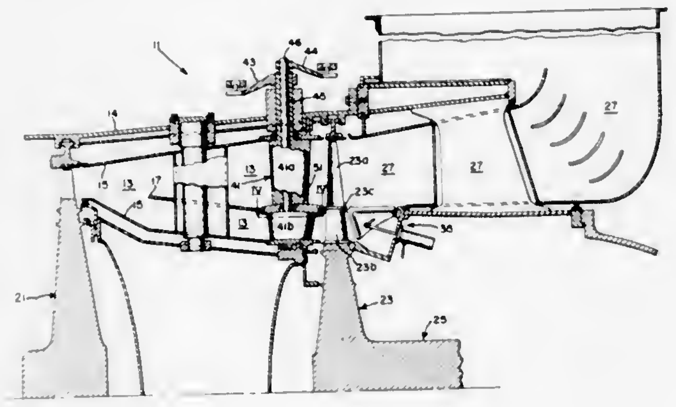
Ethan K. Maursey, 2123 Common Rd., Warren, Mich.
Filed Oct. 25, 1972, Ser. No. 300,713
Int. Cl. B23b *51/02*
U.S. Cl. 408—240 **7 Claims**



The shank for a micro drill 0.06 inch in diameter or less is made from three-like cylindrical rods which are brazed together along engaging lines which are parallel to the center of the rods forming a triangular body with a central aperture therebetween which is also parallel to the rod centers. One end of the joined rods has a drill advanced into the aperture for drilling a hole therein for the driven end of the micro drill. The end may be supported within the drilled aperture by suitable adhesive such as an epoxy, a low temperature solder or the like so that the drill end can readily be removed in case of breakage for replacement without affecting the securement of the three rod sections together with the higher temperature brazing material.

3,790,298
FLEXIBLE CONTOUR TURBINE NOZZLE FOR TIGHT CLOSURE

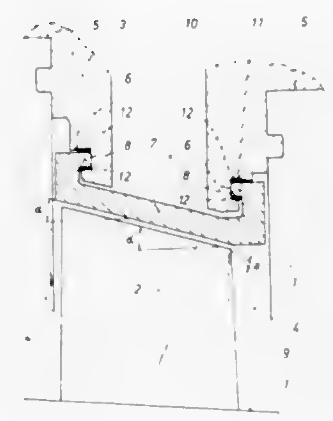
Robert L. Hendrickson, Scotia, and George W. Scheper, Jr., Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed May 1, 1972, Ser. No. 249,614
Int. Cl. F01d *1/30;* **F02c** *1/06*
U.S. Cl. 415—152 **9 Claims**



In a two shaft, axial flow, reversing gas turbine, hot turbine gases from the blades of the compressor turbine are selectively directed through a variable nozzle ring to rotate the turbine wheel of the load shaft in either one or the other direction. The variable nozzle ring comprises two concentric rings of adjustable vanes, one of which may be open while the other is closed. The present invention is directed toward controlling leakage losses through the vanes when closed and also toward limiting turbulence and hence aerodynamic losses in the vanes when open.

3,790,299
APPARATUS FOR ADJUSTING TIP CLEARANCE IN FLUID FLOW MACHINES

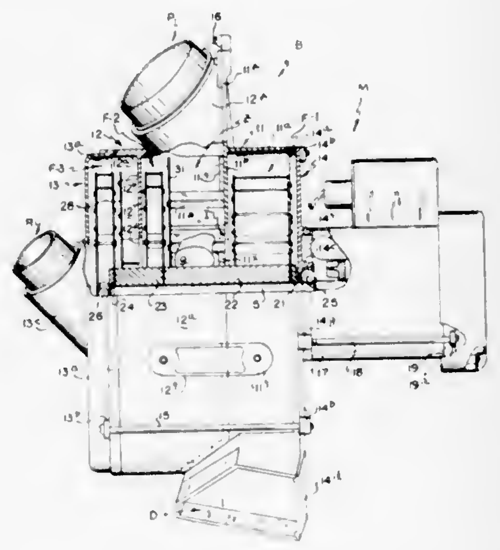
Erwin Sidler, Baden, Switzerland, assignor to Brown Boveri & Company Limited, Baden, Switzerland
Filed Oct. 17, 1972, Ser. No. 298,235
Claims priority, application Switzerland, Nov. 10, 1971, 16255/71
Int. Cl. F01d *1/10, 9/02*
U.S. Cl. 415—199 R **2 Claims**



A fluid flow machine of the type wherein adjacent rows of rotor blading rotate between adjacent rows of blading carried by the stator and wherein a ring formed from arcuate intermediate pieces fitted to the stator blading carrier intermediate adjacent rows of stator blading functions as a heat storage member and also forms a space separate from the flow passage for cooling stator blading carrier. The inner periphery of the ring of intermediate pieces establishes a running clearance with the tips of the rotor blading and this clearance is made adjustable by the insertion of packing strips between key portions formed on the intermediate pieces and the walls of circular grooves formed in the stator blading carrier in which these key portions are secured.

3,790,300
MULTI-FUNCTION CENTRIFUGAL BLOWER UNIT

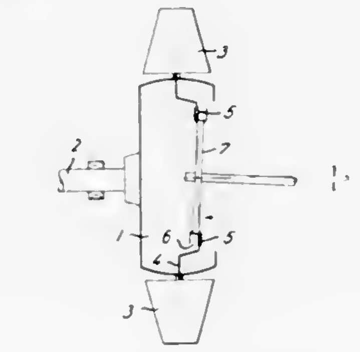
Michael L. Gilliland, Kent, Ohio, assignor to Ametek, Inc., New York, N.Y.
Filed May 18, 1972, Ser. No. 254,760
Int. Cl. F01d *1/02, 25/24, 9/00*
U.S. Cl. 415—219 C **10 Claims**



A two-stage centrifugal fan section with a first suction inlet, a central diffuser chamber section accepting the first section discharge and having circumferentially spaced second and third suction inlets, and a final generally tangentially discharging centrifugal fan section receiving diffuser section discharge, all incorporated in a composite housing to form a motor-blower unit with an induction motor section of which the fan mounting rotor shaft is supported in a housing end wall offset from the housing axis to provide with a local pinch formation in the final section interior, a scroll or snail shell type discharge. The diffuser section is vaned to isolate and allocate certain flows to respective regions of the final fan inlet and thereby promote stable pumping operation at the three inlets independently at distinct flow and/or pressure differential conditions.

3,790,301
AXIAL FLOW FAN, THE IMPELLER VANES OF WHICH ARE ADJUSTABLE DURING OPERATION

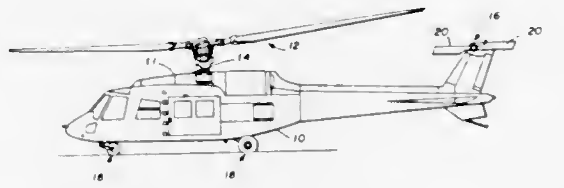
Henry Valdemar Pedersen, Haslev, and Ole Jakobsen Bredsted, Naestved, both of Denmark, assignors to Nordisk Ventilator Co. A/S, Nestved, Denmark
Filed July 1, 1971, Ser. No. 158,794
Claims priority, application Denmark, July 10, 1970, 3610
Int. Cl. F04d *29/36*
U.S. Cl. 416—108 **10 Claims**



An axial flow fan comprising a plurality of impeller vanes that are angularly adjustable during operation by means of an adjustment member operatively connected with the vanes and having an axis that either forms a small angle with the axis of rotation of the impeller or has a small transverse distance therefrom. The adjustment member may be axially or angularly displaceable for causing the desired vane adjustment in such a way that during each revolution of the impeller the vanes are successively acted upon by the adjustment member, i.e., at least one but not all of the vanes are adjusted at a time.

3,790,302
TAIL ROTOR MOUNTING FOR CONING RELIEF

Robert L. Pascher, Dallas, Tex., assignor to Textron Incorporated, Providence, R.I.
Filed Oct. 10, 1972, Ser. No. 295,888
Int. Cl. B64c *27/48*
U.S. Cl. 416—134 **19 Claims**

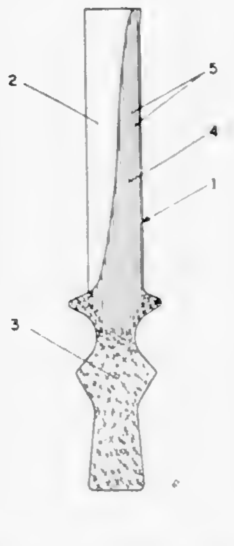


Helicopter tail rotors provide anti-torque forces to maintain stabilized flight and further provide aircraft heading control. Aerodynamic forces generated on the rotor blade cause the tip thereof to move out of line with the pitch change axis of the blade, an effect known as "coning," which produces undesirable forces on the rotor blade, the hub and the tail rotor control system.

Each tail rotor blade is attached to a blade grip which is coupled to a yoke through laminated elastomeric bearings that provide in-plane stiffness while permitting blade coning in such a manner as to relieve the undesired coning effect forces.

3,790,303
GAS TURBINE BUCKET

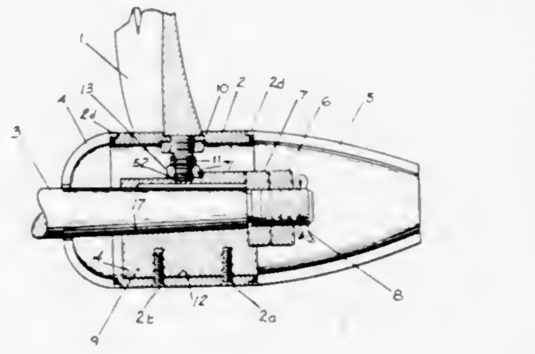
Wilhelm Endres, Ennetbaden, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland
Filed Apr. 5, 1972, Ser. No. 241,165
Claims priority, application Switzerland, Apr. 8, 1971, 5225/71
Int. Cl. F01d *5/28*
U.S. Cl. 416—241 **4 Claims**



In a gas turbine bucket, having a blade and a root, composed of a eutectic alloy the blade is reinforced by eutectic fibers disposed in grain-orientated form, whilst in the root of the bucket the structure is non-orientated and enjoys a desirably high impact strength and ductility.

3,790,304
DETACHABLE PROPELLER BLADE

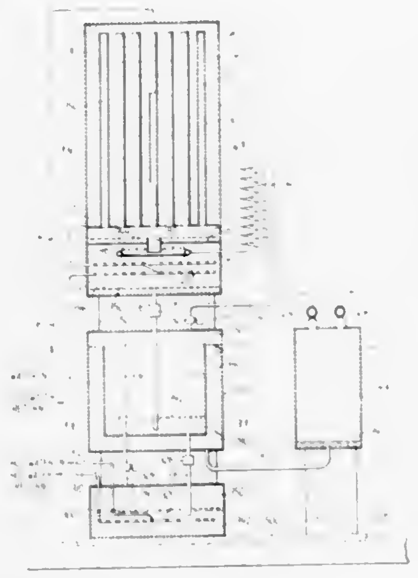
Joseph R. Langlois, 3331 Charleston Blvd., Ft. Lauderdale, Fla.
Filed Feb. 16, 1973, Ser. No. 333,205
Int. Cl. B63h *1/20*
U.S. Cl. 416—207 **4 Claims**



A propulsion unit for a watercraft having an annular casing to be axially positioned about the end zone of the drive shaft of the watercraft, the casing being connected to an inner hub to be secured to the drive shaft with spacer portions radially extending from the hub and connecting it to the casing; the casing and hub have means for connecting the blade to the hub, the blades each having a shank portion seated in the hub periphery and extending through a hole, the casing, with the shank of each blade being locked to the hub and casing in a predetermined pitch attitude, the lock being releasible to change the pitch of the blade or to replace it with a different type or configuration thereof.

3,790,305
THERMAL-GRAVITY FLUID PUMPING METHOD AND APPARATUS

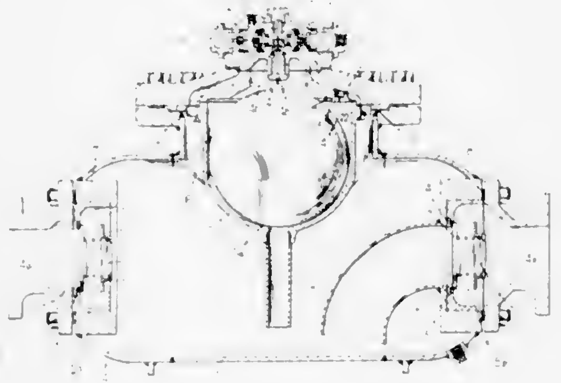
Albert C. Ledner, 5328 Bellaire Dr., New Orleans, La.
Continuation-in-part of Ser. No. 249,032, May 1, 1972. This application Nov. 28, 1972, Ser. No. 309,972
Int. Cl. F04b *35/02;* **F03g** *3/00*
U.S. Cl. 417—53 **5 Claims**



A large volume pumping method and apparatus comprising an economical thermal-gravity pumping system which is nonpolluting, and employs relatively free and limitless, generally available, sources of energy input. The invention is particularly useful in pumping water into a tank reservoir for the ultimate purpose of generating hydroelectric power by conventional turbine-operated generator.

3,790,306
PUMPING TRAP FOR CONDENSATE

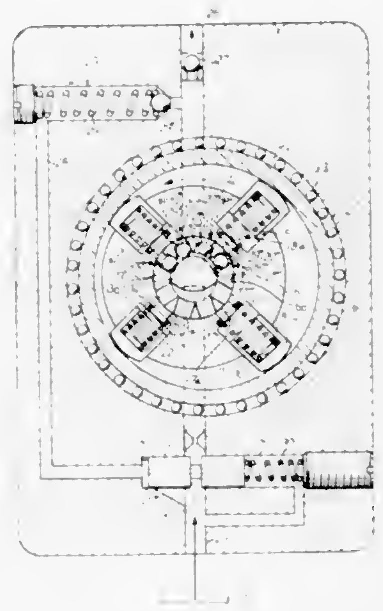
Zenichiro Uefuji, Kakogawa, Japan, assignor to Fujiwara Manufacturing Co. Ltd., Kakogawa, Japan
Filed Oct. 5, 1971, Ser. No. 186,604
Claims priority, application Japan, Oct. 13, 1970, 45-89958; Mar. 17, 1971, 46-14929; Apr. 13, 1971, 46-23355
Int. Cl. F04f *1/06*
U.S. Cl. 417—128 **6 Claims**



A pumping trap for returning high temperature condensate under lower presure directly to a boiler under higher pressure. This trap comprises in combination a condensate sump having an inlet and an outlet respectively provided with a check valve, supply and exhaust passages for higher pressure air, gas or the like, a float accomodated in said condensate sump, inlet and outlet check valves as well as pressure operated supply and exhaust valves provided on said passages, and a pilot valve which opens and closes according to rise and fall of said float.

3,790,307
FLOW CONTROL ARRANGEMENT FOR A PISTON PUMP

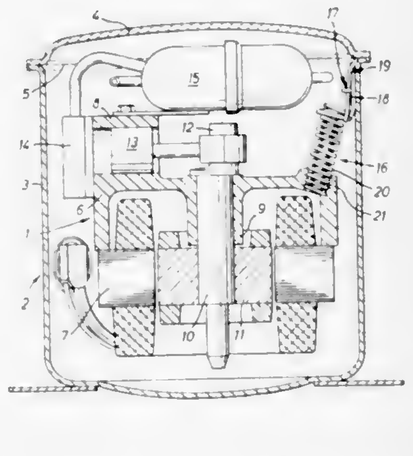
Ulrich Aldinger, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Jan. 20, 1972, Ser. No. 219,284
Claims priority, application Germany, Jan. 27, 1971, 2103645
Int. Cl. F04b *1/08;* **F01b** *13/06*
U.S. Cl. 417—270 **8 Claims**



A radial piston pump has a rotor with cylinder chambers in which pistons are reciprocated by an eccentric actuator ring. A stationary centrally located control means has low pressure inlet chambers and high pressure outlet chambers connected by radial channels with low pressure ports and high pressure ports which are swept by the cylinder ports of the pump rotor. Only in the radial channels in which high pressure prevails, check valves are provided so that no high pressure fluid can flow from a high pressure outlet chamber into a cylinder chamber still filled with low pressure fluid.

3,790,308
SPRING SUSPENSION FOR MOUNTING THE MOTOR COMPRESSOR OF A REFRIGERATING MACHINE IN ITS CASE

Bendt Wegge Romer, Sonderborg, and Hans Kristian Pedersen, Nordborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark
Filed Sept. 13, 1972, Ser. No. 288,770
Claims priority, application Germany, Sept. 14, 1971, 2145883
Int. Cl. F04b *17/02;* **F16p** *15/06*
U.S. Cl. 417—363 **2 Claims**



The invention relates to a spring suspension system for mounting a motor compressor unit of a refrigeration machine in its case. Flanged, rectangularly shaped brackets are fixedly attached to the inner casing wall. Cooperating brackets having an L-shape with one leg having the form of a frame are attached to the flanged brackets. Each bracket set has a nesting arrangement with the rectangularly shaped leg of the fixed bracket being nested in the frame part of the other bracket. The flange of one bracket has apertures for receiving a resilient stirrup which wedgingly maintains the other bracket in its installed position. The L-shaped brackets have bores which are respectively complementary to bores provided in the motor compressor unit. Coil spring are threadedly inserted in aligned pairs of bores to provide a resilient suspension system

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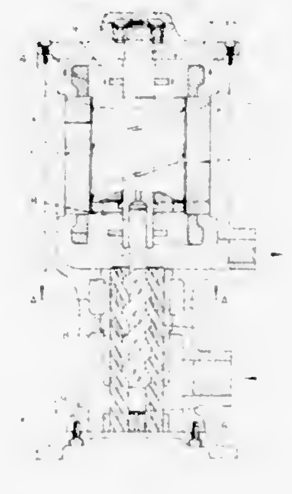
3,790,309
UNITARY PUMP-MOTOR ASSEMBLY

Hermann Volz, Konstanz, Germany, assignor to Allweiler AG, Radolfzell, Germany
Filed Aug. 26, 1971, Ser. No. 175,225
Claims priority, application Germany, Sept. 8, 1970, 2044295; Sept. 8, 1970, 2044335
Int. Cl. F04b *39/06*
U.S. Cl. 417—368 **13 Claims**

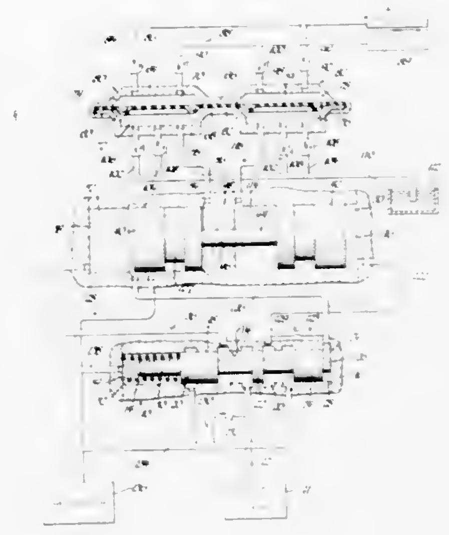


A housing enclosing a motor and a pump having a common drive shaft. The pump is composed of helical driving and idler elements and the motor is cooled by a secondary flow of liquid forced through the motor by helical passages, or similar arrangements, to thereafter sweep the heat generating surfaces of the motor.

3,790,310
FLUID POWERED AIR COMPRESSOR

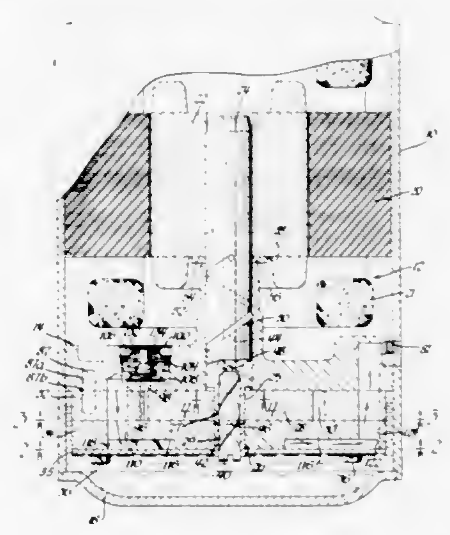
James E. Whelan, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed May 10, 1972, Ser. No. 252,106
Int. Cl. F04b *9/10, 35/02*
U.S. Cl. 417—388 **2 Claims**

A fluid powered air compressor including two interconnected pistons, each operatively associated with respective diaphragm air compressors. A control valve is provided to receive and direct pressurized fluid from an external source, the valve being spring biased to a normal position. In its normal position the valve directs the fluid to a first one of the pistons which moves in response thereto and pressurizes fluid flexing its associated air compressing diaphragm thereby pressurizing air that is discharged to a receiver. While the first piston is moving to pressurize air, the second piston moves to flex its associated air compressing diaphragm in a direction to draw air into its air chamber. Sufficient movement of the first piston in an air pressurizing direction opens a conduit connecting the externally supplied pressurized fluid to one end of the control valve in opposition to its spring biasing means. The control valve is moved by the pressurized fluid to a position directing the externally supplied pressurized fluid to the second piston. The second piston then moves flexing its associated air compressing diaphragm pressurizing air on the opposite side thereof which is discharged through an exhaust valve to the aforementioned receiver. At this time the first piston flexes its air compressing diaphragm drawing inlet air into its air chamber. After the second piston has moved a sufficient distance, the pressurized fluid is exhausted from the one end of the control valve allowing it to return to its normal position completing one cycle of operation. These cycles automatically continue as long as pressurized fluid is supplied to the control valve from an external source



3,790,311
FOUR VANE ELLIPTICAL ROTARY AIR CONDITIONING COMPRESSOR

Mervin R. Butts, West Milton, and Joseph J. Robbins, West Alexandria, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 27, 1972, Ser. No. 309,789
Int. Cl. F04b *17/00*
U.S. Cl. 417—410 **3 Claims**



A rotary hermetically sealed refrigerant electric compressor having an elliptically shaped compression chamber in which a symmetrical rotating rotor, keyed on the drive shaft in an axially slidable manner, includes opposed pairs of sliding vanes providing an inherently balanced bearing loading. The shear forces caused by the compressor rotor revolving against the lower bearing plate are reduced by incorporating a thrust element between the electric motor rotor and stationary hub portion of the upper bearing plate allowing limited movement of the compressor rotor on the shaft in an axial direction to provide for out of squareness dimensional tolerances between the compressor rotor, the shaft and the compression chamber.

3,790,312
PUMPS FOR LIQUIDS

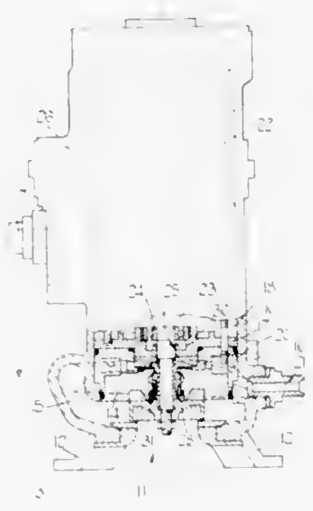
Harry Simister Bottoms, 40 Kineton Green Rd., Solihull, England

Filed July 24, 1972, Ser. No. 274,295

Claims priority, application Great Britain, July 23, 1971, 34,551/71

Int. Cl. F04b *17/00*

U.S. Cl. 417—424 **3 Claims**



A pump for a liquid comprises a housing a first chamber in the housing, an inlet and an outlet for said front chamber a second chamber in the housing sealingly separated from the first chamber, an electric motor in the second chamber, a third chamber between the first and second chambers, an outlet from said third chamber, a main impeller in the first chamber, an anusiliary impeller in the third chamber to urge any fluid leaking from said first and second chamber to the outlet.

3,790,313
APPARATUS FOR A CONTINUOUS TRANSFER OF SEMISOLID MATERIAL

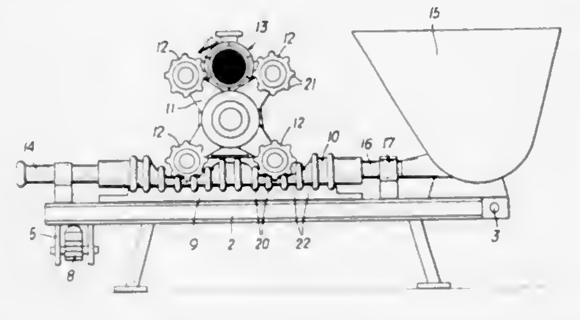
Otto Magerle, Klagenfurt, Austria, assignor to Fa. Tukiem Trust, Vaduz, Liechtenstein

Filed May 21, 1973, Ser. No. 362,235

Claims priority, application Austria, May 25, 1972, 4545/72

Int. Cl. F04b *43/12*

U.S. Cl. 417—477 **5 Claims**



A rocker which consists of a frame is pivoted on a support on a pivotal axis and carries a straight-line bed, which supports an elastic squeeze tube. A driven spider is mounted for rotation about an axis of rotation which is parallel to said pivotal axis. Squeeze rollers are rotatably mounted on said spider and revolvable thereby about said axis of rotation and adapted to act on and compress said squeeze tube. Spring means are provided which urge said frame towards said squeeze rollers.

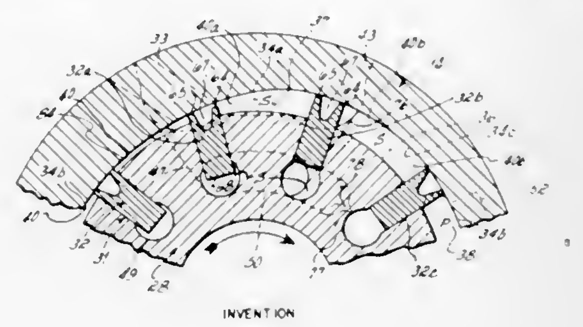
3,790,314
VANE PUMP HAVING EXTENDED UNDERVANE SUCTION PORTS

James C. Swain, and Cecil E. Adams, both of Columbus, Ohio, assignors to Abex Corporation, Columbus, Ohio

Filed May 22, 1972, Ser. No. 255,580

Int. Cl. F04c *15/02*

U.S. Cl. 418—1 **11 Claims**



Improved high speed operation of vane pumps is obtained by the provision of undervane suction ports that are positioned to establish continuing fluid communication with the inner end of each rotor vane slot, angularly beyond the end of the main suction port. The undervane suction port advantageously extends in the direction of rotor rotation to a position just short of the point at which it would provide a short circuit connection between the pressure and suction zones.

3,790,315
ROTARY PISTON COMPRESSORS WITH LIQUID INJECTION

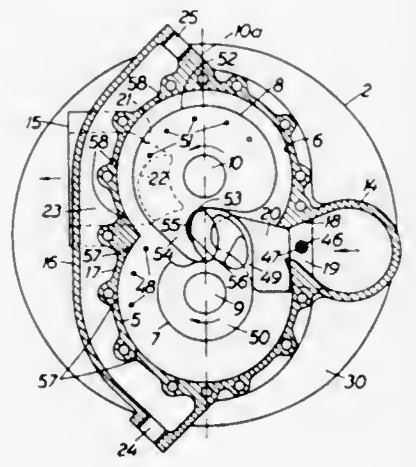
Kaj Bengt Ingemar Emanuelsson, Wilrijk, Belgium, and Bo Olof Roland Arnegard, Skarholmen, Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Sept. 28, 1971, Ser. No. 184,520

Claims priority, application Sweden, Oct. 1, 1970, 13310/70

Int. Cl. F01c *21/06, 1/20*

U.S. Cl. 418—97 **4 Claims**



A rotary piston compressor having a casing with two intersecting parallel cylindrical bores in which a main rotor and a gate rotor cooperating therewith are mounted to rotate. Each rotor has a hub with a substantially constant radius hub portion and with a tooth extending radially from said portion and with a recess for passage of the tooth of the cooperating rotor. The casing provides end walls for the bores with axial inlet and outlet ports for the working fluid. Injection nozzles or fine openings for liquid serving as sealant and for cooling the working fluid are provided in the end walls of the gate rotor bores in such position, that they are covered by the constant radius portion of the gate rotor hub at the beginning of the compression cycle and are uncovered in the recess of said hub towards the end of the compression cycle.

3,790,316
GEAR PUMP

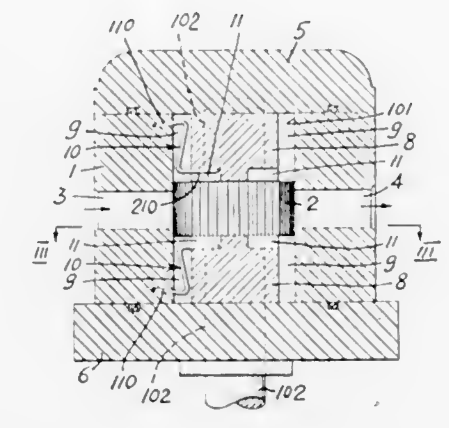
Marco Turolla, 213, Via Toscana, Bologna, Italy

Filed Nov. 5, 1971, Ser. No. 195,928

Claims priority, application Italy, Nov. 28, 1970, 13056/70; Aug. 10, 1971, 12860/71

Int. Cl. F01c *19/08*

U.S. Cl. 418—131 **12 Claims**



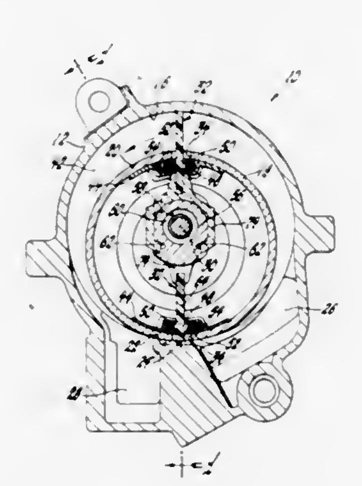
A gear pump includes at least one wear plate slidable in a bore in the pump casing towards and away from the pump gears parallel to the axes of the gears. Vacuum on the suction side of the pump draws the wear plate against the side face of the gears and a compression spring is provided to resist excessive pressure between abutting faces of the wear plate and the gears. A separate spring may be provided for each wear plate or one spring may act on two wear plates on opposite sides of the gears.

3,790,317
VANE ASSEMBLY

A. P. Stanley Hyde, and Leo F. LaFramboise, both of Saginaw, Mich., assignors to General Motors Company, Detroit, Mich. Continuation-in-part of Ser. No. 176,836, Sept. 1, 1971, abandoned. This application Nov. 20, 1972, Ser. No. 308,138

Int. Cl. B22d *19/00;* **F01c** *19/00, 21/00*

U.S. Cl. 418—137 **7 Claims**



A sintered metal vane hub and a vane blade formed of an epoxy and woven glass cloth laminate are assembled by die casting magnesium or injecting plastic into recesses on the hub and blade. The vane is shown in a semi-articulated vane pump used to inject air into the exhaust system of a vehicle engine.

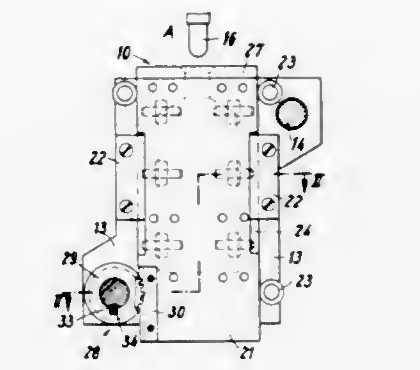
3,790,318
BLOW MOLDING MACHINES

Wilhelm Marfiewicz, Berlin, Germany, assignor to Firma Emil Korsch Spezialfabrik Fur Komprimiermaschinen, Berlin, Germany

Filed Apr. 10, 1972, Ser. No. 242,591

Int. Cl. B29d *23/03*

U.S. Cl. 425—326 B **9 Claims**



A blow molding machine for producing hollow bodies of thermoplastic material, by the blow-extrusion process, includes blow mold halves arranged inside a chase between form plates of the chase. The chase is displaceable between a receiving position, aligned with an extrusion nozzle, and a blowing position offset laterally relative to the receiving position. Vertical guides on the form plates engage guide plates on the blow mold halves for vertical displacement of the blow mold halves relative to the chase to lower the blow mold halves when the chase is moved to the blowing position. A rack and gear type lifting mechanism acts between the form plates and the blow mold halves and operates automatically, responsive to movement of the chase to the blowing position, to lower the blow mold halves. Rollers may be interposed between the guide plates and the form plates to facilitate relative movement. The blow mold halves may be closed by the usual cylinder and piston arrangements, but preferably are closed by a toggle mechanism which moves the two blow mold halves toward each other, the blow mold halves being supported for such movement on guide rods.

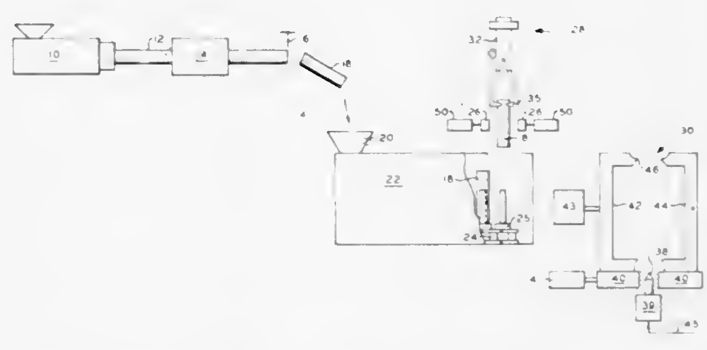
3,790,319
TEXTURED FINGERS FOR PRECISE TEMPERATURE ADJUSTMENT OF PREHEATED PARISON PREFORMS

Jimmie E. Hudson, Bartlesville, Okla., and Jimmy W. Snelson, Orangeburg, N.Y., assignors to Phillips Petroleum Company, Washington, D.C.

Filed Apr. 10, 1972, Ser. No. 242,385

Int. Cl. B29d *23/03*

U.S. Cl. 425—387 B **6 Claims**



Tubular parison preforms for blow molding generally oval-shaped oriented hollow articles such as bottles are reheated to orientation temperature and the sides of the parison which are to be expanded out along a major axis of a mold are contacted with textured fingers so as to lower the temperature a very small amount. This allows the portion of the parison corresponding to the major axis of the mold to resist stretching and thus compensates for the unequal wall thickness which otherwise results when the parison touches the walls of the mold opposite the minor axis and is thereby chilled.

3,790,320

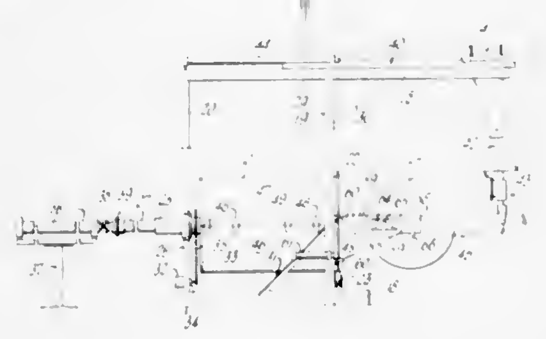
ROTARY CASTING MACHINE

Charles D. Snelling, Allentown; Theodore E. Andrews, Kutztown, and John J. Weller, Emmaus, all of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Feb. 22, 1972, Ser. No. 228,130

Int. Cl. B29d *27/04*

U.S. Cl. 425—4 R **38 Claims**



The invention contemplates a machine and method whereby rotation of an annular mold is used to develop a homogenous longitudinal and radial distribution of foaming plastic. The foaming plastic is introduced into the mold cavity during mold rotation and, particularly where mold-cavity length substantially exceeds mold-cavity diameter, a longitudinal traverse is imparted to the introduction of foaming material during rotation of the mold. The cavity is closed to permit foamed filling of the mold, and a polymerizing cure is effected prior to mold opening and product removal. The particular machine herein described is notable (a) for its ready mechanical release from both inner and outer molding contact with the product, (b) for its inherent adaptability to production of a selected one of a plurality of inner and outer profiles and sizes in the product, and (c) for its safe accommodation of fast-foaming and curing plastics, even for relatively large product diameter or girth.

3,790,321

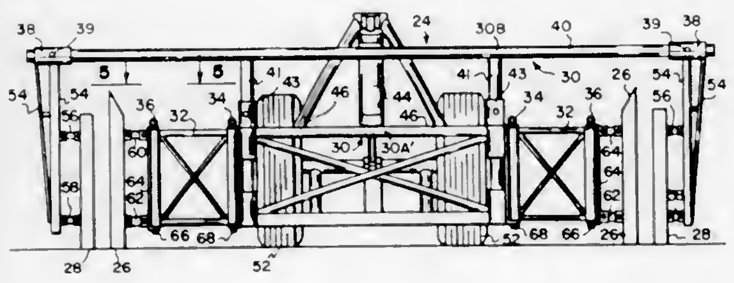
PORTABLE SELF-ALIGNING WALL FORMING APPARATUS

Richard E. Bunger, 5202 E. Washington St., Phoenix, Ariz.

Filed Mar. 13, 1972, Ser. No. 234,245

Int. Cl. B28b *7/02*

U.S. Cl. 425—63 **8 Claims**



A portable self-aligning wall form connected in modular sections and provided for the casting in place of continuous monolithic type walls of a uniform height and width.

3,790,322

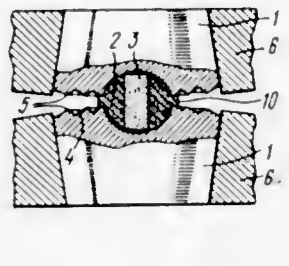
DEVICE FOR ESTABLISHING HIGH PRESSURE AND TEMPERATURE

Nikolai Nikolaevich Sirota, Leningradsky prospekt, 78, korpus Ia, kv. 141, Moscow; Anatoly Mitrofanovich Mazurenko, ulitsa Vostochnaya, 25, kv. 53, and Nikolai Alexeevich Strukov, Leninsky prospekt, 44, kv. 162, both of Minsk, all of U.S.S.R.

Filed July 14, 1972, Ser. No. 271,650

Int. Cl. B30b *11/32*

U.S. Cl. 425—77 **5 Claims**



Two dies interconnected along the periphery thereof are provided on their oppositely adjacent face surfaces with center recesses and ridges, the latter being disposed coaxially in relation to said recesses. When the dies are drawn together said recesses are adapted to form a high pressure chamber in which a container made of a thermal and electrical insulating material which is ductile under omnidirectional compression is enclosed whereas the ridges are adapted to form concentric circular compartments with the clearances in the joints thereof successively increasing towards the periphery of the dies. The volumes of said compartments also increase from the center towards the periphery of the dies. These compartments are locking in their function and ensure a smooth reduction of pressure exerted by the ductile material on the face surfaces toward the periphery of the dies.

3,790,323

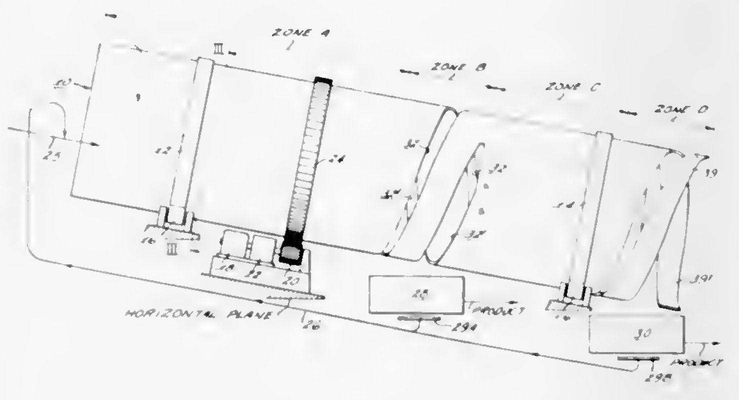
ROTATABLE MATERIAL HANDLING DRUM

Glenn A. Heian, Franklin, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Mar. 24, 1971, Ser. No. 127,715

Int. Cl. C09c *1/56*

U.S. Cl. 425—222 **8 Claims**



A balling drum which includes a conventional end discharge preferably of the type shown by U. S. Pat. No. 2,822,076, granted to John F. Baier on Feb. 4, 1958, and which balling drum additionally includes a discharge section intermediate the length of the drum and upstream of the end discharge section, the intermediate discharge section comprising helically extending port means in the form of helical slots through the wall of the drum which slots are so positioned with respect to the angular path of load material flow relative to the internal surface of the balling drum that some predetermined percentage of the entire load passing through the balling drum, preferably about 50 percent of the entire load, is discharged by the intermediate discharge section, the helical slots substantially evenly distributing the discharge flow from the intermediate discharge section onto a classifying screen positioned beneath the intermediate discharge section.

3,790,324

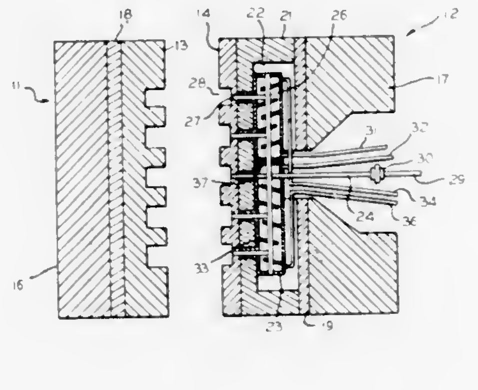
EXTENSION RUNNER SYSTEM SPRUE ARRANGEMENTS FOR MOLDING APPARATUS

Victor G. Susin, Naperville, Ill., assignor to Young Rubber Co., Naperville, Ill.

Filed June 14, 1972, Ser. No. 262,526

Int. Cl. B29h *1/06*

U.S. Cl. 425—247 **9 Claims**



An extension runner system sprue arrangement for molding apparatus that includes a bushing for coupling the extension runner system to the mold cavities. The bushing is shaped and arranged to control friction generated heat of plasticized material passing through the bushing. This enables vernier control of the temperature for the material being molded and thereby enables faster and more efficient molding operations.

3,790,325

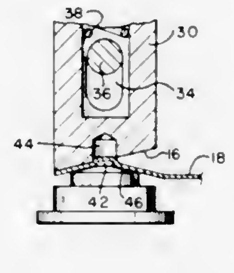
MAGNETIC TAPE TIP CUTTER

William M. Hobart, Whitinsville, and Allan C. Wainio, Maynard, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Sept. 27, 1971, Ser. No. 184,087

Int. Cl. B29c *1/14*

U.S. Cl. 425—299 **10 Claims**



A method and apparatus are disclosed for forming a novel magnetic tape tip for use with automatic tape threading storage devices. The magnetic tape tip is formed by cutting a half round tip in the tape and simultaneously forming a protrusion on the oxide side of the tape. The protrusion is formed in such a manner as to insure that the tape oxide surface is merely plastically deformed and not totally penetrated. The protrusion within the tape tip allows for the tip to be separated from the underlying reeled tape. This facilitates easy access of the tape tip by automatic threading devices.

3,790,326

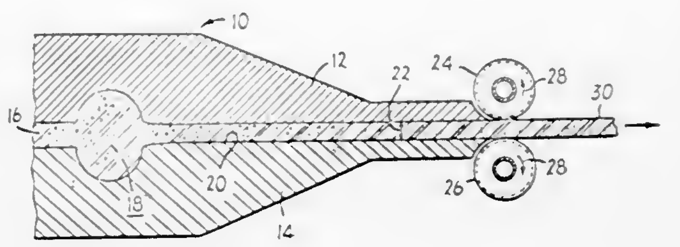
EXTRUSION APPARATUS

Ronald L. Larsen, Minneapolis, Minn., assignor to Conwed Corporation, St. Paul, Minn.

Division of Ser. No. 47,755, June 19, 1970. This application Nov. 26, 1971, Ser. No. 202,451

Int. Cl. B29d *7/02*

U.S. Cl. 425—325 **8 Claims**



An apparatus is provided for the extrusion of polymer products from a pool of molten polymer. The apparatus is comprised of at least two movable die members between which the polymer is extruded. The moveable die members apply pressure to the surface of the extruding sheet to spread and smooth out gauge variations in the extruded product to reduce the visual effects of the gauge variations on the extruded sheet.

3,790,327

APPARATUS FOR PRODUCING A THERMOPLASTICALLY DEFORMABLE PLASTIC FOIL

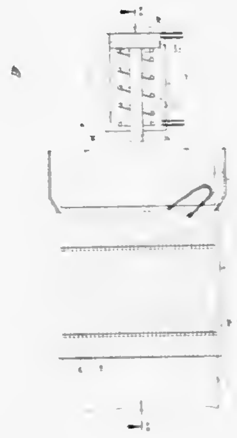
Wilhelm Haberle, D7487 Scheer/Wurtt, Industriegelande, Germany

Filed Jan. 24, 1972, Ser. No. 220,210

Claims priority, application Germany, Feb. 1, 1971, P 21 04 493.9

Int. Cl. B29f *3/06*

U.S. Cl. 425—376 **11 Claims**



An apparatus for the production of a thermoplastically deformable plastic foil from a granulated or powdered material comprising a storage container, a block-shaped cylinder coupled to the container for receiving the material to be processed therefrom, a charging and compressing arrangement coupled between the cylinder and the storage container for conveying the material into the cylinder for compression and plastification therein, and a slot-shaped nozzle coupled to the cylinder or formed integrally therewith for passing the material therethrough and thereby forming the plastic foil. The invention discloses also a method for making the plastic foil.

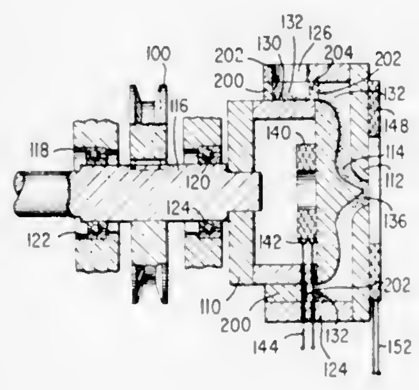
3,790,328
APPARATUS FOR FEEDING ELASTIC MELT EXTRUDERS

Bryce Maxwell, 19 McCosh Cir., Princeton, N.J.

Filed Apr. 10, 1972, Ser. No. 242,700

Int. Cl. B29f *3/02*

U.S. Cl. 425—381.2 **8 Claims**



An apparatus and method for feeding elastic melt extruders are described herein, which apparatus includes a stator and a rotor, operatively disposed with respect to the stator to define a shear zone. The stator may be formed to define an axial outlet and a radial inlet may be provided adjacent a cylindrical surface of the rotor for introducing a charge of feed material to the extruder. A guide member may be provided, adjacent the rotor, for urging the charge of feed material axially toward the shear zone in response to the operational rotation of the rotor. The guide member may be disposed so as to axially isolate the shear zone from the radial inlet.

The disclosed method includes the step of providing a shear zone, defined by a stator and a rotor, operationally disposed with respect to the stator. A charge of feed material may be deposited on a cylindrical portion of the rotor, which may be aligned along a horizontal axis and the feed material may be urged axially along the cylindrical surface of the rotor toward the shear zone in response to the rotation of the rotor. Additionally, the shear zone may be axially isolated from an inlet provided for introducing the charge of feed material.

3,790,329
APPARATUS FOR GRIPPING AND SEPARATING RESPECTIVELY OF A HOSE EMERGING FROM AN EXTRUDER AND FOR ITS FEEDING INTO A DIVISIBLE BLOWING FORM BY MEANS OF A BLOWING DEVICE FOR HOLLOW BODIES

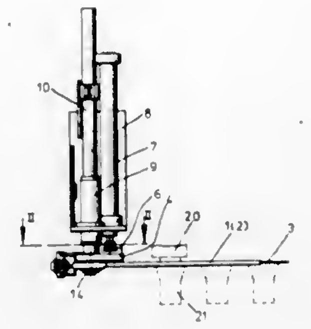
Egon Gampe, Monheim, Germany, assignor to Rheinmetall GmbH, Dusseldorf, Germany

Filed Apr. 23, 1971, Ser. No. 136,759

Int. Cl. B29b *23/03*

U.S. Cl. 425—387 B **6 Claims**

An apparatus for gripping and separating a hose of synthetic material emerging from an extruder and its feeding into a divisible mold in blowing devices for hollow bodies which comprises a holding member, two legs mounted at one end thereof in the holding member, swingable in a horizontal plane and movable relative to each other. Ledges for gripping and separating, respectively, of the hose are disposed in the legs. A mold-closing coupling member of the legs is arranged for a symmetrical movement in opposite directions upon operation of one of the legs.



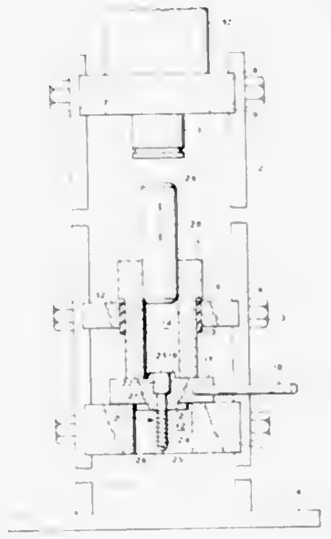
3,790,330
COMPACT PRESS AND PELLET PLUNGER

Charles H. Roland, Toledo, Ohio, assignor to Phillips Petroleum Company, Washington, D.C.

Filed May 4, 1972, Ser. No. 250,294

Int. Cl. B29c *3/00*

U.S. Cl. 425—412 **3 Claims**



A modified compaction press having a cylinder and piston mounted below a pressure providing means, wherein relatively small amounts of a particulate sample can be subjected to a pressure in the range of 15,000 to 30,000 p.s.i.; the modification comprising a plunger movably positioned in the center portion of a bottom seal means of the press cylinder. The plunger provides a means for in situ breaking of compressed pellet or pill before subsequent repressing in the same cylinder cavity.

3,790,331
EXTRUDING FLOWER DESIGNS

Martin A. Backer, 434 E. South Temple, Salt Lake City, Utah

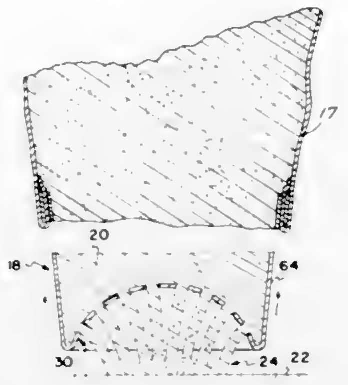
Filed June 14, 1971, Ser. No. 152,649

Int. Cl. B29f *3/04*

U.S. Cl. 425—464 **11 Claims**

There is disclosed a method and apparatus for extruding flower designs from a plastic extrudate in essentially a one step

operation. The die through which the extrudate is expressed includes means for moving the terminal ends of the petal forming strips laterally of the axis of extrudate movement upon cessation of extrusion.



3,790,332
LIQUID CANDLES

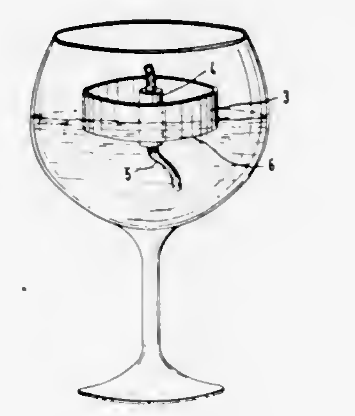
Ronald Brian Woollard, Hook, England, assignor to Price's Patent Candle Company Limited, London, England

Filed Jan. 17, 1972, Ser. No. 218,248

Claims priority, application Great Britain, Feb. 2, 1971, 3700/71

Int. Cl. F23q *2/32*

U.S. Cl. 431—126 **11 Claims**



A liquid candle capable of burning with a coloured flame is formed by floating a wick holder comprising a float and a wick on a body of combustible liquid within an open-top, for example, glass container, the liquid having a high flash point and containing in solution a flame-colouring amount of at least one flame-colouring additive. The float portion of the wick holder holds the wick with its lower part within the liquid and its upper part, which forms a burning end, spaced from the surface of the body of liquid to an extent which prevents ignition thereof during use. The liquid can contain a dye to enhance its appearance, and optionally also a perfume.

3,790,333
INFRA-RED BURNER

Piero Padovani, Donato Milanese, and Sergio Boerio, Donato Hilanese, both of Italy, assignors to Pyronics, Inc., Cleveland, Ohio

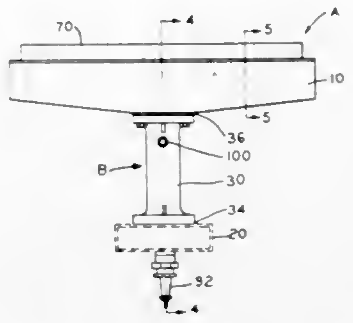
Filed Nov. 15, 1971, Ser. No. 198,681

Claims priority, application Italy, Nov. 26, 1970, 32230/70

Int. Cl. F23g *3/00*

U.S. Cl. 431—266 **9 Claims**

A gas fired infra-red generator having a first generally flat nonporous reflector and second curved nonporous reflector spaced from the flat reflector in a concave relationship therewith. A combustible fuel gas mixture is directed through elongated fissures in a plenum chamber and the first reflector to impinge and be ignited at the second reflector and then diverted to impinge the first reflector. The heated reflectors then both radiate thermic energy outwardly therefrom. The first and second reflectors are both mounted relative to the generator so as to permit thermic dilatation during generator operation.



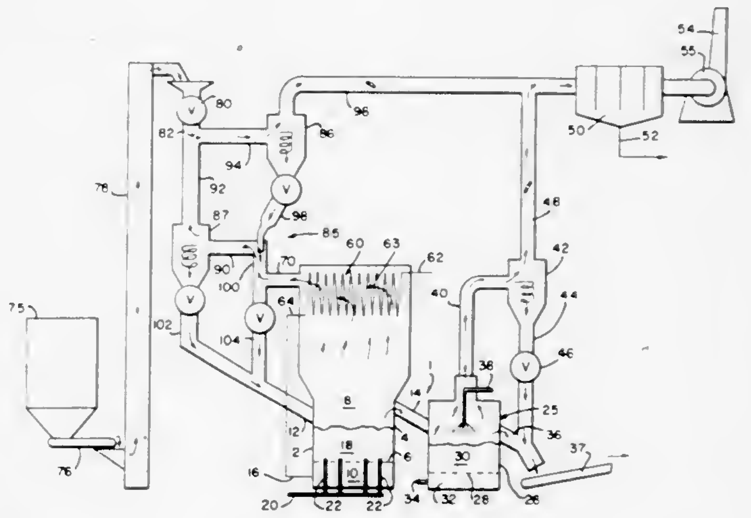
3,790,334
MANUFACTURE OF LIGHTWEIGHT AGGREGATE

Sidney M. Cohen, Allentown, Pa., assignor to Fuller Company, Catasauqua, Pa.

Filed May 22, 1972, Ser. No. 255,556

Int. Cl. F27b *15/00*

U.S. Cl. 432—58 **5 Claims**



A method of and apparatus for making sealed surface fine lightweight aggregate particles in a fluid bed reactor which includes a method and apparatus for preheating the raw feed material. The reactor includes a gas permeable grid which supports a bed of material. Fluidizing air is supplied to the plenum below the grid for passage through the grid for fluidizing the particles of material in the vessel. Fuel is supplied to the fluidized bed for combustion therein to heat the material to a temperature range such that a pyroplastic surface will be formed on the surface of the particles of material and at same temperature range, gas forming components in the material will release a bloating gas. The material is then rapidly cooled. The preheater is of the suspension type and includes a plurality of serially flow connected gas-solids separators such as cyclones. Raw feed material having a particle size range up to ⅜ inch is supplied to a stream of hot gases and it is entrained in those hot gases and then separated in a cyclone. The material discharged from the one cyclone is reentrained in other hot gases and separated in a second cyclone. From the second cyclone, the material is discharged to the reactor. The original source of hot gases is the hot spent fluidizing gas from the reactor.

3,790,335
LINED COOLERS FOR ROTARY KILNS

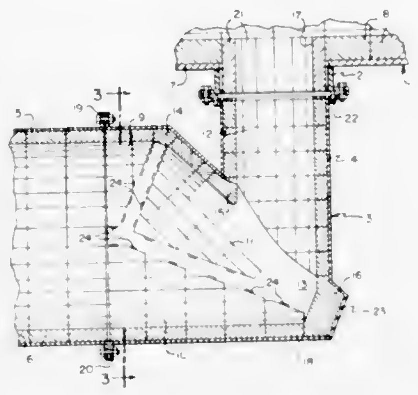
Victor Paul Andreassen, Copenhagen-Valby, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.

Filed Apr. 7, 1972, Ser. No. 242,213

Claims priority, application Great Britain, Apr. 8, 1971, 9,077/71

Int. Cl. F27b *7/38*

U.S. Cl. 432—80 **7 Claims**



A junction piece for use in rotary kilns of the type having a plurality of planetary cooler tubes is disclosed in which the lining of the junction piece includes, at least in part, sections of monolithic material.

3,790,336
METHOD AND APPARATUS FOR SINTERING ANNULAR COMPACTS

Alexander Brede, III; Charles Robert Talmage, and Elvin E. Tuttle, all of c/o Motor Wheel Corporation, Lansing, Mich.

Division of Ser. No. 105,167, Jan. 11, 1971. This application Nov. 24, 1972, Ser. No. 309,212

Int. Cl. F27b *5/02*

U.S. Cl. 432—163 **10 Claims**

A method and apparatus for sintering annular compacts without any substantial temperature gradients through the compacts. The method involves axial movement of the compact through vertical heating and cooling towers of a controlled atmosphere furnace with lateral movement of the compact through a crossover conduit interconnecting the upper ends of the towers. The lower end of the heating tower is provided with an inlet opening in constant communication with the exterior of the furnace and the lower end of the cooling tower has an outlet connected via a sealable exit chamber with the exterior of the furnace.

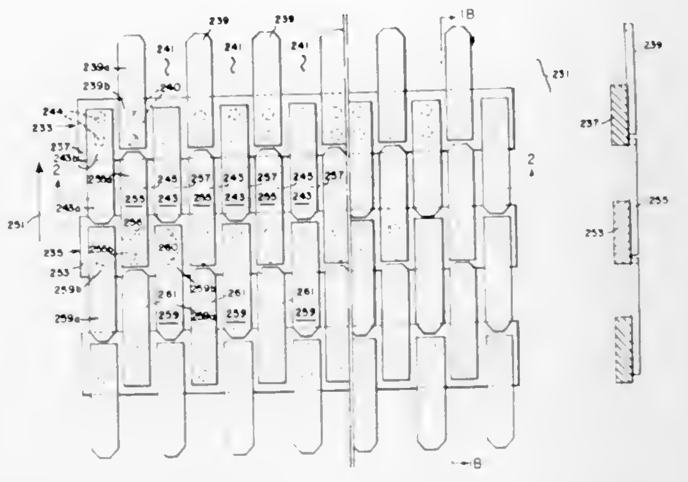
3,790,337
SELF-CLEANING AIR FLOW BAR FOR APPARATUS FOR MAKING AGGREGATE

John G. Connell, 232 Wyoming Ave., West Pittston, Pa.

Filed Apr. 10, 1973, Ser. No. 349,711

Int. Cl. F27b *9/00*

U.S. Cl. 432—239 **10 Claims**



A self-cleaning air flow bar in a traveling grate assembly for conveying carbonaceous shale and the like through a furnace to make lightweight aggregate, including a series of self-cleaning air-flow bar members, with a first said bar member extending transversely across the traveling grate assembly and including a cross bar and a series of spaced key portions extending forwardly and rearwardly therefrom, a second self-cleaning air-flow bar member extending transversely across the grate assembly and including a cross bar and a series of spaced key portions extending forwardly and rearwardly therefrom, said first bar member rearwardly extending key portions positioned in the spaces between the second bar member forwardly extending key portions, whereby, when the grate assembly travels around a sprocket, the key portions of one cross bar wipe clean the spaces between the key portions of the other cross bar.

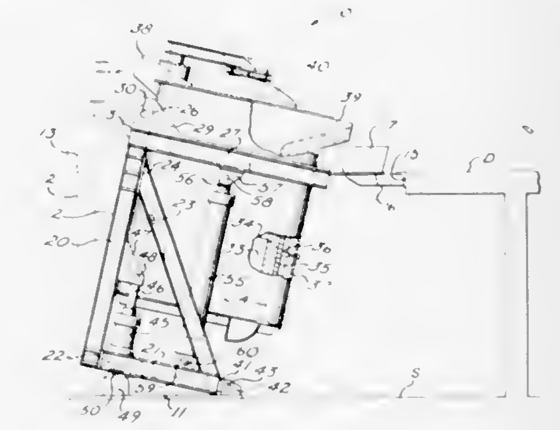
3,790,338
REAR SLAGGING FOR INDUCTION FURNACE

William J. Duca, Warren, Ohio, assignor to Ajax Magnethermic Corporation, Warren, Ohio

Filed Oct. 29, 1971, Ser. No. 193,770

Int. Cl. F27b *14/02*

U.S. Cl. 432—247 **6 Claims**



There is disclosed herein a coreless induction furnace disposed on a vertical axis during heating and having a front pouring spout and a rear slagging spout at the upper end thereof. The furnace is mounted in a forwardly pivotable cradle carried by a backwardly tiltable base frame, the base frame being pivoted at the bottom thereof rearwardly of the furnace axis.

3,790,339
CYLINDRICAL ELONGATED FURNACE FOR TREATING MATERIAL AT HIGH TEMPERATURE IN A GASEOUS ATMOSPHERE UNDER HIGH PRESSURE

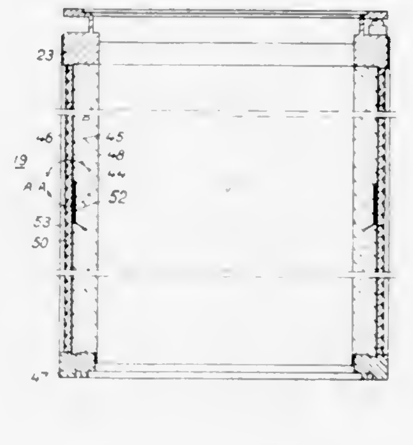
Hans Larker; Sven-Erik Isaksson; Mats Lindberg, all of Robertsfors, and Gunnar Granberg, Umea, all of Sweden, assignors to Allmanna Svenska Elekriska Aktiebolaget, Vasteras, Sweden

Filed June 5, 1973, Ser. No. 367,101

Claims priority, application Sweden, June 13, 1972, 7782/72; Dec. 29, 1972, 17130/72

Int. Cl. F27d *1/00*

U.S. Cl. 432—249 **10 Claims**



A cylindrical elongated furnace for treating material at high temperature in a gaseous atmosphere under high pressure is formed of a high pressure cylinder with end closures projecting into it and a furnace chamber arranged in the high pressure cylinder. The furnace chamber is insulated from the walls of the pressure chamber by a cylindrical casing having gas-impermeable tubes arranged one inside the other with an insulation between them. At least one layer of insulating material in the casing engages only the outer or inner surface of one tube and is spaced from the adjoining tube, the space between being filled with gas. The insulating material may be held against the outside of one of the tubes by rings or a spiral strip running helically.

3,790,340
CYLINDRICAL ELONGATED FURNACE FOR TREATING MATERIAL AT HIGH TEMPERATURE IN A GASEOUS ATMOSPHERE UNDER HIGH PRESSURE

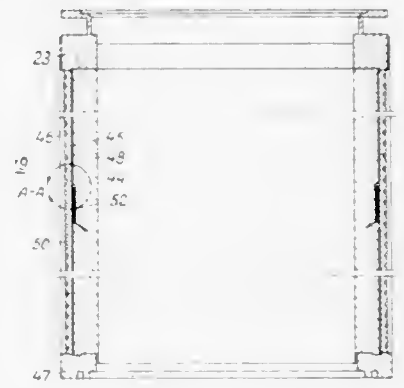
Sven-Erik Isaksson; Hans Larker, and Mats Lindberg, all of Robertsfors, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed June 5, 1973, Ser. No. 367,103

Claims priority, application Sweden, June 13, 1972, 727781

Int. Cl. F23m *5/00*

U.S. Cl. 432—249 **7 Claims**



In a cylindrical elongated furnace for treating material at high temperature in a gaseous atmosphere under high pressure, the furnace chamber is insulated from the walls of the pressure chamber by at least three tubular parts arranged one inside the other with insulating parts. At least one ring is provided attached to one of the tubular parts and having a downwardly and inwardly sloping similar part secured to the inside of this part and directed towards, but terminating short of, the opposed part.

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tainers to a test station where each sample is tested, pertinent information sensed and fed to a printer for readout. Prelimina-

and inexpensive apparatus for safely mixing a pyrophoric material such as barium metal and an oxidizer such as molyb-

CHEMICAL

3,790,341

METHOD OF DYEING POLYMERS CONTAINING NITRILE GROUPS AND ARTICLES MADE OF SAME

Kajum Makhkamov, ulitsa Zhdanova, 118, kv. 8; Iosif Yakubovich Kalontarov, Prospekt Kuibysheva, 4/1, kv. 15, and Eleonora Nikolaevna Repina, ulitsa Sviridenko 34, kv. 7, all of Dushanbe, U.S.S.R.

Filed Jan. 12, 1970, Ser. No. 2,353

Int. Cl. D06p *1/00, 3/82*

U.S. Cl. 8—52 **12 Claims**

A method of dyeing polymers containing nitrile groups and articles made from such polymers so as to impart colors thereto ranging from yellow to brown, according to which sulfur is introduced into said polymers and articles made therefrom by treating them with an aqueous solution of hydrosulfuric acid or salts thereof in a neutral medium with a subsequent treatment of said polymers and articles in a weakly acidic medium. Further treatment with a metal salt capable of forming a chelate with the sulfhydryl groups in the dyed polymer imparts decay-resistance, light-fastness, thermal stability and hydrophobic properties.

3,790,342

PROCESS OF PRODUCING A DYED CLEANED MATERIAL

Ronald Barr Love, and Alistair Templeton Stewart, both of Paisley, Scotland, assignors to J. & P. Coats Limited, Glasgow, Scotland

Filed Jan. 28, 1972, Ser. No. 221,831

Claims priority, application Great Britain, Jan. 29, 1971, 3536/71; Jan. 29, 1971, 3537/71; Apr. 3, 1971, 8623/71

Int. Cl. D06p *5/02, 1/68*

U.S. Cl. 8—73 **9 Claims**

A process of producing a dyed cleaned material comprising first applying to virgin material a dyeing medium, next drying the material and then treating the material with a cleaning substance containing acetone. The acetone may be diluted with water in a proportion up to 50 percent water. The dyeing medium may be a non-aqueous solvent dyeing medium. The non-aqueous dyeing medium may be combined with a material for which the solvent has an affinity higher than it has for the dye, e.g., a silicone.

3,790,343

METHOD FOR BLEACHING FIBROUS MATERIALS AND COMPOSITIONS THEREFOR

Seijiro Ikeda, 22/1,7-chome Nakayamate-dori, Ikuta-ku, Kobe-shi, Hyogo-ken, Japan

Filed Dec. 10, 1971, Ser. No. 206,874

Int. Cl. D06l *3/08*

U.S. Cl. 8—108 **3 Claims**

A bleaching composition for a fibrous material comprises an aqueous medium having dissolved therein sodium chlorite and sodium polyphosphate, said sodium polyphosphate being such that the molar ratio of Na_2O to P_2O_5 is greater than 0.1 but less than 1.0 and that a 1 weight percent aqueous solution thereof has a pH of not higher than 3; and a method for bleaching a fibrous material comprises bleaching a fibrous material with said composition.

3,790,344

AGENTS FOR IMPROVING THE FASTNESS TO WET PROCESSING

Gerritt Frickenhaus, Wuppertal-Ronsdorf; Martin Meister, Leverkusen; Hellmuth Pantke, Leichlingen, and Erhard Schuffenhauer, Cologne, all of Germany, assignors to Farbenfabriken Bayer Aktiegesellschaft, Leverkusen, Germany

Filed Nov. 30, 1970, Ser. No. 93,812

Claims priority, application Germany, Dec. 3, 1969, 1960616

Int. Cl. D06p *5/02*

U.S. Cl. 8—165 **18 Claims**

Process for improving the fastness to wet processing of dyeings obtained on synethetic polyamides with anionic and/or cationic dyestuffs wherein the dyeings are aftertreated with aqueous liquors containing condensation products of a higher molecular weight prepared from (*a*) 4,4′-dioxydiphenylsulphon, (*b*) formaldehyde and (*c*) phenol sulphonic acid, naphthalene sulphonic acid, sodium sulfite or sodium hydrogen sulfite, using the components (*a*), (*b*) and (*c*) in a molecular ratio of 1:0.7–1.1:0.7–0.2.

3,790,345

DETECTION OF DECONTAMINATION OF WATER

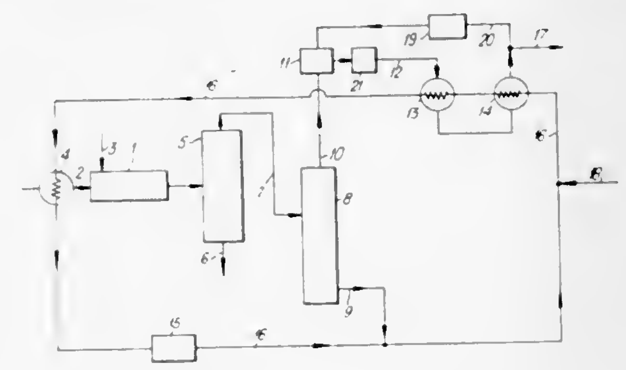
Geoffrey Harry Mansfield, and William Lyth, both of Norton, Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Filed July 19, 1971, Ser. No. 163,834

Claims priority, application Great Britain, July 28, 1970, 36,504/70

Int. Cl. G01m *3/20*

U.S. Cl. 23—230 R **3 Claims**



Contamination of one aqueous stream by a second such stream, e.g., through leakage in a heat exchanger, is detected by providing phenol in the second stream and analysing for the presence of phenol in the first stream.

3,790,346

HEATING SYSTEM

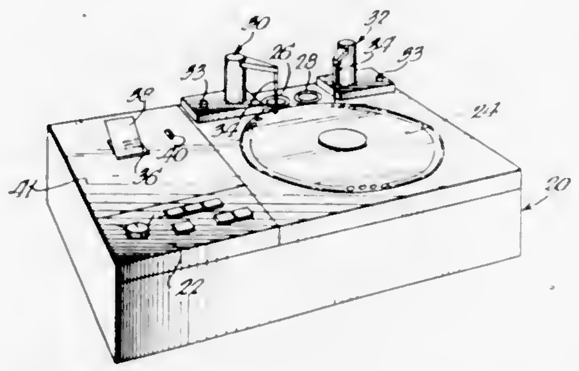
David Alan Ritchie, St. Louis, Mo., assignor to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed July 30, 1971, Ser. No. 167,376

Int. Cl. G01n *21/24, 33/16*

U.S. Cl. 23—253 R **9 Claims**

A testing apparatus for automatically determining prothrombin times and other similar factor assays. A turntable conveyor moves successive blood plasma samples in containers to a test station where each sample is tested, pertinent information sensed and fed to a printer for readout. Preliminary to the testing station is a first reagent dispenser where a reagent is dispensed to each sample and a second reagent dispenser is located at the testing station for adding a second reagent. Intermediate the two reagent dispensers is a sample incubation device which intimately contacts each container to apply heat thereto to incubate the sample contained therein.



Each reagent dispenser is provided with a reagent reservoir and associated magnetic stirring system. A unique system for decoupling the magnetic stirring system from a magnetic stirrer and moving the magnetic stirrer out of the path of a pipette forming part of each reagent dispenser is provided. At the testing station, a unique photosensitive detection device is provided for sensing the formation of clots after the second reagent is added.

3,790,347

APPARATUS FOR REMOTE HANDLING OF MATERIALS

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Robert B. Kimball, Anaheim; David T. Hodder, Playa Del Ray, both of Calif., and Walter W. Wrinkle, deceased, late of Huntington Beach, Calif.

Filed Dec. 30, 1971, Ser. No. 214,084

Int. Cl. B01f *11/00;* **B01l** *1/00;* **G01n** *31/12*

U.S. Cl. 23—253 PC **26 Claims**

Apparatus for remote handling of materials. A closed housing is provided with first and second containers and first and second reservoirs for holding materials to be mixed. The materials are transferable from the reservoirs to the first container; in which they are mixed. The mixed materials are then conveyed from the first container to the second container preferably by dumping the mixed materials into a funnel positioned over the second container. The second container is then moved to a second position for analysis of the mixed materials. For example, the materials may be ignited and the flame analyzed. Access, such as a sight port, is provided in the housing at the analysis position. The device provides a simple and inexpensive apparatus for safely mixing a pyrophoric material such as barium metal and an oxidizer such as molybdenum trioxide which together form a thermite type mixture that burns to produce a large quantity of heat and light.

3,790,348

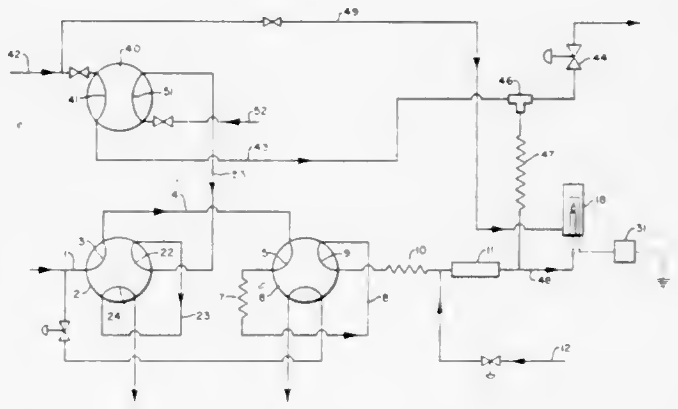
APPARATUS FOR DETERMINING THE CARBON MONOXIDE, METHANE AND TOTAL HYDROCARBONS CONTENT IN AIR

Clayton J. Bossart, Monroeville, and Albert A. Poli, Pittsburgh, both of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Mar. 22, 1972, Ser. No. 237,106

Int. Cl. B01d *53/00;* **G01n** *31/08, 31/12*

U.S. Cl. 23—254 EF **8 Claims**



An air sample to be analyzed for carbon monoxide and methane is delivered to a chromatograph column that is connected by a reactor with a hydrogen flame ionization detector. The reactor converts carbon monoxide in the sample into methane. The amount of carbon monoxide and methane in the sample is determined by measuring the electrical conductivity of the detector. To measure total hydrocarbons in the impure air being sampled, a stream of the sample air is delivered to a conduit communicating with the detector. When total hydrocarbons are not being detected, a stream of pure air is delivered to the conduit continuously to establish a reference point for the analyses.

3,790,349

REACTOR FOR CATALYST PREPARATION

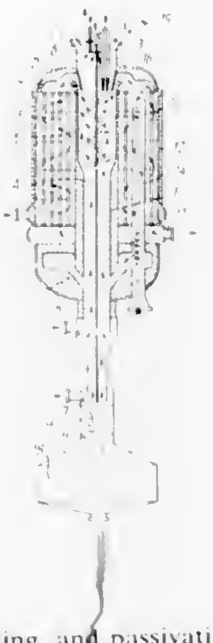
Pavel Petrovich Andreichev, pereulok Obukha, 4, kv. 4, Moscow, U.S.S.R.

Filed Sept. 4, 1970, Ser. No. 69,610

Int. Cl. B01j *11/06, 11/18*

U.S. Cl. 23—284 **1 Claim**

A reactor for catalyst preparation by treating a granular stock material with a reducing gas which comprises a reaction chamber made as a vertical tube whose cross-section is reduced in the direction of the stock material flow, a chamber for drying and thermally treating the stock material, a chamber for cooling the catalyst, and a chamber for passivating the catalyst. The reactor is provided with preheating and heat-exchange devices. The reactor construction allows the



drying, reduction, cooling, and passivation of the catalyst to be carried out in one apparatus by a continuous method.

3,790,350

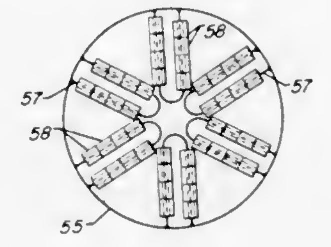
APPARATUS FOR CATALYTIC CONVERSION OF FLUIDS

Vladimir Haensel, Hinsdale, Ill., assignor to Universal Oil Products Company, Des Plains, Ill.

Filed Dec. 22, 1971, Ser. No. 210,937

Int. Cl. B01j *9/04*

U.S. Cl. 23—288 F **5 Claims**



Apparatus for catalytic conversion of fluids. The apparatus includes a catalyst element that comprises a support wire to which a plurality of subdivided catalyst particles having openings therethrough are threaded thereon. Means is provided on the support wire for maintaining the catalyst particles in place.

3,790,351

SINTERED ALLOY HAVING WEAR RESISTANCE AT HIGH TEMPERATURE

Itaru Niimi, Nagoya; Kametaro Hashimoto, Toyota; Kenzi Ushitani, Toyota; Yoichi Serino, Toyota; Ko Ishihara, Toyota; Seishu Mitani, Kyoto, and Kunizo Imanishi, Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota City, Japan

Filed Oct. 4, 1971, Ser. No. 186,424

Claims priority, application Japan, Apr. 26, 1971, 46-027385

Int. Cl. C22c *1/04;* **B22f** *5/00, 3/16;* **B21k** *1/24*

U.S. Cl. 29—182 **2 Claims**

The present invention relates to sintered alloys having wear resistance at high temperature composed of a copper-base alloy containing copper as a principal constituent and 4 to 15 percent of tin, 4 to 25 percent of nickel, and 4 to 25 percent of chromium.

3,790,352

SINTERED ALLOY HAVING WEAR RESISTANCE AT HIGH TEMPERATURE

Itaru Niimi, 4-1205, Obašama, Aza, Takahari, Ooaza, Idaka-cho, Chigusa-ku, Nagoya; Kametaro Hashimoto, 29, 5-chome, Takami-cho, Toyota, Aichi-prefecture; Kenzi Ushitani, 3-38, 4-chome, Maruyama-cho, Toyota, Aichi-prefecture; Yoichi Serino, 2-1, Ekakushin-machi, Toyota, Aichi-prefecture; Seishu Mitani, 11-5, Higashi-machi, Anshubaba, Yamashina, Higashiyama-ku, Kyoto, and Kunizo Imanishi, 2-11, Toei-cho, Mizuho-ku, Nagoya, all of Japan

Filed Jan. 11, 1972, Ser. No. 217,031

Claims priority, application Japan, June 28, 1971, 46-046994

Int. Cl. C22c *1/04,* **B22f** *7/00, 5/00;* **B21k** *1/24*

U.S. Cl. 29—182.1 **12 Claims**

The present invention relates to iron-base sintered alloys having excellent wear resistance at high temperatures, and more particularly to alloys adapted for fabricating valve seat rings of internal combustion engines. The alloys of the present invention are characterized by infiltrating selected metals having lubricating properties or the alloys thereof into the pores of iron-chromium-carbon base sintered alloys having significant mechanical strength and heat resistance.

3,790,353

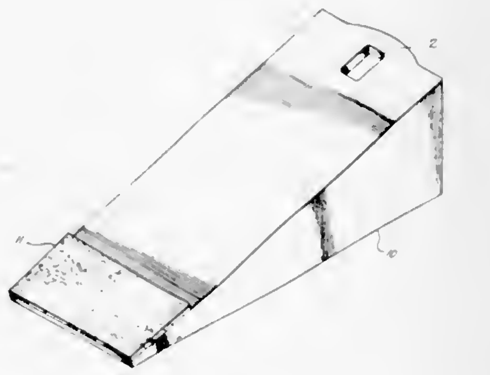
HARD-FACING ARTICLE

Hewy E. Jackson, Livingston, and Howard B. Myers, Humble, both of Tex., assignors to The Servco Company, a division of Smith International Inc., Long Beach, Calif.

Filed Feb. 22, 1972, Ser. No. 227,777

Int. Cl. C22c *29/00, 1/05;* **B22f** *7/04, 7/08*

U.S. Cl. 29—182.7 **8 Claims**



A hard facing wear pad usable, for example, by brazing to a digger tooth or the like is provided in practice of this invention. The wear pad is from 70 to 85 percent by volume particles of cemented metal carbide in a metal matrix having a melting point not substantially higher than the melting point of the metal cementing the carbide. The cemented carbide particles are in the size range of from about 6 to 30 U.S. Sieve, and the thickness of the pad is within limits determined by the cemented carbide particle size.

3,790,354

WELDING ARRANGEMENT OF EXPLOSIVE-PLATED METAL SHEETS

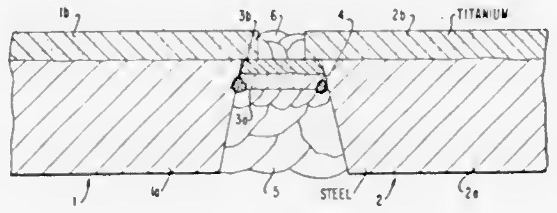
Ulf Richter, Wurgendorf, Germany, assignor to Dynamit Nobel Ag., Troisdorf, Germany

Division of Ser. No. 16,128, March 3, 1970, Pat. No. 3,629,932. This application Aug. 18, 1971, Ser. No. 154,637

Claims priority, application Germany, Mar. 3, 1969, 1910674

Int. Cl. B32b *15/00*

U.S. Cl. 29—191 **5 Claims**



The present disclosure relates to a process and arrangement of elements for welding explosive plated metal sheets which substantially eliminate the formation of cracks when the weld is exposed to mechanical stresses.

3,790,355

COATED METAL ARTICLE AND METHOD OF COATING

Stephen P. Palisin, Jr., Cleveland, Ohio, assignor to The Empire Plating Company, Cleveland, Ohio

Continuation of Ser. No. 887,397, Dec. 22, 1969, abandoned. This application Nov. 18, 1971, Ser. No. 200,224

Int. Cl. B23p *3/00;* **C23c** *7/26*

U.S. Cl. 29—195 **3 Claims**

A metal article having a corrosion-resistant, adherent surface-covering, hydrophobic, thermosetting polymer film.

A method of coating a metal article to make it resistant to corrosion comprising the steps of forming a metallic chromating surface thereof, applying a hydrophobic, thermosetting polymer to a surface thereof and heating the article at a temperature of at least about 300° F. to convert the polymer into a hard, adherent film.

3,790,356

DEVICE FOR MOUNTING AND DISMOUNTING A STERN POST BEARING

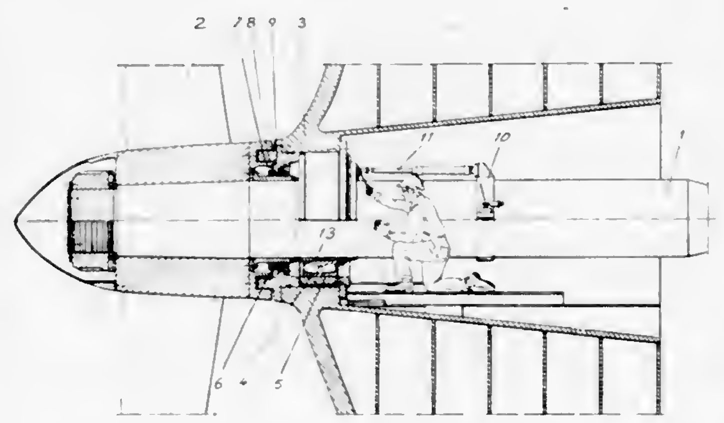
Folke Gunnar Bergling, Partille, Sweden, assignor to SKF Industrial Trading and Development Company B.V., Amsterdam, Netherlands

Filed Oct. 24, 1972, Ser. No. 301,212

Claims priority, application Sweden, Dec. 22, 1971, 16443/71

Int. Cl. B23p *19/04, 11/00*

U.S. Cl. 29—201 **2 Claims**



The present invention relates to a device for mounting and dismounting a stern post bearing and possibly a seal for a propeller shaft in a vessel.

3,790,357

METHOD OF PRODUCING CALORIFIC ENERGY

Johann Schroder, Aachen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 861,029, Sept. 25, 1969, abandoned. This application Jan. 13, 1972, Ser. No. 217,639

Claims priority, application Netherlands, Sept. 30, 1968, 6813987

Int. Cl. F24j *1/00*

U.S. Cl. 44—3 R **3 Claims**

Calorific energy produced by reacting sulfur hexafluoride with an alloy of lithium and calcium in a ratio such that an eutectic mixture of the resultant fluorides are formed.

3,790,358

RESIDUAL FUELS IMPROVED IN ITS FLOW CHARACTERISTICS BY A COPOLYMER OF C_{22} TO C_{40} LINEAR ALPHA-OLEFIN AND STYRENE OR A C_3 TO C_{18} ALPHA-OLEFIN

Albert Rossi, Jersey City; Norman Jacobson, East Brunswick, and Harold N. Miller, Millington, all of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Continuation of Ser. No. 762,372, Sept. 16, 1968, abandoned. This application July 30, 1971, Ser. No. 167,867

Int. Cl. C10l *1/16*

U.S. Cl. 44—62 **6 Claims**

Hydrocarbon polymers comprising linear C_{18+} alkyl side chains are added to residual fuels to improve their pour point and flow characteristics. These polymers are prepared by polymerizing C_{20}–C_{40} alpha-olefins in the presence of a Ziegler-type catalyst to a number average molecular weight within the range between about 500 and 125,000. Particularly effective polymers are prepared from C_3–C_{18} alpha-olefins and C_{20}–C_{40} alpha-olefins.

3,790,359

MIDDLE DISTILLATE FUEL HAVING INCREASED LOW TEMPERATURE FLOWABILITY

Nicholas Feldman, Woodbridge, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.

Filed Mar. 17, 1969, Ser. No. 807,966

Int. Cl. C10l *1/18*

U.S. Cl. 44—62 **5 Claims**

The low temperature flowability of a middle distillate petroleum fuel oil boiling within the range of about 250° to about 700°F. at atmospheric pressure is improved by adding to the fuel oil from about 0.1 to about 3 weight percent of an essentially saturated hydrocarbon fraction which is substantially free of normal paraffinic hydrocarbons and which has a number average molecular weight in the range of about 600 to about 3,000, together with a flow-improving additive such as a copolymer of ethylene and an unsaturated ester, wherein said copolymer has less than six methyl terminating side branches per 100 methylene groups, the weight ratio of said saturated hydrocarbon fraction to said copolymer flow-improving additive being in the range of about 25:1 to 1:1.

3,790,360

PROCESS FOR PRODUCING METAL COATED GLASS-CERAMIC ARTICLES

Taketosi Kato; Masakazu Umetsu, both of Nagoya, and Toshio Kobayashi, Aichi, all of Japan, assignors to Ishizuka Garasu Kabushiki Kaisha, Aichi-ken, Japan

Filed Feb. 23, 1972, Ser. No. 228,757

Int. Cl. C03b *29/00*

U.S. Cl. 65—32 **3 Claims**

A method of producing a metal coated glass-ceramic article which comprises melting a glass-forming batch containing a nucleating agent and 0.05 to 5 percent by weight, calculated as the metal based on the total weight of the glass-forming batch, of at least one metal compound selected from copper compounds and silver compounds, forming the melt into a

glass article of desired configuration, heating the formed glass

3,790,363

(3′-isobutyramidophenyl)-3-methyl urea, 1-cyclohexyl-3-(3′-propionamidophenyl)urea, 1-butyl-3-(3′-propionamidophen-

3,790,368

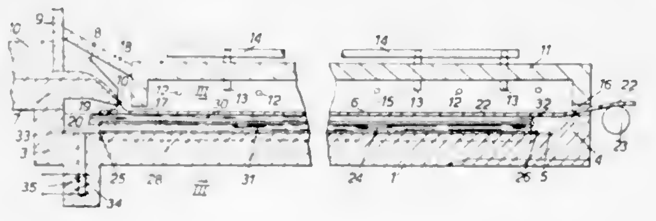
METHOD FOR ENHANCING THE REMOVAL OF

glass article of desired configuration, heating the formed glass article in a reducing atmosphere to devitrify the glass, while causing the metallic ions generated from said metal compound by said reducing atmosphere to migrate through the glass matrix and diffuse to the surface of said devitrified article and to reduce the metallic ions to the state of metallic particles on the surface, heating the article in an oxidizing atmosphere to oxidize the metallic particles to the state of metal oxide crystalline particles bonded to each other, and heating the so obtained article again in a reducing atmosphere to reduce said metal oxide to its metallic state on the surface of devitrified article.

3,790,361

MANUFACTURE OF FLAT GLASS

Jack Lawrenson, St. Helens, England, assignor to Pilkington Brothers Limited, Liverpool, Lancashire, England
Filed Sept. 22, 1971, Ser. No. 182,770
Claims priority, application Great Britain, Sept. 23, 1970, 45363/70
Int. Cl. C03b *18/00*
U.S. Cl. 65—99 A **14 Claims**

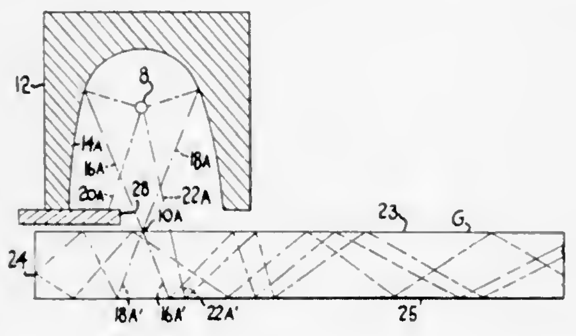


In the float process for the manufacture of flat glass in ribbon form on a bath of molten metal, the movement of the ribbon along the bath surface creates a forward flow of molten metal in a surface layer of the bath, which forward flow is segregated by flow dividing means for an upstream return flow of cooler molten metal along the bottom of the bath.

3,790,362

DIRECTIONAL CONTROL FOR THERMAL SEVERING OF GLASS

John R. Dahlberg, Jeannette; James L. Oravitz, Cheswick, and Edmund R. Michalik, West Mifflin, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Division of Ser. No. 72,353, Sept. 15, 1970, Pat. No. 3,709,414. This application June 21, 1972, Ser. No. 265,082
Int. Cl. C03b *33/02*
U.S. Cl. 65—174 **7 Claims**



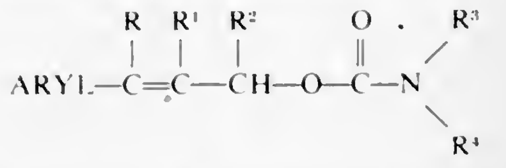
This invention relates to non-contact thermal severing of glass and includes methods and apparatus for altering at least some of the radiation from a thermal source so that a temperature profile that would ordinarily otherwise tend to be asymmetrical becomes symmetrical about an intended path of cut. The problem of asymmetrical temperature profiles occurs, for example, in non-bisecting cuts. The cut is completed either by continuing with the application of radiant heat until a tensile stress of about 1,000 pounds per square inch is generated within the glass, or by applying a bending moment about the thermal score.

3,790,363

CINNAMYL CARBAMATES AND THEIR UTILITY AS HERBICIDES

Llewellyn W. Fancher, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.
Division of Ser. No. 719,700, April 8, 1968, Pat. No. 3,697,582. This application July 12, 1971, Ser. No. 161,988
Int. Cl. A01n *9/24, 9/28*
U.S. Cl. 71—106 **21 Claims**

Compounds correspond to the formula



$$\mathrm{ARYL}-\overset{\displaystyle R}{\overset{|}{C}}=\overset{\displaystyle R^1}{\overset{|}{C}}-\overset{\displaystyle R^2}{\overset{|}{C}}\mathrm{H}-\mathrm{O}-\overset{\displaystyle O}{\overset{\|}{C}}-\mathrm{N}\begin{matrix}\diagup R^3\\ \diagdown R^4\end{matrix}$$

wherein ARYL is phenyl, substituted phenyl, naphthyl and substituted naphthyl in which said substituents are halogen, lower alkoxy, lower alkyl, or when ARYL is substituted phenyl the substituent is also 3,4-oriented-methylenedioxy;

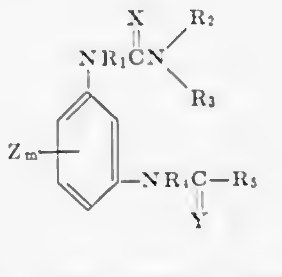
R and R^1 are independently hydrogen, lower alkyl, chlorine or bromine; R^2 is hydrogen, lower alkyl, or phenyl; and R^3 and R^4 are independently hydrogen, alkyl, lower alkenyl, carbethoxymethyl, phenyl and substituted phenyl in which said substituents are selected from the group halogen, lower alkoxy, lower alkyl and nitro, provided that only one of R^3 or R^4 is phenyl or substituted phenyl. The above-defined compounds are effective herbicides. Representative compounds are: cinnamyl-N-methylcarbamate; 2-chlorocinnamyl-N-methylcarbamate; cinnamyl-N-allylcarbamate; cinnamyl carbamate; o-bromocinnamyl-N-methyl carbamate.

3,790,364

META-ANILIDE UREA COMPOSITIONS AND THEIR UTILITY AS HERBICIDES

Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, New York, N.Y.
Division of Ser. No. 23,021, March 26, 1970, Pat. No. 3,642,891, Continuation-in-part of Ser. No. 746,007, July 19, 1968, abandoned, which is a continuation-in-part of Ser. No. 662,573, Aug. 23, 1967, abandoned. This application Sept. 13, 1971, Ser. No. 180,075
Int. Cl. A01n *9/20*
U.S. Cl. 71—120 **25 Claims**

Meta-anilide urea compositions have the formula:



in which X and Y are, independently, oxygen and sulfur; R_1 is hydrogen or lower alkyl; R_2 and R_3 are, independently, hydrogen, alkyl, lower alkoxy, haloalkyl, lower alkenyl, cycloalkyl having from 3 to 6 carbon atoms, inclusive, carbalkoxyalkyl, furfuryl, naphthyl, phenyl or substituted-phenyl, inclusive, in which the substituents are halogen, nitro, or lower alkoxy; R_4 is hydrogen or lower alkyl; R_5 is hydrogen, alkyl, ethyl cycloalkyl, lower alkenyl, halogenated lower alkyl, cycloalkyl having 3 to 6 carbon atoms, inclusive, pinonoyl 2,4-dichlorophenoxymethylene, benzyl, phenyl, or substituted-phenyl in which the substituents are halogen, nitro, lower alkyl, lower alkoxy or trihalomethyl; Z is halogen, lower alkyl, nitro, amino or trifluoromethyl, and *m* is an integer having a value from 0 to 4, inclusive, provided that when R_1, R_2, R_3 and R_4 are each hydrogen, X and Y are each oxygen and m is O, then R_5 is other than methyl or ethyl. The compounds are useful as herbicides and they exhibit both preemergence and post-emergence activity. Representative compounds are: 1-(3′-isobutyramidophenyl)-3-methyl urea, 1-cyclohexyl-3-(3′-propionamidophenyl)urea, 1-butyl-3-(3′-propionamidophenyl) urea, 1-butyl-3-(3′-isobutyramidophenyl)urea, 1-(3′-nitrophenyl)-3-(3′-isobutyramidophenyl) urea, 1-N,N-dimethyl-3-(pivalamidophenyl)urea, 1-(3′-propionamidophenyl)-3-n-butyl thiourea, and 1-(3′-pestafluoropropionamido phenyl)3,3-dimethyl urea.

3,790,365

METHOD OF MAKING METAL FOAMS BY SEQUENTIAL EXPANSION

Leonard M. Niebylski, Birmingham, and Chester P. Jarema, Detroit, both of Mich., assignors to Ethyl Corporation, Richmond, Va.
Continuation-in-part of Ser. No. 879,515, Nov. 24, 1969, abandoned. This application June 21, 1971, Ser. No. 155,210
Int. Cl. C21b
U.S. Cl. 75—20 F **4 Claims**

Metal foams are produced by decomposing a blowing agent in a molten metal such that there is an initial and a subsequent expansion due to blowing gas. The sequential expansion can be conducted by more than one addition of blowing agent to the molten metal to be expanded, or by allowing the molten mass to expand, applying agitation to collapse the foam, and allowing it to expand again, or by forming an intermediate product by expanding and cooling, remelting the intermediate, stirring, and foaming again. Zinc-based foams of fine quality are produced. In a preferred embodiment, substantially pure zinc, titanium hydride (0.1 to 1.5 weight per cent based on weight of metal, and a reaction temperature of from about 475° to about 500°C. are employed.

3,790,366

METHOD OF FLASH SMELTING SULFIDE ORES

Petri B. Bryk, Helsinki; Jorma B. Honkasalo, Westend; Rolf E. Malmstrom; Simo A. I. Makipirtti, both of Pori; Toivo A. Toivanen, Harjavalta, and Olavi A. Aaltonen, Pori, all of Finland, assignors to Outokumpu Oy, Ottokumpu, Finland
Filed Jan. 13, 1970, Ser. No. 2,471
Claims priority, application Finland, Jan. 14, 1969, 104/69
Int. Cl. C22b *15/00, 1/02, 15/04*
U.S. Cl. 75—23 **9 Claims**

A fine-grained concentrate of sulphide ore is suspended by a special dispenser into which a heated downward flow of air, air enriched with oxygen or oxygen containing gas in a vertical reaction shaft of a furnace to oxidize the non-oxidic metal compounds in the concentrate. The gases and the flue dust are separated from the solids which form a smelt on the bottom of the furnace consisting of a matte and a slag on the matte. The partial pressure of sulphur in the gases obtained from the oxidizing smelting carried out in the reaction shaft is increased and/or the partial pressure of oxygen is decreased, in which case the metal oxides contained in the flying dust are converted into corresponding sulphides and most of the iron contained in the slag retains the valence of 2.

3,790,367

ALUMINUM-LEAD METAL FOAMS

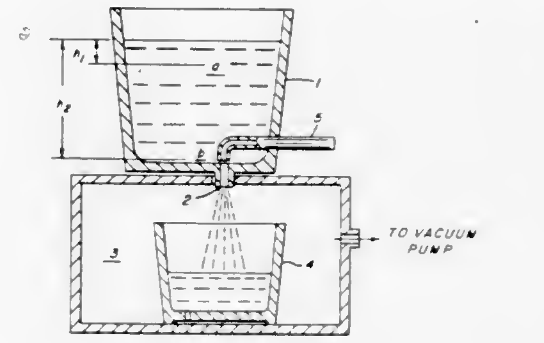
Leonard M. Niebylski, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.
Filed Nov. 26, 1971, Ser. No. 202,643
Int. Cl. C21b
U.S. Cl. 75—20 F **2 Claims**

Relatively weak metal foams are produced by decomposing a blowing agent in a molten metal mass to form a foam, and subsequently cooling to form a set cellular product; the molten mass having at least two different metals and at least two liquid phases at the time of foaming. When foaming, the two phases have been intimately intermixed. One metal can be aluminum.

3,790,368

METHOD FOR ENHANCING THE REMOVAL OF VOLATILE SPECIES FROM LIQUIDS

Robert G. Olsson, Edgewood Borough, and Ethem T. Turkdogan, Pittsburgh, both of Pa., assignors to United States Steel Corporation
Filed June 1, 1971, Ser. No. 148,551
Int. Cl. C21c *7/10;* **B01d** *1/16;* **F26b** *3/12*
U.S. Cl. 75—49 **6 Claims**

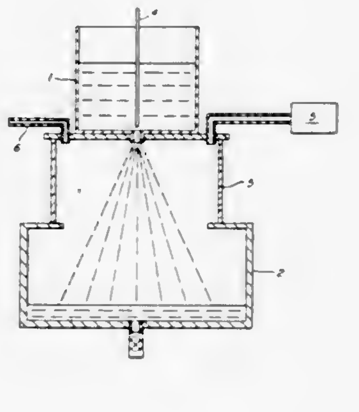


A method for effecting the disintegration of a liquid into exceedingly fine droplets, thereby effecting an increase in the surface area of the liquid with a concommitant increase in the removal rate of volatile impurities. A non-deleterious gas is injected in the form of bubbles into the liquid, prior to its passage through an orifice into a region of lower pressure, whereby the expansion of the gas bubbles causes the liquid streaming through the orifice to spread radially and disintegrated.

3,790,369

METHOD FOR ENHANCING THE REACTION OF A SPECIES OF A LIQUID WITH A FLUID SUBSTANCE

Robert G. Olsson, Edgewood Borough, and Ethem T. Turkdogan, Pittsburgh, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.
Filed June 1, 1971, Ser. No. 148,672
Int. Cl. C21c *7/10;* **B01d** *1/16;* **F26b** *3/12*
U.S. Cl. 75—49 **14 Claims**



A liquid stream is caused to disintegrate in a spray of fine droplets, thereby markedly increasing the amount of surface area available for reaction. The liquid is forced through an orifice into a chamber of lower pressure; prior to its entrance into the chamber, fine bubbles of a gas are entrained within the liquid. After entry into chamber, the individual bubbles expand radially, causing the stream to be broken into sheets of fine droplets, which then react with a gas or liquid in the chamber and/or with injected gas.

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produce a latent image on the photoconductor film by

wherein X is hydrogen, halogen, nitro, alkyl (1–4 C) or a

3,790,370

REMOVAL AND RECOVERY OF METALS FROM POLLUTED WATERS

Jean-Marc Lalancette, Sherbrooke, Quebec, Canada, assignor to Universite de Sherbrooke, Sherbrooke, Quebec, Canada

Filed Dec. 23, 1971, Ser. No. 211,617

Int. Cl. C01g *13/02;* **C22b** *43/00;* **C01b** *5/00*

U.S. Cl. 75—108 **10 Claims**

A process for removing metal ions such as mercury, copper, cadmium, zinc, lead, nickel or silver from polluted waters includes causing the metal polluted water and a sulfur-containing precipitating agent to diffuse through peat whereby a water insoluble sulfide of the metal is formed and is adsorbed on the peat and the metal free water is recovered. The process also relates to recovering the metal either as metal oxide or as metal in the case of silver, copper and mercury by burning the metal sulfide-containing peat.

3,790,371

CORROSION-RESISTANT ALLOY

David A. Karlyn, Peabody, Mass., assignor to USM Corporation, Boston, Mass.

Filed Dec. 16, 1971, Ser. No. 208,884

Int. Cl. C22c *19/00*

U.S. Cl. 75—170 **2 Claims**

Corrosion-resisting alloy useful for molding surface formed of the alloy for molding of resin, the alloy including nickel, copper andberyllium in certain ranges of proportions.

3,790,372

CO-NI-CR BASE AUSTENTIC ALLOYS PRECIPITATION STRENGTHENED BY INTERMETALLIC COMPOUNDS AND CARBIDES

Mahesh C. Chaturvedi, Ste. 1105, 2080 Pembina Hwy., Winnipeg, Manitoba, Canada

Filed May 4, 1972, Ser. No. 250,230

Int. Cl. C22c *19/00*

U.S. Cl. 75—134 F **3 Claims**

An alloy of Cobalt, Nickel and Chromium having a face centered cubic structure and precipitation strengthened by intermetallic compounds or carbides. This alloy has high strength coupled with ductility and corrosion resistance making it particularly suitable for use in surgical or orthopedic implantation.

3,790,373

ALLOY ON ALUMINUM-ZINC-BASIS

Erich Pelzel, Munich-Puchheim, Germany, assignor to Vereinigte Osterreichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed Dec. 3, 1970, Ser. No. 94,938

Claims priority, application Austria, Feb. 5, 1970, 1045/70

Int. Cl. C22c *21/00*

U.S. Cl. 75—146 **3 Claims**

The invention relates to an alloy on aluminum-zinc-basis consisting of 38 to 75 % aluminum, nickel, and, if desired, magnesium and copper, remainder zinc, wherein the improvement resides in that the nickel content amounts to at least 0.05 % and maximally corresponds to the course of the eutectic groove in the aluminum-zine-nickel system, this maximum content of nickel amounting to 0.6 % when 38 % aluminum are present, to 1.1 % when 50 % aluminum are present, to 1.7 % when 60 % aluminum are present, to 2.4 % when 70 % aluminum are present, to 2.8 % when 75 % aluminum are present, and progresses continuously between the given values. This alloy is an excellent bearing metal by which the running characteristics are essentially improved.

3,790,374

METHOD FOR FORMING ARTICLES FROM POWDERED METAL

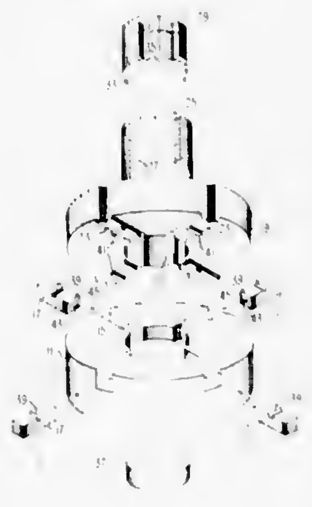
Frank G. Dedek, Westland, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 54,971, July 15, 1970, Pat. No. 3,720,491.

This application Nov. 9, 1972, Ser. No. 305,062

Int. Cl. B22f *3/16, 3/24, 5/00, 7/00;* **B41c** *1/00*

U.S. Cl. 75—208 R **10 Claims**



A method and apparatus for forming a unitary article, such as a printing disk, from powdered metal wherein at least one given face of the article is required to have a preferred grain density. A die, complementary in area and configuration to the given face, is provided for forming the given face of said preferred grain density. The face-forming die is mounted within an aperture in the inner wall of a molding cavity wherein the aperture has an outlet on the cavity and is dimensionally greater than the face-forming die. A space is provided about the face-forming die for the accumulation of a disposable portion of compacted powdered metal of less than said preferred grain density, the space being partially bounded by surfaces around said face-forming die and sloping away therefrom to the walls of the aperture. Powdered metal is placed in the mold and forced against the face-forming die and into the provided space, thereby forming a unitary article having a preferred grain density at one or more given faces while simultaneously providing for the accumulation of the disposable portion of less dense metal which may be removed in subsequent operations. The molded article is sintered to relieve work-hardening and then restruck to insure said preferred grain density and to improve facial definition. The restruck article may be subjected to further heat-treating operations depending on the desired physical characteristics required of the finished article.

3,790,375

ELECTROSTATIC COPIER

Alan J. Brock, North Adelaide, Australia, assignor to Repco Research Pty. Ltd., Dandenona, Victoria, Austria

Filed Apr. 18, 1972, Ser. No. 245,206

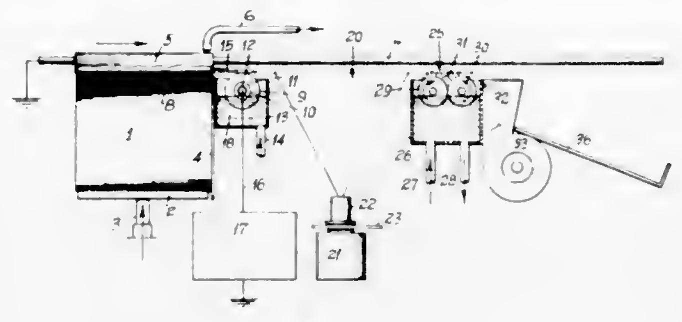
Claims priority, application Austria, Apr. 19, 1971, 4640/71

Int. Cl. G03g *13/00*

U.S. Cl. 96—1 R **9 Claims**

A method of producing electrostatic images in a machine using pre-cut or continuous paper, in which a coloured photoconductive medium is applied to the surface of the sheet and charged and then exposed to electro-magnetic waves to

produce a latent image on the photoconductor film by discharging the photoconductor in non-image areas and selectively removing the photoconductor film from the non-image areas to leave a visible image on plain paper in the image areas only.



3,790,376

ELECTRON BEAM RECORDING MATERIAL

Masakazu Hashiue; Hiroshi Yamashita, and Nobuyoshi Sekikawa, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara-shi, Kanagawa, Japan

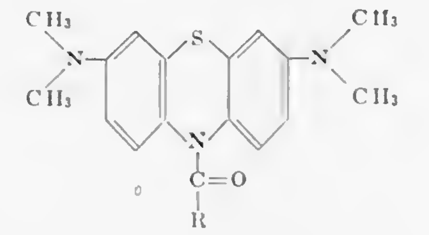
Filed Sept. 3, 1971, Ser. No. 177,761

Claims priority, application Japan, Sept. 3, 1970, 45-77408

Int. Cl. G03c *5/04*

U.S. Cl. 96—27 R **3 Claims**

A highly sensitive electron beam recording material is obtained by adding to the system of N-vinylcarbazole and tetrabromomethane in a hydrophilic binder an additive of a leucomethylene blue having the formula



wherein R is a phenyl or naphthyl group which may be substituted by a hydrogen atom, a halogen atom or an alkyl or alkoxyl group having 1 to 4 carbon atoms.

3,790,377

PROCESS FOR INSOLUBILIZING POLYMERS WITH MASKED ISOCYANATES

Georges Joseph Smets, Heverlee, and Jean Marie Vandensavel, Tienen, both of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

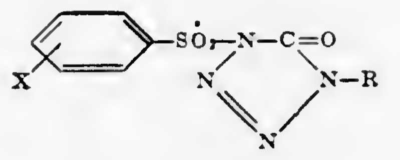
Filed May 26, 1972, Ser. No. 257,235

Claims priority, application Great Britain, June 2, 1971, 18691/71

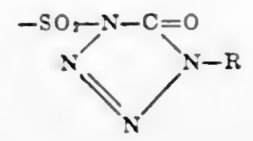
Int. Cl. G03c *1/70*

U.S. Cl. 96—35.1 **7 Claims**

Masked isocyanates in which the isocyanate group or groups may be generated by heating above 100°C are formed by tetrazolinones and bis(tetrazolinones) corresponding to the formula:



wherein X is hydrogen, halogen, nitro, alkyl (1–4 C) or a group of formula:



and R is an aliphatic, aromatic or araliphatic hydrocarbon radical.

The bis(tetrazolinones) may be utilized to cross-link upon heating polymers containing active hydrogen atoms. The heating may occur image-wise or record-wise so that layers composed of mixtures of polymers and bis(tetrazolinones) can be used as heat-sensitive recording materials.

3,790,378

PROCESS FOR THE FORMATION OF POLYMER IMAGES

Yoshihide Hayakawa, and Masato Satomura, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara-shi, Kanagawa, Japan

Continuation of Ser. No. 873,710, Nov. 3, 1969, abandoned.

This application Feb. 24, 1972, Ser. No. 232,316

Claims priority, application Japan, Nov. 2, 1968, 43-80115

Int. Cl. G03c *1/68, 1/70*

U.S. Cl. 96—48 R **30 Claims**

Process for forming a polymer image by contacting at least one of o-dioxybenzene, o-aminophenol, o-phenylenediamine, pyrogallol or derivatives thereof with a silver halide photographic layer having a photographic latent image in the presence of a polymerizable vinyl compound and sulfite ions to polymerize the vinyl compound selectively at those areas containing the latent image.

3,790,379

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE ELEMENTS WITH BOTH COLORED AND COLORLESS COLOR COUPLERS

Yasushi Oishi; Kazuya Sano, and Yoshinobu Yoshida, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-shi, Kanagawa, Japan

Continuation-in-part of Ser. No. 824,294, May 13, 1969, abandoned. This application Mar. 7, 1972, Ser. No. 232,518

Claims priority, application Japan, May 13, 1968, 43-32024

Int. Cl. G03c *7/00*

U.S. Cl. 96—55 **8 Claims**

A photographic element containing diffusion resisting 4-azo-pyrazolone and a colorless phenol or α-naphthol derivative in the silver halide layer.

3,790,380

IMAGE RECORDING MEDIUM AND PROCESS

William E. McKee, Woodland Hills, and Erika E. Kaspaul, Malibu, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed May 28, 1969, Ser. No. 828,572

Int. Cl. G03c *5/24*

U.S. Cl. 96—48 PD **6 Claims**

An electron and/or photon sensitive soluble copper salt in solution is coated upon a substrate, with subsequent evaporation of its solvent. For substrates which resist wetting by the copper salt solution, a wetting agent or film former is employed to obtain an even copper salt coating. For cases where the medium is to be electron exposed, resistivity of the medium is maintained at a sufficiently low level by an additional coating of adequately low resistivity applied beneath the cooper salt layer. After electron or photon exposure, the latent image is developed by exposing the latent image to metal vapor. Thereupon a stable and visible image is formed The optical density of the image is proportional to the exposure. When the substrate is transparent, this image can be employed in projection.

3,790,381

ALKALINE PHOTOGRAPHIC DEVELOPER CONCENTRATE

Richard S. Fisch, and Norman Newman, both of St. Paul, Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Sept. 24, 1971, Ser. No. 183,673

Int. Cl. G03c *5/30*

U.S. Cl. 96—66.1 **5 Claims**

A substantially clear aqueous alkaline solution concentrate adaptable for use as a component of a photographic color developer kit, the solution including, as a buffer, carbonate, and further including sulfoxylate.

3,790,382

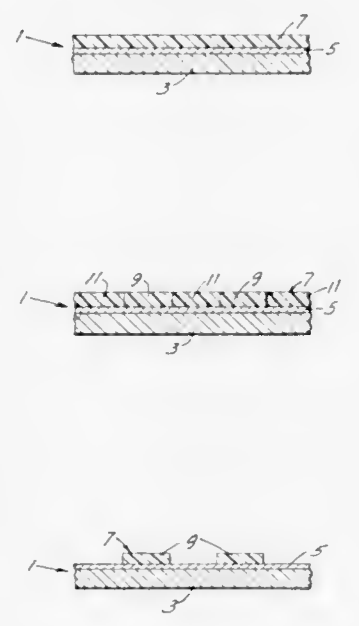
FLUORINATED POLYAMIDE-DIAZO RESIN COATING COMPOSITION

Keith E. Dahlman, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 16, 1971, Ser. No. 134,616

Int. Cl. G03f *7/08*

U.S. Cl. 96—75 **16 Claims**



An oleophobic composition suitable as the ink-receptive areas for printing plates comprising as a dried coating at least 50 percent by weight of light-sensitive diazo resin, no more than 50 percent by weight of a polyamide resin, and an effective amount of a fluoroaliphatic radical containing polymer such as the copolymer of $C_8F_{17}SO_2N(CH_3)CH_2CH_2O_2CCH{=}CH_2$ and the polyoxythylene glycol ester of methacrylic acid. The printing plate so provided is developed by an aqueous solution of a wetting agent which removes unexposed portions of the above coating without any substantial effect on the exposed portions.

3,790,383

INFECTIOUS DEVELOPER COMPOSITION

Isao Shimamura; Eiichi Okusut; Yoo Iijima, and Haruhiko Iwano, all of Minami Ashigara-machi, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-shi, Kanagawa, Japan

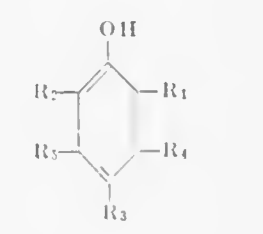
Filed Dec. 21, 1971, Ser. No. 210,546

Claims priority, application Japan, Dec. 21, 1970, 45-115432

Int. Cl. G03c *5/30*

U.S. Cl. 96—66.4 **9 Claims**

An infectious developer for photographic plates for printing containing at least one phenol compound represented by the following formula:



wherein R_1, R_2, R_3, R_4 and R_5 which need not be identical are a hydrogen atom, a hydrocarbon group, a substituted hydrocarbon group, an alkoxy group, COOM, SO_3M where M is a hydrogen atom, a water soluble cation or a hydrocarbon group, a halogen atom, S - R_6 where R_6 is a hydrocarbon group or a substituted hydrocarbon group, COR_7 where R_7 is a hydrogen atom, a hydrocarbon group or a substituted hydrocarbon group, or NR_8R_9 where R_8 and R_9 are a hydrogen atom, a hydrocarbon group or a substituted hydrocarbon group.

3,790,384

LIGHT-SENSITIVE COLOR PHOTOGRAPHIC ELEMENTS WITH IMPROVED IMAGE QUALITY

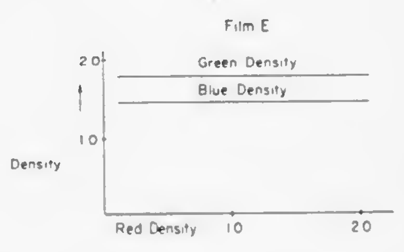
Yashushi Oishi; Yoshinobu Yoshida, and Kazuya Sano, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd, Minami Ashigara-shi, Kanagawa, Japan

Continuation of Ser. No. 745,885, July 18, 1968, abandoned. This application Oct. 26, 1971, Ser. No. 192,355

Claims priority, application Japan, July 18, 1967, 46-217

Int. Cl. G03c *1/76, 3/00*

U.S. Cl. 96—74 **9 Claims**



A multi-layer color photographic element comprising a support having a plurality of silver halide emulsion layers, at least one layer being a red-sensitive silver halide emulsion layer, containing a cyan-forming coupler, such as phenol derivatives and α-naphthol derivatives which have an iodine or a bromine atom at the "para" position to the hydroxyl group. Green-sensitive emulsion layers and blue-sensitive emulsion layers are generally used in combination with said red-sensitive layer. The order of application of said layers is of no importance, as long as the red-sensitive emulsion layer is separated from different emulsion layers by an intermediate layer containing silver halide grains of reduced photo-sensitivity. Specific examples of the cyan-forming coupler and acceptable silver halide materials are defined in the disclosure.

3,790,385

LIGHT-SENSITIVE DIAZO COPYING COMPOSITION AND COPYING MATERIAL PRODUCED THEREWITH

Hartmut Steppan, Wiesbaden-Dotzheim; Fritz Uhlig, and Roland Giesse, both of Wiesbaden-Biebrich, all of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed July 8, 1971, Ser. No. 160,912

Claims priority, application Germany, July 13, 1970, 2034655

Int. Cl. G03f *7/08*

U.S. Cl. 96—75 **28 Claims**

This invention relates to a light-sensitive copying composition comprising a condensation product of a light-sensitive diazonium compound in admixture with the reaction product of an organic acid free of olefinic double bonds and an epoxide resin.

3,790,386

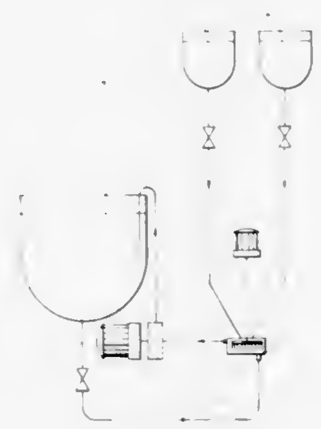
PROCESS FOR THE PRODUCTION OF SILVER HALIDE DISPERSIONS

Rolf-Fred Posse, Cologne-Flittard; Wilhelm Saleck, Schildgen/Bergisch-Gladbach; Herbert Muller; August Randolph, both of Leverkusen, and Franz Moll, Cologne-Stammheim, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 771,545, Oct. 29, 1968, abandoned. This application Nov. 19, 1971, Ser. No. 200,507

Int. Cl. G03c *1/02*

U.S. Cl. 96—94 R **1 Claim**



The preparation of a photo-sensitive salt dispersion having salts of sparing solubility in water which results in a material having a characteristic curve of the flatter gradient type by precipitating a sparingly soluble salt in a small first volume chamber which permits the reactants to be maintained with constant uniformity through the first chamber by stirring. Conducting the resultant dispersion through a conduit to a separaled ripening chamber of a second volume many times that of the precipitating first volume. The silver halide emulsion is partially recycled from the separated ripening chamber through a conduit to the precipitation reaction which is outside of the second volume and where the recycled emulsion serves as reaction medium for the further precipitation of further silver halide salts.

The amount of recycled silver halide emulsion is variable to provide an influence on the flatness of the gradient of the characteristic curve of the final emulsion.

3,790,387

PRECIPITATION OF METAL SALTS

Walter J. Musliner, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 31,351, April 23, 1970, abandoned. This application Mar. 20, 1972, Ser. No. 236,219

Int. Cl. G03c *1/02, 1/28*

U.S. Cl. 96—94 **3 Claims**

Improved precipitation processes for forming metal salt crystals are disclosed wherein crystals of metal salts are made by forming nuclei of the metal salt at a high temperature and the remainder of the crystal growth procedure is continued at a lower temperature. In one preferred embodiment, relatively large crystals having a narrow size distribution can be produced, especially when making photographic silver halide emulsions.

3,790,388

DIRECT POSITIVE COLOR PHOTOGRAPHIC MATERIALS

Keisuke Shiba; Kazuya Sano; Akio Okumura, and Seiiti Kubodera, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sept. 13, 1972, Ser. No. 288,826

Claims priority, application Japan, Sept. 13, 1971, 46-71065

Int. Cl. G03c *1/40*

U.S. Cl. 96—100 **10 Claims**

A direct positive color photographic material having a silver halide photographic emulsion layer containing chemically fogged silver halide grains, said silver halide emulsion layer containing a magenta color coupler precursor having a pyrazole nucleus substituted by an acyloxy group at the five-position. The direct positive color photographic material containing such a magenta color coupler precursor has a high sensitivity, shows good clearness in the highlight portions, and has improved stability.

3,790,389

PHOTOXIDIZABLE COMPOSITIONS

Robert A. Heimsch, St. Louis, and Eric T. Reaville, Webster Groves, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 644,121, June 7, 1967. This application Feb. 16, 1971, Ser. No. 115,727

Int. Cl. G03c *1/68*

U.S. Cl. 96—115 R **15 Claims**

This invention relates to light sensitive compositions comprising a photosensitizer and a substrate useful in preparing photographic images.

3,790,390

PHOTOGRAPHIC SILVER HALIDE LIGHT-SENSITIVE MATERIALS

Keisuke Shiba; Masanao Hinata; Koutarou Yamasue; Akira Sato, and Tadashi Ikeda, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

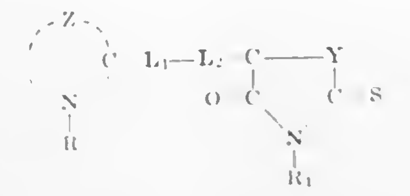
Filed Dec. 30, 1971, Ser. No. 214,216

Claims priority, application Japan, Dec. 30, 1970, 45-123036

Int. Cl. G03c *1/08*

U.S. Cl. 96—125 **15 Claims**

A silver halide photographic light-sensitive material wherein one emulsion layer contains silver halide grains with a mean grain size no larger than 0.9 microns, at least one group VIII metal compound, and at least one sensitizing dye of the formula:



wherein Z, R, R_1, L_1 and L_2 are defined in the specification.

3,790,391

APPARATUS FOR STEAM PRESSURE COOKING OF FOOD

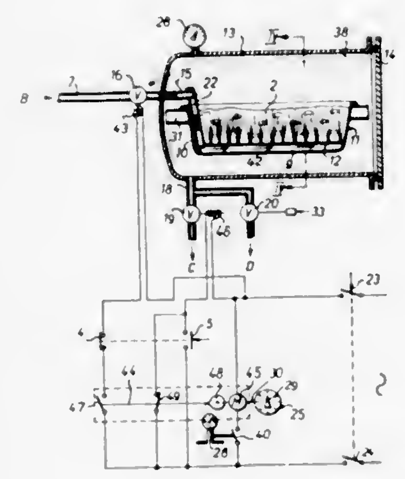
Hans Ulrich Bolleter, Lucerne, and Hansruedi Schulthess, Kriens, both of Switzerland, assignors to Salvis AG, Reussbuhl, Switzerland

Filed Feb. 13, 1973, Ser. No. 332,111

Claims priority, application Switzerland, Feb. 17, 1972, 2311/72

Int. Cl. A47j *27/06*

U.S. Cl. 99—330 **9 Claims**



In a steam pressure cooker into which externally generated steam is introduced to build up a gauge pressure at which the cooking process is greatly accelerated. An open top container for the reception of the food to be cooked is insertable into the vessel. A perforated steam distributer is placed at the bottom of the container and coupled with the steam inlet pipe so that the steam is forced to pass through the food from the bottom upwards and thereby ensures uniform heating of the food throughout its depth in the container. Valves for admitting and exhausting steam are controlled by a timer.

3,790,392

ELECTROLESS COPPER PLATING

Michael N. Gilano, Fullerton, Calif., assignor to Dynachem Corporation, Santa Fe Springs, Calif.

Filed Jan. 17, 1972, Ser. No. 218,459

Int. Cl. C23c *3/02*

U.S. Cl. 106—1 **18 Claims**

Electroless copper plating solutions can be stabilized against autodecomposition by the addition of minute quantities of organothiophosphate compounds. A secondary stabilizer or brightener of the propargyl-type gives added improvement.

3,790,393

CARBONACEOUS BODIES

Frederick Claud Cowland, and Harry Appleby, both of Towcester, England, assignors to Beckwith Carbon Corporation, Van Nuys, Calif.

Continuation-in-part of Ser. No. 59,017, July 28, 1970, abandoned. This application Jan. 20, 1972, Ser. No. 219,521

Claims priority, application Great Britain, July 31, 1969, 38458/69; Nov. 18, 1969, 56331/69

Int. Cl. C04b *35/52*

U.S. Cl. 106—56 **5 Claims**

Chemically resistant bodies of high mechanical strength are obtained by first producing a composite body in which partly-fired carbon-fibre material, made by low-temperature firing of natural or synthetic organic fibre material in an oxidising atmosphere while restraining the fibres from shrinking is incorporated in a matrix of carbonisable thermosetting resin and then heat-treating this body to carbonise the material of the matrix and at the same time complete the conversion of the organic precursor fibres into carbon-fibres. The heat treatment may be carried on to a temperature sufficient to convert the resin of the matrix into vitreous carbon, but greater mechanical strength though somewhat reduced chemical resistance may be obtained by use of carbonisation temperatures which though well above the curing point of the resin are below the temperatures necessary for the production of vitreous carbon. The use of a resin for the matrix whose shrinkage during the carbonising heat treatment is less than that of unrestrained partly-fired carbon fibres results in the production of a carbon-fibre reinforced carbon body in which the fibres are under tensile stress while the material of the matrix is under compressive stress.

3,790,394

CONCRETES AND REINFORCED CONCRETES WITH A LOW EXPANSION COEFFICIENT

Regis Magnan, Montelimar, France, assignor to S. A. Ciments LaFarge, Paris, France

Filed Jan. 4, 1971, Ser. No. 103,775

Claims priority, application France, Jan. 7, 1970, 70.00341

Int. Cl. C04b *7/02*

U.S. Cl. 106—97 **12 Claims**

Concrete is known to have a significant heat expansion coefficient, of about 12.10⁻6 m/m/°C, which has to be considered in designing structures and which can also affect the cost of such structures considerably.

The present invention relates in particular to concrete and self-prestressed reinforced concrete with a low expansion coefficient and density.

The concrete and reinforced concrete products are suitable for all purposes involving highway construction, large slabs, etc., for the nuclear power industry. Such products can also be used in producing strong and light-weight units that can withstand heat.

3,790,395

FOAMED COVER COMPOSITION

Robert E. Eron, 3375, 34th St. N., St. Petersburg, Fla.

Filed Nov. 1, 1971, Ser. No. 194,523

Int. Cl. C08b *25/00, 27/02*

U.S. Cl. 106—122 **6 Claims**

A foamed cover composition made by blending and emitting, from a foam generator, a foamed composition comprising a thickener, a cationic surfactant, a waste filler, and if desired, an additive to effect desired sustained release or sustained acting characteristics.

3,790,396

METHOD FOR STABILIZING PIGMENT SLURRIES

Robert C. Fitton, Bel Air, Md., assignor to J. M. Huber Corporation, Locust, N.J.

Filed Nov. 5, 1971, Ser. No. 198,021

Int. Cl. C09c *3/02*

U.S. Cl. 106—288 B **2 Claims**

A method for stabilizing aqueous slurries of inorganic pigments which enables the slurries to be shipped or stored without the formation of a hard cake in the bottom of the tank or tank car, is disclosed. Aqueous slurries containing inorganic pigments such as hydrated silicas, calcium silicates, sodium alumino silicates and the like are stabilized by the addition of alkaline earth metal salts. An acidic material such as aluminum sulfate is also added to the slurry to adjust the slurry pH to about 6.0 to 8.6. The method of the invention is highly efficient and does not affect the characteristics or properties of the thus treated pigments.

3,790,397

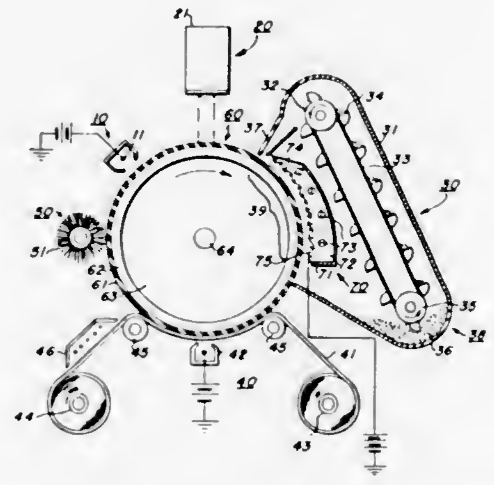
RETONING CARRIER BEADS IN THE DEVELOPMENT ZONE

Ernest A. H. Weiler, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 858,040, Sept. 15, 1969, Pat. No. 3,648,658. This application Aug. 5, 1971, Ser. No. 169,400

Int. Cl. C03g *13/08, 15/08*

U.S. Cl. 117—17.5 **1 Claim**



A development method wherein developer, comprising a mixture of toner particles and carrier beads, is lifted from a trough or sump and is cascaded over the surface of an insulating plate bearing a latent electrostatic image and the toner is attracted from the carrier to the plate to develop the latent image thereon. The carrier beads are retoned with toner particles from a container located in the development zone as the beads give up toner particles to the plate during the development process. The carrier beads and residual toner particles are directed to the trough where additional toner particles are then added to the mixture, whereupon the returned carrier beads are again lifted from the trough and cascaded over the insulating plate to start the same cycle over again.

3,790,398

METHOD FOR MARKING METAL BLOCKS AND THE MARKED ARTICLES

Waling Dijkstra, Leeuwarden, Netherlands, assignor to Zandleven Curacao N.V., Curacao, Netherlands

Continuation of Ser. No. 775,221, Sept. 10, 1968, abandoned, which is a continuation of Ser. No. 523,551, Jan. 28, 1966, abandoned. This application Jan. 14, 1971, Ser. No. 106,592

Claims priority, application Germany, Apr. 17, 1965, 47059

Int. Cl. C23c *41/00, 39/00*

U.S. Cl. 117—37 R **24 Claims**

Metal blocks to be subjected to heat treatment are marked for identification with a marking composition resistant to the heat treatment conditions so that the marking is not destroyed during the heat treatment. The marking compositions are characterized by the presence as pigment of strontium chromate, magnesium oxide, or mixtures thereof.

3,790,399

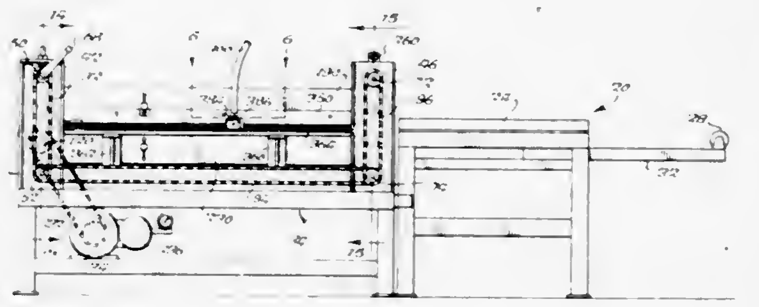
METHOD AND APPARATUS FOR EDGE SEALING CORRUGATED PAPERBOARD

Robert H. Frappier, Agawam, Mass.; Hal W. Tanner, Jr., Georgetown, S.C., and William O. Wagers, Massillon, Ohio, assignors to International Paper Company, New York, N.Y.

Division of Ser. No. 851,973, Aug. 21, 1969, abandoned. This application Sept. 30, 1971, Ser. No. 185,323

Int. Cl. D21b *1/10*

U.S. Cl. 117—44 **5 Claims**



A corrugated core paperboard in which the edges of the the core convolutions are sealed by method and apparatus for preparing a film of thermoplastic material along the board edges; the method including the steps of feeding the board along a path, passing the edge of the board through an applicator and applying a film of thermoplastic material to the board edge as the edge passes through the applicator; the apparatus including driven belts between which the board is fed in a path, an applicator along the edge of the path and means for feeding thermoplastic material to the applicator.

3,790,400

PREPARATION OF PLASTIC SUBSTRATES FOR ELECTROLESS PLATING AND SOLUTIONS THEREFOR

John J. Kuzmik, Torrington, Conn., assignor to MacDermid Incorporated, Waterbury, Conn.

Division of Ser. No. 850,249, Aug. 14, 1969. This application July 24, 1972, Ser. No. 274,177

Int. Cl. B44d *5/04*

U.S. Cl. 117—47 A **10 Claims**

Plastic substrates, such as ABS, are prepared for electroless metal plating by treatment of the surface at a temperature of about 100° to about 175°F. with an activating solution prepared by admixing a glycol ether and an acid stannous chloride-palladium hydrosol. In the hydrosol, catalyst metal particles of colloidal or semicolloidal nature are present.

3,790,401

METHOD FOR THE PREPARATION OF COMPOSITE WOOD-POLYMER PRODUCT

Jack Maine, Saginaw, Mich., assignor to C. W. Maine & Sons, Inc., Saginaw, Mich.

Continuation-in-part of Ser. No. 714,066, March 18, 1968, Pat. No. 3,560,255. This application Jan. 27, 1971, Ser. No. 110,272

Int. Cl. B44d *1/28, 1/092;* **B27k** *3/34*

U.S. Cl. 117—59 **8 Claims**

A method of manufacturing a composite wood-polymer product comprising wood permeated throughout with a polymer of tert-butylstyrene, and the resultant product is described. The composite product is characterized by polymer in the cells or pores of wood between adjacent fibers and in the cell walls of the fibers. The product is tough, durable, extremely moisture resistant, and has the appearance of the original wood.

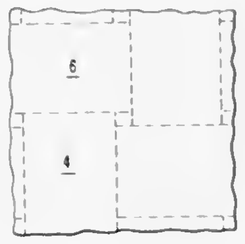
3,790,402
SARAN-ALUMINUM SILICATE COATING

Frank E. Eastes, Spartanburg, S.C., assignor to W. R. Grace & Co., Duncan, S.C.
Filed Sept. 4, 1970, Ser. No. 69,955
Int. Cl. D21h *1/28*
U.S. Cl. 117—68 **4 Claims**

A coating material particularly useful for coated sheet products of paper and plastic is a blend of aluminum silicate and a copolymer of vinylidene chloride. This coating has good optics and heat seal characteristics with good gas and moisture vapor permeability. The blend in its usual form also contains a wax such as carnauba wax as an essential ingredient. The products including the coating and the process for forming the products.

3,790,403
GLASS FABRIC COATED WITH CRACK-FREE FLUOROCARBON RESIN COATING AND PROCESS FOR PREPARING

Robert Clark Ribbans, III, Wilmington, Del., assignor to E. I. DuPont de Nemours and Company, Wilmington, Del.
Filed Jan. 13, 1972, Ser. No. 217,846
Int. Cl. B32b *17/04*
U.S. Cl. 117—76 T **7 Claims**

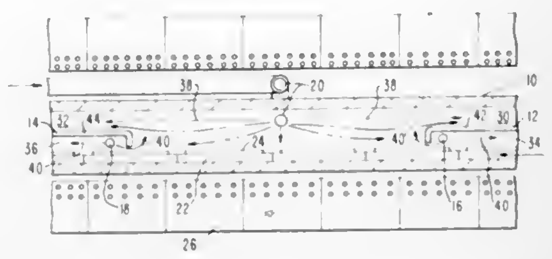


Glass fabric coated with polytetrafluoroethylene is made crack-free by applying a top coat of a melt fabricable tetrafluoroethylene copolymer which is heat bondable to said polytetrafluoroethylene, followed by heating the resultant fabric sufficiently to sinter the polytetrafluoroethylene; this heating also melts the copolymer top coat. A polytetrafluoroethylene over coat can be applied to the copolymer top coat if desired. The dip coating process for applying the polytetrafluoroethylene to the glass fabric is improved by flooding a surface of the fabric with an aqueous dispersion of polytetrafluoroethylene prior to dip coating so that wicking of the dispersion through the thickness of the fabric occurs prior to dip coating.

3,790,404
CONTINUOUS VAPOR PROCESSING APPARATUS AND METHOD

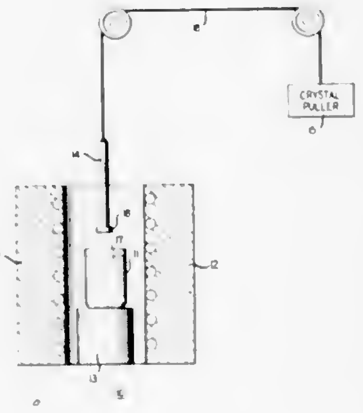
Richard R. Garnache, South Burlington; Ashwin K. Ghatalia, Essex Junction, and Ronald A. Michaud, Essex Center, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 19, 1972, Ser. No. 263,915
Int. Cl. C23c *11/08*
U.S. Cl. 117—106 R **12 Claims**

Apparatus for effecting uniform and continuous mass transport reactions, such as oxidation, diffusion, etching, etc., between a gaseous phase reactant and semiconductor substrates. The apparatus comprises a longitudinal process tube, which includes a reaction zone flanked on either side by a combination entrance-exhaust section and an exit-exhaust section. Reactant gas is provided to the reaction zone at a fixed flow rate and allowed to escape from the reaction zone axially through the two exhaust zones. Accurate isolation of the reaction zone is accomplished by passing additional gases into the entrance and exit zones at a rate sufficient to cause some gas to flow into the reaction zone where it is carried away through the exhaust zones by the axially flowing reacting gas.



3,790,405
CONTROLLED EPITAXIAL GROWTH FROM SUPERCOOLED NUTRIENT-FLUX SOLUTION

Hyman Joseph Levinstein, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.
Filed July 16, 1971, Ser. No. 163,396
Int. Cl. B01j *17/00;* **B44c** *1/18*
U.S. Cl. 117—201 **11 Claims**



Controlled growth of epitaxial layers of a variety of structures including garnet, spinel, and corundum are grown out of supercooled nutrient-flux solutions. Controlled growth, both of composition and physical characteristics, is attributed to the conditions that make the procedure primarily diffusion (rather than atomic kinetic) controlled. Such conditions include high dilution of nutrient and high viscosity of the solution.

3,790,406
METHOD OF TREATING NON-CONDUCTING AND POORLY CONDUCTING FILM

Hiroshi Sakai, 23 Hakuraku, Kanagawa-ku, Yokohama-shi, Kanagawa-ken; Kazuo Igarashi, 128 Suwacho, Hachioji-shi, Tokyo; Takuji Yamamoto, 195 Fujimicho, 6-chome, Tachikowa-shi, Tokyo, and Norimichi Matsuo, 16-25 Shiyoan, 3-chome, Suginami-ku, Tokyo, all of Japan
Filed Dec. 23, 1971, Ser. No. 211,630
Int. Cl. B44d *1/02, 1/20*
U.S. Cl. 117—227 **33 Claims**

The disclosure relates to an applied film of a non-conducting lacquer comprising a mixture of non-conducting or weakly conducting metallic powder with a lacquer base wherein the mixture is changed into a good conductor by applying a conductivating agent in the presence of a solvent. The method lends itself to the manufacture of plate electrodes for batteries, conducting yarn, conducting nets, electrical circuits, heating elements, charge accumulation prevention shields, radio wave shields, etc. from films of a non-conducting or weakly conducting lacquer.

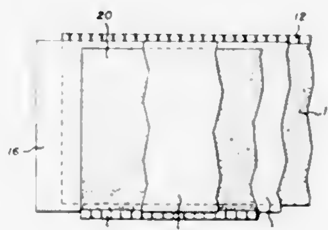
3,790,407
RECORDING MEDIA AND METHOD OF MAKING

Ronald A. Merten, and Don E. Pickart, both of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 28, 1970, Ser. No. 102,127
Int. Cl. H01f *10/02*
U.S. Cl. 117—240 **5 Claims**

High coercivity metallic magnetic material in finely divided particle form is milled with a lubricant to convert it to a leafing flake. The flakes thus obtained are mixed with a suitable binder vehicle and solvent and coated on a non-magnetic substrate to form a leafed coating in which most of the magnetic flakes float to the surface of the vehicle to form a relatively continuous thin layer of high coercivity magnetic material. When the binder vehicle is dried or cured it firmly adheres the thin layer of magnetic material to the substrate and also provides adhesion between the flakes of magnetic material to thus provide a wear and corrosion resistant magnetic recording media capable of high resolution recording.

3,790,408
BATTERY COIL CONSTRUCTION

George P. Cromer, Clay, Fla., assignor to General Electric Company, Owensboro, Ky.
Division of Ser. No. 78,807, Oct. 7, 1970, Pat. No. 3,695,935. This application May 30, 1972, Ser. No. 257,754
Int. Cl. H01m *35/16*
U.S. Cl. 136—13 **4 Claims**



An improved cell construction is utilized in which a ruffled edge of the negative plate extends longitudinally beyond the edge of the positive plate at one end of the battery coil and a ruffled edge of the positive plate extends longitudinally beyond the edge of the negative plate at the opposite end of the battery coil. Terminal straps are attached to the extending ruffled edges of the respective plates.

3,790,409
STORAGE BATTERY COMPRISING NEGATIVE PLATES OF A WEDGE-SHAPED CONFIGURATION

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Richard S. Bogner, Altadena, Calif., and Charles D. Farris, Flemingsburg, Ky.
Filed Feb. 22, 1972, Ser. No. 228,163
Int. Cl. H01m *43/00*
U.S. Cl. 136—20 **5 Claims**

An improved silver-zinc battery particularly suited for use in an environment wherein the battery operatively is subjected to multiple charge/discharge cycling over extended periods. The battery is characterized by a plurality of positive plates of a planar configuration having interposed therebetween a plurality of negative plates of a wedge-shaped configuration and a separator system including a highly absorbent material contiguous with the surfaces of the plates and multiple semipermeable membranes interposed therebetween.

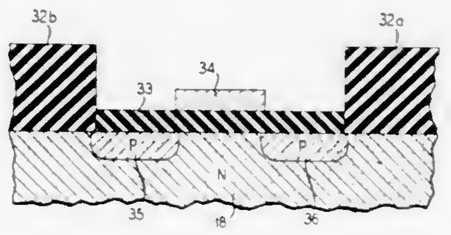
3,790,410
METHOD FOR THE MANUFACTURE OF POWDERED TUNGSTEN CARBIDE CONTAINING ELECTRODE MATERIAL

Konrad Mund; Gerhard Richter, and Magdalena Wenzel, all of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Feb. 17, 1972, Ser. No. 227,310
Claims priority, application Germany, Feb. 22, 1971, 2108396
Int. Cl. H01m *13/04*
U.S. Cl. 136—122 **12 Claims**

Method of making electrode material containing tungsten carbide particles which comprises mixing tungsten carbide with a solid or liquid cokable organic substance. A solution of such organic substance may also be used. The organic substance in the mixture is precoked. The organic substance is subsequently coked at a temperature of 800° to 1,000° C.

3,790,411
METHOD FOR DOPING SEMICONDUCTOR BODIES BY NEUTRAL PARTICLE IMPLANTATION

Douglas Leon Simms, East Orange; Norman Henry Tolk, Mendham, and Clark Woody White, Dover, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Mar. 8, 1972, Ser. No. 232,771
Int. Cl. H01l *7/54*
U.S. Cl. 148—1.5 **1 Claim**



Doping of semiconductor bodies is achieved by bombarding the surface of the semiconductor with a beam of neutral particles to implant particles therein.

3,790,412

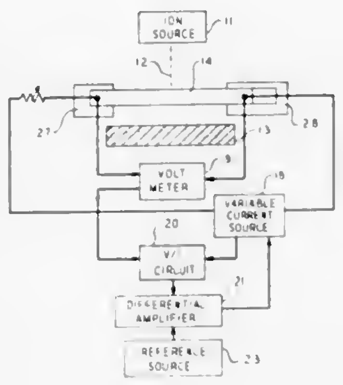
METHOD OF REDUCING THE EFFECTS OF PARTICLE IMPINGEMENT ON SHADOW MASKS

Robert Alan Moline, Gillette, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 7, 1972, Ser. No. 242,124

Int. Cl. H01l *7/54*

U.S. Cl. 148—1.5 **7 Claims**



Thermal expansion of shadow masks used in ion implantation processes has been found to cause inaccuracies in the ion implanted pattern. Such inaccuracies are reduced or eliminated by first directing a heating current into the mask, monitoring the resistance of the mask, and controlling the heating current in accordance with monitored resistance. As the mask is bombarded with ions, any temperature rise increases the monitored resistance to automatically reduce the heating current, thus compensating for the thermal effect of ion bombardment.

3,790,413

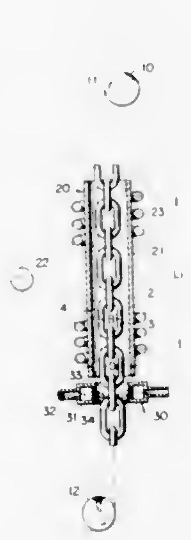
PROCESS FOR A CONTINUOUS HEAT TREATMENT AND APPARATUS THEREFOR

Norio Kanetake, Tokyo, Japan, assignor to Kabushiki Kaisha Kito, Tokyo, Japan

Filed Dec. 27, 1971, Ser. No. 212,152

Int. Cl. C21d *1/10*

U.S. Cl. 148—16.5 **6 Claims**



A heat treating process for a link chain or a similar article, characterized wherein a link chain or a similar article is conveyed through a high frequency induction coil and simultaneously heated at an elevated temperature, and is then cooled after a predetermined period of time.

3,790,414

AS-CAST, RARE-EARTH-CO-CU PERMANENT MAGNET MATERIAL

Yoshio Tawara, and Harufumi Senno, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed Nov. 14, 1968, Ser. No. 775,651

Claims priority, application Japan, Nov. 15, 1967, 42-74374; Feb. 8, 1968, 43-13233; Mar. 18, 1868, 43-18152; Mar. 18, 1968, 43-18153; Mar. 18, 1968, 43-18154

Int. Cl. C04b *35/00*

U.S. Cl. 148—31.57 **6 Claims**

Permanent magnet material having a high coercive force and a high residual flux density is constituted by an alloy of cerium (15 to 20 mol percent), cobalt (52 to 77 mol percent) and copper (8 to 30 mol percent). The cerium can be replaced by Ce-mischmetal in an amount providing the equivalent quantity of cerium. The material has a novel microstructure. The material can be prepared by melting together the ingredient materials and furnace-cooling to room temperature. Superior results are obtained with specially scheduled heat-treatments including controlled cooling rates. It is not necessary to use fine particle magnet material.

3,790,415

CHEMICAL FOAMING AND SENSITIZING OF WATER-BEARING EXPLOSIVES WITH HYDROGEN PEROXIDE

Ernst A. Tomic, Hagerstown, Md., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 18, 1970, Ser. No. 64,792

Int. Cl. C06b *1/04*

U.S. Cl. 149—2 **8 Claims**

Making foamed semisolid colloidal dispersions of water-bearing blasting agents containing an inorganic oxidizing salt, e.g., ammonium nitrate, fuel, water and adding thereto the gas-generating material hydrogen peroxide that foams and sensitizes the blasting agent.

3,790,416

COMPOSITE PROPELLANT INCLUDING (U) POLYFUNCTIONAL AMINE

Henry C. Dehm, Salt Lake City, Utah, assignor to Hercules Incorporated, Wilmington, Del.

Filed July 22, 1970, Ser. No. 87,513

Int. Cl. C06d *5/06*

U.S. Cl. 149—19 **11 Claims**

Propellant compositions are provided in which dewetting of the propellant composition under applied stress is substantially reduced. Reduced dewetting is achieved through the use of polyfunctional amines which are capable of forming a chemical bond between the oxidizer (oxygen containing ammonium salt) and the binder in the cured propellant.

3,790,417

PROCESS FOR PREPARING FIBERBOARD HAVING IMPROVED DIMENSIONAL STABILITY

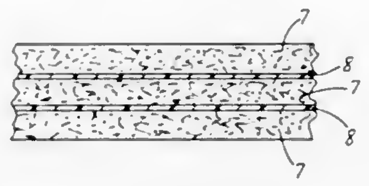
Arthur R. Paterson, Box 414, Chatham Township, County of Morris, and Annemarie C. Reimschuessel, 20 Junard Dr., Morristown, both of N.J.

Continuation of Ser. No. 780,140, Nov. 28, 1968, abandoned. This application Dec. 17, 1971, Ser. No. 209,461

Int. Cl. B29j *5/00;* **B32b** *21/08*

U.S. Cl. 156—62.8 **4 Claims**

The dimensional stability of fiberboard or hardboard prepared by bonding cellulosic fibers with a thermosetting or thermoplastic resin may be improved by preparing the fiber mat in a layered construction so that one or more layers of thermosetting or thermoplastic resin is applied between layers of resin-treated fiber and subsequently curing or flowing the resin in the layered construction under heat and pressure.



3,790,418

PROCESS FOR MAKING A TIGHT COATING AROUND A PIPE FOR CONVEYING HYDROCARBONS AND THE RESULTING HYDROCARBON CONVEYING PIPE LINE

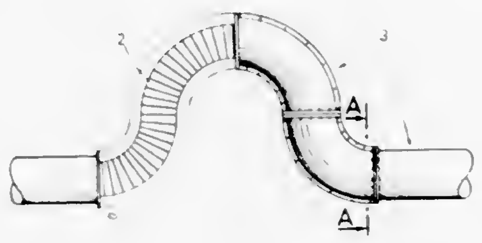
Michel Huvey, Bougival, and Germain Le Meur, Stains, both of France, assignors to Institut Francais Du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison and Societe Anonyme Pour Tous Apparcillages Mecaniques S. A. J. A. La Courneuve, La Courneuve (Seine-Saint-Denis), both of, France

Filed Oct. 8, 1971, Ser. No. 187,787

Claims priority, application France, Oct. 14, 1970, 70.37203

Int. Cl. B32b *5/18*

U.S. Cl. 156—79 **7 Claims**



Process for the formation in situ of a tight coating of pores containing material between a hydrocarbon conveying pipe and a protecting envelope surrounding the same, said material being expansible by contact with the conveyed hydrocarbon so as to obstruct any perforation accidentally occurring in the pipe wall, said process comprising covering the pipe with a sheath of said expansible material containing a curing agent and a porophoric agent, placing the envelope around the pipe and heating the sheath by circulation of a heating fluid so as to produce simultaneously the curing of the sheath and the formation of pores therein by expansion of the sheath in the annular space provided between the pipe and the envelope.

3,790,419

METHOD OF MAKING TEXTILE-REINFORCED ALL-POLYMERIC HOSE

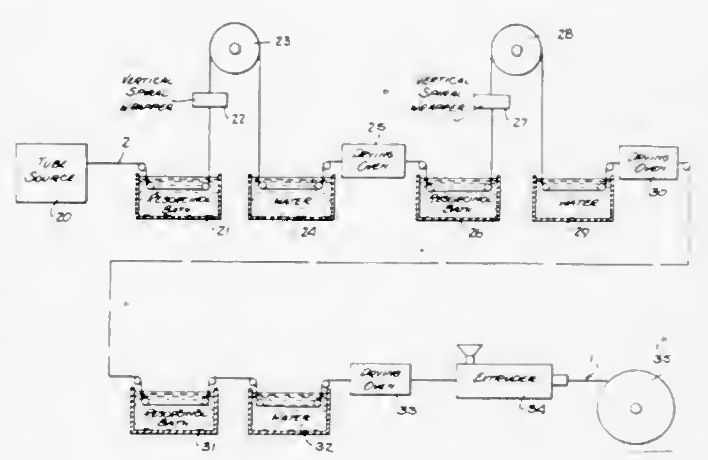
William J. Atwell, Bloomingdale, and Lawrence Cranston, Ramsey, both of N.J., assignors to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 55,784, July 17, 1970, Pat. No. 3,654,967, which is a continuation-in-part of Ser. No. 818,236, April 22, 1969, abandoned. This application Sept. 7, 1971, Ser. No. 178,150

Int. Cl. B32b *7/10, 27/34*

U.S. Cl. 156—149 **3 Claims**

An all-polymeric textile-reinforced hose particularly suited for pressure service, typically an all-nylon hose, and a method of making same are disclosed. The hose comprises an inner thermoplastic tube, two or more successive layers of thermoplastic textile reinforcement wound helically (spirally), each successive helically disposed reinforcing layer being disposed oppositely to the preceding layer, and a polymeric outer protective jacket. The innermost reinforcing layer is fused to the inner tube and successive reinforcing layers are fused to one another. This fusion is typically accomplished by softening with a resorcinol-water solution followed by juxtaposition of the components to be joined after which the resorcinol softening agent is removed with a water bath. Before the outer polymeric jacket is applied, the assembly is softened with a softening agent which is thereafter removed; this effects activation of the plastic in the outer helical textile layer and such activation, coupled with the activation in the rest of the structure as a result of previous treatments with a softening agent and removal thereof, enhances bonding of the outer jacket to the assembly.



The textile reinforcement may be constituted by synthetic multifilament yarns made of continuous thermoplastic filaments, having a total twist (including any so-called producer's or manufacturer's twist) of from 0 to 15 turns per inch, preferably from one to five turns per inch. Alternatively, but generally less preferably, the reinforcement may be formed of thermoplastic staple yarns or of so-called monofils.

3,790,420

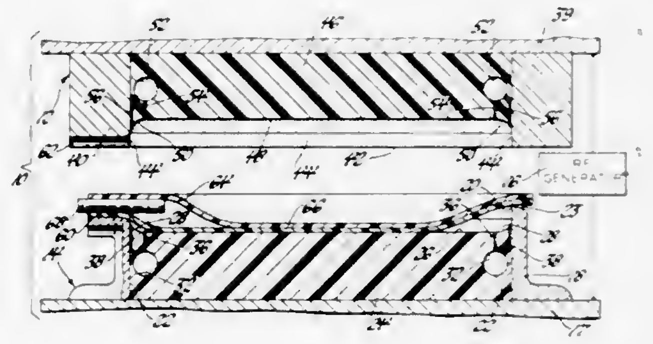
METHOD OF MAKING A SUNSHADE

Joseph Jenei, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 8, 1971, Ser. No. 196,341

Int. Cl. B32b *31/00;* **B29c** *17/00*

U.S. Cl. 156—251 **1 Claim**



A method of forming a sunshade envelope in a dielectric embossing press having a pair of opposed electrodes with one of the electrodes having a sharp upstanding edge around a cavity formed in the electrode. The method comprises the steps of positioning a pair of superposed sheets of thermoplastic material over the cavity and closing the press so as to cause the sheets to be compressed between the electrodes along a tear line created by the upstanding edge. The portion of the thermoplastic sheets adjacent the upstanding edge are then positioned in axial alignment and abutting relationship along a vertical plane followed by applying a high frequency alternating current between the electrodes so as to establish a

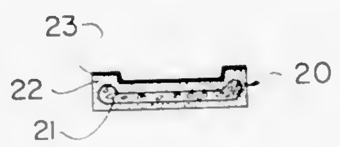
3,790,424

concentrated electric field at the upstanding edge that serves to fuse the sheets along the upstanding edge and along the vertical plane so as to maintain the portion of the sheets in axial alignment.

3,790,421
COMPOSITE ARTICLES AND METHODS OF MAKING THE SAME

Robert P. Habgood, Jr., Bradford, Pa., assignor to Plexawood, Inc.

Filed July 8, 1970, Ser. No. 53,232
Int. Cl. B29c *6/02, 27/00;* **B29d** *27/04*
U.S. Cl. 156—242 **15 Claims**



A composite article comprised of a core formed of compressed wood chips and resin, and an external portion of irregular thickness of foamed resin, such as polyurethane, formed in situ to the configuration of the composite article. The composite article may be made by forming the core in a mold, allowing the core to shrink, and filling the remainder of the mold to make up for the shrinkage of the core with foamable liquid resin and curing it to the solid state. Alternatively, the composite article may be made by forming the core in a first mold, allowing the core to shrink, placing the core in a second mold corresponding to the configuration of the composite article and filling said second mold with a foamable liquid resin and curing said liquid resin to the solid state.

3,790,422
PROCESS FOR THE AGGLOMERATION OF FLAKES OF EXPANDED POLYURETHANE

Lucien Edmond Jourquin, Wetteren, Belgium, assignor to Sobapur S.A., Luxembourg

Filed Oct. 19, 1970, Ser. No. 82,191
Claims priority, application Belgium, Oct. 17, 1969, 740446
Int. Cl. C09j *5/00*
U.S. Cl. 156—306 **12 Claims**

A process for the agglomeration of expanded polyurethane flakes comprising compressing the flakes at a temperature of between 180°C and 230°C is disclosed. Under the pressure, —NCO radicals in the flakes react with —OH radicals in the flakes.

3,790,423
METHOD OF BONDING USING A POLYAMIDE RESIN

Faber B. Jones, Nowata, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

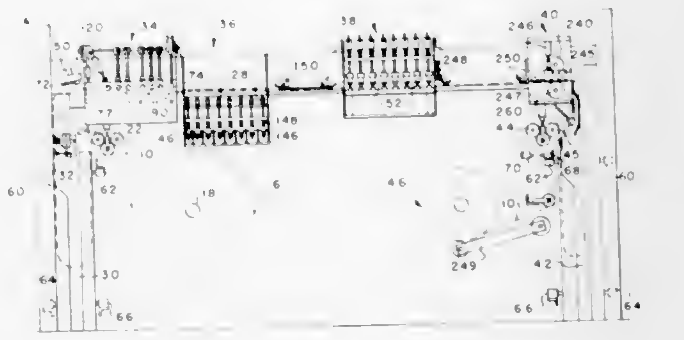
Continuation of Ser. No. 790,882, Jan. 13, 1969, abandoned. This application Nov. 22, 1971, Ser. No. 201,106
Int. Cl. C09j *5/06;* **B32b** *15/08, 27/34*
U.S. Cl. 156—331 **9 Claims**

Polyamides, useful as hot-melt adhesives, are prepared by condensing: (*a*) mixtures of at least two reaction products selected from the group consisting of the reaction product of a diamine and isophthalic acid, the reaction product of a diamine and terephthalic acid, and the reaction product of a diamine and a mixture of isophthalic acid and terephthalic acid or (*b*) the reaction product of a diamine and a mixture of isophthalic acid and terephthalic acid.

3,790,424
PULL TAB APPARATUS

William O. Young, Jr., and Walter J. Quattlebaum, both of Spartanburg, S.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 104,725, Jan. 7, 1971, Pat. No. 3,676,251. This application Jan. 31, 1972, Ser. No. 222,400
Int. Cl. B32b *31/10, 31/00*
U.S. Cl. 156—379 **8 Claims**

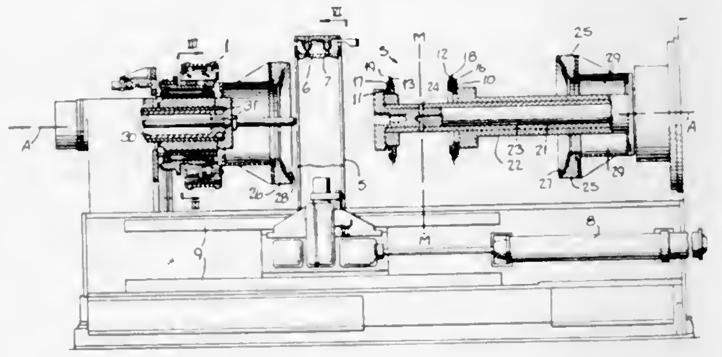


A method and apparatus to accurately punch openings in a web of material and heat seal tabs thereover to provide easy access to the contents of a package formed therefrom. As the machine performs these operations it is also accumulating a predetermined amount of paper for the next cycle.

3,790,425
TIRE BUILDING MACHINE

Jean Leblond, Compiegne, France, assignor to Uniroyal Englebert France S.A., Paris, France

Division of Ser. No. 19,134, March 4, 1970, Pat. No. 3,676,262, which is a division of Ser. No. 717,786, April 1, 1968, abandoned. This application Dec. 14, 1971, Ser. No. 208,016
Claims priority, application France, July 6, 1967, 67.113452
Int. Cl. B29h *17/16*
U.S. Cl. 156—416 **6 Claims**



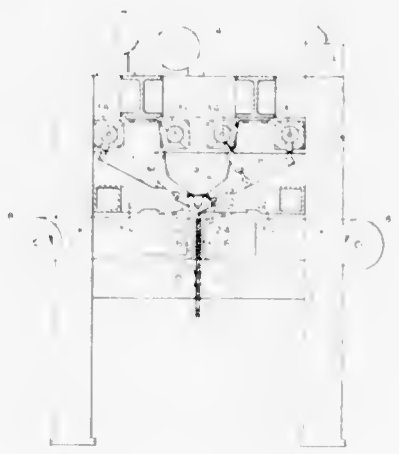
A tire building machine, comprising a radially expansible and contractable, breaker-tread assembly building drum having a magnetized outer surface for retaining building alignment of metallic cord breaker plies during building of the assembly, a pair of variably spaced tire carcass support and shaping discs coaxial with but spaced from the building drum and providing for direct inflation of a first stage carcass supported thereon, a radially expansible and contractable and axially movable transfer ring for transferring breaker-tread assemblies from the drum to carcasses on the shaping discs, and movable, conical, shaping rings engageable with the outer sidewalls of the carcass during expansion of the same for limiting such expansion to a symmetrically centered pattern with respect to the breaker-tread assembly and the beads of the carcass.

The foregoing abstract is neither intended to define the invention disclosed in this specification, nor is it intended to be limiting as to the scope of the invention in any way.

3,790,426
YARN SEPARATOR

Don M. Bylund, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Mar. 27, 1972, Ser. No. 238,230
Int. Cl. D04h *11/00;* **D05c** *15/00;* **B32b** *5/02*
U.S. Cl. 156—435 **1 Claim**

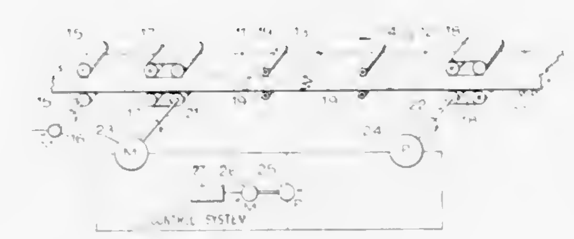


A yarn separator for the yarn fed into a carpet machine to prevent the yarns from being intertangled and placed in such condition, thereby causing a defect in the fabric.

3,790,427
APPARATUS FOR JOINING WOODEN PARTS

Anton Julius Marstrand, General Banks vei 36, Munkvoll, Norway

Filed Dec. 8, 1971, Ser. No. 206,054
Claims priority, application Norway, Dec. 8, 1970, 4696/70
Int. Cl. B32b *31/04*
U.S. Cl. 156—544 **10 Claims**

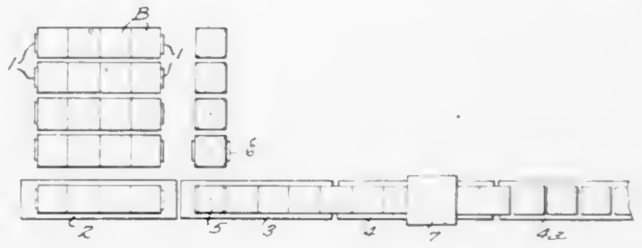


A method of and apparatus for joining parts of wooden material into a beam. The method involves applying oppositely directed longitudinal forces to a beam composed of two parts of wooden material having complementary profiled ends. The longitudinal forces press the profiled ends towards one another to remove excessive bonding agent from between the ends. The apparatus includes spaced apart beam engagable devices which move parts of wooden material along a defined path. The spaced apart beam engagable devices are coupled respectively to a driving device and a driven device. The driven device is part of an energy converting circuit which supplies energy to the driving device.

3,790,428
APPARATUS FOR PREFABRICATING VERTICAL WALL PANELS FROM BLOCKS

Hans Lingl, Fasanenweg 14, New-Ulm/Ludwigsfeld, Germany

Filed Oct. 5, 1971, Ser. No. 186,628
Claims priority, application Germany, Oct. 8, 1970, 2048944; Jan. 19, 1971, 2102291; June 11, 1971, 2129010
Int. Cl. B32b *31/04;* **F04b** *1/02*
U.S. Cl. 156—559 **18 Claims**

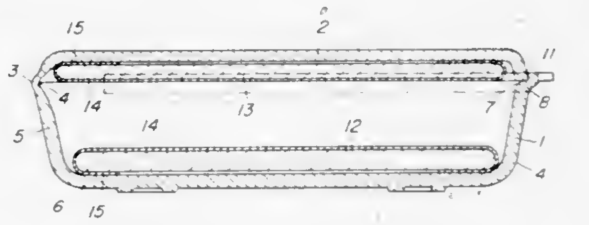


A device and method for prefabricating wall panels from block-like articles comprising a first gripper for picking up rows of blocks from a storage area and placing them upon a conveyor belt so as to leave gaps between rows; a feeding device for supplying special blocks to at least partially fill these gaps, a mortar applying device which applies mortar to the upper faces of the rows of blocks and a second gripper for transferring the rows from the conveyor to a descending support device in which panels are created by stacking the rows. The panels may then be treated on one or both sides as with stucco. In addition, mortar may be supplied to individual rows or to the whole panel through a plurality of tubes which communicate with the facing edges of adjacent blocks and further, dividing or aligning plates may be associated with the second gripper to produce gaps in the rows to create a plurality of panels or an aperture within a single panel.

3,790,429
ARTICULATED, UNIT CAST CASE SYSTEM FOR UNGLUING DOCUMENTS

Rene Berger, 33 Rue Troyon 77, Melun la Rochette, France

Filed June 9, 1971, Ser. No. 151,464
Int. Cl. B32b *35/00*
U.S. Cl. 156—584 **4 Claims**



This invention relates to apparatus which will allow documents of small dimensions to be unglued from their bindings without damage. The apparatus includes a unit-cast case actually including two boxes connected by a hinge forming an integral part of the case, with the boxes mentioned differing only by their depth, and with the top one functioning as a cover. To the respective bottom of each box are attached thin plates of asbestos covered with a plasticized grill. The system operates by dampening the asbestos plate of the lower box with distilled water. The document to be unglued is placed directly upon the grill. Impregnation time before ungluing varies from several minutes to several hours. The invention can be used in the laboratory; in the medical and pharmaceutical fields; in industry; by stamp collectors; and the like.

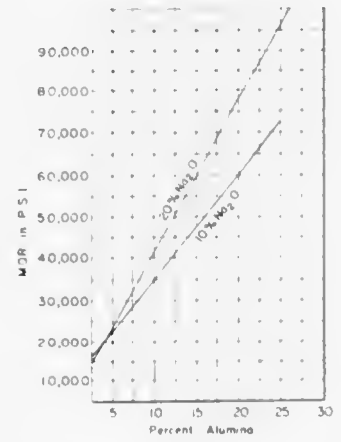
3,790,430
ALKALI ALUMINOSILICATE GLASS ARTICLE HAVING AN ION-EXCHANGED SURFACE LAYER

Ellen L. Mochel, Ojai, Calif., assignor to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 555,617, June 6, 1966, abandoned, which is a continuation-in-part of Ser. No. 181,887, March 23, 1962, abandoned. This application Aug. 21, 1968, Ser. No. 754,311

Int. Cl. C03c *21/00*

U.S. Cl. 161—1 **4 Claims**



This invention relates to the strengthening of glass articles through an ion exchange process wherein alkali metal ions in a surface of a glass article are replaced by larger monovalent metal ions. In carrying out the process, a surface of the glass article is contacted with a source of the larger monovalent ions at an elevated temperature below the strain point of the glass for a sufficient length of time to cause the replacement of small alkali metal ions in the glass surface with the larger monovalent metal ions to a depth of at least five microns, thereby inducing a surface compression layer of this depth on the article. This invention is specifically directed to alkali aluminosilicate glasses.

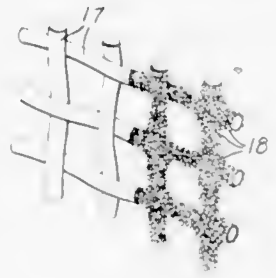
3,790,431
LIGHT-TRANSMISSIVE RETROREFLECTIVE SHEETING

Chi Fang Tung, Lincoln, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 24, 1972, Ser. No. 220,152

Int. Cl. G09f *13/16, 13/06*

U.S. Cl. 161—3.5 **13 Claims**



Light-transmissive retroreflective sheeting comprising an open web of filaments that are encased around their whole circumference at least over those parts of their length that define open spaces of the web by a monolayer of minute retroreflective microspheres. One use of the sheeting is in internally illuminated signs, where the light-transmissive retroreflective sheeting is incorporated between the internal illumination source and the sign face so as to retroreflect light beamed against the sign face and make the signs retroreflective.

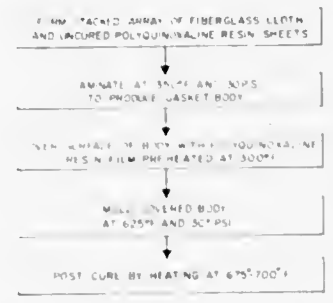
3,790,432
REINFORCED POLYQUINOXALINE GASKET AND METHOD OF PREPARING THE SAME

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Richard Van Auken, 12738 Metate Ln., Poway, Calif.

Filed Dec. 30, 1971, Ser. No. 214,006

Int. Cl. B32b *17/04;* **C08g** *33/02*

U.S. Cl. 161—93 **10 Claims**


AND UNCURED POLYQUINOXALINE RESIN SHEETS
TO PRODUCE GASKET BODY
RESIN FILM PREHEATED AT 300°F
AT 625°F AND 50 PSI
POST CURE BY HEATING AT 675°-700°F

A gasket or seal resistant to ionizing radiation and liquid hydrogen temperatures is made up of a laminated polyquinoxaline resin-fiberglass cloth body portion and a molded polyquinoxaline encapsulating film. The laminated body is prepared by stacking thin sheets of the resin alternately with fiberglass cloth and heating the assembly under pressure with the temperature, pressure and resin film thickness being controlled so that only partial impregnation of the fiberglass cloth is produced. The encapsulating resin film is preheated at about 300° F and applied to the laminate body by molding at a temperature of about 625° F, after which the molded gasket is deflashed and post-cured by heating at 675° to 700° F.

3,790,433
MULTILAMINAR SHEET STRUCTURE

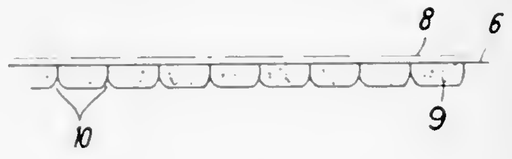
Heinz Baron, Juchener Weg 33, Dusseldorf, Germany

Filed Oct. 12, 1970, Ser. No. 80,025

Claims priority, application Germany, Oct. 25, 1969, 1953873

Int. Cl. B32b *3/10;* **A61l** *15/00*

U.S. Cl. 161—113 **2 Claims**



A multilaminar sheet structure suitable for hygienic and medical purposes comprises a layer, for instance of cellulose foil that forms waves and tunnels after having been exposed to moisture or a liquid, in combination with an absorbent layer, for instance a layer consisting of a nonwoven fabric, and possibly with one or more backing layers.

3,790,434
SYNTHETIC FIBERS FOR ARTIFICIAL HAIR AND PRODUCTION THEREOF

Masao Sone; Mitsutoshi Okazaki, and Yasuomi Ueyama, all of Okayama, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

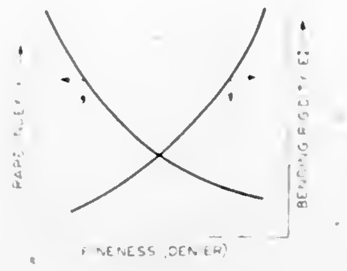
Filed Apr. 15, 1971, Ser. No. 134,313

Claims priority, application Japan, Apr. 18, 1970, 45-33217

Int. Cl. D02g *3/00*

U.S. Cl. 161—181 **7 Claims**

Synthetic fibers for artificial hair are provided which have a bending rigidity EI of 2 – 9.5 dyne. cm^2, a drape index Y of $0.04 \times 10^{-5} - 0.24 \times 10^{-5}$ cm^{-3} and a product value of EI times Y of $0.28 \times 10^{-5} - 1.8 \times 10^{-5}$. Such fibers have good esthetic appearance and handle as well as excellent hair - like feel and visual pliability.



3,790,435
SYNTHETIC PAPERS AND METHOD OF MAKING

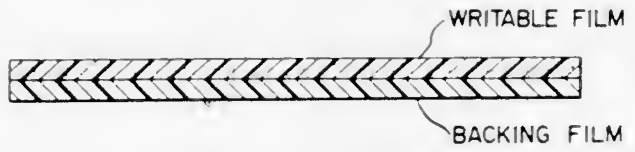
Shigeru Tanba; Mitsuo Yoshiyasu, and Yoshio Miyabe, all of Ibaraki, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo-to, Japan

Continuation-in-part of Ser. No. 29,176, April 16, 1970, abandoned. This application June 7, 1972, Ser. No. 260,526

Claims priority, application Japan, Apr. 25, 1969, 44-31473

Int. Cl. B32b *3/26, 5/18, 27/08*

U.S. Cl. 161—160 **19 Claims**



Synthetic papers, endowed with good foldability as well as good paperiness, of a non-laminated structure of one thermoplastic resin film or a laminated structure of at least two thermoplastic resin films. Each of the films is stretched or molecularly oriented, and one or more of the films contain a fine inorganic filler so as to provide paperiness of the film. According to the invention, some of the films contain a certain amount of polystyrene as a foldability improving agent.

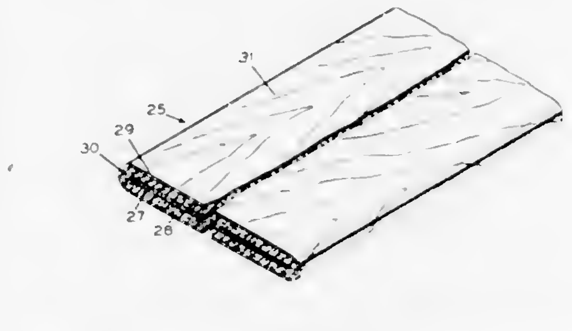
3,790,436
EXTRUDED CELLULAR SLAB OF VARYING DENSITIES

Andrew E. Graham, Jr., Lancaster, and Rickie L. Sitler, Wrightsville, both of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Division of Ser. No. 123,739, March 12, 1971. This application Aug. 10, 1972, Ser. No. 279,501

Int. Cl. B32b *3/26, 7/00*

U.S. Cl. 161—161 **2 Claims**



A thick, foamed plastic slab having a smooth surface, a densified core, and rounded edges is produced by extruding foamable, substantially unplasticized poly(vinyl chloride) in the form of a tube into a region of lower pressure, immediately cooling the outer surface of the tube while allowing entrapped gases to cause formation of a rough-textured inner surface thereon and then compressing the tube at right angles to the direction of extrusion.

3,790,437
POLYVINYL ALCOHOL FIBER REINFORCED POLYURETHANE COMPOSITIONS AND PRODUCTS THEREFROM

John S. Haley, Lake Junaluska; Jerry W. Cooper, and Arthur D. Logan, both of Waynesville, all of N.C., assignors to Dayco Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 71,237, Sept. 10, 1970, abandoned. This application Apr. 20, 1972, Ser. No. 245,911

Int. Cl. B32b *5/02, 5/16*

U.S. Cl. 161—170 **7 Claims**

A reinforced composition of improved physical properties is obtained by incorporating polyvinyl alcohol fibers or particles into curable liquid urethane prepolymers or thermoplastic urethane polymers. A strong chemical adhesion is obtained between the polyvinyl alcohol and urethane.

3,790,438
RIBBON-REINFORCED COMPOSITES

Thomas B. Lewis, and Lawrence E. Nielsen, both of Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 28, 1971, Ser. No. 213,116

Int. Cl. D02g *3/00*

U.S. Cl. 161—172 **19 Claims**

Ribbon reinforced composites comprising (a) a strain-hardenable polymer having a tensile elongation to break greater than 25 percent, and a lap shear strength characteristic of a good adhesive material; and

(b) between about 20 and 90 volume percent of a ribbon reinforcement having a tensile modular ratio greater than 5. One feature of the above composites pertains to the particular placement of the ribbons with respect to one another.

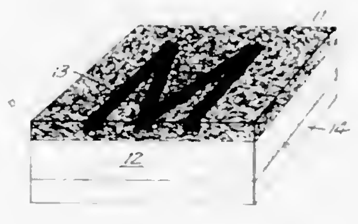
3,790,439
PRINTABLE, HEAT-BONDABLE SHEET MATERIAL

James D. La Perre, Troy, Wis.; James F. Dyrud, North St. Paul, and Thomas W. Zosel, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 28, 1971, Ser. No. 138,216

Int. Cl. C09j *7/02, 7/00*

U.S. Cl. 161—167 **6 Claims**



A laminated sheet material comprising (1) a porous, printable thermoplastic polymeric layer and (2) a heatactivated adhesive layer has particular utility in preparing call number labels for attachment to the spines of books. The physical properties of the two layers are interrelated, and the heat which activates the adhesive during application of the label also indelibly seals the indicia in the printable layer.

3,790,440

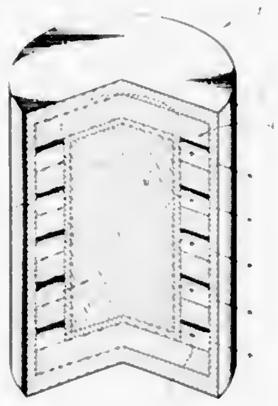
RADIOISOTOPE FUEL MATERIAL AND METHOD

Vahe Keshishian, Sherman Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 815,131, April 10, 1969, which is a continuation-in-part of Ser. No. 687,945, Oct. 25, 1967, which is a division of Ser. No. 464,702, June 17, 1965, Pat. No. 3,515,875. This application Jan. 13, 1971, Ser. No. 106,071. The portion of the term of this patent subsequent to June 2, 1987, has been disclaimed.

Int. Cl. C01g *56/00*

U.S. Cl. 252—301.1 R **14 Claims**



A primary alpha-particle-emitting radioactive fuel material and a method for preparing it so that secondary neutron generation by an alpha-neutron reaction is substantially reduced. Those individual isotopes of oxygen, carbon, nitrogen, silicon, and chlorine which have a threshold for the alpha-neutron reaction greater than the maximum energy of the emitted alpha particles are selected for combination with the alpha-particle-emitting radioactive isotope to give the desired oxides, carbides, nitrides, silicides, and oxychlorides.

3,790,441

BINDERS FOR GLASS FIBER INSULATION

Ronald James Ashall, Wigan, England, assignor to Fibreglass Limited, Liverpool, Lancashire, England

No Drawing. Filed Dec. 15, 1971, Ser. No. 208,396

Claims priority, application Great Britain, July 13, 1971, 32,877/71

Int. Cl. C08g *37/08;* **C08h** *15/00*

U.S. Cl. 161—198 **12 Claims**

A binder composition for bonding together glass comprises a resin of a phenol-formaldehyde polymer, and urea and sodium lignosulfonate as binder setting modifying additives such that by varying the relative proportions of urea and sodium lignosulfonate added, a predetermined setting time can be achieved.

3,790,442

BINDERS FOR GLASS FIBER INSULATION

Ronald James Ashall, Wigan, England, assignor to Fibreglass Limited, Liverpool, Lancashire, England

No Drawing Filed Dec. 15, 1971, Ser. No. 208,400

Claims priority, application Great Britain, Dec. 19, 1970, 60,195/70; Jan. 29, 1971, 3,475/71; July 13, 1971, 32,877/71

Int. Cl. C08g *37/08;* **C08h** *15/00*

U.S. Cl. 161—198 **11 Claims**

A binder composition for bonding together glass fibers comprises a resin of a phenol formaldehyde polymer and two setting modifying additives, namely urea and either calcium, magnesium or ammonium lignosulfonate so that by controlling the amount of urea relative to the lignosulfonate added to form the binder a desired setting time can be achieved.

3,790,443

HYDROXYMETHYLAMINO NITRILE SALTS FOR QUENCHING THE FLUORESCENCE OF OPTICAL BRIGHTENING AGENTS

William M. Reif, 300 Broadway, Dobbs Ferry, N.Y. 10522, and Robert B. Lauder, 94 Brookmere Drive, Fairfield, Conn. 06430

No Drawing. Filed Apr. 27, 1972, Ser. No. 248,202

Int. Cl. D21b *3/52*

U.S. Cl. 162—158 **10 Claims**

A water soluble hydroxymethylamino nitrile salt is applied directly as a dry powder to papermaking materials to quench the fluorescence of optical brightening agents present in the papermaking materials.

3,790,444

PROCESS FOR PREPARING DIKETOGLUCONIC ACID

Shunichiro Oga, Kiyoshi Sato, Katsumi Imada, and Kazuo Asano, Osaka, Japan, assignors to Daiichi Seiyaku Co., Ltd., Tokyo, Japan

No Drawing. Filed Mar. 9, 1972, Ser. No. 233,293

Claims priority, application Japan, Mar. 9, 1971, 46/12,643

Int. Cl. C12b *1/00*

U.S. Cl. 195—47 **6 Claims**

2,5-diketogluconic acid is produced in a high yield by the cultivation of newly isolated *Acetobacter fragum* n. sp.

3,790,445

PRODUCTION OF OPTICALLY ACTIVE ANTIPODES

Heinz Gibian and Klaus Kieslich, Berlin, Germany, Hans-Joachim Koch, Caracas, Venezuela, Horst Kosmol, Clemens Rufer, and Eberhard Schroder, Berlin, Germany, and Rosemarie Walsh, nee Vossing, Glendale, Calif., assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

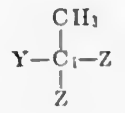
No Drawing. Continuation-in-part of application Ser. No. 578,996, Sept. 13, 1966, now Patent No. 3,562,112. This application Nov. 20, 1970, Ser. No. 91,552

Claims priority, application Germany, Sept. 14, 1965, Sch 37,715

Int. Cl. C07c *167/00;* **C12d** *13/00*

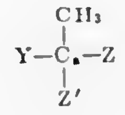
U.S. Cl. 195—51 R **11 Claims**

In a process for the production of optically active compounds, such as intermediates for the production of steroid hormones, in which an optically inactive compound of the formula



$$Y{-}\overset{\displaystyle CH_3}{\underset{\displaystyle Z}{C_1}}{-}Z$$

wherein C_1 is a symmetric carbon atom and the two Z groups are identical aliphatic groups joined together, each of which bears a keto group, and Y is the remainder of the molecule, is subjected to a microbiological enzyme system to produce an optically active antipode of the formula



$$Y{-}\overset{\displaystyle CH_3}{\underset{\displaystyle Z'}{C_a}}{-}Z$$

wherein Y and Z have the values given above, C_a is the asymmetrical carbon atom corresponding to C_1 and Z′ is a ligand otherwise corresponding to Z bearing a hydroxy rather than a keto group, the improvement which comprises employing a microorganism selected from the group consisting of *Aspergillus ochraceus, Bacillus esterificans, Bacillus thuringiensis* and *Saccharomyces uvarum.*

3,790,446

CYTOPHAGA ISOAMYLASE

Zeenat Gunja-Smith, Miami, Fla., assignor to Research Corporation, New York, N.Y.

No Drawing. Filed Oct. 7, 1971, Ser. No. 187,318

Int. Cl. C12d *7/02*

U.S. Cl. 195—66 R **10 Claims**

Isoamylase enzyme which will debranch polysaccharides having α-1→6-linked branches, for example glycogen and amylopectin, is recovered from an enzyme system derived from a species of the genus Cytophaga deposited in the National Collection of Industrial Bacteria in Aberdeen, Scotland, under number NCIB 9497. This Cytophaga isoamylase has the following identifying characteristics:

(a) an optimum activity pH of 5.5;
(b) a molecular weight of the order of 120,000;
(c) an isoelectric point between 5.0 and 5.5;
(d) inactivation by ethylenediamine tetraacetate;
(e) non-inactivation by tris-2-amino-2-hydroxymethyl-1,3-propanediol or p-CMB (p-chloromercuribenzoate).

3,790,447

STREPTOCOCCI DIAGNOSTIC METHOD

Arthur Atsunobu Hirata, Waukegan, and William Franklin Boley, Lake Villa, Ill, assignors to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed July 5, 1972, Ser. No. 268,967

Int. Cl. C12k *1/04*

U.S. Cl. 195—103.5 R **3 Claims**

A method of detecting Streptococcal organisms, especially Group A, β-hemolytic Streptococci, is provided wherein separate smears on microscope slides comprising negative control and positive control organisms are treated with antibody conjugated to peroxidase, and the slides then compared under the microscope, after dyeing with enzyme substrates to determine the presence of Group A Streptococci.

3,790,448

METHOD OF PURIFYING WASTE FLUID

William J. Didycz, Whitehall Borough, and Donald Glassman, Mount Lebanon Township, both of Allegheny County, Pa., assignors to United States Steel Corporation

Filed Mar. 3, 1971, Ser. No. 120,540

Int. Cl. B01d *3/06;* **C10b** *39/08*

U.S. Cl. 201—39 **13 Claims**

A frontward flow and backward flow method of and apparatus for purifying waste fluid containing waste water and corrosive salts with high temperature steam from a continuous coke quenching apparatus to produce substantially pure salt free condensate are disclosed.

(A) One method of purifying waste fluid, containing waste water and corrosive salts produced in a coke producing apparatus and normally utilized to quench coke in a coke quenching apparatus, with waste steam from the coke quenching apparatus to produce substantially salt free condensate, comprises the steps of:

(a) heating the waste fluid in heat exchange relationship with the steam to a first predetermined temperature at a first predetermined pressure;
(b) condensing the high temperature steam to form substantially salt free condensate;
(c) vaporizing the heated waste fluid at the first predetermined temperature at the first predetermined pressure to vaporize a portion of the waste fluid and to concentrate the corrosive salts to form a concentrate, the first predetermined pressure being lower than the pressure of the waste steam from the coke quenching apparatus;
(d) condensing the heated vaporized portion of the waste fluid to form substantially salt free condensate; and
(e) utilizing the substantially salt free condensate in an industrial application, thereby eliminating the disposal of the waste fluid and the contamination of the atmosphere with the waste fluid if the waste fluid were employed to quench the coke in the coke quenching apparatus, and utilizing the waste steam for a useful purpose.

3,790,449

METHOD OF AND APPARATUS FOR CONTINUOUS ELECTROCHEMICAL METERING OF SUBSTANCE CONCENTRATIONS IN GASEOUS MEDIA, WITH ELECTROLYTE RECIRCULATION

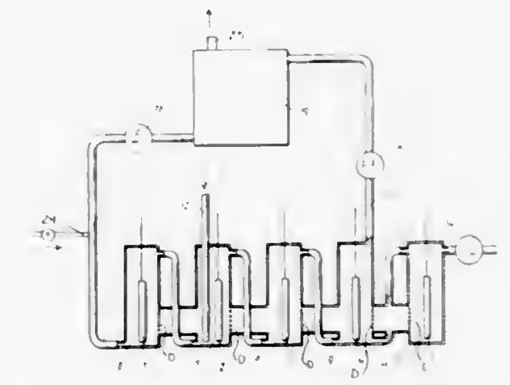
Jiri Novak, Prague, Czechoslovakia, assignor to Ceskoslovenska Akademie ved, Prague, Czechoslovakia

Filed June 12, 1972, Ser. No. 262,053

Claims priority, application Czechoslovakia, June 10, 1971, 4,251/71

Int. Cl. G01n *27/46*

U.S. Cl. 204—1 T **5 Claims**



Method of and apparatus for continuous electrochemical metering of concentrations of or analyzing noxious substances, such as sulphur dioxide, hydrogen sulphide, halogens, or ozone, in gaseous media. An electrolyte solution is drawn from a storage tank and forced successively through a metering system of electrode cells with at least one indicating electrode and a reference electrode cell, the reference electrode cell forming the last downstream stage of said system, whereby harmful products arising in electrode reactions are made ineffective by electrochemical reactions, the degree of concentration of said products being proportional to the sum of the currents flowing through said metering system. A major portion of said electrolyte solution is reintroduced into the storage tank to be repeatedly recirculated; a minor portion of said electrolyte solution is passed through said reference electrode cell. The said electrolyte solution is an aqueous solution of sulphuric acid which is saturated with elemental iodine during its passage between the storage tank and the metering system.

3,790,450
ORGANIC COATING PROCESS

Herman S. Bloch, Des Plaines, and James J. Louvar, Niles, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed Dec. 21, 1972, Ser. No. 317,327
Int. Cl. C23b *5/00, 9/00*
U.S. Cl. 204—14 N **10 Claims**

An electrochemical method of depositing a high-melting, impervious organic coating upon a metal substrate utilizing a novel electrolyte comprising a lower aliphatic acid, an aromatic compound and a Group III–A halide.

3,790,451
ELECTRODEPOSITION OF COPPER FROM SULFUR-FREE CYANIDE ELECTROLYTES USING PERIODIC REVERSE CURRENT

Lavern M. Weisenberger, Walled Lake, and Julio L. Biora, Highland Park, Mich., assignors to The Richardson Chemical Company (Allied-Kelite Products Division), Baltimore, Md.
Filed Aug. 29, 1969, Ser. No. 854,094
Int. Cl. C23b *5/48*
U.S. Cl. 204—15 **14 Claims**

A process for electroplating copper on a base member comprising applying to the member an essentially sulfur-free aqueous alkaline cyanide plating bath comprising a source of copper, an acetylenic alcohol, a complexing agent and a hydroxy acid. Current is caused to flow through the member while in contact with the plating bath for a period of 20–60 seconds to electroplate copper on said member. Thereafter a deplating electric current is caused to flow through said member for a period of 6–20 seconds to deplate a part of the copper plated on the member. Alternate plating and deplating cycles are continued until a desired thickness of copper has been deposited on the member.

3,790,452
ANODIZED SILICON-MANGANESE ALUMINUM BASE ARCHITECTURAL ALLOY

William A. Anderson and Edmund C. Franz, Pittsburgh, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.
No Drawing. Original application Dec. 17, 1969, Ser. No. 886,010. Divided and this application Feb. 3, 1972, Ser. No. 223,379
Int. Cl. C23b *9/02*
U.S. Cl. 204—29 **7 Claims**

An aluminum base alloy containing in percent by weight 3.5–6.5 silicon, 0.3–0.65 manganese, 0.1–0.7 iron, a maximum of 0.3 copper, a maximum of 0.1 magnesium, and a maximum of 0.1 titanium, with a maximum total of other elements 0.15%, and no more than 0.05% of any one of these other elements. This alloy is colorable by anodization to an attractive slate-gray.

3,790,453
CORROSION PROTECTED ANODIZED ALUMINUM SURFACES

John L. Wanamaker, Burbank, Kenneth E. Weber, Los Angeles, and Geraldine M. Hoch, Chatsworth, Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.
No Drawing. Filed Mar. 22, 1971, Ser. No. 126,932
Int. Cl. C23b *9/02;* **C23f** *17/00*
U.S. Cl. 204—35 N **12 Claims**

An aluminum surface can be protected against corrosion by initially anodizing such a surface so as to place upon it an oxide surface film and then sealing such a surface covering by first locating cobalt ions within it and then subsequently exposing such cobalt ions in the surface covering to chromate ions in order to react the cobalt and chromate ions to produce a cobaltous chromate composition within the oxide surface. Such a composition is considered to be a mixture of cobaltous oxychromate compounds.

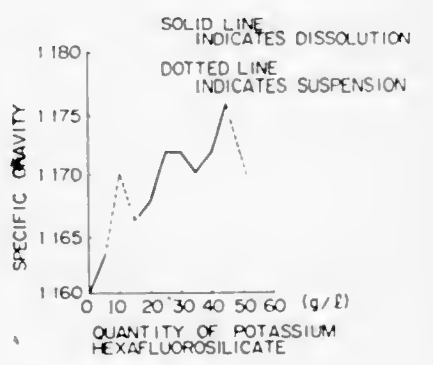
3,790,454
ELECTRODEPOSITION OF SPONGE NICKEL

Ian H. S. Henderson, Ottawa, Ontario, and Stephan George Ladan, Edmonton, Alberta, Canada, assignors to Her Majesty the Queen in Right of Canada as represented by the Minister of National Defence
No Drawing. Continuation of abandoned application Ser. No. 625,945, Mar. 27, 1967. This application Jan. 22, 1971, Ser. No. 109,022
Int. Cl. C23b *5/08*
U.S. Cl. 204—49 **8 Claims**

Sponge nickel is electrolytically deposited from a conventional nickel plating bath to which finely divided low density nickel powder has been added.

3,790,455
CHROMIUM PLATING BATH

Eigi Kaneko and Masa Nakajima, both of 21–8, 2-chome, Shimomaruko, Tokyo, Japan
Continuation-in-part of abandoned application Ser. No. 626,406, Mar. 28, 1967. This application Jan. 22, 1970, Ser. No. 4,810
Int. Cl. C23b *5/06*
U.S. Cl. 204—51 **8 Claims**



A chromium plating bath utilized to form a chromium plated layer on the surface of an article to be plated comprises an aqueous solution of chromium trioxide, and fluorosilicate dissolved in the aqueous solution in amounts ranging from 20 to 45 grams per one liter of the solution. Direct current is passed between an anode electrode made of metal, such as lead, and a cathode electrode consisting of the article to be plated, which are immersed in the plating bath.

3,790,456
METHOD OF EXTRACTING AND RECOVERING CHROMIUM VALUES FROM CHROMITE ORE

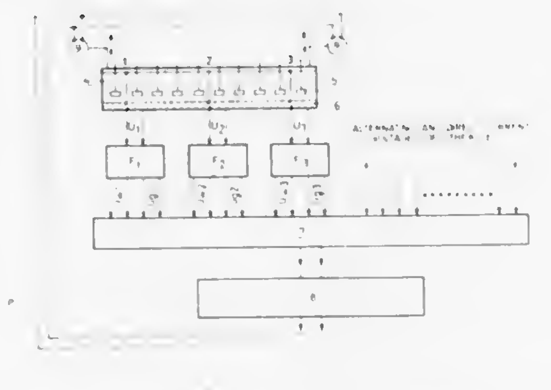
Charles Patrick Bruen, Bernardsville, N.J., and Christian Albert Wamser, Camillus, and Thomas Richard Morgan, Solvay, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Feb. 16, 1972, Ser. No. 226,866
Int. Cl. B01k *3/00;* **C01b** *13/14;* **C22b** *3/00*
U.S. Cl. 204—61 **14 Claims**

A method of extracting chromium values from chromite ore by digesting the ore with a molten bisulfate, separating the insolubles and electrolyzing the digest fluid to yield an immiscible phase consisting of an oxidized chromium product.

Preliminary thermal oxidation of the chrome ore prior to the digestion step increases the dissolution rate and efficiency in the molten bisulfate.

3,790,457
PROCESS FOR ADJUSTING THE ELECTRODE DISTANCE IN AN ELECTROLYTIC CELL WITH FLOWING MERCURY CATHODE

Gerhard Quietzsch, Frankfurt am Main, Bernd Greiner, Oberdorfelden, Helmut Hund, Schneidhain, Taunus, Harald Nottebohm, Frankfurt am Main, and Lothar Pelz, Oberroden, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
Filed Dec. 18, 1972, Ser. No. 316,118
Claims priority, application Germany, Dec. 18, 1971, P 21 62 962.9
Int. Cl. C01d *1/14;* **B23p** *1/12*
U.S. Cl. 204—99 **1 Claim**



The electrode distance in electrolysis cells with flowing mercury cathode is adjusted, for example in the alkali metal chloride electrolysis. The anodes or groups of anodes are brought close to the cathode until the ratio of the variation of the amplitude of the characteristic alternating voltage or current occurring with small electrode distances to the variation of the direct voltage or current in the electrolysis cell in the same time interval has reached a predetermined value.

3,790,458
METHOD OF ELECTROCHEMICAL PROCESSING OF MANGANESE ORES AND THEIR CONCENTRATION WASTES

Nazi Vladimirovna Demuria, ulitsa Grishashvili 42, and Rafael Ilich Agladze, prospekt Plekhanova 96/90, kv. 1, both of Tbilisi, U.S.S.R.
Filed Oct. 18, 1972, Ser. No. 298,629
Int. Cl. B01k *1/00*
U.S. Cl. 204—96 **6 Claims**

A method of electrochemical processing of manganese ores and their concentration wastes comprising the leaching of said manganese-containing starting material with an aqueous acid solution with the formation of a manganese salt. Said solution of a manganese salt is separated from waste rock and subjected to electrolysis in a membrane-type electrolyzer. The electrolysis is performed in the presence in the solution, in addition to a manganese salt, of a salt of an alkali or alkaline-earth metal at a temperature of 80–100° C. in the anode space and at a ratio between the cathodic and anodic current densities of at least 1.2. Upon the electrolysis there are formed: hydrogen—at the cathode and manganous hydroxide and alkaline catholyte in the cathode space, as well as manganese dioxide at the anode and anolyte comprising an acid and a salt of an alkali or alkali-earth metal in the anode space. Waste electrolyte—anolyte—is fed into the stage of leaching the manganese-containing starting material.

The method according to the invention allows to perform the electrolysis in such a way that both anodic and cathodic processes are utilized for precipitation of manganese from the solution in the form of concentrates with minimum power consumption.

3,790,459
PROCESS FOR REMOVING HYDROGEN SILANES FROM CHLOROSILANES

Hans-Joachim Kotzsch, Rheinfelden, and Hans-Joachim Vahlensieck, Wehr, Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany
No Drawing. Filed Sept. 28, 1970, Ser. No. 76,253
Claims priority, application Germany, Sept. 27, 1969, P 19 48 911.3
Int. Cl. B01j *1/10;* **C01b** *33/08*
U.S. Cl. 204—157.1 **8 Claims**

Purification of trichlorosilane compositions which also contain higher hydrogen content silanes and may further contain tetrachlorosilane by admixing and reacting the composition with elemental chlorine at −30° C. to 300° C. for a time sufficient to convert substantially all of said higher-hydrogen silanes to tri- or tetrachlorosilane, and then recovering the trichlorosilane, possibly by distillation.

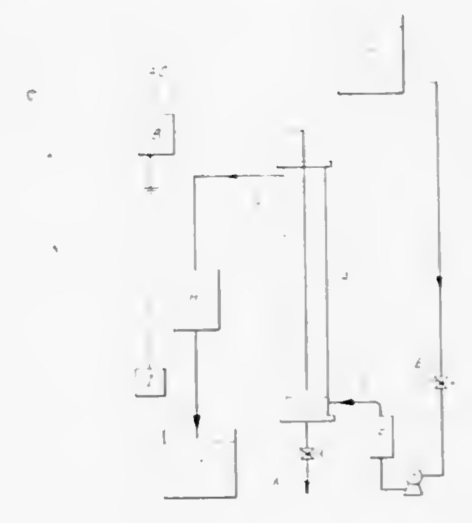
3,790,460
CARBON MONOXIDE COPOLYMERS

Lester Weintraub, Bronx, N.Y., assignor to Air Products and Chemicals, Inc., Allentown, Pa.
No Drawing. Continuation of application Ser. No. 826,078, May 13, 1969, which is a continuation of application Ser. No. 502,286, Oct. 22, 1965. This application July 13, 1970, Ser. No. 56,188
Int. Cl. C08f *1/18, 13/04*
U.S. Cl. 204—159.23 **3 Claims**

A vinyl halide, such as vinyl fluoride and vinyl chloride, and carbon monoxide are copolymerized in the simultaneous presence of a free-radical-producing compound and ultra-violet light, most advantageously at a polymerization temperature of 50° to 75° C., to produce a copolymer having a carbon monoxide content of more than 3% by weight and an intrinsic viscosity of at least 1 dl./g.

3,790,461
SEPARATION OF A LIQUID CONTAINING CHARGED PARTICLES OR/AND POLARIZABLE MOLECULES

George C. Yeh, Willistown Township, Chester County, Pa. (Smedley Drive, R.D. 1, Newtown Square, Pa. 19073)
Filed May 20, 1971, Ser. No. 145,527
Int. Cl. B01k *5/00*
U.S. Cl. 204—180 R **10 Claims**



When a liquid containing charged particles, such as ions, electrolytes, free radicals and colloids or/and molecules having polar or/and polarizable properties is brought into contact with an electrostatically charged surface, a double layer of said charged particles or/and

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said molecules may be formed at said surface. Separation of said charged particles or/and said molecules from said liquid can be accomplished if said liquid in the bulk is replaced from said electrostatically charged surface, after the contacting.

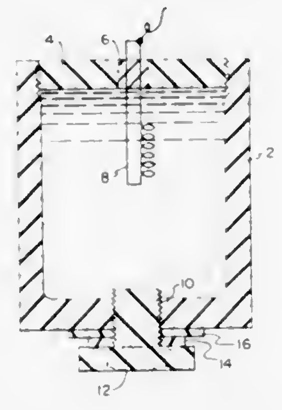
3,790,462
PROCESS FOR THE PREPARATION OF 1,1,1-TRI-FLUORO-2-CHLORO-2-BROMOETHANE

Neithart Schultz, Eichsel, Hans-Joachim Vahlensieck, Wehr, and Peter Martens, Rheinfelden, Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany
No Drawing. Filed Aug. 30, 1972, Ser. No. 284,825
Claims priority, application Germany, Sept. 3, 1971, P 21 44 160.1
Int. Cl. B01j *1/10*
U.S. Cl. 204—163 R **8 Claims**

A process for the preparation of 1,1,1-trifluoro-2-chloro-2-bromoethane in the gas phase at a temperature between 150 and 270° C. in the presence of a source of molecular chlorine under irradiation by light rays having a wave length between 2350 and 3800 angstroms.

3,790,463
pH REFERENCE ELECTRODE

Arthur E. Gealt, Philadelphia, Pa., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Aug. 30, 1972, Ser. No. 285,014
Int. Cl. G01n *27/30*
U.S. Cl. 204—195 F **10 Claims**

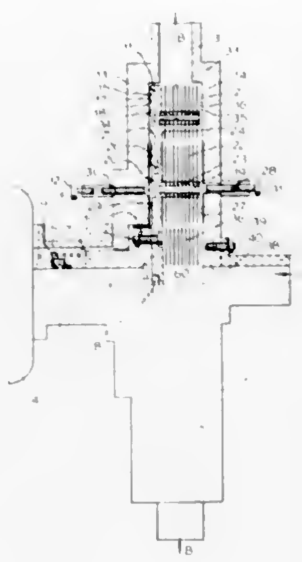


A pH reference electrode having a liquid junction formed by adjacent separable structural electrode elements having different coefficients of thermal expansion whereby to automatically change the cross-sectional area of the liquid junction in response to change in environmental temperature to control the flow of electrolyte out of the reference electrode, while facilitating cleaning of the liquid junction.

3,790,464
ELECTROLYZER INCLUDING ROTATABLE BIPOLAR ELECTRODES

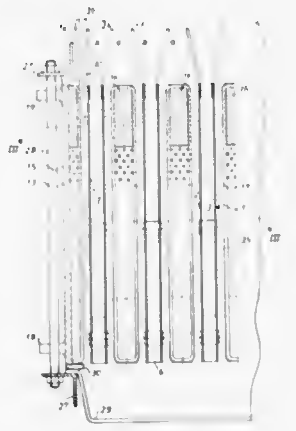
Bruce Bousfield Greaves, Liverpool, England, assignor to The Cumberland Engineering Company Limited, Bootle, Lancashire, England
Filed May 30, 1972, Ser. No. 257,519
Int. Cl. C23b *5/68*
U.S. Cl. 204—212 **8 Claims**

The present invention comprises an electrolytic cell having a pair of terminal electrodes located within a chamber and adapted to be connected to the poles of a D.C. source. A plurality of "bipolar electrodes" are located between the terminal electrodes and are arranged to be rotatable about an axis through their centers. The electrolyte is fed to the cell at radially inner portions of the cell and withdrawn at the periphery of the cell, such that electrolyte flow is radially outward through the cell. Due to the rotation of the bipolar electrodes relative to the chamber and to electrolyte passing through the cell, the tendency for solid products of the elecrolysis process to accumulate on the electrodes is considerably reduced.



3,790,465
ELECTROLYTIC CELL INCLUDING VERTICAL HOLLOW ANODES WITH DEFLECTOR PANELS DIVERGING UPWARDLY FROM EACH ANODE

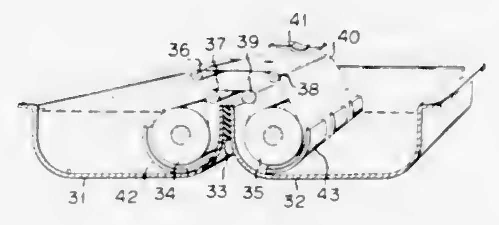
Umberto Giacopelli, Rosignano Solvay, Livorno, Italy, assignor to Solvay & Cie, Brussels, Belgium
Filed Dec. 6, 1972, Ser. No. 312,706
Claims priority, application France, Dec. 6, 1971, 7143789
Int. Cl. B01k *3/10*
U.S. Cl. 204—266 **9 Claims**



Anodes for electrolysis cells for producing a gas by electrolysis comprise vertically disposed hollow metal boxes open at their lower and upper ends and having two opposite parallel metal walls arranged facing one another. These walls are surmounted by two deflector panels which incline outwardly away from one another so as to diverge upwardly. The deflector panels may be integral with the walls or may be separate members secured to the upper portions of the walls.

3,790,466
CLEANING LIQUID PURIFICATION DEVICE FOR USE IN WET-TYPE ELECTROSTATIC PHOTOGRAPHY

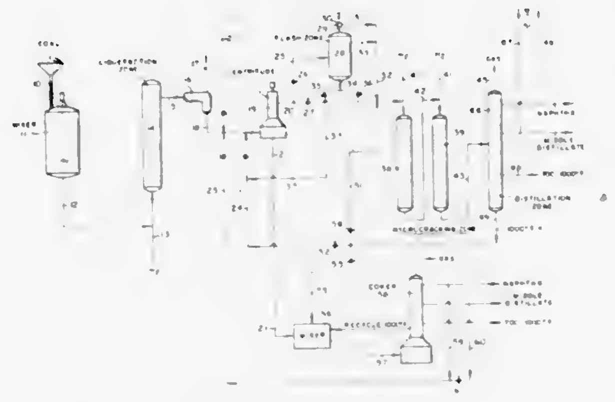
Hideaki Akiyama, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed May 16, 1969, Ser. No. 825,226
Claims priority, application Japan, May 21, 1968, 43/34,207, 43/34,208
The portion of the term of the patent subsequent to Feb. 5, 1990, has been disclaimed
Int. Cl. B01k *5/02;* **C23b** *13/00*
U.S. Cl. 204—300 **3 Claims**



A cleaning liquid purification device for use in wet-type electrostatic photography. A container having cleaning fluid therein acts as a first electrode. An adjacent container having developing liquid therein acts as an opposing electrode, and an endless belt passing therebetween has the same polarity as the developing liquid container. Passage of the belt picks up excess toner from the cleaning liquid container for dispersal in the developing liquid container.

3,790,467
COAL LIQUEFACTION SOLIDS REMOVAL

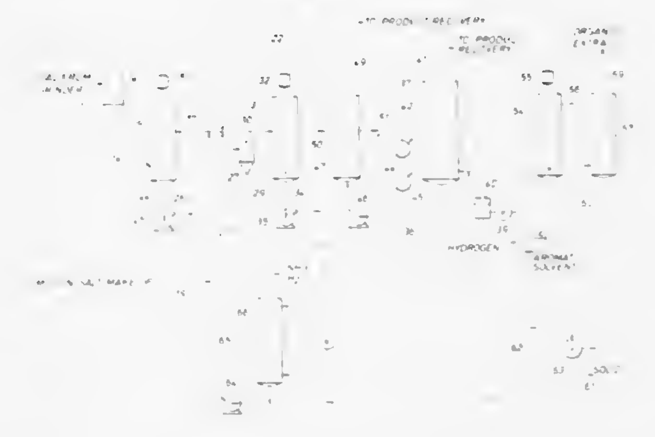
Robert J. Fiocco, Summit, N.J., and Edward L. Wilson, Baytown, Tex., assignors to Esso Research and Engineering Company
Continuation-in-part of application Ser. No. 67,457, Aug. 27, 1970, now Patent No. 3,687,837. This application Apr. 24, 1972, Ser. No. 246,725
The portion of the term of the patent subsequent to Jan. 29, 1989, has been disclaimed
Int. Cl. C10g *1/04*
U.S. Cl. 208—8 **12 Claims**



Solid residues are more effectively separated from a coal extract enriched solvent of a coal liquefaction product, in a solids-liquids separation zone in which solids size is a separation parameter, by adding to the coal liquefaction product a coal extract liquid derived from the coal liquefaction product and containing at least 20 volume percent of materials boiling below about 400° F. or at least 20 volume percent of materials boiling above about 1000° F.

3,790,468
HYDROCRACKING OF COAL IN MOLTEN ZINC IODIDE

Rene A. Loth, Spring, Tex., assignor to Shell Oil Company
Filed Mar. 16, 1973, Ser. No. 342,112
Int. Cl. C10g *1/06*
U.S. Cl. 208—10 **9 Claims**



Coal is continuously hydrocracked in suspension in a continuous-phase molten salt predominating in zinc iodide, at a temperature of from about 300° C. to about 500° C. and under a pressure of from about 200 p.s.i.g. to about 3000 p.s.i.g. The molten zinc iodide contains a substantial proportion of alkali metal iodide as a melting point depressant, sufficient to lower the melting point from about 446° C., the normal melting point of zinc iodide, to substantially below 350° C. The molten zinc iodide catalyst also contains ammonia, ammonium iodide and water, in small proportions, resulting from hydrocracking the coal, all of which are also melting point depressants for zinc iodide. The slurry of coal in the molten catalyst system is prepared by first slurrying ground coal in at least 12 to about 25-fold proportions by weight molten iodide salt mixture predominating in zinc iodide and containing alkali metal iodide. The resulting slurry of coal in the molten salt mixture is then concentrated by separating a portion, at least one-third, of the molten salt mixture, to provide a still pumpable slurry of coal in molten salt, which is the charge to the hydrocracking zone. The separated excess molten salt is recycled to the primary slurrying operation to provide a portion of the molten salt for slurrying the coal. The molten salt mixture withdrawn from the hydrocracking operation is separated from volatile and normally liquid products of the reaction, and a major proportion thereof is recycled to the primary slurrying step. A minor proportion of the molten salt mixture is extracted with an aromatic solvent to remove resulting tar-like material and then filtered to remove solids, after which the separated molten salt is recycled to the primary slurrying operation.

3,790,469
HYDROCRACKING COAL IN MOLTEN ZINC IODIDE

Rene A. Loth, Spring, and Milton M. Wald, Houston, Tex., assignors to Shell Oil Company
Filed Mar. 16, 1973, Ser. No. 342,113
Int. Cl. C10g *1/06*
U.S. Cl. 208—10 **6 Claims**

Coal is slurried in a molten salt mixture predominating in zinc iodide and the coal is hydrocracked at a tempera-

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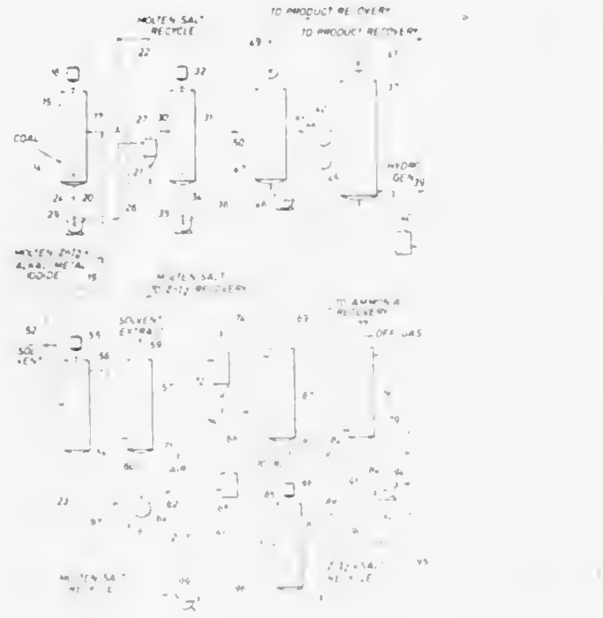
of about 300°-500° C. and at a pressure of about designated as ZSM-5 having the composition expressed

a composite containing, on an elemental basis, about 0.01

3,790,477

LATICES FOR SEWAGE COAGULATION

ture of about 300°–500° C. and at a pressure of about 200–3000 p.s.i.g. in the presence of hydrogen. The molten salt mixture contains a substantial proportion of alkali or alkaline earth metal iodide as a melting point depressant, sufficient to lower the melting point from about 446° C., the normal melting point of zinc iodide, to substantially below 350° C. The hydrocracking converts nitrogen and oxygen in the coal to ammonia and water, respectively, the ammonia being converted in part to ammonium iodide. The generated water, ammonia and ammonium iodide all function as melting point depressants for zinc iodide. A major portion of the molten salt mixture, containing coal residue, including tar and ash, is recycled to the hydrocracking process. A minor proportion of the resulting molten salt mixture from hydrocracking is separated as a slip-stream and processed for recovery of the molten salt mixture thereof, and conversion of zinc sulfide and ammonium iodide formed from hydrocracking the coal, to recover the zinc and iodide contents thereof as zinc iodide, which is also recycled to the coal slurry operation.



3,790,470
PRODUCTION OF LUBRICATING OILS

Theodore C. Mead, Port Arthur, Billy H. Cummins, Nederland, and Richard L. Coleman, Port Arthur, Tex., assignors to Texaco Inc., New York, N.Y.
No Drawing. Filed Dec. 6, 1972, Ser. No. 312,440
Int. Cl. C10g *13/00*
U.S. Cl. 208—58 **9 Claims**

Lubricating oils of improved viscosity index and improved stability to ultraviolet light are prepared by a procedure involving hydrocracking, solvent extraction, hydrogenation of the aromatic-rich extract and reblending.

3,790,471
CONVERSION WITH ZSM–5 FAMILY OF CRYSTALLINE ALUMINOSILICATE ZEOLITES

Robert J. Argauer, Kensington, Md., and George R. Landolt, Audubon, N.J., assignors to Mobil Oil Corporation
No Drawing. Continuation-in-part of abandoned application Ser. No. 630,933, Apr. 14, 1967, and a division of application Ser. No. 865,472, Oct. 10, 1969, now Patent No. 3,702,886. This application May 18, 1972, Ser. No. 254,799
Int. Cl. C10g *13/02;* **C01b** *33/28*
U.S. Cl. 208—111 **13 Claims**

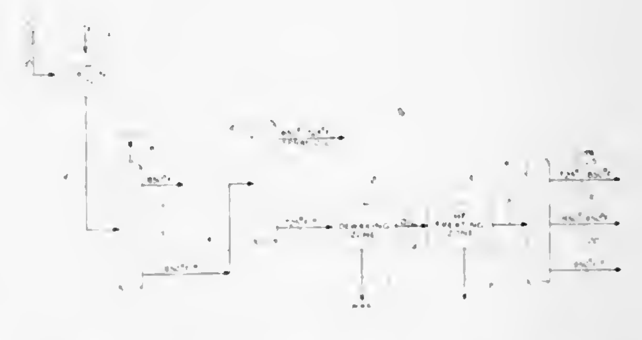
Catalytic conversion of hydrocarbons is carried out by contacting the same with a family of crystalline zeolites designated as ZSM–5 having the composition expressed as mol ratios of oxides as follows:

$$0.9\pm M_{2/n}O:Al_2O_3:ySiO_2:zH_2O$$

wherein M is at least one cation having a valence *n*, *y* is at least 5 and *z* is between 0–40, said aluminosilicates characterized by a specific X-ray powder diffraction pattern.

3,790,472
HYDROCRACKING PROCESS FOR PRODUCING LUBRICATING OILS

Robert J. White, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Continuation-in-part of application Ser. No. 260,933, June 8, 1972, which is a continuation-in-part of application Ser. No. 34,370, May 4, 1970, which in turn is a continuation-in-part of application Ser. No. 800,896, Feb. 20, 1969, all now abandoned. This application May 24, 1973, Ser. No. 363,778
Int. Cl. C01b *33/28;* **C10g** *13/02, 13/14*
U.S. Cl. 208—111 **9 Claims**



A process for producing lubricating oils which comprises hydrocracking in a hydrocracking zone at a temperature of 500° to 850° F. and a per-pass conversion of 20 to 90 volume percent a hydrocarbon feedstock containing a substantial amount of materials boiling above 700° F., in the presence of a hydrocracking catalyst comprising at least one hydrogenating component and a crystalline zeolitic molecular sieve cracking component selected from zeolite A, faujasite, zeolite X and zeolite Y, and further selected from components substantially in the decationized, ammonium or hydrogen form, and recovering from the hydrocracking zone a plurality of lubricating oil fractions boiling above 700° F. and having V.I.'s in the range of 90 to 120 and a V.I. spread of 10 units or less.

3,790,473
TETRAMETALLIC HYDROCARBON CONVERSION CATALYST AND USES THEREOF

Richard E. Rausch, Mundelein, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Continuation-in-part of application Ser. No. 142,079, May 10, 1971, now Patent No. 3,702,294, which is a continuation-in-part of applications Ser. No. 819,114, Apr. 24, 1969, now abandoned, and Ser. No. 807,910, Mar. 17, 1969, now Patent No. 3,740,328. This application Nov. 6, 1972, Ser. No. 304,177
Int. Cl. B01j *11/12;* **C10g** *35/08*
U.S. Cl. 208—139 **23 Claims**

A catalytic composite comprising a combination of catalytically effective amounts of a platinum or palladium component, an iridium component, a rhenium component and a tin component with a porous carrier material is disclosed. The principal utility of this composite is in the conversion of hydrocarbons, particularly in the reforming of a gasoline fraction. A specific example of the disclosed catalytic composite is a combination of a platinum component, an iridium component, a rhenium component, a tin component, and a halogen component with an alumina carrier material in amounts sufficiently to result in

a composite containing, on an elemental basis, about 0.01 to 2 wt. percent platinum, about 0.01 to about 2 wt. percent iridium, about 0.01 to 2 wt. percent rhenium, about 0.01 to 5 wt. percent tin and about 0.1 to 3.5 wt. percent halogen.

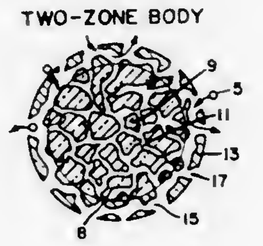
3,790,474
METHOD OF PURIFYING OILS CONTAINING LIQUID AND SOLID IMPURITIES

James W. Moffitt, 7 Fairwood,
Pleasant Ridge, Mich. 48069
No Drawing. Filed May 10, 1973, Ser. No. 358,941
Int. Cl. C10m *11/00*
U.S. Cl. 208—181 **7 Claims**

A process for removing solid and liquid impurities from used oils such as hydraulic oils, lubricating oils, quench oils, tramp oils, cutting oils and oils used in sharpening, finishing and grinding of metal tools and parts, comprising heating the oil, adding a small amount of an alkaline solution to the oil while stirring the oil, maintaining the treated oil at a heated temperature, subsequently adding an acid to the treated oil mixture while stirring the oil to thoroughly mix the acid with the oil and maintaining the treated oil in a settling container at a heated temperature for a period of at least about 10 hours in order to allow the solids and water to settle to the bottom. The purified oil which remains on top can then be withdrawn. Sodium hydroxide and sulfuric acid are preferred reactants.

3,790,475
POROUS GLASS SUPPORT MATERIAL

David L. Eaton, Big Flats, N.Y., assignor to
Corning Glass Works, Corning, N.Y.
Original application Mar. 27, 1972, Ser. No. 238,258. Divided and this application Mar. 30, 1973, Ser. No. 346,607
Int. Cl. B01d *15/08*
U.S. Cl. 210—31 C **2 Claims**



Porous glass support materials having two essentially distinct zones of porosity. An outer surface zone comprises an outer shell with relatively large pores of controlled diameter while an inner zone comprises a core portion having relatively smaller pores of controlled diameter. The materials are made by subjecting porous glass bodies of substantially uniform pore size to a carefully controlled alkali etching cycle in which only the outer zone of the bodies have their pores enlarged. The thus treated bodies are particularly useful as chromatographic support materials which, in use, demonstrate a desirably low height equivalent theoretical plate (HETP).

3,790,476
LATICES FOR INDUSTRIAL WASTE COAGULATION

F. Steven Spoerle, Oak Lawn, and Elmer W. Palmer, Woodridge, Ill., assignors to Nalco Chemical Company, Chicago, Ill.
No Drawing. Filed Nov. 22, 1971, Ser. No. 200,848
Int. Cl. B01d *21/02;* **C02b** *1/20*
U.S. Cl. 210—47 **10 Claims**

Thickening or dewatering solids from industrial wastes comprising the addition of an aqueous solution of a water-soluble vinyl addition polymer made by the inversion of a polymeric latex.

3,790,477
LATICES FOR SEWAGE COAGULATION

Ralph R. Nielsen, Chicago, and William R. Busler, Park Forest, Ill., assignors to Nalco Chemical Company, Chicago, Ill.
No Drawing. Continuation-in-part of abandoned application Ser. No. 201,398, Nov. 23, 1971. This application Feb. 2, 1972, Ser. No. 222,998
Int. Cl. B01d *21/02;* **C02b** *1/20*
U.S. Cl. 210—47 **8 Claims**

Thickening or dewatering solids from sewage comprising the addition of an aqueous solution of a water-soluble vinyl addition polymer made by the invention of a polymeric latex.

3,790,478
SYNTHETIC LUBRICANT FOR AERO GAS TURBINES

Stanley George Rudston, West Molesey, Surrey, Derek Clark Byford, Staines, and Peter Michael Blanchard, West Molesey, Surrey, England, assignors to The British Petroleum Company Limited, Moor Lane, London, England
No Drawing. Continuation of abandoned application Ser. No. 652,696, July 12, 1967. This application Apr. 30, 1971, Ser. No. 139,183
Int. Cl. C10m *1/34, 1/46*
U.S. Cl. 252—34 **12 Claims**

An aero gas turbine lubricant having outstanding oxidation stability, corrosion resistance and load carrying ability and good low temperature fluidity is based on a hindered ester and contains an alkylated diphenylamine and an alkylated phenyl naphthylamine as antioxidants, a copper passivator, a dispersant polymer and a neutral organic phosphate as a load-carrying additive. A lead corrosion inhibitor and a hydrolytic stability improver may also be included in the lubricant.

3,790,479
LITHIUM BASE LUBRICATING GREASE METHOD

Gordon H. Hommer, Wallingford, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.
Filed Dec. 21, 1970, Ser. No. 100,249
Int. Cl. C10m *5/14*
U.S. Cl. 252—41 **1 Claim**

A method is disclosed for the low temperature preparation of a lithium base lubricating grease having the desired properties wherein the need for either shearing or milling is eliminated. Furthermore, the resulting grease has excellent mechanical stability. This method comprises raising the top temperature of the saponified mixture to within a specified narrow temperature range. The latter is related to the aniline point of the lubricating oil in the composition whose top temperature falls within the aforementioned temperature range.

3,790,480
MINERAL OIL COMPOSITION

John B. Campbell, Hockessin, and Edward Fuller Cluff and Christos Sarafidis, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 29, 1972, Ser. No. 319,898
Int. Cl. C10m *1/18*
U.S. Cl. 252—59 **10 Claims**

A mineral oil composition comprising a neutral, nonvolatile, mineral oil base and, as a viscosity index improver, an effective amount, for example, 0.5–3 weight percent, of an essentially amorphous, oil soluble copolymer having random repeat units derived, on a weight basis with the combined weights totalling 100%,

(a) 25–55% from ethylene,
(b) 37–75% from a terminally unsaturated straight chain monoolefin having 3–12 carbon atoms,
(c) 0.1–10% from a non-conjugated diolefin having 5–18 carbon atoms and only one polymerizable double bond, and

(d) 0.1–2% from a non-conjugated diolefin having 5–18 carbon atoms and two polymerizable double bonds,

said copolymer having an inherent viscosity of 0.7–1.8 as measured on a 0.1 weight percent solution in tetrachloroethylene at 30° C. and a Wallace Plasticity of at least 16, said copolymer further characterized as exhibiting superior processability and isolability and good shear stability.

3,790,481

SYNTHETIC LUBRICANTS FOR AERO GAS TURBINES

Derek Clark Byford, Staines, and Peter Michael Blanchard, West Molesey, England, assignors to The British Petroleum Company Limited, Moor Lane, London, England

No Drawing. Continuation of abandoned application Ser. No. 652,697, July 12, 1967. This application Apr. 30, 1971, Ser. No. 139,184

Int. Cl. C10m *1/10*

U.S. Cl. 252—49.9 **9 Claims**

An aero gas turbine lubricant having outstanding thermal and oxidation stability. corrosion resistance and load-carrying ability and good low temperature fluidity is based on a hindered ester and contains an aromatic amine antioxidant, a copper passivator of the azole or salicylaldehyde semicarbazone type and a neutral phosphate and a dialkyl phosphite as load carrying additives. A lead corrosion inhibitor and a hydrolytic stability improver may also be included in the lubricant.

3,790,482

ENZYME-CONTAINING DETERGENT COMPOSITIONS

Jack D. Jones, Cincinnati, and Everett J. Collier, New Burlington, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Continuation of abandoned application Ser. No. 721,081, Apr. 12, 1968. This application June 9, 1971, Ser. No. 151,552

Int. Cl. C11d *1/14, 1/37, 7/42*

U.S. Cl. 252—525 **1 Claim**

Alkaline detergent compositions containing an organic detergent and an alkaline builder salt in a weight ratio of about 1:30 to about 4:1 and an enzymatic mixture of about 0.001 to about 10% of a *Bacillus subtilus*-derived Carlsberg subtilisin, an X-ray mutated *Bacillus subtilus*-derived subtilisin or mixture thereof and about 0.0003 to about 3% of an α-amylase. A weight ratio of alkaline protease to α-amylase of about 30:1 to about 3:1 is employed to provide detergent compositions having excellent cleaning and stain removal properties.

3,790,483

LUBRICATING OILS CONTAINING A VINYL AROMATIC, C_2 TO C_8 OLEFIN AND C_{12} TO C_{20} OLEFIN TERPOLYMER

W. R. Song, Maplewood, and Norman Jacobson, East Brunswick, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed June 28, 1972, Ser. No. 267,211

Int. Cl. C01m *1/38*

U.S. Cl. 252—59 **7 Claims**

An oil-soluble terpolymer, useful as a viscosity index improver and pour point depressant for lubricating oils, is made by a Ziegler-Natta synthesis, preferably hydrogen moderated, from monomers comprising 2 to 50 mole percent of a vinyl aromatic hydrocarbon; from 1 to 49 mole percent of a C_2–C_8 straight-chain α-olefin; and 10 to 97 mole percent of a substantially linear C_{12}–C_{20} α-olefin having not less than 9 unsubstituted methylene radicals in a straight chain following the olefinic carbon atoms. The terpolymer is amorphous in structure as determined by X-ray and differential thermal analyses, is essentially free of olefinic unsaturation and has a number average molecular weight equal to or greater than 10,000.

3,790,484

FRAGRANCE-IMPARTING LAUNDERING COMPOSITION

Rhio H. Blair, Santa Ana, Calif., assignor to Edwin O. Blalock, Los Angeles, Calif.

No Drawing. Filed Jan. 18, 1972, Ser. No. 218,827

Int. Cl. C11d *3/50*

U.S. Cl. 252—89 **2 Claims**

Residual fragrance is imparted to laundered fabric articles by adding to such articles in course of laundering and during or at the inception of final rinse an aqueous composition comprising a fragrant oil, a cationic agent such as a dialkyl fatty quaternary ammonium halide, an organic amine base, and a non-ionic detergent.

3,790,485

PROCESS FOR PRODUCING ELECTROPHOTOGRAPHIC LIQUID DEVELOPER

Masamichi Sato and Yasuo Tamai, Asaka, Japan, assignors to Xerox Corporation, Stamford, Conn.

No Drawing. Filed Feb. 3, 1972, Ser. No. 223,366

Int. Cl. G03g *9/04*

U.S. Cl. 252—62.1 **8 Claims**

A process for producing electrophotographic liquid developer containing finely divided powdered polypeptide polymeric particles which comprise preparing an intimate mixture of the said polypeptide material and a ferromagnetic powder material in an aqueous solution subjecting said mixture to a wet process crushing in a carrier liquid and, after said mixture is dried, removing said ferromagnetic powder from said mixture by means of a magnetic field.

3,790,486

THERMAL CATALYTIC CHEMICAL REACTION OF NON-NEWTONIAN FLUIDS

Alvin R. Saltzman, Bradley Beach, N.J., and Bruno T. Plizak, Philadelphia, Pa., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Oct. 28, 1971, Ser. No. 193,549

Int. Cl. C09k *3/02*

U.S. Cl. 252—77 **5 Claims**

Non-Newtonian fluids suitable for use as a coolant comprise various types of collagen reactant materials prepared in aqueous solution with catalytic materials. The fluids exhibit thermal catalytic chemical reaction when subjected to heat. The fluids in addition have a viscosity which is time dependent and subject to change without the necessity of heat.

3,790,487

EROSION-INHIBITED FUNCTIONAL FLUIDS

Merwyn L. Burrous, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Nov. 5, 1971, Ser. No. 196,179

Int. Cl. C09k *3/02*

U.S. Cl. 252—78 **13 Claims**

The addition of a small amount of phosphonium or ammonium salt of the formula

$$(R)_nNH^+_{4-n}X^- \text{ or } (R)_nPH^+_{4-n}X^-$$

where X^- is halide or acetate, R is C_1–C_{50} hydrocarbyl which may be the same or different, and *n* is an integer from 0 to 4, to an energy-transmitting phosphate ester based functional fluid severely reduces the streaming current of the fluid. The streaming current is associated with erosion of control valves in the fluid-carrying system.

3,790,488

CLEANING COMPOSITION

Hirokazu Iino, 4/40 Kasumi-cho, Nishinomiya, Japan

No Drawing. Filed Jan. 2, 1973, Ser. No. 320,477

Int. Cl. C11d *3/20*

U.S. Cl. 252—89 **13 Claims**

A cleaning composition comprising an aqueous medium having dispersed therein a 7:3 to 3:7 weight ratio mixture

of a polar high molecular weight substance and a rubber, the concentration of said mixture being in the range of 10 to 60% by weight, based on the weight of the composition, and said rubber being at least one species selected from the group consisting of natural rubber, polybutadiene rubber and styrene-butadiene rubber.

3,790,489

PAINT STRIPPING COMPOSITION

Robert H. Shoemaker, Royal Oak, and William G. Wood, Grosse Pointe Park, Mich., assignors to Kolene Corporation, Detroit, Mich.

No Drawing. Filed Dec. 1, 1971, Ser. No. 203,880

Int. Cl. C11d *7/54*

U.S. Cl. 252—103 **10 Claims**

A paint stripping compound for use fused at elevated temperatures which has a caustic base of an alkali metal hydroxide, an alkali metal nitrate, an alkali metal chloride, a catalyst selected from the group of alkali metal permanganates, manganese dioxide and Cr_2O_3, and preferably an alkali metal carbonate. The compound is fused and maintained at temperature between 800 degrees F. and 900 degrees F. for stripping. Periodically the temperature is reduced to about 700 degrees F. for desludging. Preferably the material is provided as a uniform solid solution.

3,790,490

EUROPIUM AND MANGANESE ACTIVATED STRONTIUM CHLOROSILICATE PHOSPHOR

Ranajit K Datta, East Cleveland, and Thomas W. Luscher, Wickliffe, Ohio, assignors to General Electric Company

Filed Mar. 3, 1971, Ser. No. 120,511

Int. Cl. C09k *1/54*

U.S. Cl. 252—301.4 F **1 Claim**

A strontium chlorosilicate phosphor, $Sr_5Si_4Cl_6O_{10}$ activated by europium and manganese is described. The phosphor produces a bright green emission when excited by 2537 and 3650 Angstrom radiation.

3,790,491

SPINNING SOLUTION COMPRISING A POLYAMIDE, POLYESTER OR POLYOLEFIN AND AN OPTICAL BRIGHTENER

Gaudenz Girell di Giovanoel, Arlesheim, Basel-Land, and Reinhard Zweidler, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application Nov. 19, 1969, Ser. No. 878,214, now Patent No. 3,635,959. Divided and this application July 22, 1971, Ser. No. 165,381

Int. Cl. D06l *3/12*

U.S. Cl. 252—301.2 W **1 Claim**

2-4-(3-alkyl - 4 - phenyl-v-triazole) - styryl benzoxazoles and -benzothiazoles are brighteners for organic material. The compounds are obtained from the oximes of the coupling products of p-diazo-2-styrylbenzoxazoles and benzylalkylketones through splitting off water.

3,790,492

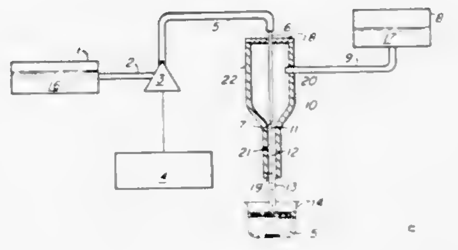
METHOD FOR PRODUCTION OF UNIFORM MICROSPHERES

Mack J. Fulwyler, Los Alamos, N. Mex., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Mar. 11, 1971, Ser. No. 123,362

Int. Cl. C09k *3/00*

U.S. Cl. 252—301.1 R **1 Claim**



Uniform microspheres having any desired diameter within the range of about 2 to 40 microns are readily produced by introducing a laminar jet of a core liquid carrying material in solution or suspension within a laminar flowing sheath liquid, said core liquid jet being periodically disturbed, allowing the droplets of core liquid thus produced to remain suspended within the sheath liquid for a time sufficient for the material suspended or dissolved in said droplets to form condensed microspheres, and removing said microspheres from the sheath liquid. The variation in diameter of the microspheres is about 2%, which is near the accuracy limitation of the measuring instrumentation.

3,790,493

POST OXIDATION PROCESS FOR URANIUM DIOXIDE RICH COMPOSITIONS

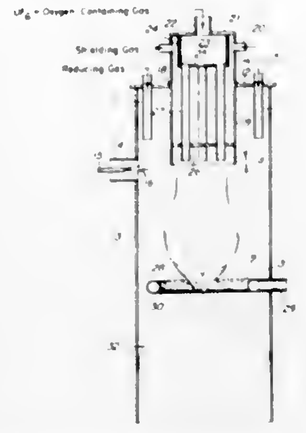
Abdul G. Dada, William R. De Hollander, and Robert J. Sloat, San Jose, Calif., assignors to General Electric Company

Filed Apr. 6, 1971, Ser. No. 131,685

Int. Cl. C01g *43/02*

U.S. Cl. 252—301.1 R **42 Claims**

This invention presents a process for conversion of gaseous uranium hexafluoride to an oxide product of uranium by introducing to a reaction zone in the presence of an active flame maintained in the reaction zone a first gaseous reactant comprising a mixture of uranium hexafluoride and an oxygen-containing carrier gas and a second gaseous reactant comprising a reducing gas and temporarily separating the first and second gaseous reactants with a shielding gas which temporarily prevents substantial mixing and reaction between these gaseous reactants. The first and second gaseous reactants ultimately react to give a particulate uranium dioxide rich composition in the presence of residual reducing gas. An oxygen-containing gas as a third gaseous reactant is introduced at a time when the uranium hexafluoride conversion to the uranium dioxide rich composition is substantially complete. This results in oxidizing the uranium dioxide rich composition to a higher oxide of uranium with conversion of the residual reducing gas to its oxidized form. This process is adaptable to yield oxide products of uranium in any state of oxidation between uranium dioxide (UO_2) and uranium tritaoctoxide (U_3O_8).



3,790,494
SILICA MODIFIED CALCIUM TUNGSTATE PHOSPHOR COMPOSITION

Francis Nathan Shaffer, Tonawanda, Pa., assignor to GTE Sylvania Incorporated

No Drawing. Continuation-in-part of abandoned application Ser. No. 30,461, Apr. 21, 1970. This application Sept. 24, 1971, Ser. No. 183,516

Int. Cl. C09k *1/28*

U.S. Cl. 252—301.5 **5 Claims**

Silica-modified, lead-activated calcium tungstate phosphor compositions having a Ca:W ratio of substantially 1 and substantially all calcium and tungsten present as calcium tungstate are disclosed wherein the phosphor contains, as a modifier, silicon dioxide in an amount sufficient to produce increased brightness to about 0.03 mole per mole of calcium tungstate and as an activator, lead in an amount sufficient to produce luminescence to about 0.03 mole per mole of calcium tungstate.

3,790,495
PROCESS FOR THE MANUFACTURE OF COLLOIDAL FIBROUS BOEHMITE

Ernst Podschus, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Jan. 31, 1972, Ser. No. 222,388

Claims priority, application Germany, Feb. 3, 1971, P 21 04 897.5

Int. Cl. B01j *13/00*

U.S. Cl. 252—313 R **6 Claims**

The present invention relates to a process for the production of colloidal fibrous boehmite [AlO(OH)] wherein active aluminum oxide having a residual water content of from 2 to 15% by weight obtained by incomplete dehydration of hydrargillite is reacted in an aqueous slurry with a monobasic organic acid to give the corresponding basic Al-salt and subsequently said basic Al-salt is subjected to hydrothermal treatment at 120–200° C. and 2–15 atmosphere pressure in an aqueous suspension having a concentration of from 2 to 20% by weight of Al_2O_3 until a colloidal fibrous boehmite solution has been formed.

3,790,496
ALKYLENE POLYAMINE POLYMERIC REACTION PRODUCT CORROSION INHIBITOR

Rudolf H. Hausler, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Sept. 30, 1971, Ser. No. 185,451

Int. Cl. C23f *11/14*

U.S. Cl. 252—392 **12 Claims**

A corrosion inhibiting composition of (1) a hydrocarbon substituted alkylene polyamine and (2) polymeric reaction product of an epihalohydrin compound and an aliphatic amine. The composition is incorporated in any substrate which contacts metal and thereby serves to inhibit corrosion of the metal.

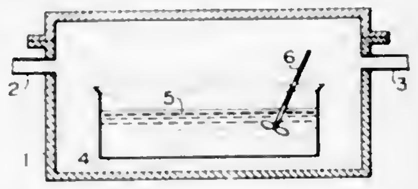
3,790,497
METHOD FOR PRODUCING WATER CONTAINING MICROCAPSULES

Hiroshi Sato, Munehiro Okumura, and Masujiro Arita, Hiroshima, Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan

Filed Nov. 24, 1971, Ser. No. 201,896

Int. Cl. B01j *13/02;* **B44d** *1/02*

U.S. Cl. 252—316 **24 Claims**



Water containing microcapsules having wall superior in strength, thermal resistance as well as water retainability are produced by emulsifying an aqueous solution containing water soluble oxyacid salt of aluminium and other specific elements or hydrate thereof in an oily film forming liquid containing an organic acid to obtain a water-in-oil emulsion, re-emulsifying the emulsion in water containing a surface active agent to obtain an oil-in-water emulsion and hardening the film forming liquid layer of said oil-drops to form capsule wall. The microcapsules are useful for imparting antiflammability to fibers, films and so on.

3,790,498
MEMORY LIQUID CRYSTAL COMPOSITIONS

Yoshio Katagiri and Yoshio Miyata, Sendai, Japan, assignors to Kabushiki Kaisha Daini Seikosha, and Kabushiki Kaisha Seikosha, both of Tokyo, Japan

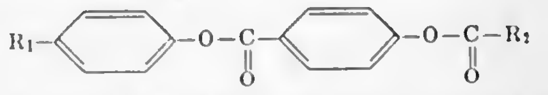
No Drawing. Filed Nov. 22, 1971, Ser. No. 201,215

Claims priority, application Japan, Dec. 28, 1970, 46/120,048

Int. Cl. C02f *1/16*

U.S. Cl. 252—408 **6 Claims**

Memory liquid crystal compositions containing from 80–95% by weight of one or more nematic crystal liquid compounds of the formula



wherein R_1 and R_2 are alkyl and alkoxy and may be the same or different, and 5–20% by weight of a carboxylic acid ester of cholesterol, sitosterol or stigmasterol are useful in display devices at room temperature.

3,790,499
CATALYST FOR THE PREPARATION OF POLYETHER-TYPE POLYMERS

Anne C. Udding, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed July 23, 1971, Ser. No. 165,705

Claims priority, application Netherlands, July 30, 1970, 7011318

Int. Cl. C08g *23/14*

U.S. Cl. 252—431 R **4 Claims**

Cyclic ethers are polymerized in the presence of a sulfur-containing catalyst formed by reacting a compound of a trivalent metal of the formula

$$(RO)(RO)M'—OX$$

with a compound of a divalent metal of the formula

$$YO—M—Z$$

wherein M′ is a trivalent metal of Groups III to VI and VIII of the periodic system; M is a divalent metal or a metal-containing group, the metal of which has two free valances, of Groups I, II and IV to VIII of the periodic system; Z is an OR group or a hydrocarbylsulfinyloxy group; one of the symbols X and Y represents an R group, the other representing a hydrocarbylsulfinyl group; and R, which may be similar or dissimilar, denotes a monovalent hydrocarbyl group of 1 to 6 carbon atoms. The polymeric products are useful plastics or rubbers.

3,790,500
OXIDATIVE DEHYDROGENATION CATALYST

Darrell W. Walker, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed May 6, 1971, Ser. No. 140,968

Int. Cl. B01j *11/82*

U.S. Cl. 252—437 **5 Claims**

Organic compounds are dehydrogenated to compounds having a higher degree of unsaturation by contacting the feedstock in the vapor phase in the presence of an oxygen-containing gas with a catalyst containing at least one of the elements nickel, cobalt or iron in association with tin, phosphorus, and arsenic together with sufficient combined oxygen to satisfy the valence requirements of the components of the catalyst. Optionally, the catalytic compositions can contain minor amounts of alkali metal such as potassium. Representative of such conversions is the oxidative dehydrogenation of butane to butenes and butadiene. The conversion products are valuable compounds particularly useful as intermediates for the preparation of polymeric materials such as synthetic rubbers and the like.

3,790,501
OXIDATIVE DEHYDROGENATION CATALYST

Darrell W. Walker, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed May 6, 1971, Ser. No. 140,967

Int. Cl. B01j *11/82*

U.S. Cl. 252—437 **6 Claims**

Organic compounds are dehydrogenated to compounds having a higher degree of unsaturation by contacting the feedstock in the vapor phase in the presence of an oxygen-containing gas with a catalyst comprising at least one of nickel, cobalt or iron in association with tin, phosphorus and an alkali metal. Representative of such conversions is the oxidative dehydrogenation of, e.g., butane to butenes and butadiene. The conversion products are valuable compounds particularly useful as intermediates for the preparation of polymeric materials such as synthetic rubbers and the like.

3,790,502
CATALYST AND METHOD OF MANUFACTURE

Joseph W. Nemec, Rydal, Pa., and Francis W. Schlaefer, Pennsauken, N.J., assignors to Rohm & Haas Company, Philadelphia, Pa.

Application Dec. 13, 1968, Ser. No. 783,641, now Patent No. 3,637,835, which is a continuation-in-part of applications Ser. No. 555,247, June 6, 1966, now abandoned, and Ser. No. 615,880, Feb. 6, 1967, now Patent No. 3,527,716. Divided and this application Sept. 21, 1971, Ser. No. 182,347

Int. Cl. B01j *11/74*

U.S. Cl. 252—439 **11 Claims**

A catalyst, a method for its preparation, and a method of preparing catalytic cobalt molybdate, useful for the oxidation of olefins to the corresponding unsaturated aldehydes and unsaturated carboxylic acids are provided. The solid catalyst is in the form of particles, each particle comprising a fluxed mixture of (a) calcined cobalt molybdate particles, (b) a telluride of arsenic, bismuth or antimony, and (c) a molybdenum compound, such as molybdenum trioxide, which is volatile to an extent that slow migration within the pellet occurs at elevated temperatures. The volatile molybdenum compound, non-catalytic in itself, surprisingly gives a much longer productive life to the catalyst; the catalyst, in spite of the diluent, is more productive per unit of time; and the added physically soft compound does not make the particles fragile. In use, the tellurium content diminishes, and the composition of the catalyst changes slowly in other ways.

3,790,503
METHOD OF MANUFACTURING A GERMANIUM CATALYST

Daniel E. McCartney, Mount Prospect, and Roy T. Mitsche, Island Lake, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 17,862, Mar. 9, 1970. This application Mar. 27, 1972, Ser. No. 238,616

Int. Cl. B01j *11/06, 11/12*

U.S. Cl. 252—442 **12 Claims**

A method of catalyst manufacture. An aqueous solution of a weak base and a germanium compound is dissolved in an acidic alumina sol at below gelation temperature and the resulting mixture treated at an elevated temperature effecting hydrolysis of the weak base and gelation of the mixture. The weak base is preferably hexamethylenetetramine and the germanium compound is germanium dioxide or a compound hydrolyzable thereto. The product is further composited with a platinum group metal to yield an improved reforming catalyst.

3,790,504
PLATINUM-IRIDIUM-ZINC CATALYST FOR THE CONVERSION OF HYDROCARBONS

Pierre Duhaut, Le Vesinet, Jean Guillemat, Chatou, and Jean Miquel, Paris, France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison, France

No Drawing. Filed Feb. 24, 1972, Ser. No. 229,164

Claims priority, application France, Mar. 3, 1971, 7107391

Int. Cl. B01j *11/12, 11/78;* **C10g** *35/08*

U.S. Cl. 252—466 PT **30 Claims**

An improved catalyst for carrying out such reactions as reforming, hydrogenation, dehydrogenation, isomerization, aromatization and other hydrocarbon conversions, which comprises platinum and iridium incorporated in a carrier such as alumina, silica, magnesia or alumina-silica and a critical amount of zinc or of a zinc compound.

3,790,505
LOW TEMPERATURE METHANOL SYNTHESIS CATALYST

Thomas D. Casey, Fern Creek, and George M. Chapman, Louisville, Ky., assignors to Catalysts and Chemicals, Inc., Louisville, Ky.

No Drawing. Continuation-in-part of abandoned application Ser. No. 787,234, Dec. 26, 1968. This application May 4, 1971, Ser. No. 140,244

Int. Cl. B01j *11/22*

U.S. Cl. 252—463 **12 Claims**

Until recently low temperature methanol synthesis catalysts have been virtually unknown. A zinc, copper and chromium catalyst has been used as a low temperature methanol synthesis catalyst, but alumina has been discounted as having no practical interest as an ingredient in a methanol synthesis catalyst. However, under certain conditions alumina can be used to advantage in such catalysts.

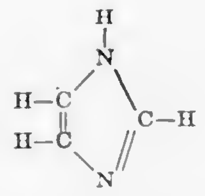
ERRATUM

For Class 252—301 R see:
Patent No. 3,790,440

3,790,506
EPIHALOHYDRIN RUBBER VULCANIZATION

Henry C. Tillson, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.
No Drawing. Filed Oct. 26, 1972, Ser. No. 301,002
Int. Cl. C08g *43/00, 51/84*
U.S. Cl. 260—2 A **6 Claims**

Epihalohydrin polymers can be rapidly cross-linked by heating with imidazole having the formula



to produce useful vulcanizates less subject to compression set.

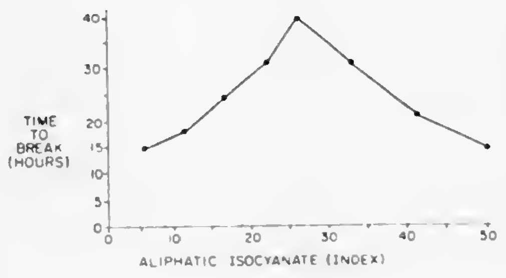
3,790,507
PLASTIC BONE COMPOSITION

Milton Hodosh, Providence, R.I., assignor to Research Corporation, New York, N.Y.
Original application Mar. 10, 1969, Ser. No. 805,400, now Patent No. 3,609,867, dated Oct. 5, 1971. Divided and this application July 6, 1970, Ser. No. 60,983
Int. Cl. C08f *45/04, 47/10*
U.S. Cl. 260—2.5 R **4 Claims**

A composition comprising as its basic ingredients a mixture of grated anorganic bone and an acrylic polymer, such as polymethacrylate, for use as dental implants, as well as for implants in other parts of the body, and as a coating for metals which may be implanted in the human body for dental purposes, orthopedic protheses, neurosurgery and others.

3,790,508
LIGHT-STABLE POLYURETHANE FOAM FORMED BY REACTION OF A POLYOL AND A MIXTURE OR AROMATIC AND ALIPHATIC POLYISOCYANATES

Rocco P. Triolo, Broomall, Pa., assignor to Scott Paper Company
Filed Mar. 20, 1972, Ser. No. 236,092
Int. Cl. C08g *22/18*
U.S. Cl. 260—2.5 AT **4 Claims**

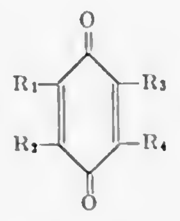


A light-stable polyurethane foam is disclosed comprising the reaction product of a polyol, an aliphatic isocyanate and an aromatic isocyanate. The reaction is carried out in the presence of a blowing agent and a catalyst.

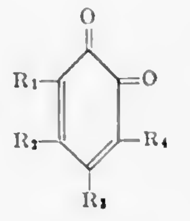
3,790,509
PROCESS FOR THE PRODUCTION OF SYNTHETIC RESINS WHICH CONTAIN ISOCYANURATE GROUPS

Hans-Joachim Diehr, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed June 1, 1972, Ser. No. 258,556
Claims priority, application Germany, June 3, 1971, P 21 27 502.5
Int. Cl. C08g *33/02*
U.S. Cl. 260—2.5 AW **4 Claims**

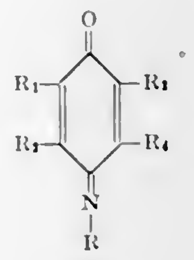
A process for the production of cellular synthetic resins which contain isocyanurate groups by polymerization of polyisocyanates in the presence of isocyanate polymerization catalysts is provided, characterized in that polymerization is carried out using a quinone of the formulae



(I)



(II)

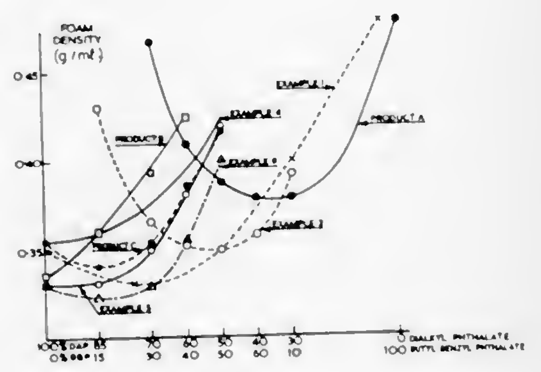


(III)

or mixtures thereof in which R_1, R_2, R_3 and R_4 are the same or different and represent hydrogen, hydrocarbon radicals containing 1 to 6 carbon atoms, halogen atoms or a nitrile radical or R_1 and R_2 and/or R_3 and R_4 represent aromatically condensed cyclic hydrocarbon radicals and R represents hydroxyl, halo or alkylamino substituted aromatic radicals containing 6 to 14 carbon atoms.

3,790,510
FOAMABLE PLASTISOL COMPOSITION CONTAINING A FOAM STABILIZER, AND FOAMED COMPOSITION OBTAINED THEREFROM

William Tait Flannigan, Kilwinning, Scotland, assignor to Imperial Chemical Industries Limited, London, England
Filed Nov. 13, 1972, Ser. No. 305,659
Claims priority, application Great Britain, Nov. 22, 1971, 54,120/71
Int. Cl. C08j *1/16*
U.S. Cl. 260—2.5 P **6 Claims**



New organopolysiloxane pro-foamers for use in thermoplastic resin plastisols, especially vinyl chloride polymer plastisols, consisting of mono-, tri- and tetrafunctional siloxanyl units in specific ratio ranges, plastisols containing these and foams produced therefrom.

3,790,511
GUM ERASER

Fumio Horie, 22–2, 6-chome, Honkomagome, Bunkyo-ku, Tokyo-to, Japan
No Drawing. Filed July 12, 1971, Ser. No. 162,024
Claims priority, application Japan, July 13, 1970, 45/60,872; Dec. 24, 1970, 45/116,683; June 15, 1971, 46/42,120
Int. Cl. C08c *17/28;* **C08d** *9/04*
U.S. Cl. 260—5 **3 Claims**

Gum eraser of an improved quality which is composed of a base rubber material and vulcanized rubber powder particles uniformly dispersed in the base rubber material.

3,790,512
POLYAMIDE RESIN-DYE COMPOSITIONS AND METHODS OF MAKING THE SAME

Edgar R. Wagner, 11 E. 32nd St. 10016, and Charles W. Gould, 65 Central Park W. 10023, both of New York, N.Y.
No Drawing. Original application Dec. 7, 1970, Ser. No. 95,895, now Patent No. 3,743,622. Divided and this application Mar. 13, 1973, Ser. No. 340,650
Int. Cl. A61k *7/12;* **C08g** *51/04*
U.S. Cl. 260—14 **8 Claims**

A resin-dye complex for topical application to human and non-human keratinous materials and synthetic fibers, said complex being made of a polyamide-polyamine compound reacted with a heat-reactive phenolic material having appreciable alcohol solubility, said resulting resin being complexed with a dye.

3,790,513
THERMOSETTING ACRYLIC POLYMER POWDER COATING COMPOSITIONS

Claus Victorius, Media, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Dec. 27, 1971, Ser. No. 212,738
Int. Cl. C08g *37/32*
U.S. Cl. 260—15 **10 Claims**

The thermosetting acrylic polymer powder coating composition comprises finely divided particles having a diameter of 1–100 microns wherein the product particles are a bend of

(A) 70–95% by weight of an acrylic polymer of methyl methacrylate, a soft constituent which is either an alkyl acrylate or an alkyl methacrylate having 2–12 carbons in the alkyl group, a hydroxy alkyl acrylate or a hydroxy alkyl methacrylate having 2–4 carbon atoms in the alkyl groups, and an α,β-ethylenically unsaturated carboxylic acid such as methacrylic acid that has at least 50% of the carboxyl groups neutralized with an aliphatic amine having a given boiling point range;
(B) 5–30% by weight of an alkylolated melamine formaldehyde;

the powder composition can contain pigments and dyes;

The novel thermosetting acrylic polymer powder coating composition is particularly useful as an exterior finish for automobiles and trucks.

3,790,514
AMPHOTERIC STRENGTHENING AGENTS FOR PAPER

Peter Economou, Bedford, Mass., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Application July 22, 1969, Ser. No. 843,838, now Patent No. 3,660,338, which is a continuation-in-part of abandoned application Ser. No. 546,214, Apr. 29, 1966. Divided and this application Apr. 24, 1972, Ser. No. 247,200
Int. Cl. C08d *9/06*
U.S. Cl. 260—17.4 ST **13 Claims**

Normally liquid water-insoluble polysalt coacervates, wherein one of the component polymers is only weakly ionic, are water-soluble where they contain a sufficient amount of an ionization suppressor.

3,790,515
POURABLE, STORABLE POLYMERIZABLE LACTAM-CATALYST-ACTIVATOR MIXTURES

Heinz Jörg Rosenbaum, Krefeld-Gartenstadt, and Hans Rudolph, Krefeld-Bockum, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Mar. 8, 1972, Ser. No. 232,902
Claims priority, application Germany, Mar. 10, 1971, P 21 11 412.5
Int. Cl. C08g *20/18*
U.S. Cl. 260—18 N **8 Claims**

A pourable, storable, polymerizable lactam-catalyst-activator mixture comprising at least one lactam having more than 5 ring members, at least one alkaline catalyst and at least one activator being embedded in an organic material.

3,790,516
POURABLE, STORABLE, POLYMERIZABLE LACTAM-CATALYST-ACTIVATOR COMPOSITION

Heinz Jorg Rosenbaum, Hans Rudolph, Rolf Dhein, and Klaus Reinking, Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Mar. 8, 1972, Ser. No. 232,903
Claims priority, application Germany, Aug. 21, 1971, P 21 41 985.2
Int. Cl. C08g *20/18*
U.S. Cl. 260—18 N **9 Claims**

A pourable, polymerizable lactam-catalyst-activator mixture which is stable on storage comprising at least one lactam having more than 5 ring members, at least one activator and a member of the group consisting of an alkaline catalyst and an 8 to 90% by weight solution of an alkaline catalyst in a lactam having more than 5 ring members said catalyst or solution of the catalyst and optionally said activator being embedded in an organic material.

3,790,517
CRYSTALLINE POLYPROPYLENE COMPOSITIONS

Masaharu Koizumi, Otake, and Motoyasu Yusawa, Iwakuni, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan
No Drawing. Filed Aug. 7, 1972, Ser. No. 278,191
Int. Cl. C08f *19/14, 21/04*
U.S. Cl. 260—23 H **5 Claims**

A crystalline polypropylene composition consisting essentially of crystalline polypropylene and a molecular weight adjusting agent selected from the group consisting of halogen- or acid amide-substituted diphenyldisulfides, halogen- or acid amide-substituted bivalent metallic dithiophenates, and derivatives of such disulfides and dithiophenates, the molecular weight adjusting agent being incorporated in an amount of 0.0001–1% by weight based on the weight of the polypropylene, the composition having been heated at above 200° C.

3,790,518
CEMENT COMPOSITIONS

Herbert Jackson Shearing, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Mar. 11, 1971, Ser. No. 123,418
Claims priority, application Great Britain, Mar. 18, 1970, 13,039/70
Int. Cl. C08g *51/24*
U.S. Cl. 260—25 **8 Claims**

Cement compositions comprising a hydraulic cement, a silica filler, water, an organic polyisocyanate and the reaction product of castor oil with a hard resin derived from rosin. These compositions set rapidly and provide strong, durable flooring surfaces having good flexibility.

3,790,519

ASPHALTIC-PLASTOMERIC COMPOSITION

Harold J. Wahlborg, Baton Rouge, La., assignor to Copolymer Rubber & Chemical Corporation, Baton Rouge, La.

No Drawing. Filed Mar. 10, 1972, Ser. No. 233,744

Int. Cl. C08f *45/52, 15/04, 15/42*

U.S. Cl. 260—28.5 AS **14 Claims**

A blend of asphaltic material and plastomeric material, with or without polyethylene, in which the plastomeric material is in the form of an EPM or EPDM plastomer in which ethylene represents 75–90 mol percent of the ethylene-propylene content.

3,790,520

ACRYLATE POLYMER LATEX COMPOSITIONS WITH ALIPHATIC GLYCOLS AND/OR ALIPHATIC GLYCOL ETHERS

Robert Ludwig, Lorain, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 24,795, Apr. 1, 1970. This application May 3, 1972, Ser. No. 250,081

Int. Cl. C08f *45/24, 45/26*

U.S. Cl. 260—29.6 E **9 Claims**

Latices containing alkyl acrylate and alkyl methacrylate copolymers of more than 40% of said alkyl acrylate and/or alkyl methacrylate ester, having a homopolymer glass temperature in the range of less than 10° C., and about 15 to 55% of a vinylidene monomer copolymerizable therewith having a terminal $CH_2<$ group, the homopolymer of said vinylidene comonomer having a glass temperature greater than about 20° C., and greater than 10 parts per 100 parts of copolymer of an aliphatic glycol and/or glycol ether, provide clear, weather-resistant films deposited from the latex and are useful in improving the physical properties of paper and in adhering fabrics.

3,790,521

METHOD FOR MAKING NONCOLLOIDAL PARTICLES LIKE FIBERS AND POWDERS FROM LARGER GRANULES OF ETHYLENE/CARBOXYLIC ACID COPOLYMERS

Gordon D. McCann and Earl T. Dumitru, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 7, 1968, Ser. No. 765,635

Int. Cl. C08f *47/16*

U.S. Cl. 260—29.6 N **8 Claims**

Ethylene/carboxlylic acid copolymers of low acid content in the form of pieces such as molding granules are converted into noncolloidal particles in the nature of fine fibers, microscopic spheroids and powders by digesting in aqueous triethylamine; by digesting in aqueous alkaline media containing n-hexanol, microscopic spheroids and powders are obtained. Useful for preparation of plastic articles, coatings, and impregnations.

3,790,522

POLYEPOXIDE AND AMINE HARDENER COMPOSITIONS

Joseph Francis Bliss, Somerville, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 822,306, May 6, 1969. This application Nov. 9, 1971, Ser. No. 197,102

Int. Cl. C08g *51/04, 51/26*

U.S. Cl. 260—30.4 EP **11 Claims**

Compositions comprising a polyepoxide or an amine hardener and less than 0.1 percent by weight of a quaternary ammonium compound based on the weight of the polyepoxide or amine hardener employed which compositions resist filler hard-settle upon storage and are suitable precursor compositions for cured epoxide products.

3,790,523

PROCESS FOR PREPARING ACRYLIC ORGANOSOL COATING COMPOSITIONS

Gary W. Orvis, Flint, Mich., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Mar. 20, 1972, Ser. No. 236,443

Int. Cl. C08f *45/26, 47/10;* **C08j** *1/46*

U.S. Cl. 260—30.6 R **6 Claims**

The improved process for preparing an acrylic organosol coating composition comprises the following steps:

(1) blending together pigment, an organic dispersant, an acrylic organosol and a monomeric plasticizer;
(2) heating the pigment blend prepared above and applying a vacuum to remove solvent and form a powder;
(3) high shear mixing the powder by charging the powder into a roll mill to form pigment chips;
(4) forming a mill base by dissolving the pigment chips in an organic solvent; and
(5) blending the mill base with an acrylic organosol to form an acrylic organosol coating composition;

the resulting acrylic organosols are particularly useful as finishes for the exterior of automobiles and trucks.

3,790,524

PROCESS FOR PREPARING VULCANIZED EPIHALOHYDRIN POLYMERS

Yoshiomi Saito, Kamakura, Hiroshi Sasaki, Kawasaki, Mamoru Yamaguchi, Yokohama, Hideo Fukuda, Chigasaki, Humio Yamada, Yokohama, and Koji Kimura, Tokyo, Japan, assignors to The Japanese Geon Company, Ltd., Tokyo, Japan

No Drawing. Filed Apr. 20, 1971, Ser. No. 135,779

Claims priority, application Japan, Apr. 25, 1970, 45/35,119

Int. Cl. C08g *23/06, 51/60*

U.S. Cl. 260—45.8 N **8 Claims**

A process for preparing vulcanized epihalohydrin polymers which comprises heating at least a polymer selected from the group consisting of a homopolymer of epihalohydrin and a copolymer of epihalohydrin with at least one other copolymerizable monomer in the presence of (A) 0.1–10 parts by weight of at least one compound selected from the group consisting of polyalkylenepolyamines, polyalkylenepolyamine carbamates and thioureas which are optionally substituted with alkyl groups of 1–4 carbon atoms leaving at least one hydrogen atom unsubstituted, (B) 1–20 parts by weight of magnesium oxide and (C) 0.2–5 parts by weight of 2-mercaptobenzimidazole.

3,790,525

4-PIPERIDONE KETAL DERIVATIVES, THEIR PREPARATION AND THEIR USE AS STABILIZERS

Keisuke Murayama, Toshimasa Toda, Eiko Mori, Katsuaki Matsui, Tomoyuki Kurumada, Noriyuki Ohta, and Ichiro Watanabe, Tokyo, Japan, assignors to Sankyo Company Limited

No Drawing. Filed Jan. 19, 1972, Ser. No. 219,133

Int. Cl. C08f *45/60;* **C08g** *51/60*

U.S. Cl. 260—45.8 NZ **7 Claims**

A synthetic polymer composition stabilized against photo- and thermal-deterioration is disclosed. The stabilization is effected by incorporating in the composition an effective amount of certain 4-piperidone ketal derivatives.

3,790,526

POLYOLEFIN STABILIZED WITH 3,5-DISUBSTITUTED - 4 - HYDROXYBENZYL ALCOHOL OR AMINE

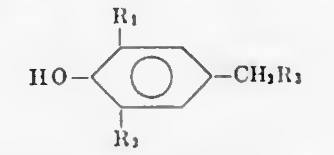
Gordon D. Brindell, Crystal Lake, and Rudy F. Macander, Cary, Ill., assignors to The Quaker Oats Company, Chicago, Ill.

No Drawing. Filed May 26, 1972, Ser. No. 257,177

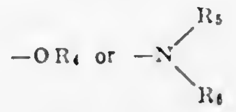
Int. Cl. C08f *45/58, 45/60*

U.S. Cl. 260—45.85 S **21 Claims**

Polyolefin normally tending to undergo oxidative deterioration stabilized with a compound of the following formula is disclosed:



wherein R_1 and R_2 are independently aralkyl or alkyl with the proviso that at least one aralkyl group contains no branching on the carbon alpha to the phenylene group or at least one alkyl group contains no branching on the carbon alpha to the phenylene group but has at least one branch on the carbon beta to the phenylene group R_3 is hydroxy,



R_4, R_5, and R_6 are alkyl, cycloalkyl, aralkyl, aryl, or alkaryl and R_6 may additionally be hydrogen.

3,790,527

FLEXIBLE TACK FREE SILICONE RESINS

Duane F. Merrill, Ballston Spa, N.Y., assignor to General Electric Company

No Drawing. Filed July 21, 1972, Ser. No. 274,111

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 R **8 Claims**

There is provided a flexible, tack-free silicone resin by hydrolyzing first a diorganodihalosilane in a hydrolysis mixture comprising water, acetone and a water-immiscible solvent and then in a second and independent step hydrolyzing and adding to the same mixture an organotrihalosilane. The silicone resin obtained by this hydrolysis procedure is the desired resin of the present case which is not brittle and dries to a non-tacky state irrespective of whether it is dried at room temperature or dried at elevated temperatures.

3,790,528

PROCESS FOR PREPARATION OF OXYBENZOYL POLYMER

Kiyoshi Tesaki and Michio Hiraoka, Tokyo, Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan

No Drawing. Filed Dec. 27, 1971, Ser. No. 212,730

Int. Cl. C08g *17/02*

U.S. Cl. 260—47 C **9 Claims**

A process for preparation of oxybenzoyl polymers comprising reacting m- or p-hydroxybenzoic acids having or not having substituent on aromatic nucleus or alkaline salts thereof with acid-halogenation agent in a mole rate of 1 mole of the said hydroxybenzoic acids or alkaline salts thereof for more than 0.5 mole of acid-halogenation agent.

3,790,529

PROCESS FOR PRODUCING CATIONIC WATER SOLUBLE POLYMER BY REACTING FORMALDEHYDE, AMINE, A POLYMER OF ACRYLAMIDE OR METHACRYLAMIDE AND PRECIPITATING SAID POLYMER WITH A WATER SOLUBLE SALT OF A POLYBASIC ACID

Kinji Fujimura, Tokyo, and Katsutoshi Tanaka, Chigasaki, Japan, assignors to Kabushiki Kaisha Kyoritsu Yuki Kogyo Kenkyusho, Tokyo, Japan

No Drawing Filed Oct. 5, 1971, Ser. No. 186,794

Int. Cl. C08g *9/04*

U.S. Cl. 260—72 R **8 Claims**

Formaldehyde and amine are caused to react with an aqueous solution of a water soluble polymer which is a homopolymer of acrylamide or methacrylamide, a copolymer of them, and a copolymer of acrylamide or methacrylamide with a copolymerizable monomer with them and the polymer has more than 50 mol percent of acid amide group, and more than 5 mol percent of the acid amide group is subjected to aminomethylation, thereby to obtain a cation modified polymer aqueous solution.

A water soluble salt such as a normal salt prepared from a metal such as K, Na, Li, or Mg and a dibasic acid is added to the cation modified polymer aqueous solution to separate a polymer. The resulting polymer is subjected to dehydration and drying at a temperature of below 80° C. thereby to prepare a cationic water soluble polymer.

3,790,530

METHOD OF MAKING AMIDE-IMIDE RESINS, AROMATIC AMIDES AND AROMATIC POLYAMIDE RESINS

Ernest C. Koerner, William W. Wareham, and Donny R. Disque, Fort Wayne, Ind., assignors to Phelps Dodge Magnet Wire Corporation, Fort Wayne, Ind.

No Drawing. Continuation-in-part of abandoned application Ser. No. 819,954, Apr. 28, 1969. This application Nov. 3, 1971, Ser. No. 195,502

Int. Cl. C08g *22/00*

U.S. Cl. 260—77.5 R **10 Claims**

A method of making essentially totally imidized polyamide-imide resins, aromatic amides, and other aromatic polyamide resins which can be applied to articles without the resins undergoing substantial chemical change as the resins are being applied, and intermediates formed during the performance of the method. Specific polyamide-imide resins which can be made in accordance with the method of the invention are those derived from tricarboxylic acids or anhydrides thereof, such as trimellitic acid or trimellitic acid anhydride, and a diisocyanate, such as p,p′-diphenyl methane diisocyanate. The method comprises an initial reaction under mild conditions and a subsequent reaction under more severe conditions.

3,790,531

HIGH MOLECULAR WEIGHT LINEAR COPOLYAMIDES CONTAINING OXAMIDE GROUPS

Geert Christoph, Eduard Radlmann, and Gunther Nischk, Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Nov. 26, 1971, Ser. No. 202,671

Claims priority, application Germany, Nov. 27, 1970, P 20 58 414.9

Int. Cl. C08g *20/20, 20/06*

U.S. Cl. 260—78 R **3 Claims**

New copolyamides which are obtained by cocondensation of dicarboxylic acids containing oxamide groups, cer-

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tain diamines, and aliphatic dicarboxylic acids and hexamethylene diamine, or a lactam. The copolyamides are useful for the production of filaments and films.

3,790,532

NOVEL CURED EPOXY RESIN COMPOSITION

Hideo Fukutani and Makoto Tokizawa, Tokyo, and Hiroyoshi Okada, Kawasaki, Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

No Drawing. Filed Aug. 2, 1971, Ser. No. 168,488

Claims priority, application Japan, Aug. 28, 1970, 45/75,446

Int. Cl. C08f *3/62;* **C08g** *30/12*

U.S. Cl. 260—78.4 EP **4 Claims**

A cured epoxy resin composition is prepared by curing an ester of dicarboxylic acid containing epoxy radicals. The cured epoxy resin composition has high tracking resistance, good arc resistance, and high impact strength, and is particularly useful for casting of electrical parts.

3,790,533

PRESSURE SENSITIVE ADHESIVE COPOLYMERS AND TAPES THEREFROM

Carlos M. Samour, 324 Linden St.,
Wellesley, Mass. 02134

No Drawing. Filed Jan. 26, 1972, Ser. No. 221,106

Int. Cl. C08f *15/40*

U.S. Cl. 260—78.5 R **20 Claims**

Pressure sensitive adhesive polymers of monomers consisting of certain carboxylic acid vinyl monomers, an aminoalkyl acrylate or methacrylate in an amount which is within ±10% of the acid-base equivalent of the carboxylic acid vinyl monomers, and an alkyl acrylate in an amount from 65 to 99.6% by weight of the total monomers. Other copolymerizable monomers may optionally be present, including cross-linking monomers. Tapes coated with the pressure sensitive adhesive polymers are described.

3,790,534

INHIBITING PREVULCANIZATION OF RUBBER FORMULATIONS

Marion J. Gattuso, Hoffman Estates, and Robert J. Arnold, Chicago, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Mar. 16, 1972, Ser. No. 235,415

Int. Cl. C08c *11/54;* **C08d** *9/00*

U.S. Cl. 260—79.5 B **10 Claims**

Inhibiting premature vulcanization of vulcanizable diene rubber formulations by incorporating therein a substituted-carbamyl disulfide.

3,790,535

METHOD OF REGENERATING CHELATE RESINS HAVING MERCURY ADSORBED THERETO

Kensuke Motani, Tokuyama, Tadahiro Kiyotoshi, Tokyo, and Akihiko Nakahara, Tokuyama, Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Yamaguchi-ken, Japan

Filed Oct. 6, 1972, Ser. No. 295,486

Int. Cl. C08g *23/00*

U.S. Cl. 260—79 **3 Claims**

A method of regenerating a chelate resin having mercury adsorbed thereto, which comprises contacting the resin with a solution of a sulfide of an alkali metal, barium or ammonium having a pH of at least 11.0, preferably at least 13.0, to thereby liberate the mercury from the chelate resin.

3,790,536

ARYLENE SULFIDE POLYMER PROCESS

Fernando C. Vidaurri, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Sept. 18, 1972, Ser. No. 289,863

Int. Cl. C08g *25/00*

U.S. Cl. 260—79.1 **6 Claims**

A process for increasing the production capacity of an arylene sulfide polymer process is described wherein incremental quantities of an arylene halide reactant are added to an alkali metal sulfide reactant in the presence of a polar organic compound under suitable process conditions to provide maximum production rates for arylene sulfide polymers at moderate reaction temperatures and pressures.

3,790,537

POLYMERS CONTAINING CYCLO-1,1-DIALLYLGUANIDINE LINKAGES AND WET STRENGTH PAPER HAVING A CONTENT THEREOF

Hans Peter Panzer, Stamford, Conn., and Louis Vincent McAdams, East Greenwich, R.I., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Jan. 18, 1971, Ser. No. 107,456

Int. Cl. C08f *3/86, 15/02*

U.S. Cl. 260—80.3 N **2 Claims**

Water-soluble polymers are prepared by homopolymerizing 1,1-diallylguanidine or by copolymerizing 1,1-diallylguanidine. The resulting polymers are cationic and are flocculating agents. When glyoxylated (by reaction with glyoxal) they are water-soluble cationic thermosetting wet strength agents for paper. Wet strength paper containing this polymer rapidly loses its wet strength on normal weathering.

3,790,538

PROCESS FOR THE PRODUCTION OF THERMOREVERSIBLE COACERVATES

Nikolaus Schön, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 17, 1971, Ser. No. 116,252

Claims priority, application Germany, Mar. 4, 1970, P 20 10 117.1

Int. Cl. C08f *15/02*

U.S. Cl. 260—29.6 H **6 Claims**

A process for the production of a thermoreversible coacervate, wherein from 30 to 70 mol percent of acrylic acid and from 70 to 30 mol percent of acrylamide is copolymerized in aqueous solution at a temperature of from 15° to 80° C. using redox catalyst comprising a water soluble persulphate and a reducing agent, and the polymer solution obtained is optionally cooled to a temperature below 15° to 30° C.

3,790,539

METHOD OF PRODUCING OF ALTERNATING COPOLYMERS OF CONJUGATED DIENES AND CONJUGATED POLAR VINYL MONOMERS

Akira Onishi and Koichi Irako, Kodaira, Yoshihiro Hayakawa, Higashi-Murayama, Takeshi Shimomura, Kobe, Takahiro Kawagoe, Tokorozawa, and Shoji Miyamoto, Higashi-Murayama, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Continuation of abandoned application Ser. No. 865,114, Oct. 9, 1969. This application Apr. 13, 1972, Ser. No. 243,898

Claims priority, application Japan, Oct. 14, 1968, 43/74,208; Oct. 16, 1968, 43/74,986; Oct. 18, 1968, 43/75,551; Oct. 22, 1968, 43/76,479; Feb. 8, 1969, 44/9,008; Feb. 13, 1969, 44/10,030; Mar. 7, 1969, 44/16,793

Int. Cl. C08d *1/14*

U.S. Cl. 260—80.7 **34 Claims**

Alternating copolymers of a conjugated diene with a conjugated polar vinyl monomer, wherein the conjugated

diene unit and the conjugated polar vinyl monomer unit are bonded substantially alternately, are produced by copolymerizing said conjugated diene with said conjugated polar vinyl monomer by means of a catalyst prepared in the presence of a conjugated polar vinyl monomer to be used in the copolymerization reaction from a component (A) of a compound of a transition metal of the Group IV or V in the Periodic Table and a component (B) selected from the group consisting of an aluminum-containing compound; a combination of an aluminum compound and a tin compound; a combination of an organometallic compound and a metal halide; and an organoaluminum compound. This copolymerization activity can be improved by adding a component (C) of a radical initiator selected from the group consisting of organic peroxides, organonitrile compounds and trialkylboron∼oxygen systems to the above described components (A) and (B). Furthermore, the molecular weight of the alternating copolymers can be controlled by adding a molecular weight regulator selected from the group consisting of mercaptans, disulfides and carbon polyhalides containing bromine or iodine as an essential component to the polymerization reaction system.

3,790,540

ELASTOMERIC FLUORINATED TERPOLYMER HAVING GOOD THERMAL STABILITY

Julius Eugene Dohany, Berwyn, and Alfred Case Whiton, Blue Bell, Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Filed Aug. 23, 1971, Ser. No. 174,216

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.77 **5 Claims**

This invention relates to a novel and thermally stable terpolymer of vinylidene fluoride, hexafluoropropane and trifluoroethylene in respective quantities of about 29–55% by weight hexafluoropropene, 2–20% by weight trifluoroethylene and the remainder vinylidene fluoride which terpolymer forms amine-cured vulcanizates with excellent initial and heat-aged properties.

3,790,541

ETHYLENE-VINYL AROMATIC TELOMER WAXES AND PROCESSES OF PREPARING THEM

Arthur W. Langer, Jr., Plainfield, N.J., assignor to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 85,781, Oct. 30, 1970. This application Oct. 12, 1971, Ser. No. 188,476

The portion of the term of the patent subsequent to Oct. 2, 1990, has been disclaimed

Int. Cl. C08f *1/76, 19/04*

U.S. Cl. 260—88.2 C **9 Claims**

Novel wax compositions containing alkyl cycloalkyl structures in addition to alkyl aromatic telomer structures and also including copolymer telomer structures. These wax compositions have a molecular weight ranging from 500 to 5000.

3,790,542

METHOD FOR POLYMERIZING VINYL CHLORIDE

Shunichi Koyanagi, Naoetsu-shi, Hajime Kitamura, Niigata-ken, Kinya Ogawa, Naoetsu-shi, and Toshihide Shimizu, Niigata-ken, Japan, assignors to Shinetsu Chemical Company

Filed Sept. 15, 1970, Ser. No. 72,446

Int. Cl. C08f *1/60*

U.S. Cl. 260—92.8 R **1 Claim**

The polymerization is conducted in a medium which does not dissolve the produced polymer or copolymer. It is also conducted in the presence of a polymerization catalyst comprising acetyl cyclohexyl sulfonyl peroxide and a member selected from the group consisting of tertiary butyl peroxypivalate, diisopropyl peroxydicarbonate, di-2-ethylhexyl peroxydicarbonate, α,α-azobis-2,4-dimethylvaleronitrile and mixtures thereof.

3,790,543

POLYMERIZATION OF ALICYCLIC COMPOUNDS

Gunther Lehnert and Dieter Maertens, Leverkusen, and Josef Witte, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 9, 1972, Ser. No. 224,925

Claims priority, application Germany, Feb. 10, 1971, P 21 06 302.5

Int. Cl. C08f *1/34*

U.S. Cl. 260—93.1 **17 Claims**

A process for the polymerization of unsaturated alicyclic compounds, characterized in that at least one cyclic olefine having 4, 5, 7 or more ring carbon atoms and at least one olefinic double bond in the ring is polymerized in the presence of a catalyst system consisting of

(a) a halide or oxyhalide of molybdenum or tungsten,
(b) an organometallic tin compound and
(c) optionally a Lewis base as co-catalyst.

3,790,544

PROCESS FOR THE POLYMERIZATION OF CYCLOALKENES

Dieter Maertens, Günther Lehnert, and Gottfried Pampus, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 9, 1972, Ser. No. 224,926

Claims priority, application Germany, Feb. 10, 1971, P 21 06 301.4

Int. Cl. C08f *1/34*

U.S. Cl. 260—93.1 **14 Claims**

A process for the polymerization of unsaturated alicyclic compounds, characterized in that at least one cyclic olefine having 4, 5, 7 or more ring carbon atoms and at least one olefinic double bond in the ring is polymerized in the presence of a catalyst system consisting of

(a) a salt of molybdenum or tungsten,
(b) an organometallic compound of aluminum and
(c) a Lewis acid or an adduct of a Lewis acid and a Lewis base as co-catalyst and the catalyst for this polymerization.

3,790,545

PREPARATION OF HIGH CIS-CONTENT POLYPENTENAMER POLYMERS

Robert J. Minchak, Parma Heights, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed May 18, 1972, Ser. No. 254,631

Int. Cl. C08f *1/34*

U.S. Cl. 260—93.1 **8 Claims**

Polypentenamer polymers having high cis-content are prepared in a process comprising polymerizing cyclopentene monomer with a catalyst comprising an organoaluminum compound and a tungsten salt at a temperature of from about —40° C. to about —60° C. and below. The tungsten salt is added after the organoalumium compound and at polymerization temperatures. The polymers are sulfur-vulcanizable and have good low temperature properties.

3,790,546

PROCESS FOR THE PREPARATION OF TRANS-POLYPENTENAMER

Nikolaus Schön and Gottfried Pampus, Leverkusen, and Josef Witte, Cologne-Stammheim, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application June 25, 1969, Ser. No. 836,633, now abandoned. Divided and this application June 1, 1972, Ser. No. 258,749

Claims priority, application Germany, July 10, 1968, P 17 70 844.0

Int. Cl. C08f *1/34*

U.S. Cl. 260—93.1 **4 Claims**

Catalyst for polymerizing cyclopentene comprising:

(a) A reaction product of a tungsten or tantalum halide and an epoxide;

(b) An organoaluminum compound and a process for polymerizing cyclopentene.

3,790,547

PROCESS FOR THE ANIONIC POLYMERIZATION OF STYRENE

Daniel Muller, Pau, France, assignor to Nationale des Petroles d'Aquitaine, Paris, France
Filed Aug. 11, 1971, Ser. No. 170,717
Claims priority, application France, Aug. 14, 1970, 7030091; July 20, 1971, 7126503
Int. Cl. C08f *1/04, 7/04, 19/00*
U.S. Cl. 260—93.5 R **1 Claim**

A fast polymerization process for monomers which can be polymerized by anionic catalysis, particularly styrene, possibly mixed with butadiene or in the presence of a polymer.

The process is characterized by the fact that the monomer or monomers are bulk-polymerized in a thin-film polymerizing plant, using an anionic polymerization catalyst, in particular an alkaline metal such as sodium, or an organo-metallic alkaline metal compound such as butyllithium.

The process results in transparent polymers free of residual monomer, showing low polydispersion and with a high molecular weight. In addition, they are not yet de-activated when leaving the polymerization plant, and can be used to obtain graft and sequence copolymers.

3,790,548

CHLORINATING POLYETHYLENE

Hans-Georg Trieschmann, Hambach, Helmut Pfanmueler, Limburgerhof, and Gerhard Zeitler, Hessheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Continuation of abandoned application Ser. No. 820,618, Apr. 30, 1969. This application Feb. 8, 1971, Ser. No. 113,610
Claims priority, application Germany, May 1, 1968, P 17 70 312.7, P 17 70 313.8
Int. Cl. C08f *3/04, 27/02*
U.S. Cl. 260—94.9 H **6 Claims**

A process for chlorination polyethylene in which particulate high-pressure polyethylene is suspended in a chlorohydrocarbon and treated with chlorine.

3,790,549

TERMINALLY REACTIVE POLYMERS

George Feniak, Wyoming, Ontario, Canada, assignor to Polymer Corporation Limited, Sarnia, Ontario, Canada
No Drawing. Filed Sept. 10, 1971, Ser. No. 179,536
Claims priority, application Canada, Sept. 25, 1970, 94,062
Int. Cl. C08d *11/00;* **C08f** *3/14, 3/16*
U.S. Cl. 260—94.8 **4 Claims**

Terminally reactive polymers are produced by ozonizing high molecular weight polymers of branched conjugated diolefins such as isoprene and reacting the ozonized products with modifying compounds such as hydrazine, hydroxylamine and dihydrazino compounds.

The reactive polymers are low molecular weight materials having terminal hydrazone, oxime and hydrazide groups; they react with polyfunctional compounds such as diisocyanates or epoxy resins to form cross-linked structures.

3,790,550

FLUID BED POLYMERIZATION PROCESS

Adam R. Miller, South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.
Original application Nov. 21, 1969, Ser. No. 878,774. Divided and this application Oct. 26, 1971, Ser. No. 192,195
Int. Cl. C08f *3/06, 15/40, 1/00*
U.S. Cl. 260—94.9 P **10 Claims**

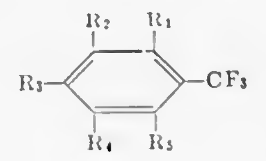
Polymerization catalysts in the form of dry powders are continuously fed to a fluidized bed reactor under essentially plug-flow conditions by a sequential repetition of the steps of dispensing under controlled conditions, a desired quantity of catalyst from a catalyst supply source to a chamber which is alternately communicable with such supply source and the reaction zone of the fluidized bed reactor, isolating the dispensed catalyst from the catalyst supply source, exposing the dispensed catalyst to the reaction zone of the fluidized bed reactor and rapidly injecting the catalyst into the reaction zone with a carrier gas.

3,790,551

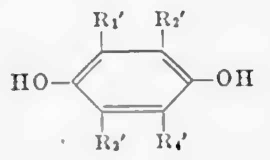
PROCESS FOR PRODUCING BUTADIENE POLYMER

Yoshiharu Yagi, Toyonaka, Akira Kobayashi, Nishinomiya, and Hiroshi Sato, Takatsuki, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka-fu, Japan
No Drawing. Filed June 4, 1971, Ser. No. 150,191
Claims priority, application Japan, June 4, 1970, 45/48,958
Int. Cl. C08d *1/14, 3/06*
U.S. Cl. 260—94.3 **10 Claims**

A process for producing butadiene polymer which comprises polymerizing 1,3-butadiene in the presence of a catalyst system consisting essentially of (A) at least one of nickel and cobalt compounds, (B) a trialkyl aluminum compound, (C) a benzotrifluoride compound represented by the formula:



(wherein R_1, R_2, R_3, R_4 and R_5 are each a hydrogen atom, a halogen atom, an alkyl group or a fluoroalkyl group), and (D) a hydroquinone compound represented by the formula:



(wherein R_1', R_2', R_3' and R_4' are each a hydrogen atom or a halogen atom or the combination of R_1' with R_2' and/or of R_3' with R_4' is an aromatic condensed ring(s) and the remaining substituents are, if any, each a hydrogen atom or a halogen atom) and in the coexistence of water to give a butadiene polymer containing predominantly cis-1,4 structure and having a regulated molecular weight.

3,790,552

METHOD OF REMOVING HEPATITIS-ASSOCIATED ANTIGEN FROM A PROTEIN FRACTION USING POLYETHYLENE GLYCOL

Alan J. Johnson, New York, and Jack Newman, Pelham, N.Y., assignors to the United States of America as represented by the Secretary, Department of Health, Education, and Welfare
No Drawing. Filed Mar. 16, 1972, Ser. No. 235,211
Int. Cl. A23j *1/06;* **C07g** *7/00*
U.S. Cl. 260—112 B **28 Claims**

A method of removing hepatitis-associated antigen from a protein fraction by regulating protein concentration, ionic strength of the solution, and pH, and fractionating the mixture by the use of polyethylene glycol in a particular concentration range is disclosed. The pH of the solution should be removed from the isoelectric point of the material being precipitated.

3,790,553

EXTRACTION PROCESS FOR PREPARATION OF VITAL WHEAT GLUTEN FROM WHOLE WHEAT KERNELS

Ganta V. Rao and Oliver B. Gerrish, Sr., Hutchinson, Kans., assignors to Far-Mar-Co., Inc.
No Drawing. Filed Sept. 25, 1972, Ser. No. 291,635
Int. Cl. A23j *1/12*
U.S. Cl. 260—112 G **14 Claims**

Gluten protein may be recovered from the whole wheat kernel according to a two-stage extraction process. The kernel is tempered to a moisture content, by weight, from about 15% to saturation, the tempered kernel is crushed, flaked or ground and the low molecular weight proteins are extracted from the crushed wheat in a water slurry having a wheat to water ratio, by weight, of 1:1 to 1:5 and a pH of 4.5–8.0. The high molecular weight proteins are extracted from the crushed wheat in a pH 0.9–12 slurry consisting of one part, by weight, water-extraction solid residue and from 1–5 parts, by weight, mild base, such as ammonium hydroxide.

3,790,554

HEPTAPEPTIDE INTERMEDIATE TO GONADOTROPIN-RELEASING HORMONE

George Rogelio Flouret, Waukegan, Ill., assignor to Abbott Laboratories, Chicago, Ill.
No Drawing. Filed Sept. 24, 1971, Ser. No. 183,691
Int. Cl. C07c *103/52;* **C07g** *7/00;* **C08h** *1/00*
U.S. Cl. 260—112.5 **8 Claims**

The synthesis of the heptapeptide Ser-Tyr-Gly-Leu-Arg-Pro-Gly-amide carrying easily removable protective groups on the Ser, Tyr and Arg moieties is described; the correspondingly protected hexapeptide is used as the starting material. The heptapeptide, upon removal of any protective group on the amino-N of the serine moiety, is an important intermediate for the preparation of the gonadotropin-releasing hormone.

3,790,555

OCTAPEPTIDE DERIVATIVE OF GONADOTROPIN-RELEASING HORMONE

George Rogelio Flouret, Waukegan, and John Wayne Cole, Deerfield, Ill., assignors to Abbott Laboratories, North Chicago, Ill.
No Drawing. Filed Jan. 20, 1972, Ser. No. 219,567
Int. Cl. C07c *103/52;* **C07g** *7/00;* **C08h** *1/00*
U.S. Cl. 260—112.5 **8 Claims**

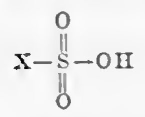
The synthesis of the octapeptide Trp-Ser-Tyr-Gly-Leu-Arg-Pro-Gly-amide carrying easily removable protective groups on the Ser, Tyr, Arg and Trp moieties is described. The new synthesis uses as the starting material two tetrapeptide fragments carrying easily removable protective groups. One of these fragments, Trp-Ser-Tyr-Gly-OH with suitable protective groups, also is a part of the present invention. After coupling of the two fragments, the protective group on the amino-N of the tryptophane moiety is removed to obtain an octapeptide carrying easily removable protective groups which can be retained while building up the molecule to the decapeptide chain which is the gonadotropin-releasing hormone, after removal of these protective groups.

3,790,556

ORGANIC SOLVENT SOLUBLE DIAZONIUM COMPOUND FORMED FROM ANIONIC SULFATE OR SULFONATE SURFACTANTS

Towers Doggett, Westbrook, Maine, assignor to Scott Paper Company, Delaware County, Pa.
No Drawing. Filed Apr. 28, 1971, Ser. No. 138,336
Int. Cl. C07c *113/00;* **G03c** *1/56;* **G03f** *7/02*
U.S. Cl. 260—141 **10 Claims**

Light-sensitive, water-insoluble compounds which are formed by reacting an anionic surfactant of the formula



$$X-\overset{\overset{O}{\|}}{\underset{\underset{O}{\|}}{S}}-OH$$

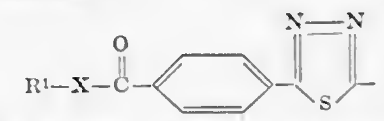
with the formaldehyde condensation product of a diphenylamine-4-diazonium salt and which are soluble in a wide range of organic solvents, and negative working lithographic plates provided with a coating of the light-sensitive compounds.

3,790,557

THIADIAZOLYL-AZO-PHENYL OR -TETRAHYDROQUINOLINE COMPOUNDS

Max A. Weaver and James M. Straley, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Jan. 19, 1972, Ser. No. 219,152
Int. Cl. C09b *29/36*
U.S. Cl. 260—158 **10 Claims**

Monoazo compounds consisting of a diazo component having the formula



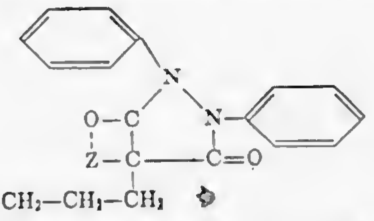
in which X is oxygen, imino or alkylimino and R^1 is hydrogen, alkyl, cycloalkyl or aryl, and an aniline or 1,2,3,4-tetrahydroquinoline disperse azo dye coupling component produce bright red to bluish-red shades on polyester fibers and exhibit good fastness to light and resistance to sublimation.

3,790,558

PYRAZOLIDONE DERIVATIVES SUBSTITUTED ON THE 4 POSITION WITH PECTIN OR ALGIN

Georges Negrevergne, Bordeaux, France, assignor to The Purdue Frederick Company, Norwalk, Conn.
No Drawing. Application May 14, 1969, Ser. No. 856,508, now Patent No. 3,629,282, which is a division of application Ser. No. 691,197, Dec. 18, 1967, now Patent No. 3,487,046, which is a continuation-in-part of application Ser. No. 362,393, Apr. 24, 1964, which in turn is a continuation-in-part of application Ser. No. 121,796, Apr. 24, 1961, both now abandoned. Divided and this application Nov. 18, 1971, Ser. No. 200,259
Int. Cl. C07d *49/04, 49/08*
U.S. Cl. 260—209.5 **2 Claims**

Hydrogen bonded compounds of the structure:



wherein Z is a compound of the group selected from algin and pectin and the methods for the preparation of the aforesaid compounds. The compounds are useful in achieving an anti-inflammatory effect.

3,790,559

PRODUCTION OF ERYTHROMYCYLAMINE COMPOUNDS

Eric Wildsmith, Chamberley, England, assignor to Lilly Industries, Ltd., Henrietta Place, London, England
No Drawing. Filed Mar. 17, 1971, Ser. No. 125,399
Claims priority, application United Kingdom, Apr. 13, 1970, 17,527/70
Int. Cl. C07c *129/18*
U.S. Cl. 260—210 E **6 Claims**

Erythromycylamine compounds are produced by subjecting an erythromycin hydrazone azine or imine to reduction by means of a highly electropositive metal or additionally, in the case of the imine, to reduction by means of a complex metal hydride. A process is also provided for preparing the novel imines, which are useful as antibiotic agents, particularly against gram-positive organisms.

3,790,560

DERIVATIVES OF LINCOMYCIN AND ITS ANALOGS AND PROCESS

Brian Bannister, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Continuation-in-part of application Ser. No. 198,990, Nov. 15, 1971, which is a continuation-in-part of abandoned applications Ser. No. 158,075, June 29, 1971, and Ser. No. 161,909, July 12, 1971, the latter being a continuation-in-part of abandoned application Ser. No. 156,100, June 23, 1971. This application Mar. 22, 1972, Ser. No. 237,129
Int. Cl. C08b *19/00*
U.S. Cl. 260—210 R **23 Claims**

Alkyl 7-deoxy-7-mercaptoalkylthio-α-thiolincosaminides useful as intermediates for preparing antibacterially active 7-deoxy-7-mercaptoalkylthio-lincomycins are prepared by heating alkyl N-acyl-6,7-aziridino-6-deamino-7-deoxy-α-thiolincosaminides with an appropriate sulfide in the presence of glacial acetic acid or other anhydrous lower alkanoic acid, or anhydrous benzoic acid or other arenoic acid or not more than 12 carbon atoms.

3,790,561

PREPARATION OF A CALCIUM AND MAGNESIUM ION SEQUESTRANT

Donald M. MacDonald, Monroe, N.Y., assignor to International Paper Company, New York, N.Y.
No Drawing. Original application June 28, 1971, Ser. No. 157,616, now Patent No. 3,740,339. Divided and this application Mar. 22, 1973, Ser. No. 343,917
Int. Cl. C02b *5/06;* **C08b** *15/04;* **C11d** *3/22*
U.S. Cl. 260—212 **5 Claims**

The elimination of phosphorus-containing compounds from detergent formulations, which cause water pollution, and their replacement with non-phosphorus-containing compounds of equal efficacy is achieved by employing the cured product of the reaction between 6-carboxy cellulose and an aqueous solution of a Lewis acid catalyst.

3,790,562

METHYL CELLULOSE-BORON ALKOXIDE COMPOUNDS

Jett C. Arthur, Jr., Metairie, and Malkiat S. Bains, New Orleans, La., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed May 23, 1972, Ser. No. 256,021
Int. Cl. C08b *11/02*
U.S. Cl. 260—231 R **16 Claims**

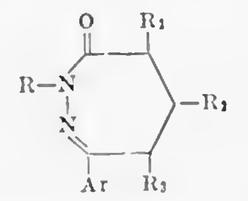
This invention relates to a method for preparing carbohydrate-boron alkoxide compounds. Under anhydrous conditions, stable compounds of methyl cellulose and boron alkoxides, such as boron ethoxide, boron propoxide, and boron isopropoxide, were prepared in neat boron alkoxide, the parent alcohol, benzene, pyridine, and/or ethylenediamine. The method of this invention has as its objective increasing the reactivity of methyl cellulose with boron alkoxides by treatment in solutions of strong bases, such as pyridine and ethylenediamine. Formation of methyl cellulose-boron alkoxide compounds modifies the rate of oxidation of methyl cellulose and is related to preparing flame-resistant products.

3,790,563

TETRAHYDRO DIAZEPINONES AND THEIR PREPARATION FROM HYDRAZINES AND δ-CARBONYLACIDS

Camille Georges Wermuth, Strasbourg, and Jean Cahn, Paris, France, assignors to Synthelabo, Paris, France
No Drawing. Filed Dec. 16, 1971, Ser. No. 208,957
Claims priority, application France, Dec. 16, 1970, 7045361
Int. Cl. C07d *53/02*
U.S. Cl. 260—239.3 R **8 Claims**

A hydrazine is reacted with a δ-carbonyl acid to provide 2,3,5,6-tetrahydro-4H-1,2-diazepine - 3 - ones of the formula



wherein

Ar is phenyl, tolyl, halophenyl, methoxyphenyl, naphthyl, or thienyl,

R is hydrogen, lower alkyl, carboxy(lower alkyl), di(lower alkyl)amino(lower alkyl), morpholino(lower alkyl) or pyrrolidino(lower alkyl), and each of R_1, R_2 and R_3 is independently hydrogen, lower alkyl, or a phenyl group,

and the pharmaceutically acceptable salts and quaternary ammonium derivatives thereof.

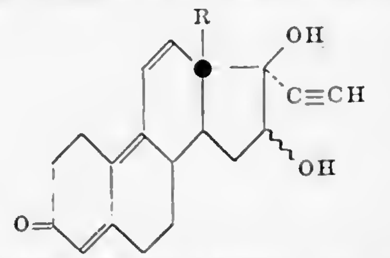
The compounds are useful in pharmaceutical chemistry, having been found particularly useful as psychotropic agents.

3,790,564

TRIENIC STEROIDS, PROCESS OF THEIR PREPARATION AND METHODS OF THEIR USE

André Pierdet, Noisy-le-Sec., and Geneviève Azadian, Paris, France, assignors to Roussel-UCLAF, Paris, France
No Drawing. Filed Aug. 15, 1972, Ser. No. 280,852
Claims priority, application France, Aug. 26, 1971, 7131032
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 C **9 Claims**

Ethynylated trienic steroids having the formula



wherein R represents alkyl having 1 to 3 carbon atoms and the ∼OH in the 16 position is selected from the group consisting of the α-OH and the β-OH; as well as processes for the preparation of the compounds, intermediates in the process, therapeutic compositions containing the compounds and the method of preventing pregnancy in warm-blooded animals by administration of the compounds.

3,790,565

CEPHALOSPORIN C_A IMPROVED PROCESS

Peter W. Vanevenhoven, West Terre Haute, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
No Drawing. Filed Aug. 23, 1971, Ser. No. 174,213
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C **3 Claims**

In a process for recovering cephalosporin C_A type antibiotics obtained by the general nucleophilic displacement of the acetoxyl moiety of the crude cephalosporin C type starting compounds with the appropriate nucleophile in a heated, neutral aqueous solution of certain preferred halogen or —SCN salts, for example, in preparing cephaloridine from cephalothin, the product is nominally recovered in crude form by dilution and acidification to form the water-insoluble cephaloridine hydrothiocyanate salt. The claimed process improvement involves partial acidification wherein much of the colored, acidic degradation products are first converted to an insoluble, amorphous precipitate that is filtered prior to further acidifying the resulting filtrate, thereby permitting crystallization of an improved quality, lower-colored cephalosporin C_A type hydrothiocyanate salt.

3,790,566

CARBAMATE ESTERS OF 2-OXYIMINO-3-KETO-1,4-DIHETEROCYCLICS

Russell F. Bellina, Claymont, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Aug. 12, 1971, Ser. No. 171,388
Int. Cl. C07d *93/10*
U.S. Cl. 260—243 R **6 Claims**

Chemical compounds of the class of carbamate esters of 2-oxyimino-3-keto-1,4-diheterocyclics, such as 2-methylcarbamoyloxyimino-4-methyl - 3 - thiomorpholinone useful in controlling pests such as insects and nematodes.

3,790,567

CEPHALOSPORIN COMPOUNDS

James Kennedy, Montrose, Scotland, and Alan Gibson Long, Greenford, and William George Elphinstone, Underwood, Stokes Poges, England, assignors to Glaxo Laboratories Limited, Greenford, England
No Drawing. Original application Aug. 13, 1968, Ser. No. 752,191, now Patent No. 3,665,003. Divided and this application Dec. 28, 1971, Ser. No. 213,194
Claims priority, application Great Britain, Aug. 21, 1967, 38,493/67
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C **3 Claims**

7β-acylaminodoceph-3-em-4-carboxylic acids having an etherified hydroxymethyl group at the 3-position and physiologically acceptable derivatives thereof. The compounds have utility as antibiotics and show absorption after oral administration.

3,790,568

PROCESS FOR PREPARING THIOAMINES

Joseph Edward Kerwood and Robert I. Leib, Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Mar. 9, 1970, Ser. No. 17,944
Int. Cl. C07c *145/00;* **C07d** *51/70, 87/28*
U.S. Cl. 260—247.1 **16 Claims**

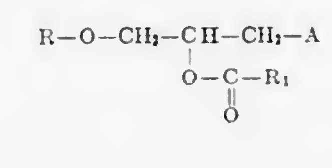
A process for preparing thioamines which comprises reacting a secondary amine or tertiary alkyl primary amine with a thioamide.

3,790,569

2-PROPANOL DERIVATIVES

Roland-Yves Mauvernay, Norbert Busch, Jacques Simond, and Jacques Moleyre, all of Route de Marsat, 63 Riom, France
No Drawing. Original application Aug. 1, 1968, Ser. No. 749,277, now abandoned. Divided and this application Aug. 23, 1971, Ser. No. 174,178
Int. Cl. C07d *23/00*
U.S. Cl. 260—247.2 B **4 Claims**

A compound having the formula:



$$\begin{array}{l}R-O-CH_2-CH-CH_2-A\\ \qquad\qquad\quad\;\; |\\ \qquad\qquad\quad\;\; O-C-R_1\\ \qquad\qquad\qquad\quad\;\; \|\\ \qquad\qquad\qquad\quad\;\; O\end{array}$$

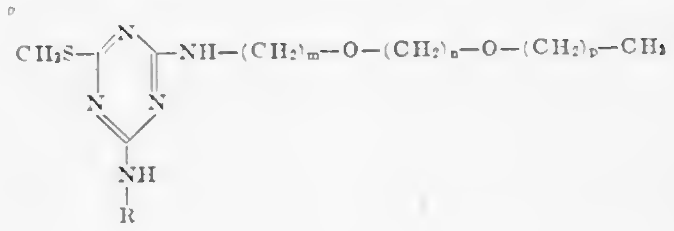
wherein R is an alkyl radical with 1 to 5 carbon atoms, an alkenyl radical, an alkynyl radical, or an arylalkyl radical, R_1 is phenyl, a methoxyphenyl, pyridyl, furyl, an arylalkyl radical, or an arylalkenyl radical, and A is morpholino, N-methylpiperazinyl, or N-benzylpiperazinyl. The compound has coronaro-dilatory and antiarrhythmic properties.

3,790,570

SUBSTITUTED DIAMINO-s-TRIAZINES

Jacques Perronnet, Paris, and Jean-Pierre Demoute, Montreuil-sous-Bois, France, assignors to Roussel-UCLAF, Paris, France
No Drawing. Filed Nov. 30, 1971, Ser. No. 203,450
Claims priority, application France, Dec. 10, 1970, 7044500
Int. Cl. C07d *55/20*
U.S. Cl. 260—249.8 **2 Claims**

Novel 1,3,5-triazines of the formula



(I)

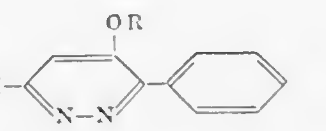
wherein R is a lower alkyl, *m* is 1 or 2, *n* is 1 or 2 and *p* is 0, 1 or 2 which have pre- and post-emergence herbicidal activity and their preparation.

3,790,571

PHENYLPYRIDAZINES

Alfred Diskus, Linz (Danube), Rupert Schonbeck, Leonding, near Linz (Danube), Engelbert Klomstein, Eferding, and Hubert Mayr, Leonding, near Linz (Danube), Austria, assignors to Osterreichische Stickstoffwerke Aktiengesellschaft, Linz (Danube), Austria
No Drawing. Filed June 9, 1972, Ser. No. 261,331
Claims priority, application Germany, June 11, 1971, P 21 29 109.8
Int. Cl. C07d *51/04*
U.S. Cl. 260—250 A **5 Claims**

Phenylpyridazine compounds having the general formula:



in which X is Cl or Br and R is H, $—CH_3$ or $—CH_3CO$, a process for their preparation and herbicidal compositions containing them.

3,790,572

2-HYDROXYALKYL-4,5-DIHYDROPYRIDAZIN-3(2H)-ONE DERIVATIVES

William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.
No Drawing. Continuation-in-part of application Ser. No. 242,796, Apr. 10, 1972, which is a continuation-in-part of application Ser. No. 178,815, Sept. 8, 1971, both now abandoned. This application Aug. 14, 1972, Ser. No. 280,670
Int. Cl. C07d *51/04*
U.S. Cl. 260—250 A **9 Claims**

Derivatives of 2-hydroxyalkyl-6-aryl or heterocyclic substituted-4,5-dihydropyridazin - 3(2H) - ones, e.g., 6-(p-chlorophenyl) - 2 - (2-N-methylcarbamoyloxybutyl)-4,5-

dihydropyridazin-3(2H)-one are prepared by reacting 2-hydroxyalkyl - 6 - substituted - 4,5 - dihydropyridazin-3(2H)-ones with organic acid halides or anhydrides, isocyanates, dihydrofuran or dihydropyran or by treating 2-alkoxycarbonyl halide-6-substituted-4,5-dihydropyridazin-3(2H)-one with amines and are useful as central nervous depressants.

3,790,573

IMIDAZO AND PYRIMIDO[2,1-b]QUINAZOLINES

Dale W. Blackburn, Moorestown, N.J., and Robert F. Devenney, Newtown Square, and Timothy Yu-Wen Jen, Broomall, Pa., assignors to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Filed Nov. 11, 1971, Ser. No. 197,916

Int. Cl. C07d *51/48*

U.S. Cl. 260—256.4 F **8 Claims**

The compounds are hexahydro, octahydro and decahydro imidazo[2,1-b]quinazolines and pyrimido[2,1-b]quinazolines which have hypotensive activity. For example, compounds of this invention are 1,2,3,5,6,7,8,9-octahydroimidazo[2,1-b]quinazoline and 1,2,3,4,7,8,9,10-octahydro-6H-pyrimido[2,1-b]quinazoline.

3,790,574

21-SUBSTITUTED 17-AZA-STEROIDS AND SALTS THEREOF

Zoltán Tuba and Mária Bor, nee Szabó, Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar R.T., Budapest, Hungary

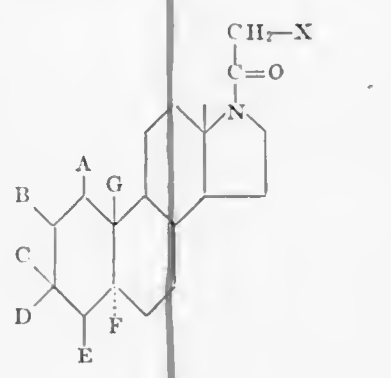
No Drawing. Filed June 14, 1971, Ser. No. 152,970

Claims priority, application Hungary, June 18, 1970, RI–396

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 PC **6 Claims**

This invention relates to 21-substituted 17-aza-steroids and salts thereof having the Formula I



(I)

wherein

A and B each represent hydrogen,
C is hydroxy group, ester or ether,
D, E and F each represent hydrogen atom,
G is a methyl group if the compounds are of androstane type, or
A and B, D and E and F and G each represent termini of double bond, or
C and D represent together an oxo-group, especially a ketal group, and
X represents chlorine, bromine, hydroxy or acyloxy a substituted, secondary or tertiary amino.

3,790,575

QUINACRIDONE PIGMENTS

Frederick J. Hafele, Paterson, N.J., and Hugh M. Smith, Staten Island, N.Y., assignors to Sun Chemical Corporation, New York, N.Y.

No Drawing. Filed Jan. 11, 1971, Ser. No. 105,606

Int. Cl. C07d *39/00*

U.S. Cl. 260—279 R **7 Claims**

The properties of quinacridones are improved by contacting the crude non-pigmentary quinacridone with a mixture of aqueous sulfuric acid and xylene sulfonic acid, drowning the product in a water-miscible organic diluent, and recovering the pigment product.

3,790,576

9 SUBSTITUTED 4,9-DIHYDRO-1,3,4,4-TETRA-ALKYL-1H-PYRAZOLO[3,4-b]QUINOLINES

Horace A. De Wald, Ann Arbor, Mich., assignor to Parke Davis & Company, Detroit, Mich.

No Drawing. Filed Mar. 20, 1972, Ser. No. 236,459

Int. Cl. C07d *33/52*

U.S. Cl. 260—286 R **10 Claims**

4,9 - dihydro-1H-pyrazolo[3,4-b]quinoline compounds, substituted in the 1-position by alkyl or 2-hydroxyethyl, in the 3- and 4-positions by methyl or ethyl, optionally in the 6- or 7-position by methyl, chloro, fluoro, methoxy, or methylthio, and optionally in the 9-position by a 3-(amino, methylamino, or dimethylamino)propyl group or a 3-(dimethylamino)propyl, N-oxide group; salts thereof; and their production by (a) cyclizing an o-[(pyrazol-5-yl)-amino]-α,α-dialkylbenzyl alcohol, (b) reacting an alkali metal salt of one of the 9-unsubstituted compounds with a 3-(dimethylamino)propyl halide, (c) reacting a 9-(3-halopropyl)-intermediate with methylamine, (d) reducing a 9-(3-azidopropyl)-intermediate, and (e) reacting one of the 9-[3-(dimethylamino)propyl]-compounds with an oxidizing agent. The compounds are useful as intermediates and as antidepressant agents.

3,790,577

PYRIDOQUINOLINE DICARBOXYLIC ACID DERIVATIVES

Wilson Shaw Waring, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing Filed Sept. 13, 1971, Ser. No. 180,233

Claims priority, application Great Britain, Oct. 5, 1970, 47,151/70; Nov. 18, 1970, 54,868/70; Feb. 22, 1971, 5,096/71

Int. Cl. C07d *39/14*

U.S. Cl. 260—287 R **8 Claims**

Dicarboxylic acid derivatives of 1,7-phenanthroline, 4,7-phenanthroline, pyrido[2,3-g]quinoline and pyrido-[3,2-g]quinoline, processes for their preparation, and pharmaceutical compositions. A representative compound is 2,8-diethoxycarbonyl-4,10-dihydroxy-6 - methyl - 1,7-phenanthroline. Compounds active against syndromes or diseases initiated by an antigen-antibody reaction.

3,790,578

DERIVATIVES OF 2,3-DIHYDROXYPROPYL-N-(7 OR 8-CHLORO-4-QUINOLINYL)ANTHRANILATE

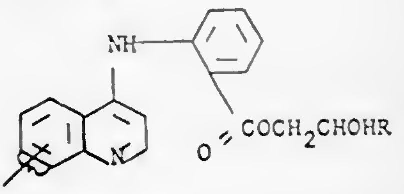
Robert John Theriault, Kenosha, Wis., and James Paul Karwowski, Mundelein, and Norman Earl Wideburg, Waukegan, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed Oct. 19, 1971, Ser. No. 190,690

Int. Cl. C07d *33/38*

U.S. Cl. 260—287 R **3 Claims**

Novel derivatives of 2,3-dihydroxypropyl-N-(7 or 8-chloro-4-quinolinyl)anthranilate. The compounds are represented by the formula



wherein the chloro is in the 7- or 8-position and R is $—CH_2OCH_3$. The compounds are prepared by microbial transformation of 2,3-dihydroxypropyl-N-(7- or 8-chloro-4-quinolinyl)anthranilate. The compounds are useful as

analgesic and anti-inflammatory agents these are prepared by fermentations employing NRRL–3941, Basidiomycete species F–55.

3,790,579

1-OXA-2,4,8-TRIAZASPIRO[4,5]DEC-2-ENES

Michio Nakanishi, Nakatsu, Katsuo Arimura, Yoshitomimachi, and Hideki Ao, Nakatsu, Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

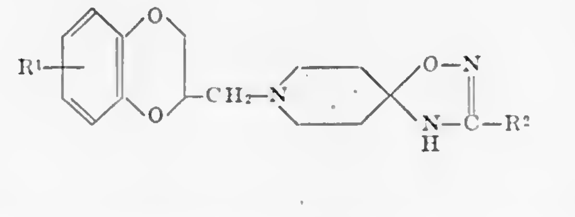
No Drawing. Filed Aug. 19, 1971, Ser. No. 173,327

Claims priority, application Japan, Aug. 19, 1970, 45/72,932

Int. Cl. C07d *85/52*

U.S. Cl. 260—293.58 **13 Claims**

1-oxa-2,4,8-triazaspiro[4,5]dec-2-enes of the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein R^1 is H, Cl, CH_3 or OCH_3; and R^2 is an alkyl group of from 1 to 3 carbon atoms, a benzyl group, a phenyl group and a substituted phenyl group in which the substituent is selected from the group consisting of Cl, CH_3 and OCH_3. These compounds are useful as vasodilators and can be prepared by reacting a functional derivative of the corresponding benzodioxanylmethanol with the corresponding new oxatriazaspirodecene.

3,790,580

BIS-4-OXO-4H-1-BENZOPYRANS

Peter Bennett Johnson and Thomas Brian Lee, Loughborough, England, assignors to Fisons Limited, London, England

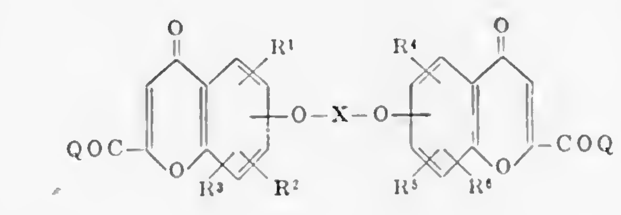
No Drawing. Filed Sept. 2, 1971, Ser. No. 177,510

Claims priority, application Great Britain, Sept. 3, 1970, 42,132/70, 42,133/70

Int. Cl. C07d *7/32*

U.S. Cl. 260—293.58 **8 Claims**

There are described compounds of Formula I,



in which

R^1, R^2, R^3, R^4, R^5 and R^6 are the same or different and each represent hydrogen, halogen, hydroxy, alkyl or alkoxy, or substituted alkyl or alkoxy,
X is an optionally substituted, straight or branched hydrocarbon chain which may be interrupted by a carbocyclic or heterocyclic ring, or one or more oxygen atoms or carbonyl groups, and
COQ is a basic amide or a basic ester group.

3,790,581

N-{1-[3-CYANO - 3,3 - BIS(OPTIONALLY SUBSTITUTED PHENYL)PROPYL] - 4-PHENYLPIPERIDINE-4-CARBONYLOXY}SUCCINIMIDES

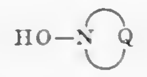
Eunice M. Kreider, Chicago, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 262,325, June 13, 1972. This application Aug. 17, 1972, Ser. No. 281,441

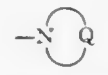
Int. Cl. C07d *29/32*

U.S. Cl. 260—293.71 **5 Claims**

Preparation of the subject compounds by reaction of 1-[3-cyano-3,3-bis(optionally substituted phenyl)propyl]-4-phenylpiperidine-4-carboxylic acid with an N-hydroxy compound of the type



wherein



represents an optionally substituted monocyclic- or fused polycyclic-heterocyclic radical containing at least one carbonyl function adjacent to the nitrogen atom, in the presence of a suitable dehydrating agent, and their unexpected utility as narcotic antagonists are disclosed.

3,790,582

CERTAIN PYRIDYLPHOSPHATES, THIOPHOSPHATES, PHOSPHONATES AND THIOPHOSPHONATES

Daniel Demozay, Villeurbanne, and Daniel Pillon and Jacques Ducret, Lyon, France, assignors to Pepro, Societe pour le Developpement et la Vente de Specialites Chimiques, Lyon, France

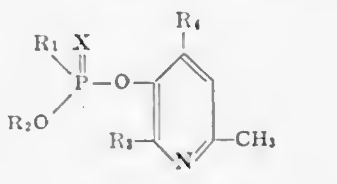
No Drawing. Filed June 28, 1971, Ser. No. 157,636

Claims priority, application France, June 30, 1970, 7024078

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 K **9 Claims**

Phosphoric derivatives containing substituted methylpyridines and having the general formula



and their use in insecticidal, acaricidal and nematicidal compositions.

3,790,583

CERTAIN [3-(4 - PHENYL)-1-(2H) 3,6 - DIHYDROPYRIDYL]-PROPYL(THIO)-ANILIDES, SULFONAMIDO ANILIDES, ANILINES AND DERIVATIVES THEREOF

Albrecht Edenhofer, Riehen, and Hans Spiegelberg, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Dec. 4, 1969, Ser. No. 882,298, now Patent No. 3,674,799, dated July 4, 1972. Divided and this application Mar. 23, 1972, Ser. No. 237,539

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 G **6 Claims**

Substituted [3-(4-phenyl - 1 - hydropyridyl)-propoxy or propylthio]anilines prepared, inter alia, by reacting the

(wherein: R_1 is a hydrogen atom, a phenyl group, a

3,790,590

and acid addition salts thereof are prepared from 1-sub-correspondingly substituted propoxy or propyl-thio anilines and N-phenyl-hydropyridines, are described. The end products, i.e., the substituted [3-(4-phenyl - 1 - hydropyridyl)propoxy or propylthio]anilines are useful as antiphlogistic, antiallergic, antitussive and analgesic agents.

3,790,584
SULFAMYLBENZOIC ACIDS

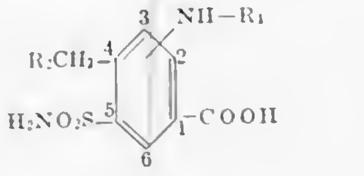
Peter Werner Feit, Gentofte, and Ole Bent Tvaermose Nielsen, Vanlose, Denmark, assignors to Lovens Kemiske Fabrik Produktionsaktieselskab, Ballerup, Denmark

No Drawing. Original application June 16, 1971, Ser. No. 153,879. Divided and this application Sept. 15, 1972, Ser. No. 288,765

Int. Cl. C07d *31/48*

U.S. Cl. 260—294.8 F **3 Claims**

The invention relates to a series of new compounds, their salts and esters and to methods for the preparation of the compounds having the general formula:



in which the NH—R_1 group can be in the 2- or 3-position, R_1 represents an aliphatic radical with from 3 to 8 carbon atoms in the chain, or a mononuclear aromatically or a mononuclear heterocyclically substituted methyl or ethyl group, and R_2 represents an unsubstituted or substituted phenyl group.

3,790,585
MANUFACTURE OF BIPYRIDYLIUM SALTS

John Edward Colchester and Thomas Blundell, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed June 16, 1969, Ser. No. 833,709

Claims priority, application Great Britain, July 1, 1968, 31,365/68; Sept. 11, 1968, 43,147/68; Oct. 8, 1968, 47,585/68; Nov. 1, 1968, 51,850/68; Nov. 23, 1968, 61,012/68; Feb. 17, 1969, 8,509/69

Int. Cl. C07d *31/44*

U.S. Cl. 260—295 AM **22 Claims**

A process for the manufacture of a 1,1′-disubstituted-4,4′-bipyridylium salt wherein each of the substituents contains up to 10 carbon atoms which comprises reacting and N-substituted pyridinium salt with a cyanide under basic conditions. The interaction product is then subsequently oxidized to produce the bypyridylium salt.

3,790,586
IMIDAZO-PYRIDINE DERIVATIVES

Tsutomu Irikura, Kazunori Kasuga, and Taeko Hashizume, Tokyo, Mitsuo Ohashi, Ageo, Masuo Yuge, Urawa, and Michiko Yamada, Tokyo, Japan, assignors to Kyorin Seiyaku Kabushiki Kaisha, Tokyo, Japan

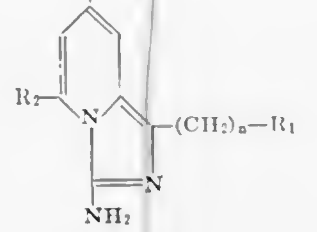
No Drawing. Filed Feb. 29, 1972, Ser. No. 230,506

Claims priority, application Japan, Mar. 15, 1971, 46/14,159

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 H **12 Claims**

The present invention provides 3-amino-imidazo[1,5-a]-pyridines expressed by the general formula,



(I)

(wherein: R_1 is a hydrogen atom, a phenyl group, a halogen-substituted phenyl group, or a lower straight or branched alkyl-substituted phenyl group; R_2 is a hydrogen atom, a halogen atom, or a lower straight or branched alkyl group; R_3 is a hydrogen atom, a halogen atom, a lower straight or branched alkyl group, an amino group, or an acetoamido group; and n is 0 or 1), and acid addition salts thereof.

The substances of this invention expressed by the general Formula I exhibit excellent gastric antisecretory action without an anticholinergic effect.

3,790,587
ANTIMYCOTIC BENZISOTHIAZOLINE DERIVATIVES

Horst Boshagen, Haan, and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation-in-part of applications Ser. No. 566,199, July 19, 1966, and Ser. No. 783,756, Dec. 13, 1968, both now abandoned. This application June 10, 1971, Ser. No. 151,929

Claims priority, application Germany, July 29, 1965, P 15 45 844.3

Int. Cl. C07d *91/12*

U.S. Cl. 260—304 **15 Claims**

The weakly basic products obtained from the reaction of an N-substituted-3-halogenobenziothiazolium halogenide and ammonia, and the salts of these products with strong acids, possess antimycotic properties. The substituents on the nitrogen atom of the 3-halogenoisothiazolium halogenide can be alkyl group of 1 to 7 carbon atoms, benzyl, cyclohexyl, methylcyclohexyl, phenyl or phenyl substituted by halogen, nitro, lower alkyl, nitro, lower alkyl, lower alkoxy or di-(lower alkyl) amino. A typical embodiment is the hydrochloride salt of the product obtained from 2-methyl-3-chlorobenzisothiazolium chloride and ammonia, said hydrochloride being colorless prisms and having the empirical formula $C_8H_8NS.HCl$ with a melting point of 220° C.

3,790,588
METHOD OF MANUFACTURING DIALKYLAMINO - 1,3,4 - OXADIAZOLES AND 1,3,4-THIADIAZOLES

Norman A. Dahle, Mission, Kans., assignor to Gulf Research and Development Company, Pittsburgh, Pa.

No Drawing. Filed Oct. 24, 1969, Ser. No. 869,385

Int. Cl. C07d *85/54, 91/62*

U.S. Cl. 260—306.8 D **6 Claims**

5-substituted tetrazoles are reacted with N,N-dialkyl carbamyl chlorides or corresponding thiocarbamyl chlorides and the reaction products are heated to produce 2-dialkylamino-5-substituted-1,3,4-oxadiazoles and thiadiazoles by decomposition and molecular rearrangement. The products are useful as selective herbicides.

3,790,589
SUBSTITUTED 5-NITROIMIDAZOLES AND METHOD OF PREPARING THE SAME

Goro Asato, Titusville, Gerald Berkelhammer, Princeton, and William Henry Gastrock, Hightstown, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Application Oct. 2, 1969, Ser. No. 863,378, now Patent No. 3,649,638, which is a continuation-in-part of abandoned application Ser. No. 766,984, Oct. 11, 1968. Divided and this application Nov. 26, 1971, Ser. No. 202,568

Int. Cl. C07d *91/62*

U.S. Cl. 260—306.8 D **3 Claims**

This invention relates to new chemical compounds of the class 1-substituted-5-nitro-2-substituted imidazoles and methods for the preparation thereof. These compounds are useful for their anti-microbial activity.

3,790,590
2-AMINO - 1,3,4 - THIADIAZOLE-5-CARBOXALDEHYDE OXIME AND 2-ACETAMIDO-1,3,4-THIADIAZOLE-CARBONITRILE

William Alan Remers, West Lafayette, Ind., Gabriel Joseph Gibs, Pearl River, N.Y., and Martin Joseph Weiss, Oradell, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Application Oct. 30, 1970, Ser. No. 85,736, now Patent No. 3,700,684, which is a continuation-in-part of application Ser. No. 766,986, Oct. 11, 1968, now Patent No. 3,564,002. Divided and this application Feb. 24, 1972, Ser. No. 229,151

Int. Cl. C07d *91/62*

U.S. Cl. 260—306.8 D **2 Claims**

The preparation of 2-amino or substituted amino-5-substituted thiadiazoles are described. They are useful as intermediates for the preparation of, for example, 2-(2-amino-5-1,3,4-thiadiazolyl)-1-methyl - 5 - nitroimidazole which has anti-protozoal and anti-bacterial properties.

3,790,591
INTERMEDIATE 4-METHOXY ISOXAZOLES

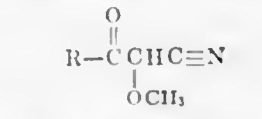
Harry Allen Albrecht, Towaco, and John Thomas Plati, Rutherford, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Aug. 6, 1970, Ser. No. 61,785, now Patent No. 3,706,761, which is a division of application Ser. No. 682,551, Nov. 13, 1967, now Patent No. 3,547,973, which in turn is a division of application Ser. No. 446,068, Apr. 6, 1965, now Patent No. 3,400,122. Divided and this application Aug. 11, 1972, Ser. No. 279,917

Int. Cl. C07d *85/44*

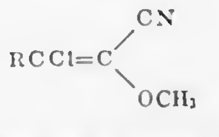
U.S. Cl. 260—307 H **2 Claims**

Antibacterial N^1-(4-methoxy-3-alkyl-5-isoxazolyl)-sulfanilamides, N^1-(4-methoxy-5-alkyl-3-isoxazolyl)sulfanilamides and their base addition salts with pharmaceutically acceptable bases are described. The N^1(4-methoxy-3-alkyl-5-isoxazolyl)sulfanilamides are prepared from the sequential intermediates 4-methoxy-5-alkylisoxazole,



$$R{-}\overset{\displaystyle O}{\overset{\|}{C}}\underset{\displaystyle OCH_3}{\underset{|}{C}H}C{\equiv}N$$

wherein R is hydrogen or lower alkyl, and 5-amino-4-methoxy-3-alkylisoxazole. The N^1-(4-methoxy-5-alkyl-3-isoxazolyl)sulfanilamides are prepared from the sequential intermediates



$$RCCl{=}C\begin{matrix}\diagup CN\\ \diagdown OCH_3\end{matrix}$$

wherein R is hydrogen or lower alkyl, and 3-amino-4-methoxy-5-alkylisoxazole.

3,790,592
1-SUBSTITUTED-5-NITROIMIDAZOL-2-YLALKYL-(N-SUBSTITUTED)-CARBAMATES

John A. Carlson, Mead Road, R.F.D. 2, Nassau, N.Y. 12123; Dale R. Hoff, 2 Kings Ridge Road, R.F.D. 1, Basking Ridge, N.J. 07920; and Clarence S. Rooney, 416 Fletchers Road, Beaconsfield, Quebec, Canada

No Drawing. Application Sept. 5, 1969, Ser. No. 855,769, now Patent No. 3,646,027, dated Feb. 29, 1972, which is a continuation-in-part of application Ser. No. 550,932, May 18, 1966, which in turn is a continuation-in-part of application Ser. No. 470,239, July 7, 1965, both now abandoned. Divided and this application Nov. 12, 1971, Ser. No. 198,432

Int. Cl. C07d *49/36*

U.S. Cl. 260—309 **8 Claims**

1-substituted-5-nitroimidazol-2-ylalkyl carbamates containing N-alkoxy, alkanoyloxy, or benzoyloxy substituents, and acid addition salts thereof are prepared from 1-substituted-5-nitroimidazoles having at the 2-position of the imidazole ring a hydroxyalkyl, mercaptoalkyl, haloalkyl, halocarbonylalkyl or halothiocarbonyloxyalkyl radical. The 1-substituted - 5 - nitroimidazol-2-ylalkyl-(N-substituted)-carbamates are useful in the treatment of parasitic diseases. Antiparasitic compositions in which the active ingredient is a 1-substituted-imidazol-2-ylalkyl-(N-substituted)-carbamate are also provided.

3,790,593
1-SUBSTITUTED-5-NITROIMIDAZOL-2-YLALKYL-(N-SUBSTITUTED)-CARBAMATES

John A. Carlson, Mead Road, R.F.D. 2, Nassau, N.Y. 12123; Dale R. Hoff, 2 Kings Ridge Road, R.F.D. 1, Basking Ridge, N.J. 07920; and Clarence S. Rooney, 416 Fletchers Road, Beaconsfield, Quebec, Canada

No Drawing. Application Sept. 5, 1969, Ser. No. 855,765, now Patent No. 3,646,027, dated Feb. 29, 1972, which is a continuation-in-part of application Ser. No. 550,932, May 18, 1966, which in turn is a continuation-in-part of application Ser. No. 470,239, July 7, 1965, both now abandoned. Divided and this application Nov. 12, 1971, Ser. No. 198,440

Int. Cl. C07d *49/36*

U.S. Cl. 260—309 **8 Claims**

1-substituted-5-nitroimidazol-2-ylalkyl carbamates containing N-amino or N-substituted amino substituents, and acid addition salts thereof are prepared from 1-substituted-5-nitroimidazoles having at the 2-position of the imidazole ring an hydroxyalkyl, mercaptoalkyl, haloalkyl, halocarbonylalkyl or halothiocarbonyloxyalkyl radical. The 1 - substituted-5-nitroimidazol-2-ylalkyl-(N-substituted)-carbamates are useful in the treatment of parasitic diseases. Antiparasitic compositions in which the active ingredient is a 1-substituted imidazol-2-ylalkyl-(N-substituted)-carbamate are also provided.

3,790,594
THIENYL-IMIDAZOLYL ALKANOIC ACIDS

Werner Meiser, Carl Metzger, Karl Heinz Buchel, and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Nov. 24, 1971, Ser. No. 201,981

Claims priority, application Germany, Dec. 5, 1970, P 20 59 949.9

Int. Cl. C07d *49/36*

U.S. Cl. 260—309 **14 Claims**

Derivatives of alkanoic acids bearing a thienyl group and an imidazolyl group on a common carbon atom and optionally being further substituted on the same carbon atom are antimycotic agents. The compounds, of which methyl dithienyl-imidazolylacetate is a representative embodiment, are obtained from the corresponding thienyl halo or hydroxy alkanoic acid derivative and imidazole, a salt thereof or reactive derivative thereof.

3,790,595
4-SUBSTITUTED-5,7-DINITRO-2-(α,α-DIFLUOROALKYL)BENZIMIDAZOLE COMPOUNDS

John L. Miesel, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Continuation-in-part of abandoned application Ser. No. 833,685, June 16, 1969. This application Jan. 28, 1972, Ser. No. 221,809

Int. Cl. C07d *49/38*

U.S. Cl. 260—309.2 **10 Claims**

4-substituted-5,7-dinitro - 2 - (α,α-difluoroalkyl)benzimidazole compounds and their alkali metal and alkaline earth metal salts, useful as insecticides.

3,790,599

dric phenols which are substantially insoluble in epichloro-

3,790,606

3,790,596

METHOD OF PRODUCING INDOLE AND SUBSTITUTION PRODUCTS OF THE SAME

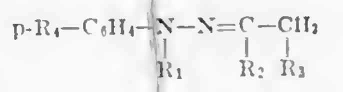
Nikolai Nikolaevich Suvorov, 3 ulitsa Frunzenskaya 6, kv. 172; Vladimir Grigorievich Avramenko, ulitsa Kondratyuka 14, kv. 50; Valentina Nikolaevna Shkilkova, 2 Pereyaslavsky pereulok 9, kv. 12; and Lidia Ionovna Zamyshlyaeva, Novolesnaya ulitsa 18, korpus 1, kv. 7, all of Moscow, U.S.S.R.

No Drawing. Continuation-in-part of abandoned application Ser. No. 712,361, Mar. 12, 1968. This application May 14, 1971, Ser. No. 143,644

Int. Cl. C07d *27/56*

U.S. Cl. 260—319.1 **8 Claims**

A method of producing indole and its derivatives consisting in that an arylhydrazone having the general formula



$$p\text{-}R_4\text{—}C_6H_4\text{—}\underset{R_1}{N}\text{—}N\text{=}\underset{R_2}{C}\text{—}\underset{R_3}{CH_2}$$

where R_1 and R_2 are hydrogen or methyl, R_3 is hydrogen or ethyl, and R_4 is hydrogen or chlorine, bromine, methyl or methoxy, is catalyzed in the vapor phase over aluminum oxide at a temperature of 300–400° C.

3,790,597

SULFUR DERIVATIVES OF ALKYLHYDROXYPHENYL MALEIMIDES AND COMPOSITIONS THEREOF

Martin Dexter, Briarcliff Manor, and Martin Knell, Ossining, N.Y., and Hans Jakob Peterli, Fullinsdorf, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Apr. 12, 1971, Ser. No. 133,448

Int. Cl. C07d *27/10*

U.S. Cl. 260—326.5 S **7 Claims**

Novel sulfur derivatives of alkylhydroxyphenyl maleimides were prepared. The alkyl-hydroxyphenyl maleimides were prepared by first reacting an alkylhydroxyphenyl amine with maleic anhydride with subsequent cyclization of the maleamic acid to obtain the corresponding maleimide. The sulfur containing derivatives of the alkylhydroxyphenyl maleimide is prepared by reacting the corresponding maleimide with an appropriate mercaptan or dimercaptan compound. The compounds of this invention are useful as stabilizers of organic materials which are subject to oxidative and thermal deterioration.

3,790,598

PROCESS FOR PREPARING α-AMINO ACIDS

Ralph A. Damico, Colerain Township, Hamilton County, and Robert G. Laughlin, Springfield Township, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Dec. 19, 1969, Ser. No. 886,748

Int. Cl. C07c *99/00, 101/00*

U.S. Cl. 260—326.14 T **15 Claims**

Process for preparing α-amino acids comprising reacting an isocyano acetate ester or salt with a strongly basic metalating agent to provide an α-metalated isocyano ester or salt carbanion, reacting said α-metalated isocyano ester or salt carbanion with an electrophilic reagent to provide an α-substituted isocyano acetate ester or salt; and thereafter hydrolyzing said α-substituted isocyano ester or salt to provide an α-amino acid.

3,790,599

PREPARATION OF α-AMINOACIDS FROM HYDANTOINS

Jean Louis Zundel, 30 Rue Pierre Geofroix, Colombes (Hauts-de-Seine), France

No Drawing. Filed June 10, 1970, Ser. No. 45,270

Claims priority, application Great Britain, June 10, 1969, 29,350/69

Int. Cl. C07d *27/52;* **C07c** *99/00, 101/00*

U.S. Cl. 260—326.14 T **14 Claims**

Alpha-amino acids are produced by hydrolyzing hydantoins with a strong base in the presence of an acid having a dissociation constant of 1×10^{-2} to 1×10^{-12}.

3,790,600

2-(3 - BENZO[b]THENYL) - 2 - THIOPSEUDOUREA AND ITS PHARMACEUTICALLY ACCEPTABLE SALTS

Zaven S. Ariyan, Woodbury, Conn., and Shih-Yu Ma, Wayne, N.J., assignors to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed Apr. 6, 1972, Ser. No. 241,837

Int. Cl. A61k *27/00;* **C07d** *63/22*

U.S. Cl. 260—330.5 **2 Claims**

2-(3-benzo[b]thenyl)-2-thiopseudourea and its pharmaceutically acceptable salts are a new group of compounds which are useful as anti-aggression agents.

3,790,601

1,3-BENZODIOXOL-2-THIONES, PROCESS OF MANUFACTURE AND METHOD OF USE

Jean-Jacques Gallay, Magden, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

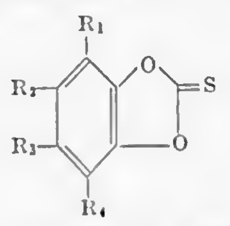
No Drawing. Filed Jan. 26, 1971, Ser. No. 109,976

Claims priority, application Switzerland, Jan. 30, 1970, 1,387/70

Int. Cl. C07d *13/10*

U.S. Cl. 260—340.5 **8 Claims**

1,3-benzodioxol-2-thiones of the formula



their manufacture, their utility against parasitic nematodes phytopathogenic fungi and representatives of the order Acarina and biocidal preparations containing them are disclosed. In this formula, R_1 and R_2 each is hydrogen or halogen; R_3 is hydrogen, halogen, iso-thiocyanate, lower alkyl or the radical-COR, wherein R stands for lower alkyl, lower halogenalkyl, lower alkoxy, phenoxy or anilino; and R_4 is hydrogen, halogen or lower alkoxy; the proviso is that at least one of R_1 to R_4 is different from hydrogen.

3,790,602

ACCELERATED PROCESS FOR DIARYL SULFONE GLYCIDYL ETHERS

Claire Bluestein, Glen Rock, N.J., William Rosenblatt, Pearl River, N.Y., and John R. Clark, Nutley, N.J., assignors to Witco Chemical Corporation, New York, N.Y.

No Drawing. Filed Mar. 31, 1972, Ser. No. 239,986

Int. Cl. C07d *1/04*

U.S. Cl. 260—348.6 **5 Claims**

An improved accelerated process for preparing glycidyl ethers of polyhydric phenols, particularly those polyhydric phenols which are substantially insoluble in epichlorohydrin, such as bis(4-hydroxyphenyl)sulfone (bisphenol-S), by refluxing a mixture of the polyhydric phenol in excess epichlorohydrin in the presence of a catalytic amount of an alkali metal salt of a weak carbon containing acid having from 1 to 4 carbon atoms, such as sodium or potassium formate or acetate, for instance, to accelerate the formation of the soluble adduct in epichlorohydrin. The resultant solution of the adduct of polyhydric phenol and epichlorohydrin in epichlorohydrin solution is treated with a stoichiometric excess of alkali metal hydroxide while refluxing, to form the glycidyl ether product which is useful in making films, castings, coatings, adhesives and the like.

3,790,603

6,14-DICHLOROPYRANTHRONE

Fritz Graser, Ludwigshafen, and Gustav Bock, Neustadt, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

No Drawing. Filed Feb. 16, 1971, Ser. No. 115,826

Claims priority, application Germany, Feb. 20, 1970, P 20 07 848.2

Int. Cl. C09b *3/42*

U.S. Cl. 260—360 **1 Claim**

6,14 - dichloropropyranthrone and a process for its manufacture from 3,3′-dichloro-2,2′-dimethyl-1,1′-dianthraquinoyl.

6,14-dichloropyranthrone is a pigment dye having excellent coloristic properties.

3,790,604

ANTHRAQUINONE COMPOUNDS

Ian Cheetham, Kenneth Dunkerley, Colin William Greenhalgh, and Duncan Adrian Sidney Phillips, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

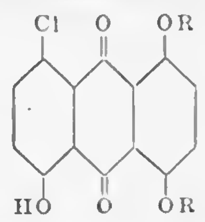
No Drawing. Filed May 19, 1972, Ser. No. 254,861

Claims priority, application Great Britain, Feb. 18, 1972, 7,543/72

Int. Cl. C09b *1/10, 1/14*

U.S. Cl. 260—383 **1 Claim**

The anthraquinone compound of the formula:



wherein R is hydrogen or lower alkyl, a process for the manufacture of the said compounds, and the use of the said compounds as dyestuffs intermediates.

3,790,605

17α-ETHYNYLESTRIOL 3-CYCLOPENTYL ETHER

Russell J. Kraay and Eugene Farkas, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of abandoned application Ser. No. 127,690, Mar. 24, 1971. This application Apr. 23, 1971, Ser. No. 136,671

Int. Cl. C07c *169/08*

U.S. Cl. 260—397.5 **1 Claim**

17α-ethynylestriol 3-cyclopentyl ether, estrogenic hormone useful in treatment of menopausal syndrome and all other conditions of estrogen deficiency or in which estrogens may be used therapeutically.

3,790,606

ALKOXYLATED MANNICH COMPOSITIONS AND DERIVATIVES THEREOF

Lucien Sellet, Saddle River, N.J., assignor to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Continuation-in-part of application Ser. No. 573,789, Aug. 22, 1966. This application Sept. 30, 1970, Ser. No. 76,988

Int. Cl. C07c *141/04;* **C14c** *11/00;* **D06m** *13/46*

U.S. Cl. 260—401 **2 Claims**

Treating agents are prepared by condensing Mannich Base compounds with alkylene oxide and thereafter reacting the alkoxylated compounds with quaternizing reagents. Mannich Base compounds are obtained by condensation of phenols with aldehydes and alkanolamines.

3,790,607

CARBONYLATION OF FLUOROCARBON IODIDES

Bernard Murray Lichstein, Elizabeth, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed May 20, 1971, Ser. No. 145,564

Int. Cl. C07c *51/00, 51/54, 67/00*

U.S. Cl. 260—408 **14 Claims**

This invention provides a direct method for carbonylation of fluorocarbon compounds without loss of fluorine substituents. The method comprises reacting a fluorocarbon iodide with carbon monoxide and an active-hydrogen containing compound, such as methanol, in the presence of a metal carbonyl catalyst.

3,790,608

PROCESS FOR PREPARING EDIBLE FATS BY HYDROGENATION AND FRACTIONATION OF TRIGLYCERIDE FATTY OILS CONTAINING C_{20} AND C_{22} FATTY ACIDS

Brian Leonard Caverly, Meopham, England, Gerard Joseph Hendrik Meertens, Eindhoven, Netherlands, and John Barry Rossell, St. Albans, England, assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 749,970, Aug. 5, 1968. This application July 23, 1971, Ser. No. 165,703

Claims priority, application Great Britain, Aug. 9, 1967, 36,657/67

Int. Cl. A23d *5/00;* **C11c** *3/12*

U.S. Cl. 260—409 **18 Claims**

A hard stearine butter for confectionery is prepared from a triglyceride oil containing mono- and poly-ethenoic acids of which 25 to 85% by weight of total fatty acids are unsaturated C_{20} and C_{22} acids, for instance a rapeseed or other crucifera oil, by selective hardening to an iodine value of between 70 and 85 with isomerization to a trans index of between 50 and 80, and fractionation to isolate a fat fraction of D_{20} at least 1400 and D_{35} below 300.

3,790,609

CARBOXYLIC, HYDROXY-CARBOXYLIC AND RELATED ACID MIXTURES

Joseph Z. Pasky, Oakland, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Jan. 29, 1971, Ser. No. 111,143

Int. Cl. C09f *5/10*

U.S. Cl. 260—413 **8 Claims**

Mono- and dibasic carboxylic acid mixtures containing an organic hydroxy-acid component are purified by contacting the mixture in the liquid phase with an alkylatable arene and hydrogen fluoride at a temperature within the 0° C. to 80° C. range.

3,790,610

ORGANIC POLYMER CHELANTS FOR IRON AND MANGANESE IONS

John C. Lum, Union, N.J., and Ronald F. Beyer, Concord, Calif., assignors to Colloids, Inc., Newark, N.J.
No Drawing. Filed Sept. 7, 1971, Ser. No. 178,119
Int. Cl. C07f *13/00, 15/02*
U.S. Cl. 260—429 J **5 Claims**

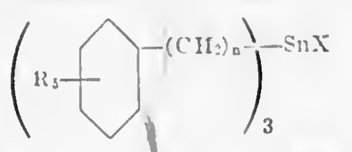
Process for soluble polymeric chelates of iron and manganese which comprises reacting iron and/or manganese ions with polymers and copolymers based on organic monomeric acids, the polymers and copolymers preferably having relatively low molecular weights of less than 50,000, the chelation process being applicable at a wide range of pH values of the ion containing solution, compositions of polymeric chelates prepared thereby, and uses therefor.

3,790,611

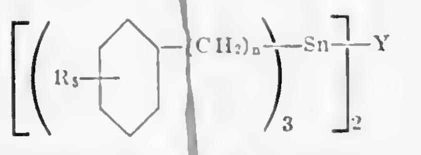
TRIS(CYCLOHEXYLALKYL)TIN OR HEXAKIS (CYCLOHEXYLALKYL)TIN COMPOUNDS

Melvin H. Gitlitz and Bernard G. Kushlefsky, Edison, N.J., assignors to M & T Chemicals Inc., Greenwich, Conn.
No Drawing. Filed Oct. 5, 1972, Ser. No. 295,137
Int. Cl. C07f *7/22*
U.S. Cl. 260—429.7 **5 Claims**

Triorganotin compounds of the general formulae



and



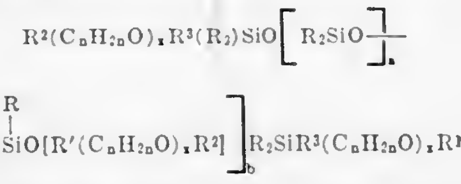
are novel and effectively combat a variety of undesirable organisms, including fungi and mites when applied to objects, particularly plants, that are susceptible to attack by these organisms. In the foregoing formulae each R is individually selected from hydrogen and lower alkyl radicals, X is a chlorine, bromine, fluorine, hydroxyl, carboxylate, phenoxy, alkoxy (—OR′) or mercaptide (—SR′) radical wherein R′ represents an alkyl or aryl radical containing between 1 and 12 carbon atoms, inclusive; Y is an oxygen, sulfur, or a sulfate radical and *n* represents an integer between 1 and 5, inclusive.

3,790,612

ORGANOPOLYSILOXANE COPOLYMER USEFUL AS SURFACTANT

William J. Raleigh, Watervliet, N.Y., assignor to General Electric Company
No Drawing. Original application May 27, 1970, Ser. No. 41,067, now Patent No. 3,654,195. Divided and this application Oct. 14, 1971, Ser. No. 189,446
Int. Cl. C07f *7/08*
U.S. Cl. 260—448.2 B **5 Claims**

An organopolysiloxane copolymer of the formula,



$$R^2(C_nH_{2n}O)_xR^3(R_2)SiO\left[R_2SiO\right]_a\left[\overset{\overset{R}{|}}{Si}O[R'(C_nH_{2n}O)_xR^2]\right]_b R_2SiR^3(C_nH_{2n}O)_xR^1$$

wherein R, R² are lower monovalent hydrocarbon radicals, R′ and R³ are lower divalent hydrocarbon radicals, *a* has a value of at least 4, *b* has a value of at least 1, *n* has a value of from 2 to 4 and *x* has a value of at least 5.

3,790,613

ORGANOSILICON COMPOUND WITH ISOTHIOCYANATE SUBSTITUENT BONDED THROUGH DIVALENT BRIDGE

Abe Berger, Schenectady, N.Y., assignor to General Electric Company
No Drawing. Application June 9, 1971, Ser. No. 151,549, which is a continuation-in-part of application Ser. No. 796,647, Jan. 31, 1969, now Patent No. 3,646,089. Divided and this application June 23, 1972, Ser. No. 266,516
Int. Cl. C07f *7/08, 7/18*
U.S. Cl. 260—448.8 R **5 Claims**

A new class of organosilicon compounds having an isothiocyanate group bonded to the silicon atom through an alkylene bridge of at least three carbon atoms, or an alkylene bridge having sulfur oxygen or nitrogen linkages therein is made by reacting the corresponding amino alkyl substituted organosilicon compound with carbon disulfide and a dialkyl carbodiimide. The compositions are extremely useful where base cleavage of the silicon atom from the isothiocyanate substituted group is a problem, such as glass sizing where the glass is basic and the formation of polyurethanes where a base catalyst is implied.

3,790,614

HERBICIDAL IMIDO ESTERS

Paulus P. Montijn, Amsterdam, Netherlands, and Ernest Haddock, Sheppey, Kent, England, assignors to Shell Oil Company, New York, N.Y.
No Drawing. Filed Dec. 6, 1971, Ser. No. 205,319
Claims priority, application Great Britain, Sept. 14, 1971, 59,718/71
Int. Cl. C07c *119/20*
U.S. Cl. 260—453 R **1 Claim**

Ethyl N-benzoyl - 3,4 - dichloroanilinopropionimidate monohydrochloride, useful for controlling undesired plant growth.

3,790,615

O,N-DIPHENYLTHIOCARBAMIC ACID ESTERS

Walter Traber, Riehen, Heinz Hamböck, Binningen, and Anton Georg Weiss, Benken, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Original application Jan. 26, 1970, Ser. No. 5,954, now Patent No. 3,721,699. Divided and this application Jan. 2, 1973, Ser. No. 320,390
Int. Cl. C07c *125/06*
U.S. Cl. 260—455 A **5 Claims**

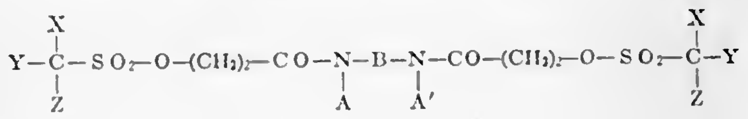
Certain O,N-diphenyl-carbamic acid esters in which one phenyl moiety is substituted in the 2-position by a halogenated phenoxy radical are disclosed as microbicidally active compounds. A method for controlling microorganisms with the aid of such compounds and compositions containing them are also described.

3,790,616

SULPHONIC ACID ESTERS, THEIR PRODUCTION AND COMPOSITIONS OF AND USES THEREFOR

Alexander Senning, Brabrand, and Hans Christian Buchholt, Aayboy, Denmark, and Robert Bierling, Wuppertal-Elberfeld, Dieter Steinhoff, Bochum, and Gerhard Trossmann, Bonn-Bad Godesberg, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Dec. 3, 1971, Ser. No. 204,684
Claims priority, application Germany, Dec. 9, 1970, P 20 60 551.0
Int. Cl. A61k *27/00;* **C07c** *143/08*
U.S. Cl. 260—456 A **17 Claims**

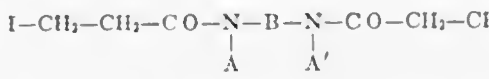
Sulphonic acid esters of the formula:



$$Y-\overset{\overset{X}{|}}{\underset{\underset{Z}{|}}{C}}-SO_2-O-(CH_2)_2-CO-\underset{\underset{A}{|}}{N}-B-\underset{\underset{A'}{|}}{N}-CO-(CH_2)_2-O-SO_2-\overset{\overset{X}{|}}{\underset{\underset{Z}{|}}{C}}-Y$$

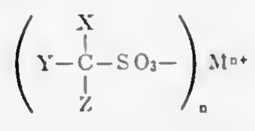
(I)

wherein A and A′ are the same or different and each is hydrogen or an aliphatic moiety; B is a bifunctional aliphatic moiety; and X, Y and Z are the same or different and each is hydrogen, halogen, nitrile, pseudo-halogen or methylsulphonyl, are produced by reacting a di-iodo compound of the formula:



$$I-CH_2-CH_2-CO-\underset{\underset{A}{|}}{N}-B-\underset{\underset{A'}{|}}{N}-CO-CH_2-CH_2-I \qquad (II)$$

wherein A, A′ and B are as above defined, with a sulphonate of the formula:



$$\left(Y-\overset{\overset{X}{|}}{\underset{\underset{Z}{|}}{C}}-SO_3-\right)_n M^{n+} \qquad (III)$$

wherein X, Y and Z are as above defined; M^{n+} is a cation which forms a sparingly soluble iodide; and *n* is 1 or 2.

These compounds are useful for their cytostatic activity against transplanted lymphatic leukaemia L 1210 in mice.

3,790,617

PROCESS FOR PREPARATION OF ORGANIC DINITRILES

Yoshiyasu Masada and Teruo Yasue, Kurashiki, Japan, assignors to Kurashiki Rayon Co., Ltd., Kurashiki, Japan
No Drawing. Filed Jan. 21, 1969, Ser. No. 792,812
Claims priority, application Japan, Jan. 25, 1968, 43/4,509
Int. Cl. C07c *121/02, 121/20, 121/26*
U.S. Cl. 260—465.8 D **8 Claims**

A process for preparing organic dinitriles by dimerization of acrylonitrile comprising reacting acrylonitrile with hydrogen in a gaseous phase at 100 to 450° C. under a total pressure of 1 to 20 atmospheres by using as catalyst ruthenium metal or a ruthenium compound reducible to ruthenium metal under reaction conditions. Catalytic activity of the catalyst can be increased by addition of an alkali metal hydroxide or a mixture of a halide of nickel, chromium, molybdenum or tungsten with an organic phosphorus compound.

3,790,618

Nω-4,4-DIMETHOXYBENZHYDRYL DERIVATIVES OF ASPARAGINE AND GLUTAMINE

Wolfgang Konig, Langenhain, Taunus, and Rolf Geiger, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft, vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Original application Mar. 12, 1969, Ser. No. 806,734, now abandoned. Divided and this application Apr. 21, 1971, Ser. No. 136,262
Int. Cl. C07c *103/32*
U.S. Cl. 260—471 A **7 Claims**

N^ω-4,4′-dimethoxybenzyl-protected asparagine and glutamine compounds useful as intermediates in the synthesis of therapeutics by peptide condensation reactions.

3,790,619

FLUORIDE SUBSTITUTED CARBANILATES

Fred Y. Edamura and Thomas J. Giacobbe, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Nov. 1, 1971, Ser. No. 194,532
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C **7 Claims**

Compounds useful as herbicides and fungicides defined as substituted (thio-and dithio-)carbanilate compounds and derivatives thereof.

3,790,620

ARYL ESTERS OF PHENYL KETENE CARBOXYLIC ACIDS

Kenneth Butler, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.
No Drawing. Original application Jan. 5, 1968, Ser. No. 695,851, now Patent No. 3,574,189, dated Apr. 6, 1971. Divided and this application Oct. 31, 1969, Ser. No. 873,087
Int. Cl. C07c *69/66*
U.S. Cl. 260—471 R **8 Claims**

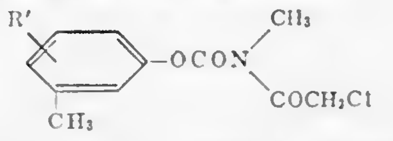
Arylchloro (and bromo) carbonyl ketenes, arylcarboxy ketene esters and aryl carbothiolic phenylesters derived therefrom, methods for their preparation and the use of the esters as acylating agents for the production of esters of α-carboxy and α-carbothiolic arylacetyl derivatives of 6-amino-penicillanic acid and, by hydrolysis, the corresponding acid derivatives are described.

3,790,621

DIALKYLPHENYL-N-METHYL-HALOACETYL CARBAMATES

Michihiko Sakai and Yasuo Sato, Kyoto, and Rokuya Morimoto, Kazuo Konishi, and Katsuyuki Maki, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
No Drawing. Filed May 12, 1969, Ser. No. 823,968
Claims priority, application Japan, May 11, 1968, 43/31,755
Int. Cl. C07c *125/06*
U.S. Cl. 260—479 C **4 Claims**

Compounds having the general formula



wherein R′ represents the methyl group attached to the 4- or 5-position of the benzene ring or the isopropyl group attached to the 5-position of the benzene ring, possess good insecticidal properties with low toxicity to homothermal animals.

3,790,622

PROCESS FOR THE PRODUCTION OF HALOGENATED MALONATES

Denzel Allan Nicholson, Springfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Original application Oct. 25, 1968, Ser. No. 770,860, now Patent No. 3,662,039. Divided and this application Dec. 27, 1971, Ser. No. 212,625
Int. Cl. C07c *69/62*
U.S. Cl. 260—485 H **8 Claims**

The process of reacting methylenediphosphonate esters (C_7–C_{22}), malonate esters (C_4–C_{22}), or phosphonoacetate esters (C_8–C_{22}) with hypohalite ions in an aqueous reaction media comprising a water miscible organic solvent; mono- and dihalogenated methylenediphosphonate esters (C_9–C_{22}); mono- and dihalogenated malonate esters (C_4–C_{22}); and mono- and dihalogenated phosphonoacetate esters (C_8–C_{22}).

3,790,623

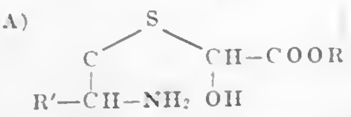
CONDENSATION PRODUCTS OF GLYOXYLIC ACID ESTERS WITH AMINOTHIOLS

Jean-Pierre Fourneau, Paris, France, assignor to Laboratoires Houde, Paris, France
No Drawing. Filed Dec. 16, 1970, Ser. No. 98,921
Claims priority, application France, Dec. 19, 1969, 6944143
Int. Cl. C07c *149/20*
U.S. Cl. 260—481 R **1 Claim**

The invention relates to a therapeutical composition useful in particular for the prevention and treatment of injuries due to ionizing radiations.

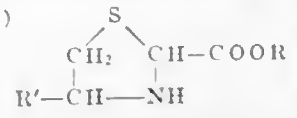
Said composition comprises, as active ingredient, a compound responding to either one of the following formulae:

(A)



or

(B)



in which R is a straight- or branched-chain alkyl group having 1–18 carbon atoms and R′ is hydrogen, —COOH or —COOR″ in which R″ is a straight- or branched-chain alkyl group having 1–18 carbon atoms.

The invention relates also to a process for the preparation of the active ingredient of said composition and to the new compounds of Formula A or B.

3,790,624
OXIDATION OF ALKYL-SUBSTITUTED AROMATIC COMPOUNDS

Stephen N. Massie, Palatine, and Herman S. Bloch, Skokie, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Mar. 24, 1972, Ser. No. 237,943

Int. Cl. C07c *45/02, 47/52, 63/02*

U.S. Cl. 260—524 R **11 Claims**

The alkyl-substituted aromatic compounds, and particularly alkyl-substituted aromatic hydrocarbons, are treated with an oxygen-containing gas in the presence of a catalyst comprising a mixture of a transition metal compound and a hypochlorite compound to obtain improved yields of the desired oxygenated aromatic compounds.

3,790,625
POLY(GLYCIDIC ACID) AND METHODS OF PREPARATION THEREFOR

Herwart V. Vogt, Grosse Ile, and Pauls Davis, Gibraltar, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Filed Aug. 24, 1970, Ser. No. 66,618

Int. Cl. C07c *59/12*

U.S. Cl. 260—535 P **3 Claims**

Polymers of glycidic acid are prepared by either (1) oxidation of poly(glycidol) or (2) homopolymerization and ion exchange of potassium glycidate. The polymers of glycidic acid [poly(glycidic acid)] are useful as intermediates in the preparation of alkali soluble resins, thickeners, suspending and dispersing agents, and as flocculants.

3,790,626
PURIFICATION OF ADIPIC ACID

Hiroyuki Shinohara, Hiroaki Ohashi, and Kazuhiko Konno, Oaza-Wakaguri, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo-to, Japan

No Drawing. Filed Mar. 1, 1971, Ser. No. 120,049

Claims priority, application Japan, Apr. 3, 1970, 45/27,904

Int. Cl. C07c *51/42*

U.S. Cl. 260—537 P **6 Claims**

Raw crystals of adipic acid, prepared by oxidizing cyclohexane, cyclohexanone, cyclohexanol, or mixtures thereof with molecular oxygen are purified by subjecting the same to a nitric-acid treatment, the temperature of the raw crystals of adipic acid being prevented from exceeding 75° C. prior to the nitric-acid treatment, and recrystallizing the resulting adipic acid from water.

3,790,627
PROCESS FOR THE PRODUCTION OF TRICHLOROMETHANETHIOSULFENYL CHLORIDE

Helmut Magerlein, Erlenbach, Gerhard Meyer, Obernburg, and Hans-Dieter Rupp, Erlenbach, Germany, assignors to Glanzstoff AG, Wuppertal, Germany

No Drawing. Filed June 29, 1970, Ser. No. 50,919

Claims priority, application West Germany, July 1, 1969, P 19 33 242.4

Int. Cl. C07c *149/16*

U.S. Cl. 260—543 H **9 Claims**

A process for the preparation of trichloromethanethiosulfenyl chloride by reacting sulfur with trichloromethanesulfenyl chloride at an elevated temperature on activated carbon, preferably with less than the stoichiometric amount of sulfur and/or in the presence of sulfur chloride to suppress side reactions. The product of this process is a valuable intermediate known for use especially in the production of pesticides.

3,790,628
PURIFICATION OF PERCHLOROMETHYL MERCAPTAN

Albert M. Leon, Mamaroneck, and Robert C. Whittington, Bronx, N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Feb. 22, 1971, Ser. No. 117,685

Int. Cl. C07c *145/00*

U.S. Cl. 260—543 H **5 Claims**

This invention provides a process for the purification of perchloromethyl mercaptan. The purification process comprises thoroughly mixing an impure perchloromethyl mercaptan solution with water for a period between about 1 and about 3 minutes, and separating and removing from the mixture a substantially pure product of perchloromethyl mercaptan.

3,790,629
PROCESS FOR PREPARING ALKYL OR ARYL THIOPHOSPHORUS HALIDES AND MIXED ISOMERS THEREOF

Eugene Henry Uhing, Ridgewood, N.J., and Arthur Dock Fon Toy, Stamford, Conn., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Feb. 18, 1972, Ser. No. 227,616

Int. Cl. C07f *9/42*

U.S. Cl. 260—543 P **9 Claims**

Alkyl or aryl phosphonothioic dihalides and phosphinothioic monohalides are prepared by reacting an aliphatic or aromatic hydrocarbon respectively with a pentavalent thiophosphorus compound having at least two halogens attached thereto, and preferably three halogens, i.e. thiophosphoryl halide under at least autogenous pressure at a temperature of from 200° C. to 450° C. The compounds obtained are useful as constituents in insecticides, fungicides, pharmaceuticals, and as intermediates in preparation of other organophophorus compounds.

3,790,630
BENZENESULFONYL-UREAS

Rudi Weyer, Frankfurt am Main, Walter Aumüller, Kelkheim, Taunus, Helmut Weber, Frankfurt am Main, Karl Muth, Kelkheim, Taunus, and Felix Helmut Schmidt, Mannheim-Neuostheim, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

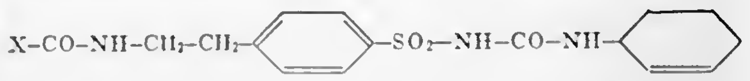
No Drawing. Filed July 28, 1969, Ser. No. 845,497

Claims priority, application Germany, Aug. 2, 1968, P 17 93 111.2

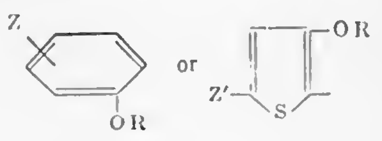
Int. Cl. C07c *127/00*

U.S. Cl. 260—553 DA **1 Claim**

Benzenesulfonyl-ureas of the formula



which in the free form or in the form of their salts have blood sugar lowering properties and are distinguished by a strong and long-lasting hypoglycemic action. In the formula X represents



wherein

R stands for an alkyl group having 1 to 4 carbon atoms,

Z stands for a halogen atom, an alkyl or alkoxy group both having 1 to 4 carbon atoms, and

Z′ stands for a halogen atom or an alkyl group having 1 to 4 carbon atoms.

3,790,631
CARBIMIDOYL UREAS

Guy D. Diana, Stephentown, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

No Drawing. Original application Mar. 2, 1970, Ser. No. 15,905, now Patent No. 3,673,201, which is a division of application Ser. No. 711,192, Mar. 7, 1968, now Patent No. 3,547,937. Divided and this application Oct. 21, 1971, Ser. No. 191,503

Int. Cl. C07c *127/16*

U.S. Cl. 260—553 A **6 Claims**

This invention relates to carbimidoyl ureas which are prepared by reacting the appropriate isocyanates with the appropriate amidines. The compounds possess anthelmintic activity.

3,790,632
BICYCLOHEPTENE-7-SYN-CARBALDEHYDES

Graham Ernest Robinson, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Mar. 28, 1972, Ser. No. 238,968

Claims priority, application Great Britain, Dec. 16, 1971, 58,400/71

Int. Cl. C07c *103/19*

U.S. Cl. 260—557 B **5 Claims**

The disclosure relates to novel bicycloheptene-7-syn-carbaldehydes, and to a novel process for the manufacture of both known and the novel bicycloheptene-7-syn-carbaldehydes, by isomerization of the corresponding anti-carbaldehydes in the presence of an amine.

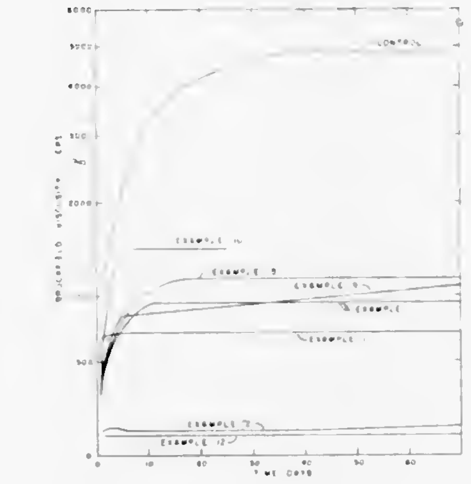
3,790,633
NOVEL LOW-VISCOSITY EPOXY CURING AGENTS

Woodrow Wilson Jedlicka, Euclid, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of abandoned application Ser. No. 76,112, Sept. 28, 1970. This application Mar. 10, 1971, Ser. No. 122,847

Int. Cl. C07c *103/30*

U.S. Cl. 260—561 B **7 Claims**



Novel compositions are prepared by the reaction of a polyamide or polyamine with an N-3-oxohydrocarbon-substituted 3-alkoxy-, 3-mercapto- or 3-aminopropionamide or similar compound. These compositions are useful as curing agents for polyepoxides, especially epoxy resins. Many of them also have low viscosity, low toxicity and low tendency to skin and eye irritation.

3,790,634
PRODUCTION OF AMINES AND DIAMINES

Virgil W. Weiss, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 2, 1971, Ser. No. 177,490

Int. Cl. C07c *85/04, 85/16*

U.S. Cl. 260—583 N **9 Claims**

Production of amines by:

(1) contacting a halohydrocarbon with a large excess of an ammonium salt and a large excess of ammonia, followed by evaporation of excess ammonia after the formation of amine hydrohalide in the reaction mixture, and

(2) subjecting the said reaction mixture to a temperature below 0° C. with the resultant precipitation of the amine hydrohalide, and

(3) neutralizing the said amine hydrohalide with a base to obtain the free amine.

3,790,635
PROCESS FOR THE PREPARATION OF CANTHAXANTHINE

Jacques Morel, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

No Drawing. Original application Aug. 23, 1968, Ser. No. 754,996, now Patent No. 3,646,149. Divided and this application June 18, 1971, Ser. No. 154,612

Int. Cl. C07c *45/04, 49/36*

U.S. Cl. 260—586 B **9 Claims**

Canthaxanthine, useful as a coloring agent for foods, may be made by oxidizing β-carotene or retrodehydro-β-carotene with a metaperiodate and, as catalyst, a metal oxide of Group V–A, VI–A, VII–A, or VIII of the Periodic Table.

3,790,636
PROCESS FOR THE PREPARATION OF ALKYL SUBSTITUTED RESORCINOLS

Arnold Brossi, Verona, and Antonino Focella and Sidney Teitel, Clifton, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Jan. 22, 1969, Ser. No. 793,191, now abandoned. Divided and this application Sept. 16, 1971, Ser. No. 181,198

Int. Cl. C07c *49/60*

U.S. Cl. 260—586 R **2 Claims**

Preparation of 5-alkyl substituted resorcinols such as Olivetol from aliphatic aldehydes and intermediates in this process.

3,790,637
PROCESS FOR THE MANUFACTURE OF VANILLIN FROM SULFITE WASTE LIQUOR

Chang-Tsing Yang, Hackensack, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed May 4, 1972, Ser. No. 250,388

Int. Cl. D21c *11/02*

U.S. Cl. 260—600 **12 Claims**

Vanillin is made by oxygenating sulfite waste liquor at a substantially neutral pH (i.e., between pH 5.5 and 8) in the presence of a water-insoluble solvent for vanillin to effect removal thereof.

3,790,638
(HYDROXY OR ALKANOYLOXY ALKYLENE) DIHYDROCARBYL PHOSPHINE OXIDES

Hans-Jerg Kleiner, Bad Soden, Taunus, Germany, assignor to Farbwerke Hoechst Aktiengeselschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Aug. 12, 1971, Ser. No. 171,305

Claims priority, application Germany, Aug. 13, 1970, P 20 40 280.6

Int. Cl. C07f *9/50*

U.S. Cl. 260—606.5 P **3 Claims**

Tertiary phosphine oxides are obtained by adding olefins having a terminal hydroxy or amino group or functional derivatives thereof to secondary phosphine oxides. The adducts are useful as intermediates in the preparation of flame-retardant agents, anti-corrosive agents, pesticides, pharmaceuticals and detergents.

3,790,639

PROCESS FOR PRODUCING A WATER-SOLUBLE METHYLOL PHOSPHINE-PHENOL ADDUCT

Donald J. Daigle, New Orleans, and George L. Drake, Jr., and Wilson A. Reeves, Metairie, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application May 7, 1971, Ser. No. 141,356. Divided and this application Mar. 28, 1972, Ser. No. 238,928

Int. Cl. C07f *9/50*

U.S. Cl. 260—606.5 P **8 Claims**

Soluble methylol phosphine adducts are prepared by reacting tris(hydroxymethyl)phosphine with substituted or unsubstituted phenol which contains one or more hydrogens ortho or para to the phenolic hydroxyl group. These adducts are convenient and useful for (a) the preparation of flame resistant polymers and (b) the preparation of flame- and glow-resistant organic fibrous materials and flame-, glow-, wrinkle-, and shrink-resistant woven and knit textiles which contain about 25% or more cellulosic fibers.

3,790,640

GLYCOLIC ETHER SUITABLE AS MEDICAMENT

Teikichi Kurosaki, Munehiko Odaka, and Satoshi Hanaoka, Osaka, Japan, assignors to Nippon Zoki Pharmaceutical Co., Ltd., Osaka, Japan

No Drawing. Filed Jan. 3, 1972, Ser. No. 215,181

Claims priority, application Japan, Dec. 31, 1970, 46/124,202

Int. Cl. C07c *43/00, 43/04*

U.S. Cl. 260—615 R **1 Claim**

The novel compound, 2-(2-hydroxybutoxy)-3-hydroxybutane, and synthetic methods for producing the same. This compound is useful as a cholagogue and displays a remarkably low toxicity.

3,790,641

METHYLATION OF PHENOLS AT ORTHO-POSITION

Akio Oshima, Hiroshi Oshima, and Takamichi Kombashiri, Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Kitaku, Osaka, Japan

No Drawing. Filed May 11, 1971, Ser. No. 142,344

Claims priority, application Japan, May 16, 1970, 45/41,803, 45/41,804, 45/41,805; June 24, 1970, 45/55,431, 45/55,432; Sept. 11, 1970, 45/80,255, 45/80,256

Int. Cl. C07c *37/16*

U.S. Cl. 260—621 R **6 Claims**

Phenol, cresol or the like phenols each having at least one hydrogen atom at ortho-position, is methylated at ortho-position thereof in high selectivity by reacting with methanol using a novel catalyst system selected from at least one of the following Groups (a), (b) and (c):

(a) A combination of at least one of magnesium oxide, zinc oxide and beryllium oxide, at least one of lanthanide oxide, scandium oxide and yttrium oxide, and at least one of uranium oxide and tin oxide;

(b) A combination of at least one of scandium oxide, yttrium oxide and lanthanide oxide, and tin oxide; and

(c) A combination of at least one of uranium oxide and lanthanide oxide, and active carbon.

3,790,642

SELECTIVE DISPROPORTIONATION OF CRESOLS

Naoya Kominami, Tokyo, Nobuhiro Tamura, Oi, and Hiroshi Mikami and Etsuo Yamamoto, Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed June 8, 1971, Ser. No. 150,915

Claims priority, application Japan, June 12, 1970, 45/50,261

Int. Cl. C07c *37/00, 37/12*

U.S. Cl. 260—621 D **4 Claims**

An improved process for the preparation of phenol and xylenols from cresols by a disproportionation reaction characterized in that the disproportionation reaction is effected with heating in the presence of an alumina catalyst having ammonium thiocyanate incorporated therein or an alumina catalyst having ammonium thiocyanate together with at least one of metals Co, Ni, Pd and Rh incorporated therein. This process can selectively provide as a main product a xylenol having a methyl group at the ortho position, which is useful as a raw material for the production of industrial chemicals.

3,790,643

HEXAHYDRO-o-XYLYLENE COMPOUNDS AND PROCESS FOR THEIR PRODUCTION

Donald J. Anderson, San Anselmo, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Continuation of application Ser. No. 621,792, Mar. 9, 1967, which is a continuation-in-part of application Ser. No. 258,632, Feb. 14, 1963, both now abandoned. This application May 19, 1972, Ser. No. 255,035

Int. Cl. C07c *17/28, 23/00*

U.S. Cl. 260—648 R **4 Claims**

Hexahydro-o-xylylene compounds are produced under free radical catalysts in a 1 to 1 addition of 1,7-octadiene with carbon compounds having a chain transfer constant (100° C. and 1-octene) in the range 0.05 to 10. The reaction is carried out in the liquid phase at a temperature in the range 0° C. to 200° C.

3,790,644

PLASTIC COMPOSITIONS BASED ON POLY (VINYL CHLORIDE) AND CONTAINERS MANUFACTURED THEREFROM

Marc Obsomer, Brussels, Belgium, assignor to Solvay & Cie, Brussels, Belgium

No Drawing. Filed Aug. 26, 1971, Ser. No. 175,321

Claims priority, application France, Sept. 2, 1970, 7032003

Int. Cl. C08f *15/06*

U.S. Cl. 260—876 R **6 Claims**

The plastic compositions are based on poly(vinyl chloride) and contain in addition from 0.1 to 5% by weight of a resin obtained by polymerizing vinyl chloride in the presence of an ethylene polymer having a melt index of 0.3 to 40 and at least one characteristic selected from (a) 0.2 to 4 double bonds per 1000 carbon atoms and (b) 5 to 30 methyl groups per 1000 carbon atoms and under a partial pressure of vinyl chloride which is always below the saturated vapor pressure of vinyl chloride at the polymerization temperature, the total amount of ethylene polymer in said resin being $\geqq 2.5\%$ by weight with respect to the poly(vinyl chloride) base. The compositions are readily processed into hollow containers which are transparent, substantially colorless, and have excellent resistance to aging and good thermal resistance.

3,790,645

METHOD FOR PRODUCING POLYVINYLIDENE FLUORIDE POLYMETHYLMETHACRYLATE COMPOSITIONS

Naohiro Murayama and Makoto Fukuda, Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Aug. 18, 1971, Ser. No. 172,705

Claims priority, application Japan, Aug. 20, 1970, 45/72,929

Int. Cl. C08d *9/08;* **C08f** *29/22*

U.S. Cl. 260—884 **5 Claims**

Method for producing uniformly blended polyvinylidene fluoride composition, in which methylmethacrylate and/or other monomers copolymerizable with methylmethacrylate is post-polymerized with polyvinylidene fluoride.

3,790,646

OIL-RESISTANT POLYMER COMPOSITION

Tetsu Ohishi, 6–16–9 Shimomeguro, Tokyo, Japan; Hiroshi Fukushima, 2–32–9 Ikego, Zushi, Japan; and Hideo Fukuda, 2975–20, Seya-cho, Yokohama, Japan

No Drawing. Filed Apr. 24, 1972, Ser. No. 247,010

Claims priority, application Japan, May 1, 1971, 46/28,584; Nov. 5, 1971, 46/88,031

Int. Cl. C08d *5/04;* **C08f** *29/08*

U.S. Cl. 260—894 **6 Claims**

An oil-resistant polymer composition comprising (I) 5 to 50% by weight of a copolymer consisting essentially of 20 to 50% by weight of acrylonitrile, 50 to 80% by weight of a diene selected from butadiene and isoprene and 0.1 to 10% by weight of an α,β-ethylenically unsaturated carboxylic acid and having a number average molecular weight of about 500 to 10,000 and (II) 95 to 50% by weight of an acrylonitrile/butadiene copolymer.

3,790,647

OZONE TREATED PHENOLIC POLYMER TACKIFIER FOR ETHYLENE PROPYLENE DIENE RUBBERS

Kornel D. Kiss, Easton, Pa., George S. Mills, Boonton, N.J., and Edwin M. Smolin, Easton, Pa., assignors to GAF Corporation, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 19,072, Mar. 12, 1970. This application Mar. 28, 1972, Ser. No. 238,964

Int. Cl. C08f *37/18*

U.S. Cl. 260—897 R **5 Claims**

The reaction products of ozone and a compound selected from the group comprising alkyl substituted phenol-acetylene resins, alkyl substituted phenol-aldheyde type resins and resins of natural origin, a process of preparing same, and a method of use therefore in increasing the building tack in E.P.D.M. (ethyl propylene diene monomer) rubber.

3,790,648

PROCESS FOR THE MANUFACTURE OF BENZYLPHOSPHONATES

Andreas Schmidt and Heimo Brunetti, Reinach, and Kurt Schwarzenbach, Aesch, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Feb. 11, 1972, Ser. No. 225,615

Claims priority, application Switzerland, Feb. 17, 1971, 2,315/71

Int. Cl. C07f *9/38*

U.S. Cl. 260—970 **10 Claims**

Process for the manufacture of 4-hydroxybenzylphosphonic esters by reacting esters of phosphoric acid with 4-hydroxybenzylamines in the presence of a base. The compounds manufactured according to the invention are used as stabilizers.

3,790,649

PREPARATION OF ESTERS OF PHOSPHORUS ACIDS

Ignatius Schumacher, 1009 S. Elm 63119, and Joseph W. Baker, 421 Greenleaf Drive 63122, both of St. Louis, Mo.

No Drawing. Filed June 24, 1971, Ser. No. 156,487

Int. Cl. C07f *9/08, 9/16*

U.S. Cl. 260—973 **17 Claims**

Halogen-containing esters of phosphorus acids are prepared by an improved process whereby thiol- or hydroxyl-containing organic materials and phosphorus halides are reacted at specified temperatures in the presence of a distillation residue, produced by distilling (a) the product derived from a reaction mixture of a thiol- or hydroxyl-containing organic material, a phosphorus halide and a catalyst material selected from amide, phosphorus amide, urea and ammonium salt compounds containing a nitrogen atom capable of forming a complex with a phosphorus moiety or (b) the product derived from such reaction mixture in which said distillation residue is employed as the catalyst material, thereby providing high yields of substantially pure esters and allowing preparation of selected halogen-containing mono- and di-esters of phosphorus esters having substantially no side reactant contamination. The phosphorus esters are useful as intermediates in the preparation of plasticizers, oil additives and functional fluids.

3,790,650

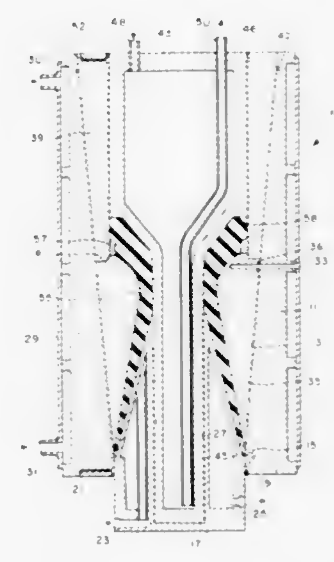
METHOD FOR COMPRESSION MOLDING OF THERMOSETTING PLASTICS UTILIZING A TEMPERATURE GRADIENT ACROSS THE PLASTIC TO CURE THE ARTICLE

Wilbur C. Heier, Hampton, Va., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Nov. 15, 1971, Ser. No. 198,763

Int. Cl. B29g *1/00*

U.S. Cl. 264—102 **9 Claims**

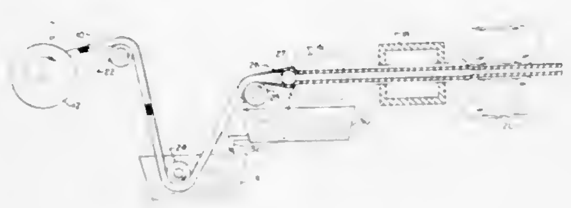


Method for compression molding of thermosetting plastics compositions wherein heat is applied to the compressed load in a mold cavity and adjusted to hold molding temperature at the interface of the cavity surface and the compressed compound to produce a thermal front. This thermal front advances into the evacuated compound at mean right angles to the compression load and toward a thermal fence formed at the opposite surface of the compressed compound.

3,790,651

PROCESS FOR THE MANUFACTURE OF PLASTIC-COATED TUBULAR ARTICLES

Sylvester Martin Meitinger, Toledo, Ohio, assignor to Stauffer Chemical Company, New York, N.Y.
Continuation of abandoned application Ser. No. 862,102, July 7, 1969, which is a division of application Ser. No. 610,095, Jan. 18, 1967, now Patent No. 3,533,133, dated Oct. 13, 1970. This application Aug. 5, 1971, Ser. No. 169,499
Int. Cl. B29d *23/05*
U.S. Cl. 264—135 **4 Claims**

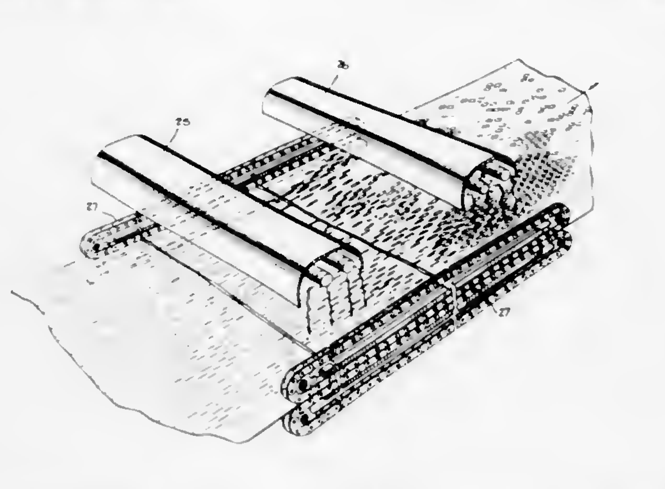


Method of continuously applying a plastic coating to a tubular article, normally one which is not self-supporting. The said tubular article in flattened condition is passed over a ball means which coacts with an extrusion inlet to restore the flattened article into cylindrical configuration for coating of said tubular article. The plastic is formed as an annular stream into which the article is passed.

3,790,652

METHOD FOR PRODUCING A THERMOPLASTIC NET BY SLITTING AND SHRINKING OPERATIONS

Johannes Jacobus Vincent Colijn and Günter Horst Tesch, Fribourg, Switzerland, assignors to Breveteam S.A., Fribourg, Switzerland
Continuation-in-part of abandoned application Ser. No. 28,705, Apr. 5, 1970. This application June 8, 1971, Ser. No. 151,011
Int. Cl. B29c *17/10, 17/14;* **B29d** *7/20*
U.S. Cl. 264—146 **8 Claims**



Thermoplastic film is extruded by a practice forming a film that is highly shrinkable transversely relative to any longitudinal shrinkability. A suitable pattern of longitudinal slits is formed through this film and thereafter it is continuously passed through a zone which opens the slits by shrinking the film to form a net which is coiled.

3,790,653

POLYESTER FILM BASE HAVING UNIFORM HIGH OPTICAL DENSITY

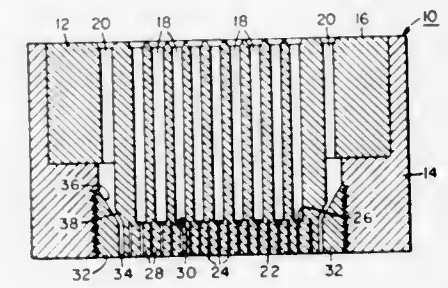
Kenneth T. Barkey, Gerald C. Gandy, and Douglas C. May, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Dec. 29, 1971, Ser. No. 213,808
Int. Cl. B29d *7/24;* **C08g** *39/10, 51/08*
U.S. Cl. 264—171 **5 Claims**

Biaxially-oriented polyester film base having uniform high optical density and free of pinholes or other opacity defects is produced by forming a dispersion of carbon black and polyvinylpyrrolidone (PVP) in ethylene glycol in a high shear mill, adding the dispersion along with polyester forming reactants to an ester exchange reactor, and carrying out the production of the polyester monomer and its subsequent conversion to polyester prepolymer and polyester in the presence of the dispersed carbon and PVP.

3,790,654

EXTRUSION METHOD FOR FORMING THIN-WALLED HONEYCOMB STRUCTURES

Rodney D. Bagley, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Nov. 9, 1971, Ser. No. 196,986
Int. Cl. B29f *3/00*
U.S. Cl. 264—177 **4 Claims**

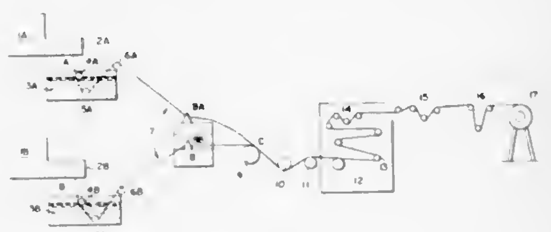


Method for forming thin-walled honeycomb structures is provided in the use of an extrusion die having an outlet face provided with a gridwork of interconnected discharge slots and an inlet face provided with a plurality of feed openings extending partially through said die in communication with said discharge slots. Extrudable material is fed to said die under pressure wherein the extrudable material flows longitudinally through the feed openings in the inlet face of the die and is directed thereby to the interconnected discharge slots communicating with the outlet face, wherein a portion of the material flows laterally within such slots to form a continuous mass before being discharged longitudinally therefrom to thereby form a thin-walled structure having a multiplicity of open passages extending therethrough. The longitudinally discharged mass is rigidified to prevent deformation of said passages.

3,790,655

METHOD FOR COMMINGLING AND ORIENTING COLORED SETS OF THERMOPLASTIC FILAMENTS

Frank Richard Cramton, Burlington, Vt., assignor to E. B. & A. C. Whiting Company, Burlington, Vt.
Filed Mar. 2, 1971, Ser. No. 120,190
Int. Cl. D01d *5/12*
U.S. Cl. 264—210 F **5 Claims**

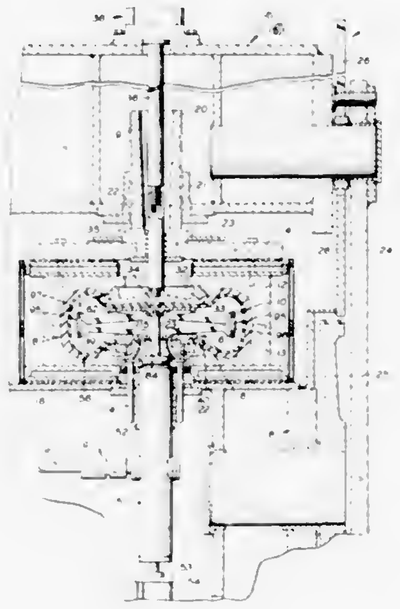


Differently colored sets of unoriented thermoplastic filaments are passed along converging paths and then commingled to form a multi-colored filament web. This web is subsequently heated to the orientation temperature of the filaments and then stretched along the longitudinal axis of the web to simultaneously stretch-orient each filament of the multi-colored web.

3,790,656

METHOD FOR LOADING A TIRE SHAPING AND CURING PRESS EMPLOYING A CENTER MECHANISM

Gary R. Getz, Norton, Ohio, assignor to McNeil Corporation, Akron, Ohio
Filed Oct. 4, 1971, Ser. No. 185,931
Int. Cl. B29h *5/06*
U.S. Cl. 264—315 **12 Claims**



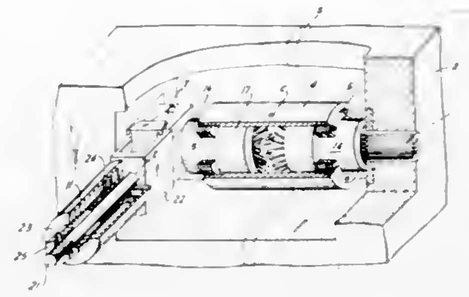
A method by which an uncured tire band is loaded into a shaping and curing press employing a center mechanism. The subject center mechanism employs the well-known, radially distensible bladder to shape the tire band, but provides bearing plates disposed within the cavity defined by said bladder and movable radially to effect the application of pressure against locations within a predetermined area on the radially inner surface of the uncured tire band—viz., an area intercepted by its transverse plane of structural symmetry—and to support the tire band in spaced relation with respect to the mold sections and/or the bead rings associated therewith while the bladder is inflated progressively and symmetrically within the tire band. This radially outward displacement of the bearing plates assures that the bladder will also be inserted symmetrically within the tire band, and such displacement can be readily effected by a mechanical drive. The center mechanism is used by positioning an uncured tire band in a predetermined position concentrically of the center mechanism, effecting supporting engagement of the tire by the center mechanism, inflating the bladder to at least substantially shape the tire and then closing the mold for the curing cycle.

3,790,657

METHOD OF AND DEVICE FOR THE FORMATION OF BEAM STRUCTURES

Constantin Leonte, Iasi, Rumania, assignor to Institutul Politehnic Iasi, Iasi, Rumania
Filed Dec. 15, 1971, Ser. No. 208,293
Int. Cl. E04c *3/10, 5/08*
U.S. Cl. 264—228 **1 Claim**

Beams are assembled at grade level from a multiplicity of precast concrete elements which are cemented together at their joints by mortar and, after the mortar has hardened, tension is applied to a cable extending through a channel of the beam formed by aligned passages of the individual elements. The tension is applied by relatively displacing wedge members of a removable assembly at an emergent end of the cable and the beams can then be erected. Externally threaded rings on the emergent ends of the cables of a pair of spacedly aligned beams are threaded into a pipe after a mortar between the beams has hardened, thereupon transmitting tensile force between the cables. The wedge assembly is then removed and the space around the cables and the pipe, and the space occupied by the wedge assembly, is filled with concrete.



3,790,658

PURIFICATION PROCESS FOR RECOVERING URANIUM FROM AN ACIDIC AQUEOUS SOLUTION BY pH CONTROL

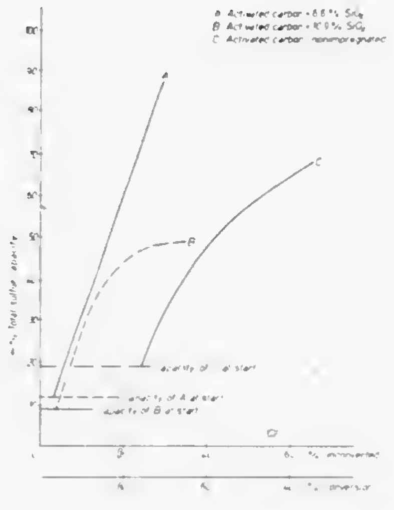
Joseph S. Fox, Lewiston, N.Y., and Jerome D. Koetting, Parkersburg, W. Va., assignors to Union Carbide Corporation, New York, N.Y.
No Drawing. Filed May 15, 1970, Ser. No. 37,870
Int. Cl. C01g *43/00*
U.S. Cl. 423—15 **10 Claims**

A process for obtaining purified uranium values from an acidic aqueous solution contaminated with iron, vanadium, phosphorus and sodium values by selectively precipitating the contaminants through acidity (pH) control of the solution.

3,790,659

ACTIVATED CARBON CATALYST IMPREGNATED WITH SiO_2

Klaus Storp, Frankfurt am Main, and Reinhard Höhne, Neu Isenburg, Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany
Filed Apr. 20, 1971, Ser. No. 135,633
Int. Cl. B01d *53/16, 53/34*
U.S. Cl. 423—224 **2 Claims**



Activated carbon catalyst, impregnated with silicate, for promoting the sulfur-forming reactions:

$$2H_2S+SO_2\rightarrow 3S+2H_2O$$

$$H_2S+\tfrac{1}{2}O_2\rightarrow S+H_2O$$

The SiO_2 concentration is 0.5 to 8.0% by weight, preferably 3.0 to 7.5% by weight, the internal surface is 1200 to 1500 m.²/g., the bulk density is at most 350 g./liter and the modal pore radius is 4 to 12 A.

3,790,660

PROCESS FOR RECOVERING SULFUR DIOXIDE FROM GASES

Christopher B. Earl and Fred Hughes, Lakeland, Fla., assignors to Wellman-Lord, Inc., Lakeland, Fla.

Filed Feb. 22, 1971, Ser. No. 117,383

Int. Cl. C01b *17/00*

U.S. Cl. 423—242 **21 Claims**

The disclosure is of an improvement in a sulfur dioxide removal process wherein a sulfur dioxide-containing gas is contacted with an aqueous absorbing solution of a metal sulfite, e.g., sodium sulfite, to yield a spent absorbing solution of metal bisulfite, and the latter is decomposed to produce the sulfite, sulfur dioxide and water, with water and sulfur dioxide being evaporated and sulfite being precipitated from solution. The decomposition is conducted while adding heat to the material undergoing decomposition by the use of indirect heat exchange between the material which is passed through the tubes of the heat exchanger, and a heat-supplying medium in contact with the exterior surfaces of the tubes. The operation is particularly characterized by the presence of at least about 25 weight percent undissolved solids in the material undergoing decomposition, preferably about 30 to 50 weight percent. A portion of the material undergoing decomposition and containing sulfite can be recycled to the absorption step to serve as a source of aqueous absorbing solution. Preferably, this recycle stream is formed by adding water to a portion of the material undergoing decomposition without separation of significant amounts of undissolved solids.

3,790,661

PROCESS FOR THE CONTINUOUS DEARSENIFICATION OF POLYPHOSPHORIC ACID

Horst Dieter Wasel-Nielen, Erftstadt-Lechenich, and Gero Heymer, Erftstadt-Liblar, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

Filed Mar. 1, 1972, Ser. No. 230,930

Claims priority, application Germany, Mar. 3, 1971, P 21 09 970.7

Int. Cl. C01b *25/16*

U.S. Cl. 423—321 **8 Claims**

Polyphosphoric acid is dearsenicated continuously. To this end, polyphosphoric acid contaminated with arsenic is continuously introduced overhead into a packed gasification zone and hydrogen sulfide, travelling countercurrently with respect to the said polyphosphoric acid, is introduced thereinto from below and circulated therein. The polyphosphoric acid is allowed to remain in the gasification zone for a mean period between 1 and 5 hours so as to effect complete transformation of the arsenic into arsenic sulfide. Following this, the polyphosphoric acid is delivered to a degasification zone communicating with the gasification zone and compressed air is injected into the degasification zone so as to expel hydrogen sulfide in excess from the polyphosphoric acid, the gasification and degasification zones being maintained at temperatures between 80 and 140° C. The polyphosphoric acid so treated is taken from the degasification zone and filtered in conventional manner.

3,790,662

PALLADIUM COMPOSITIONS SUITABLE AS OXIDATION CATALYSTS

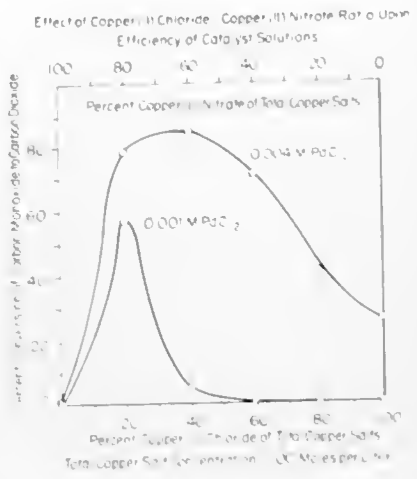
William G. Lloyd and Donald R. Rowe, Bowling Green, Ky., assignors to Larox Research Corporation, Bowling Green, Ky.

Filed Feb. 7, 1972, Ser. No. 223,970

Int. Cl. C01b *31/20, 17/68*

U.S. Cl. 423—437 **15 Claims**

Homogeneous and heterogeneous catalysts systems containing certain palladium (II) salts and copper (II) salts have been developed. A specified balance of a copper (II) halide and of a non-halide copper (II) salt is maintained.



The catalysts are effective for oxidizing CO to CO_2 and SO_2 and SO_3.

3,790,663

PREPARATION OF DRY ANTISERUM COATED SOLID-PHASE FOR RADIOIMMUNOASSAY OF ANTIGENS

Mary M. Garrison, Silver Spring, and Robert W. Bates, Bethesda, Md., assignors to the United States of America as represented by the Secretary of the Department of Health, Education, and Welfare

No Drawing. Filed July 7, 1970, Ser. No. 52,990

Int. Cl. G01n *31/00, 31/06, 33/16*

U.S. Cl. 424—12 **10 Claims**

A dried solid phase for radioimmunoassay of antigens which is stable without refrigeration for extended periods of time, and a method of preparing the solid phase. The solid-phase is prepared by coating an organic polymer with antiserum and then air drying same at about 25° C.

3,790,664

FILM-FORMING ORGANIC POLYMER-MODIFIED STARCH MATERIAL HAIR SETTING COMPOSITION

David Arthur Krochock, Mundelein, and Donald David Laiderman, Deerfield, Ill., assignors to The Gillette Company, Boston, Mass.

No Drawing. Filed Oct. 16, 1970, Ser. No. 81,557

Int. Cl. A61k *7/10*

U.S. Cl. 424—47 **7 Claims**

Composition for setting hair and simultaneously repressing or retarding development of an oily appearance containing a solution of a resin in a volatile solvent and dispersed in the solution a starch acid ester reacted with a polyvalent metal ion. A pressure propellant may be included.

3,790,665

INJECTABLE ADJUVANT, METHOD OF PREPARING SAME AND COMPOSITIONS INCLUDING SUCH ADJUVANT

Max E. Glass and Stephen F. Donahue, Kansas City, Mo., and Arthur Carlson, Jr., Overland Park, Kans., assignors to Haver-Lockhart Laboratories, Inc., Shawnee, Mo.

No Drawing. Continuation-in-part of application Ser. No. 707,671, Feb. 23, 1968, now Patent No. 3,639,577, dated Feb. 1, 1972. This application Jan. 31, 1972, Ser. No. 222,282

Int. Cl. A61k *23/00, 27/00*

U.S. Cl. 424—81 **40 Claims**

A medicinal composition comprising an injectable active substance or agent combined with a novel adjuvant therefor capable of enhancing the effect of the agent. The adjuvant in its preferred form includes a macromolecular synthetic resin complexing material such as an acrylic acid polymer cross-linked with a polyallyl saccharide, and an emulsion system therefor including a surfactant selected from the group consisting of nonionic and amphoteric nontoxic surfactants, and a water in oil or oil in water emulsion carrier. The adjuvant is useful with various medicinal agents including antigens, hormones or drug and serums of the type which will complex with the synthetic resin material.

3,790,666

CIS-3-HEXENYL BUTYRATE AS AN ATTRACTANT FOR YELLOW JACKETS

Gaines W. Eddy, Mission, Tex., Harry G. Davis, Fresno, Calif., and Morton Beroza, Silver Spring, and Terrence P. McGovern, Bowie, Md., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Application June 27, 1969, Ser. No. 857,611, now abandoned, which is a division of application Ser. No. 623,154, Dec. 29, 1966, now Patent No. 3,485,868. Divided and this application Apr. 11, 1972, Ser. No. 243,049

Int. Cl. A01n *17/14*

U.S. Cl. 424—84 **1 Claim**

The insect attractants of the present invention are highly specific for yellow jackets (Vespula spp.), attracting few other insects and no beneficial species such as honey bees. These attractants are organic esters having a total of from 9 to 12 carbon atoms, and they have at least one center of unsaturation, as exemplified by cis-3-hexenyl butyrate and 2-methylpentyl crotanate, or an alicyclic radical as in 4-methylcyclohexyl butyrate. The ester, 2,4-hexadienyl butyrate, was outstanding in field tests. Incorporated into compositions containing an insecticide, chemosterilant or other control agent, the attractants provide an improved means of reducing or eliminating populations of yellow jackets.

3,790,667

RUMINANT FEED UTILIZATION IMPROVEMENT

Arthur P. Raun, New Palestine, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 15, 1972, Ser. No. 315,730

Int. Cl. A61k *21/00*

U.S. Cl. 424—115 **7 Claims**

Ruminant animals having a developed rumen function and animals which ferment fibrous vegetable matter in the cecum convert their feed more efficiently to energy when orally treated with antibiotic A-201A.

3,790,668

RUMINANT FEED UTILIZATION IMPROVEMENT

Arthur P. Raun, New Palestine, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Dec. 15, 1972, Ser. No. 315,729

Int. Cl. A01k *21/00*

U.S. Cl. 424—117 **7 Claims**

Antibiotics thiostrepton and siomycin and the physiologically-acceptable salts and complexes of thiostrepton improve the digestive efficiency of certain animals. Oral administration of the antibiotics to ruminant animals having a developed rumen function, and to animals which ferment fibrous vegetable matter in the cecum, changes the digestive fermentation of the animals to produce more propionates relative to the production of acetates.

3,790,669

SYNERGISTIC TYLOSIN AND FURAZOLIDONE MEDICATION FOR CALF PNEUMOENTERITIS COMPLEX

Charles Gale, Indianapolis, Ind, assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Sept. 11, 1972, Ser. No. 288,226

Int. Cl. A61k *21/00*

U.S. Cl. 424—120 **10 Claims**

Administration of a synergistic combination of tylosin and furazolidone prevents and treats pneumoenteritis complex disease of calves. Oral administration is particularly preferred. Novel feed compositions containing my combination are effective in my method of controlling pneumoenteritis complex disease.

3,790,670

OXIMINOPHOSPHONODITHIOATES AS INSECTICIDES AND ACARICIDES

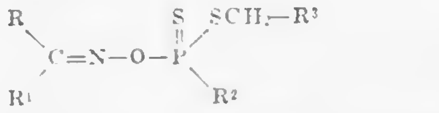
Arnold D Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Original application Apr. 6, 1970, Ser. No. 26,148, now Patent No. 3,666,839. Divided and this application Mar. 9, 1972, Ser. No. 233,332

Int. Cl. A01n *91/36*

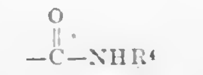
U.S. Cl. 424—210 **20 Claims**

Compounds having the formula



$$\underset{R^1}{\overset{R}{>}}C=N-O-\overset{S\ \ SCH_2-R^3}{\underset{R^2}{P}}$$

in which R is (1) alkyl or (2) lower alkylthiomethyl; R^1 is alkyl; R^2 is alkyl; and R^3 is (1) hydrogen, (2) lower alkylthio, (3) cyano, (4) phenylthio, (5) substituted phenylthio wherein the substituent is halogen, (6)



$$-\overset{O}{\overset{\|}{C}}-NHR^4$$

wherein R^4 is hydrogen or alkyl, (7) halophenyl, (8) phthalimido, (9) vinyl, (10) carboalkoxy, (11) alkyl, (12) ethynyl, (13) $CCl_2=CR^5$— wherein R^5 is hydrogen or chlorine, (14) —$CH_2OC(O)NH$(lower alkyl) or (15) benzylthio, their use as insecticides and acaricides, process for preparing the compounds, intermediates and a process for preparing intermediates.

3,790,671

FIBRINOLYTIC ACTIVATORS

Alexander Kennedy Sim, 21 Wellside Place, Falkirk, Scotland

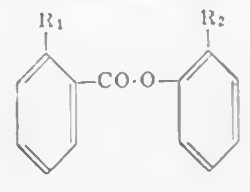
No Drawing. Filed Dec. 23, 1971, Ser. No. 211,686

Claims priority, application Great Britain, Apr. 13, 1971, 9,195/71

Int. Cl. A61k *27/00*

U.S. Cl. 424—230 **4 Claims**

This invention relates to the treatment of thrombosis and prethrombosis conditions by promoting solution of intravascular blood clots. The treatment provided by the invention comprises the administration, orally, parenterally or topically of a compound of the formula



3,790,676

oxime or a pharmacologically-acceptable salt thereof suffi-

vinyl) sulfide, a bis(trichloroethyl) sulfide or a bis(1,2, in which R_1 is a substituent selected from the group consisting of an alkyl ester radical and an hydroxyl group and R_2 is a carboxyl radical.

3,790,672

METHOD FOR ACTIVATING BLOOD FIBRINOLYSIS BY ADMINISTRATION OF A SALT OF 2-AMINO-ETHANESULPHONIC ACID

Alberto Giotti, 15 Via Trento, and Federigo Sicuteri, 36 Pizza, d'Azeglio, both of Firenze, Italy

Continuation-in-part of application Ser. No. 28,588, Apr. 15, 1970, now Patent No. 3,725,553. This application Mar. 21, 1973, Ser. No. 343,475

Claims priority, application Italy, Feb. 23, 1970, 48,769/70

Int. Cl. A61k *27/00*

U.S. Cl. 424—248 **5 Claims**

A method for activating the fibrinolysis of blood by administration of a composition containing an organic salt of 2-amino-ethanesulphonic acid and a pharmaceutical carrier therefore. The salts are those of pharmaceutically acceptable organic bases such as diethylamine and morpholine.

3,790,673

METHOD OF VIRUS SUPPRESSION BY HYDANTOINS

Koert Gerzon and Charles W. Ryan, Indianapolis, Ind., and Donald C. De Long, Canberra, ACT, Australia, assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed June 1, 1972, Ser. No. 258,617

Int. Cl. A61k *27/00*

U.S. Cl. 424—273 **7 Claims**

5-(3′,4′-dichlorophenyl)-5-methylhydantoin and homologs thereof useful in suppressing viral growth both in vivo and in vitro.

3,790,674

1-(2-PYRIDYL) PIPERAZINE AND LEVODOPA COMPOSITION

Rodolfo Rodriguez, Mexico City, Mexico, assignor to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Dec. 21, 1972, Ser. No. 317,113

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 **17 Claims**

A composition comprising 1-(2-pyridyl)piperazine and levodopa in a respective weight ratio of from 1:320 to 1:20 controls tremor symptomatic of parkinsonism in mammals. Pharmaceutically acceptable acid addition salts of 1-(2-pyridyl)piperazine can be substituted in lieu of the parent compound in the composition.

3,790,675

CERTAIN INDOLOBENZAZEPINE DERIVATIVES AS ANALGESICS

Harold Blumberg, Flushing, N.Y., assignor to Endo Laboratories, Inc., Garden City, N.Y.

No Drawing. Filed Apr. 19, 1972, Ser. No. 245,300

Int. Cl. A61k *27/00*

U.S. Cl. 424—263 **13 Claims**

1,2,3,4,8,9 - hexahydropyrido[4′,3′:2,3]indolo[1,7-ab][1]benzazepine and certain 3-substituted derivatives thereof are useful analgesics, which can be administered orally to warm-blooded animals. In addition to the free bases, their salts with pharmaceutically acceptable organic or inorganic acids can be used.

3,790,676

PREVENTING PAIN, FEVER AND INFLAMMATION WITH CYCLIC HYDROXY SULFOXIDES

Lewis H Sarett, Princeton, Tsung-Ying Shen, Westfield, and Conrad P. Dorn, Jr., Plainfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Application May 22, 1969, Ser. No. 827,044, which is a continuation-in-part of application Ser. No. 476,676, Aug. 2, 1965, both now abandoned. Divided and this application Sept. 20, 1971, Ser. No. 182,131

Int. Cl. A61k *27/00*

U.S. Cl. 424—275 **3 Claims**

Pharmaceutical compositions having as an active ingredient hydroxy sulfoxides. These compositions ar useful as anti-inflammatory compounds, cryoprotectants and skin penetrants. Also included are method of treatment claims.

3,790,677

CONTROL OF PHYTOPATHOGENIC FUNGI WITH 3-ARYLIMINO-1,2-DITHIOLS

Jorg Bader, Arlesheim, and Karl Gatzi, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application May 28, 1969, Ser. No. 828,766, now Patent No. 3,676,459. Divided and this application May 1, 1972, Ser. No. 249,426

Claims priority, application Sweden, June 10, 1968, 8,595/68

Int. Cl. A01n *9/12*

U.S. Cl. 424—277 **4 Claims**

3-arylimino-4-chloro-5-thio-1,2-dithiols are disclosed as antifungal agents, which are particularly useful for the protection of plants against phytopathogenic fungi. Antifungal compositions containing them as active ingredients are also described.

3,790,678

MICROBIOCIDAL NITROGEN DERIVATIVES OF HALOGENATED BIPHENYLS

John J. Merianos, Jersey City, Edward Griffin Shay, Belle Mead, Phillip Adams, Murray Hill, and Alfonso N. Petrocci, Glen Rock, N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

No Drawing. Original application Dec. 9, 1969, Ser. No. 883,636, now Patent No. 3,663,620. Divided and this application Feb. 1, 1971, Ser. No. 111,681

Int. Cl. A01n *9/20*

U.S. Cl. 424—330 **1 Claim**

A method of inhibiting microorganisms which comprises applying to the environment in which such microorganisms are found ammonia and aminosubstituted halogenated biphenyls, as well as the nitrogen derivatives thereof such as quaternary ammonium compounds, amine oxides, imidazolines, amides, enamines, ampholytes, and the like.

The ammonia and amino halobiphenyls are prepared by reacting the ammonia or the amine and the halobiphenyl reactants in such a manner that the ratio of amine to halobiphenyl is preferably limited to between two and five mols of amine to each mol of halobiphenyl.

3,790,679

URINARY ANTISEPTIC METHOD WITH THIOACETAMIDINES

Philip J. Shea, Zionsville, Ind., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed May 30, 1972, Ser. No. 257,941

Int. Cl. A61k *27/00*

U.S. Cl. 424—326 **8 Claims**

This invention relates to a method useful for combating microorganisms associated with infections of the urinary tract in mammals by means of administering to mammals an amount of a substituted acetamidine compound such as 2-(4-chlorophenyl)thioacetamidine, its corresponding

oxime or a pharmacologically-acceptable salt thereof sufficient to provide an antiseptic amount of said compound in the urinary trace or in the urine.

3,790,680

CERTAIN EPOXIDIZED GERANYL ESTERS AND THEIR USE IN CONTROLLING INSECTS

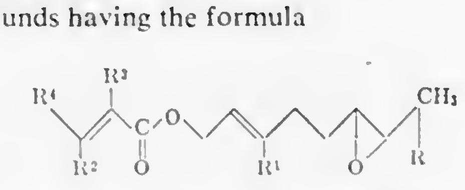
Hwalin Lee, Palo Alto, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Original application May 19, 1969, Ser. No. 825,995, now Patent No. 3,584,015. Divided and this application Dec. 28, 1970, Ser. No. 102,157

Int. Cl. A01n *9/28*

U.S. Cl. 424—278 **11 Claims**

Compounds having the formula



in which R and R^1 are independently methyl or ethyl; R^2, R^3, or R^4 are hydrogen or lower alkyl, and the use of these compounds in controlling insects.

3,790,681

METHODS OF TREATING CHOLESTEROLEMIA

Gerard C. Bulteau, Paris, France, assignor to Société d'Etudes Scientifiques et Industrielles de L'Ile-de-France, Paris, France

No Drawing. Continuation-in-part of abandoned application Ser. No. 124,957, Mar. 16, 1971, which is a continuation-in-part of application Ser. No. 760,973, Sept. 19, 1968, now Patent No. 3,632,629. This application July 11, 1972, Ser. No. 270,626

Claims priority, application France, Sept. 26, 1967, 122,380; Nov. 22, 1967, 133,439

Int. Cl. A61k *27/00*

U.S. Cl. 424—311 **6 Claims**

The methods of this invention are useful for the treatment of cholesterolemia in mammals. The methods involve administering to mammals certain fluorinated derivatives of esters of phenoxy isobutyric acid.

3,790,682

ATARACTIC USE OF DIMETHYL SULFOXIDE

Robert J. Herschler, Rte. 2, Box 1592, Camas, Wash., and Stanley W. Jacob, Oswego, Oreg.; said Jacob assignor to Crown Zellerbach Corporation, San Francisco, Calif.

No Drawing. Continuation-in-part of application Ser. No. 686,295, Nov. 28, 1967, now Patent No. 3,549,770, dated Dec. 22, 1970, which is a continuation-in-part of applications Ser. Nos. 329,205, 329,208, 329,209, 329,238 and 329,271, all Dec. 9, 1963, Ser. No. 346,366, Feb. 10, 1964, and Ser. Nos. 417,781, 417,788 and 417,797, all Dec. 11, 1964, all now abandoned. This application Nov. 30, 1970, Ser. No. 93,841

Int. Cl. A61k *27/00*

U.S. Cl. 424—337 **3 Claims**

Effective amounts of dimethyl sulfoxide (DMSO), as an essential active agent or ingredient, are administered to animals topically, by injection, by installation into body orifices and orally for the relief of signs and symptoms of anxiety.

3,790,683

UNSATURATED SULFUR-CONTAINING NEMATOCIDES AND FUNGICIDES

Paul C. Aichenegg, Prairie Village, Kans., and Carl D. Emerson, Kansas City, Mo., assignors to Baychem Corporation, New York, N.Y.

No Drawing. Original application Jan. 27, 1964, Ser. No. 340,504, now Patent No. 3,592,896. Divided and this application May 13, 1969, Ser. No. 824,275

Int. Cl. A01n *9/00*

U.S. Cl. 424—337 **8 Claims**

Nematodes and fungi are killed with a bis(dichlorovinyl) sulfide, a bis(trichloroethyl) sulfide or a bis(1,2,2-trichlorovinyl) sulfoxide.

ERRATUM

For Class 424—327 see:
Patent No. 3,790,687

3,790,684

PACKAGES WITH IMPROVED PROPERTIES

Quirino A. Trementozzi, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of abandoned application Ser. No. 814,184, Apr. 7, 1969, which is a continuation-in-part of application Ser. No. 642,207, May 29, 1967, now Patent No. 3,451,538. This application Jan. 25, 1971, Ser. No. 109,710

Int. Cl. B65b *3/00;* **B32b** *27/30;* **B65d** *23/00*

U.S. Cl. 426—106 **11 Claims**

Packages of foodstuffs, medicines or related substances enveloped in a molded container formed in an essentially solvent-free condition from a copolymer of acrylonitrile and 10 to 42 percent of a vinyl ester and/or vinyl ether. The resin exhibits oxygen permeability of less than 6:5 cc./100 sq. in. 24 hrs. atmos. mii at 73° F. and water vapor transmitted of less than 8.5 gms./24 hr. 100 sq. in. mil at 100° F. and 95% R.H. so as to protect the contents of the container from degradation.

3,790,685

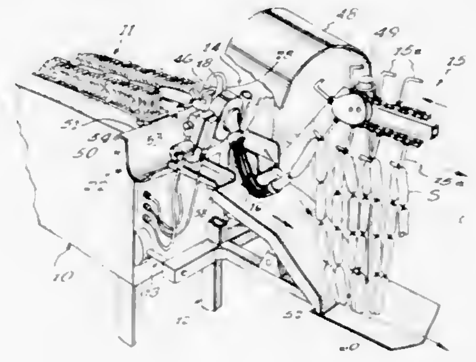
METHOD OF APPLYING LIQUID SURFACE TREATING MATERIALS TO SAUSAGES

William H. Criss, Hinsdale, and John R. Shackelford, Roselle, Ill., assignors to Stange Co.

Original application Nov. 30, 1970, Ser. No. 93,609. Divided and this application Feb. 22, 1972, Ser. No. 228,104

Int. Cl. A22c *18/00*

U.S. Cl. 426—302 **2 Claims**



A method of applying liquid surface treating materials to a linked string of sausages in a continuous cellulose casing immediately after stuffing and linking and before any other processing occurs. As the linked string of sausages moves in a predetermined path it is subjected to a spray consisting of a liquid surface treating material, the liquid being delivered under pressure to a spray head from a supply tank by a pump in susbtantial excess of the quantity required for surface treatment, and the excess liquid being returned to the tank.

3,790,686

BITTER SUBSTANCES AND THEIR PREPARATION

David Stanley John Gardner, Reigate, and John Anthony Morrell, Horley, England, assignors to White Tomkins Limited, Reigate, Surrey, England

Filed May 17, 1972, Ser. No. 254,028

Claims priority, application Great Britain, May 18, 1971, 15,660/71

Int. Cl. C12c *9/02*

U.S. Cl. 426—349 **6 Claims**

A solution of β-acids extracted from hops was prepared in methanol, a polar organic solvent. The solution was made alkaline and stirred with sodium hypochlorite. The product was extracted with ether after acidification and found to be bitter substance. The potassium salt of the substance was water solution. The substance and its salt can be added to beer to enhance its bitterness.

3,790,687
METHODS OF COMBATTING FUNGI AND BACTERIA USING SUBSTITUTED-ALPHA-ISONITROSO-ACETOPHENONES

Daniel Bertin, Jacques Perronnet, and Andre Teche, Paris, France, assignors to Roussel-UCLAF, Paris, France

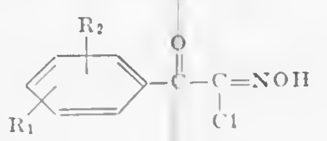
No Drawing. Continuation-in-part of abandoned application Ser. No. 112,401, Feb. 3, 1971. This application May 22, 1972, Ser. No. 255,598

Claims priority, application France, Feb. 24, 1970, 6,527; May 26, 1971, 19,048

Int. Cl. A01n *9/20, 9/24*

U.S. Cl. 424—327 **11 Claims**

Biocidal compositions having as the active ingredient an acetophenone of the Formula I



I

wherein R_1 represents hydrogen, chloro or hydroxy and R_2 represents hydrogen, hydroxy, nitro, methoxy, chloro or acetoxy, and a method of killing or combatting bacteria and fungi.

3,790,688
WATER DISPERSIBLE BETA-CAROTENE

William M. Walter, Jr., and Albert E. Purcell, Raleigh, N.C., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Mar. 15, 1972, Ser. No. 235,078

Int. Cl. A23l *1/26*

U.S. Cl. 426—380 **1 Claim**

A process for preparing water dispersible β-carotene by slowly adding ether ethanol solutions of β-carotene to boiling solutions of soluble starch with rapid stirring and then precipitating the starch carotene colloid with methanol or ethanol and recovering the water dispersible precipitate.

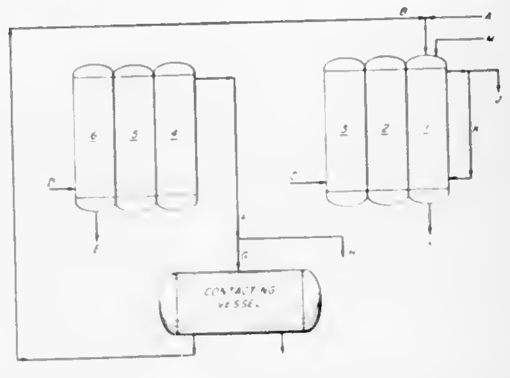
3,790,689
EXTRACTION OF ROASTED AND GROUND COFFEE

Esra Pitchon, Flushing, and Ernest L. Earle, Jr., New City, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Apr. 24, 1972, Ser. No. 246,955

Int. Cl. A23f *1/08*

U.S. Cl. 426—434 **28 Claims**



In a process for split-extraction percolation of roasted and ground coffee it has been discovered that by rapidly draining, or blowing out the extraction liquor from the fresh stage extraction column, a coffee extract of improved quality is obtained. Also, it has been discovered that if the secondary extract from the autoclave section is contacted with fresh-roasted and ground coffee, the quality of the secondary extract is upgraded. The preceding steps in combination is a preferred method of practicing split-extraction percolation.

3,790,690
PROCESS FOR THE PRODUCTION OF CORTICATED OAT KERNELS AND OAT FLAKES

Hans-Joachim F. G. Fritze, Riedener Weg. 44A, Starnberg, Germany

No Drawing. Filed Dec. 27, 1971, Ser. No. 212,768

Int. Cl. A23l *1/10*

U.S. Cl. 426—457 **11 Claims**

Oat kernels and oat flakes are produced by cleaning the oats and then wetting with water and storing in a wood silo for 24–72 hours until the moisture content is brought to 17–21% practically evenly distributed throughout the entire kernels and the kernels begin to germinate. Thereafter the oats are hulled, cleaned and kiln-dried at a temperature of not more than 65° C. to a desired moisture content.

ELECTRICAL

3,790,691
METHOD FOR ELECTROSLAG REMELTING OF CONSUMABLE ELECTRODES

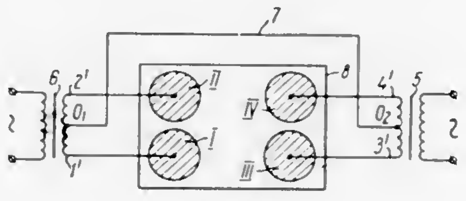
Boris Evgenievich Paton; Vladimir Konstantinovich Lebedev; Boris Izrailevich Medovar; Igor Vladimirovich Pentegov; Jury Vadimovich Latash; Oleg Petrovich Bondarenko; Vitaly Mikhailovich Baglai; Nikolai Vasilievich Podola, and July Georgievich Emelyanenko, all of Kiev, U.S.S.R., assignors to Institut Elektrosvarki Im. E.O. Patona, Kiev, U.S.S.R.

Division of Ser. No. 26,733, April 8, 1970, Pat. No. 3,665,081. This application Apr. 13, 1972, Ser. No. 243,885

Claims priority, application U.S.S.R., June 16, 1969, 1336305

Int. Cl. H05b *3/60*

U.S. Cl. 13—9 **13 Claims**



The invention relates to the field of electrometallurgy, and in particular to a method for electroslag remelting. The method is characterized in that it utilizes a transformer power supply means, which can be three-phase or which can consist of several single-phase transformers. The method uses secondary windings of the transformer power supply and incorporates center tappings of those secondaries interconnected to provide for an equality of the line speeds of melting the electrodes and for a uniform temperature field within the slag bath. The method can be utilized in the process of producing unique hollow or solid ingots and slabs of high-grade steels and alloys having a weight of 200 tons and higher.

3,790,692
THREE-PHASE ELECTRIC FURNACE FOR MANUFACTURING ALUMINIUM-SILICON ALLOYS

Jury Ivanovich Brusakov, Novo-Izmailovsky prospect, 37, kv. 42, Leningrad; Nikolai Nikolaevich Sirotkin, ulitsa Bela Kuna, 5, kv. 228, Leningrad; Vasily Pavlovich Kiselev, ulitsa Lensoveta, 48, kv. 10, Leningrad; Dmitry Vladimirovich Ilinkov, ulitsa Tregubenko, 13, kv. 5, Zaporozhie; Mikhail Pavlovich Avdeev, Irkitskoi oblasti 7, kvartal, 30, kv. 7, Shelekhev; Semen Panteleevich Marin, ulitsa 40 let Sovetskoi Ukrainy, 86, kv. 53, Zaporozhie; Alexandr Ivanovich Shkarupa, ulitsa Patrioticheskaya, 74, kv. 45, Zaporozhie; Boris Ottovich Veisman, ulitsa 40 let Sovetskoi Ukrainy, 40a, kv. 27, Zaporozhie; Vladimir Nikolaevich Lebedev, prospekt Lenina, 159, kv. 33, Zaporozhie, and Nikolai Pavlovich Gavrilenko, Pravy bereg, ulitsa Dudykina, 7, kv. 8, Zaporozhie, all of U.S.S.R.

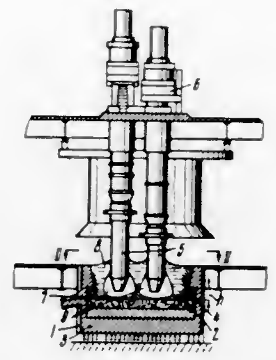
Continuation of Ser. No. 174,381, Aug. 24, 1971, abandoned. This application Sept. 8, 1972, Ser. No. 287,567

Claims priority, application U.S.S.R., Nov. 11, 1970, 1485652

Int. Cl. F27b *14/14;* **H05b** *7/00*

U.S. Cl. 13—9 **2 Claims**

In an electric furnace relationship between the bath diameter "d," the lining height "h" and the distance between the electrode axes "l" is such as to form a common reaction zone for reducing metal oxides of the charge and to provide for free discharge of the metal being produced.



3,790,693
TONE KEYING AND SYNTHESIZING SYSTEM FOR ELECTRONIC MUSICAL INSTRUMENT

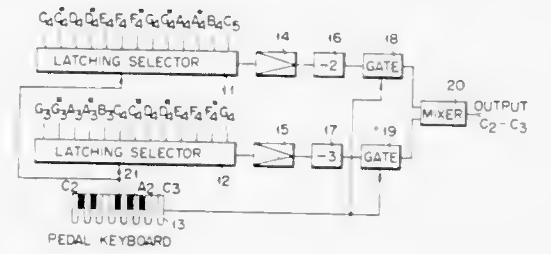
Takeshi Adachi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed Dec. 6, 1972, Ser. No. 312,680

Claims priority, application Japan, Dec. 29, 1971, 47-2142; Feb. 10, 1972, 47-14687; Feb. 10, 1972, 47-14688

Int. Cl. G10h *1/02, 5/06*

U.S. Cl. 84—1.01 **23 Claims**



First and second latching selectors receive tone signals from the tone generators and are operatively coupled to a keyboard for respectively deriving first and second tone signals having frequencies determined by the depressed keys in the keyboard. The frequencies of the first and the second tone signals are respectively divided by first and second frequency dividers respectively having predetermined dividing factors of, for example, 2 and 3, so that the first and the second frequency divided tone signals (i.e., the signals at the outputs of the frequency dividers) have a frequency ratio which is close to but not exactly equal to an integer. The mixed resultant tone exhibits an ensemble effect as produced by a multi-series tone generator.

3,790,694
FILLED TELEPHONE CABLE WITH BONDED SCREENING LAYER

Antonio Portinari, Sesto San Giovanni, Italy, assignor to Industrie Pirelli Societa per Azioni, Milan, Italy

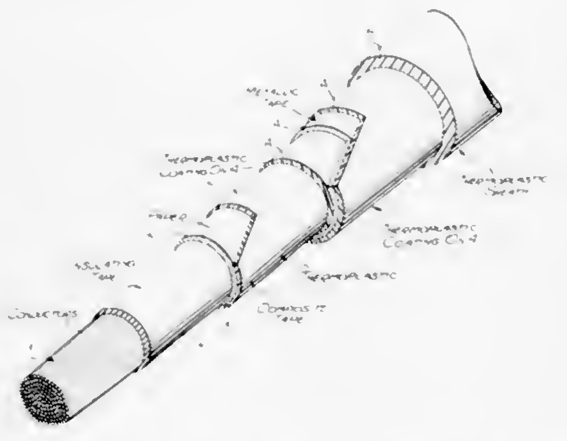
Filed May 23, 1973, Ser. No. 363,060

Claims priority, application Italy, June 7, 1972, 25330 A/72

Int. Cl. H01b *7/18, 3/18*

U.S. Cl. 174—23 R **10 Claims**

A fully-filled telephone cable having a central core of insulated wires bunched together and held together by a layer of an insulating tape, both the spaces between the wires and the tape being filled with a solid or semi-solid gel derived from a paraffin, vaseline or mineral oil. The layer of tape is surrounded by a helically wrapped or longitudinally extending composite tape having an inner layer of paper filled by said gel and having an outer layer of a thermoplastic material. The layer of composite tape is surrounded by a helically wrapped



or longitudinally extending screen comprising a metal tape coated on its inner and outer surfaces with a thermoplastic material, the inner surface coating being bonded to the outer layer of the composite tape by fusion. The screen is surrounded by a sheath of thermoplastic material having its inner surface bonded by fusion to the outer surface coating of the metal tape.

3,790,695

ELECTRICAL INSULATOR OF POROUS EXPANDED PLASTICS MATERIAL

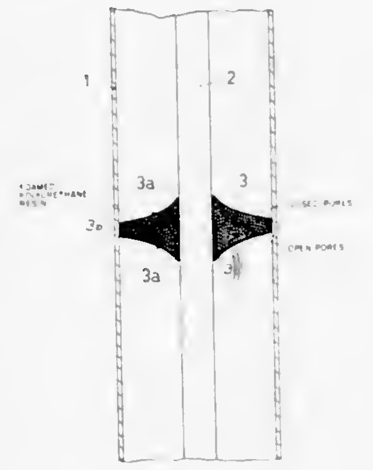
Dieter Floessel, Fislisbach, and Gerhard Mauthe, Wettingen, both of Switzerland, assignors to Brown Boveri & Company Limited, Baden, Switzerland

Filed Sept. 8, 1972, Ser. No. 287,288

Claims priority, application Switzerland, Oct. 29, 1971, 15795/71

Int. Cl. H01b *9/06, 9/04*

U.S. Cl. 174—28 **3 Claims**



An electrical insulator of porous expanded plastics material such as polyurethane for use within metal-clad high-voltage switchgear and lines and which are evacuated prior to being filled with a high-grade compressed insulating gas such as SF_6 having an insulating capacity greater than that of air. Approximately 100 percent of the pores of the expanded plastics material are open pores so as to prevent destruction of the pores during the evacuation phase and thereafter enable the pores to be filled with the insulating gas while in the normal operating condition of the electrical apparatus. If desired, the pores adjacent certain surface zones may be closed so as to reduce the risk of contamination and facilitate cleaning.

3,790,696

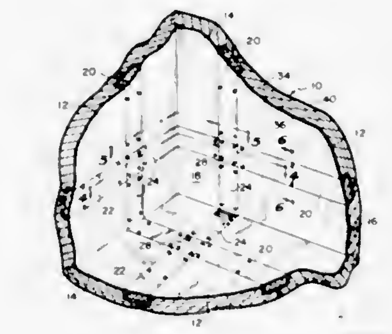
DOUBLE ISOLATED SCREEN ROOM

Erik A. Lindgren, 728 Mulford St., Ill.

Continuation-in-part of Ser. No. 306,607, Nov. 15, 1972. This application Dec. 29, 1972, Ser. No. 319,725. The portion of the term of this patent subsequent to Jan. 1, 1991, has been disclaimed.

Int. Cl. H05k *9/00*

U.S. Cl. 174—35 MS **15 Claims**



A double isolated electrically shielded screen room in which all side, top and bottom panels are identical, and along with preassembled corner units, have identical cross-sectional edges that edge-abut identically for on-the-site assembly. All joints and shielding connectors between contiguous shielding members are cross-sectionally alike and are clamped together in common planes that are parallel to the respective faces of the panels and units to form smooth walls that completely enclose the room as secured under compression in a direction perpendicular to each panel with great isolation efficiency by concealed and isolated clamping means that can be applied from either the inside or the outside of the room assembly.

3,790,697

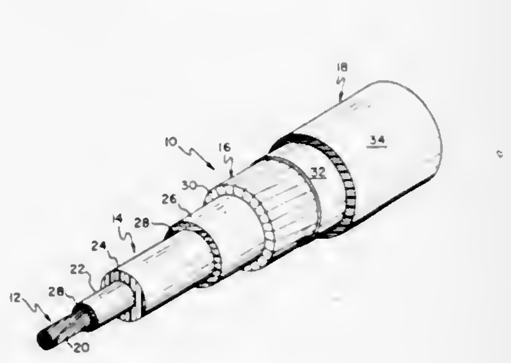
POWER CABLE SHIELDING

Robert P. Buckingham, Wyckoff, N.J., assignor to The Okonite Company, Ramsey, N.J.

Filed Oct. 30, 1972, Ser. No. 301,960

Int. Cl. H01b *7/22*

U.S. Cl. 174—102 **10 Claims**



A cable for transmitting electrical power incorporating a shield serving as a low resistance return path to carry heavy fault current. The shield comprises a multiplicity of helically wound elongate metallic elements such as straps, tapes or wires. The lay length of the metallic elements, if tapes or straps, is selected such that thermal expansion and elastic stretch of the straps or tapes is sufficient to accommodate expansion and contraction of the insulator within the elastic limit of the metallic elements. The lay length of the metallic elements, if wires, is selected such that the thermal expansion of the wires is sufficient to accommodate expansion and contraction of the insulator without elastically stretching the wires.

3,790,698

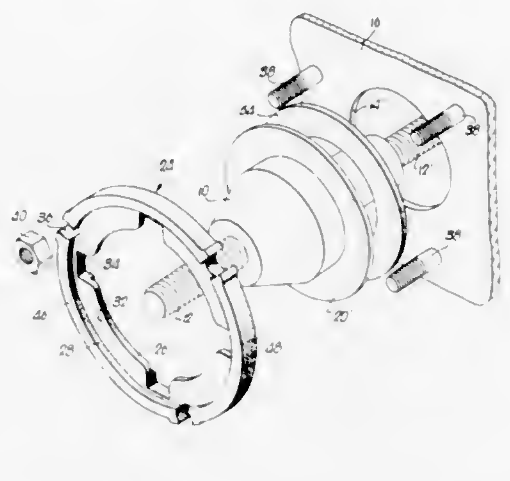
DETACHABLE BUSHING

Fred O. Engert, St. Louis, Mo., assignor to A. B. Chance Company, Centralia, Mo.

Filed July 25, 1972, Ser. No. 275,068

Int. Cl. H01b *17/30*

U.S. Cl. 174—152 R **2 Claims**



A mounting clamp is provided for detachably securing an electrical bushing upon the wall of an electrical transformer tank in sealing relationship therewith. The clamp is securable to the tank is different dispositions so as to be cooperable with bushings of differing sizes and configurations in detachably mounting same to the tank.

3,790,699

SIMPLEX RADIOTELEGRAPH SYSTEM

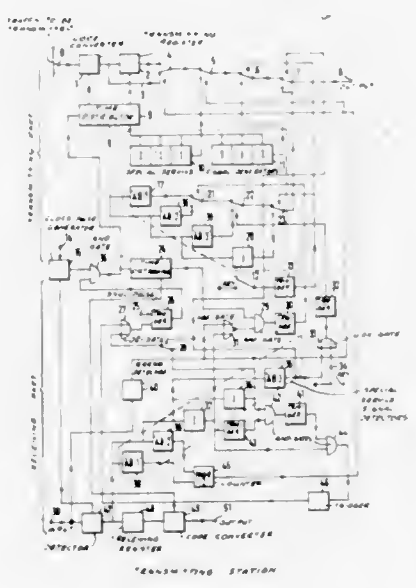
Herman Da Silva, Voorburg, Netherlands, assignor to De Staat der Nederlanden te DeZenvertegenwoordigd door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie, The Hague, Netherlands

Filed Apr. 26, 1972, Ser. No. 247,753

Claims priority, application Netherlands, Apr. 28, 1971, 7105791

Int. Cl. H04l *15/22, 15/26*

U.S. Cl. 178—2 A **9 Claims**



A simplex radio telegraph system with automatic error correction, wherein message signals transmitted to a receiving station are included in time spaced frames. The time space between consecutive ones of said frames being employed by the receiving station to return one of two service signals to indicate to the sending station whether transmission can be continued or a message signal due to an error has to be repeated. Each station is provided with circuitry for sending and detecting, respectively, a third service signal, and additional circuitry for sending and detecting, respectively, a service frame for calling-in said third service signal so as to bring a sending station into its received state, and vice versa. In order to cease established communication(s) to give priority to one or more stations involved in an emergency situation, an auxiliary circuit arrangement is provided by which a station when in its receiving state is able to transmit a fourth service signal. A station when in its sending state can be caused to respond to a fourth service signal through an OR-gate to bring its time distributers into a stand-by state. Alternatively a station when in its receiving state can be caused to respond to a specific service frame through the fore-said OR-gate to bring its time distributors into a stand-by state.

3,790,700

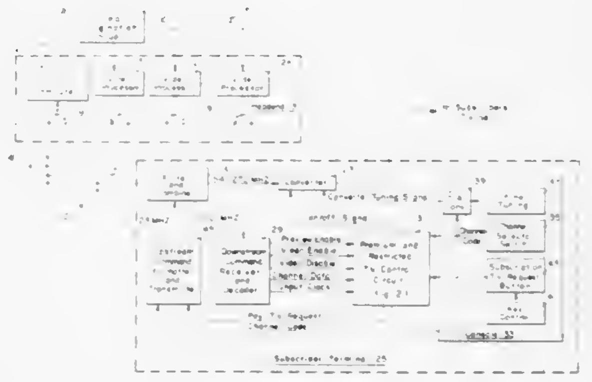
CATV PROGRAM CONTROL SYSTEM

Richard T. Callais, Northridge; Herbert Eisenberg, Manhattan Beach; F. Douglas Forbes, Palos Verdes Peninsula; Thomas J. Kosco, Harbor City; Harry M. Taxin, Los Angeles, all of Calif., and John B. Frost, Goodyear, Ariz., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 17, 1971, Ser. No. 209,222

Int. Cl. H04n *1/44*

U.S. Cl. 178—5.1 **35 Claims**



A system for controlling CATV program viewing in a plurality of modes of operation. In a first mode of operation, a downstream digital transmission causes control means to develop first binary data for comparison in a comparator with selected-channel code data from channel means to enable a first circuit to allow a first or second category program to be selected and received by a subscriber during a predetermined temporary period of time. In a second mode of operation the enabling of a second circuit by the subscriber will only cause the control means to be enabled if the subscriber is authorized to receive that selected first category program. In a third mode of operation the enabling of the second circuit by the subscriber will enable a third circuit to allow a selected second category program to be received. In a fourth mode of operation the selection of a third category program by the subscriber will enable a fourth circuit to allow that selected third category program to be received.

3,790,701

SYSTEM FOR RECORDING AND PLAYING BACK COLOR ENCODED HOLOGRAMS

Gorog Istvan, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 28, 1969, Ser. No. 880,680

Int. Cl. H04n *9/02*

U.S. Cl. 178—5.4 CD **11 Claims**

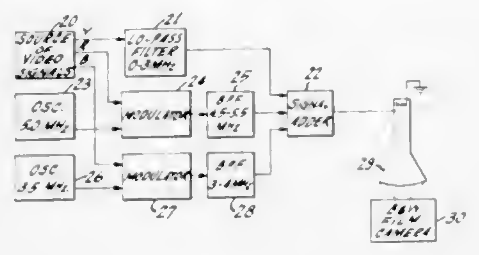
A hologram record is made containing information representative of the color and brightness of a scene. A replica

of the hologram is played back in a system including a laser

response to an intelligence signal. The method and apparatus

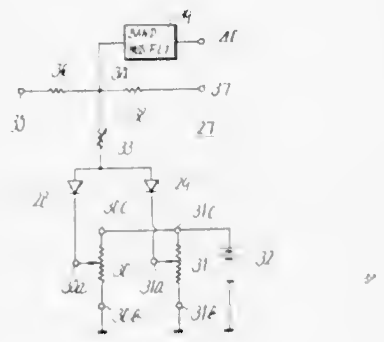
tegrated signals to digital pulses, storing maximum pulses, comparing incoming pulse values with maximums, changing

sive image frames, is derived from the detection of the movement of the image frames past first and second image frame of the hologram is played back in a system including a laser imaging unit for producing brightness and color representative signals which may be applied to a display device for reproducing the scene in its original colors.



3,790,702
GAMMA CORRECTION CIRCUIT

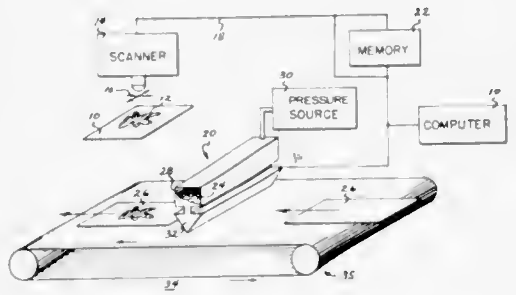
Yasuharu Kubota, and Ryuji Shiono, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Nov. 22, 1972, Ser. No. 308,654
Claims priority, application Japan, Nov. 27, 1971, 46/95640
Int. Cl. H04n *9/53*
U.S. Cl. 178—5.4 R **16 Claims**



In a gamma correction circuit for a color television camera, a luminance signal is supplied to one input of a non-linear conducting circuit, preferably including at least one semiconductor diode, so as to vary the conductance of such diode, while a chrominance signal is supplied to another input of the non-linear conducting circuit to provide a gamma corrected chrominance signal as the output therefrom.

3,790,703
METHOD AND APPARATUS FOR THERMAL VISCOSITY MODULATING A FLUID STREAM

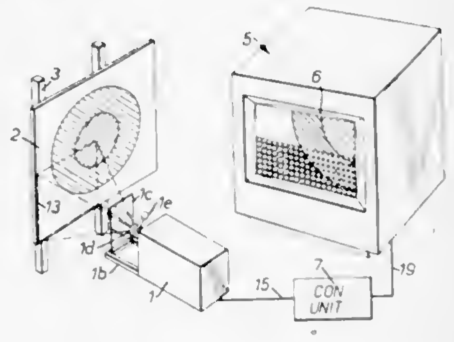
Adam Loran Carley, 45 Linnaean St., Cambridge, Mass.
Continuation-in-part of Ser. No. 46,935, June 17, 1970, Pat. No. 3,741,118. This application July 21, 1971, Ser. No. 164,510
Int. Cl. G01d *15/18*
U.S. Cl. 178—6.6 R **27 Claims**



A method and apparatus for thermal viscosity modulating a fluid stream by time varying the temperature of the stream in response to an intelligence signal. The method and apparatus are useful for "printing" or forming an ink image of an original in black and white or color. In the preferred embodiment, a plurality of fluid printing ink streams are thermal viscosity modulated in response to an electrical signal which represents a scanned original. Each fluid ink stream corresponds to a resolution element across the serially or parallel scanned original. The image of the original is formed or "printed" on a suitable fluid receptor, such as paper, by depositing the fluid streams in varying amounts on the receptor according to the viscosity of each of the streams. The thermal viscosity modulation of the fluid stream is accomplished in a preferred embodiment by passing the fluid streams under pressure through capillaries each having a thin film electrical resistor formed on the inner wall thereof. The scanned original electrical signal is impressed across the capillary electrical resistor to heat the fluid ink stream in accordance with the signal. By varying the amount of heat, the viscosity of each stream is modulated as a function of the value of the corresponding resolution element of the original.

3,790,704
PATTERN CONTROL SYSTEM FOR CONTROLLING TEXTILE MACHINERY

Herbert Collomosse, and Patrick Albert Henry Bacon, both of Croydon, England, assignors to Louis Newmark Limited, Croydan, Surray, England
Filed Dec. 15, 1972, Ser. No. 315,287
Claims priority, application Great Britain, Dec. 17, 1971, 58,633/71
Int. Cl. H04n *7/18, 9/02*
U.S. Cl. 178—6.8 **28 Claims**

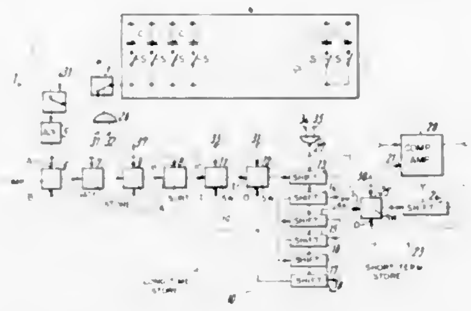


A television camera views a representation of a pattern to be knitted by a knitting machine. A television picture tube displays a monochrome image of the pattern and coloured picture elements, each representing stitch information stored at an individual address in a memory, are superimposed upon the pattern image so that the correspondence between the stored information and the original pattern may be determined. A keyboard enables pattern information to be progressively entered in a memory, each stitch so entered appearing immediately as a coloured element in a display. Any portion of the pattern information stored in the memory may be displayed at will. A pulsating marker element shows the position in the displayed pattern at which information will be entered upon actuation of a key. Automatic return and pattern line advance and "tabulator" return to preselected positions in the pattern may be effected.

3,790,705
INTERFERENCE SIGNAL COMPENSATING

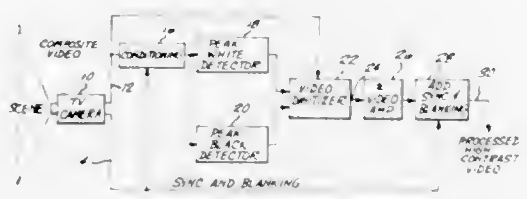
Gerhard Robert Kamin, Traisa/Darmstadt, Germany, assignor to Fernseh GmbH, Darmstadt, Germany
Filed Oct. 28, 1971, Ser. No. 193,452
Claims priority, application Germany, Oct. 29, 1970, P 20 53 116.2
Int. Cl. H04n *5/21*
U.S. Cl. 178—7.1 **6 Claims**

Interference in television scanning signals is compensated for by integrating signals from picture areas, converting the integrated signals to digital pulses, storing maximum pulses, comparing incoming pulse values with maximums, changing maximums if necessary, and storing difference values in circulating storages, and using the difference values to control a compensating amplifier in a picture signal circuit.



3,790,706
AUTOMATIC VIDEO CONTRAST CONTROL CIRCUIT

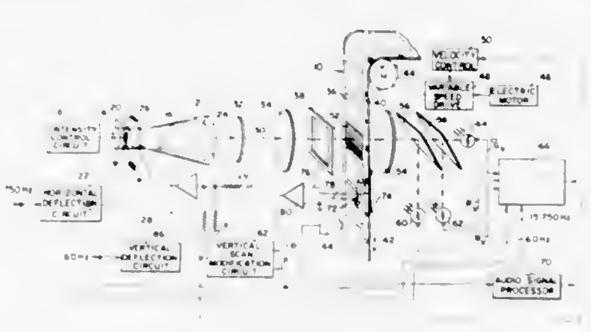
Thomas J. Gubala, Renton, and Wayne O. Kraft, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.
Filed May 25, 1972, Ser. No. 256,881
Int. Cl. H04n *5/16*
U.S. Cl. 178—7.1 **9 Claims**



An automatic video contrast control circuit in video signal processing for continuously detecting peak white and peak black levels and providing control signals therefrom to process the incoming video so that contrast is maximized by redefining the video black level and white level of the outgoing video. The method of signal processing comprises detection of the peak white and peak black amplitudes of the incoming video signals and then utilizing the voltage differential between the peak amplitudes to establish a plurality of bias levels for individual voltage level channel comparators which quantize the incoming video into a plurality of successive level signals which when combined and coupled to a display system provide the aforementioned contrast enhancement of the image.

3,790,707
METHOD AND APPARATUS FOR DERIVING A VELOCITY SIGNAL FROM CONTINUOUSLY MOVING INFORMATION BEARING MEDIA

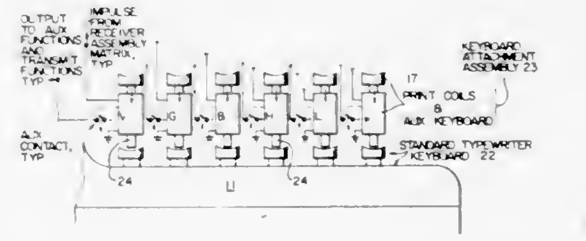
Harry L. Valenta, Jr., North Chili, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed July 3, 1972, Ser. No. 268,249
Int. Cl. H04n *5/86*
U.S. Cl. 178—7.2 **12 Claims**


VELOCITY CONTROL
VARIABLE SPEED DRIVE
ELECTRIC MOTOR
INTENSITY CONTROL CIRCUIT
HORIZONTAL DEFLECTION CIRCUIT
VERTICAL DEFLECTION CIRCUIT
VERTICAL SCAN MODIFICATION CIRCUIT
AUDIO SIGNAL PROCESSOR
60Hz
15,750Hz

The velocity of continuously moving information bearing media, such as perforated motion picture film bearing successive image frames, is derived from the detection of the movement of the image frames past first and second image frame detecting means displaced apart a distance ΔD in the direction of continuous movement and the production of corresponding first and second time-spaced signals having first and second time periods, respectively. Means are provided for transforming the first and second time-spaced signals into a velocity signal, such means including a reference signal having a value representative of the physical distance ΔD, first integrator means responsive to the velocity signal for producing a first ramp signal having a ramp slope dependent upon the value of the velocity signal and a period established by the second signal, difference means responsive to the reference signal and the first ramp signal for producing a second ramp signal representative of the instantaneous difference between the value of the reference signal and the time varying ramp slope of the first ramp signal, second integrator means responsive to the instantaneous amplitude of the difference signal for producing the velocity signal, and gate means responsive to the first signal that operates as a sampling signal for applying the second ramp signal to the second integrator means for a sampling period corresponding to the first period of the first signal, whereby the second integrator means is responsive to the sampled instantaneous value of the second ramp signal during the sampling period to produce the velocity signal having a value representative of the first predetermined rate of movement of the information bearing media and independent of non-uniform spacings of successive image frames. In telecine reproduction apparatus, the first ramp signal may be employed to modify the scanning rate of the telecine apparatus to synchronize it to the continuously moving image frames.

3,790,708
COMMUNICATION METHOD AND APPARATUS

Vernon M. Bugg, Sr., Churchville, and Francis V. Bugg, Towson, both of Md., assignors to Telectrotype Corporation of America, Belair, Md.
Filed Oct. 12, 1972, Ser. No. 296,838
Int. Cl. H04l *15/06, 15/34*
U.S. Cl. 178—17 C **5 Claims**


OUTPUT TO AUX FUNCTIONS AND TRANSMIT FUNCTIONS TYP
IMPULSE FROM RECEIVER ASSEMBLY MATRIX, TYP
KEYBOARD ATTACHMENT ASSEMBLY 23
17
PRINT COILS & AUX KEYBOARD
AUX CONTACT, TYP
STANDARD TYPEWRITER KEYBOARD 22
24
11
24

The present disclosure is directed to a communication system employing two typewriters of the electromechanical type each of which is equipped to be both a transmitter and receiver for two-way communication. When employed as a transmitter the first typewriter, upon depression of each keyboard device, initiates an electrical pulse which is passed through an encoding matrix which is responsive and definitive of only one keyboard character and which through a recycling chain counter places the representative pulse, having its identity discernable by its polarity, current or frequency level, on the conductive link between the first and second typewriter. At the second typewriter the incoming signal is received through an electrically selective matrix of switching devices which decode the incoming signal by polarity, current level or frequency. The pulse format is then directed to a second matrix where electrical means responsive to the individual coded characters activate the print out mechanism of the second typewriter to print the message.

3,790,709

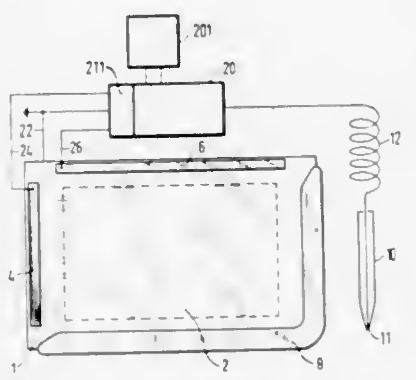
DEVICE FOR REGISTERING THE INSTANTANEOUS CONTACT PRESSURE OF A PROBE AND FOR THE ELECTRONIC RECORDING OF THE INSTANTANEOUS LOCATION OF A PROBE ON THE SURFACE OF A PLATE

Walter Heywang, Neukeferloh, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 30, 1972, Ser. No. 239,641

Int. Cl. G08c *21/00*

U.S. Cl. 178—18 **10 Claims**



A device for registering the instantaneous contact pressure of a probe which is being used as a writing instrument on a piezoelectric plate or on a sheet of paper resting on a piezoelectric plate, and to the combination of such a device in a system for electronically registering the instantaneous location of a probe on the surface of such a plate. The plate in such a system has permanent polarization in a predetermined direction. Essentially strip-shaped electrodes are arranged at adjacent edges on the upper surface of the plate. The probe is provided with an electrode at its tip and its tip is pressed against the plate, or the paper, when it is being used for writing. The system is designed in particular for the instantaneous recording of a character pattern which is written with a probe, which may, for example, be a pen or a stylus.

3,790,710

SYNCHRONIZING DEVICE FOR A TELEVISION SCANNING EQUIPMENT

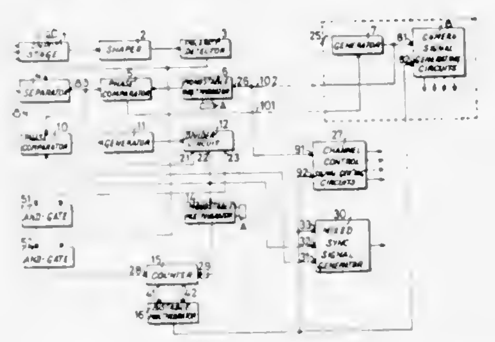
Jean Marie Gaucheron, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Feb. 1, 1972, Ser. No. 222,515

Claims priority, application France, Oct. 18, 1971, 7137304

Int. Cl. H04n *5/04*

U.S. Cl. 178—69.5 DC **2 Claims**


SHAPER
GENERATOR
CAMERA SIGNAL GENERATING CIRCUITS
SEPARATOR
AND-GATE
AND-GATE
COUNTER
MIXED SYNC SIGNAL GENERATOR

All the signals necessary for the operation of the camera are derived, as concerns the line frequency signals, from the output of a generator at the line frequency located in the camera and phase locked to the incoming line frequency sync. signal by means of a feedback loop including a variable delay device, and, as concerns the field frequency signals, from a basic field frequency signal delivered by a circuit comprising means for generating a signal at the frequency 2F, where F is the line frequency and whose phase is determined by the incoming line frequency sync. signal, and a counter fed by the signal at the frequency 2F through a further variable delay device.

3,790,711

STEROPHONY - SIMULATING EARPHONE

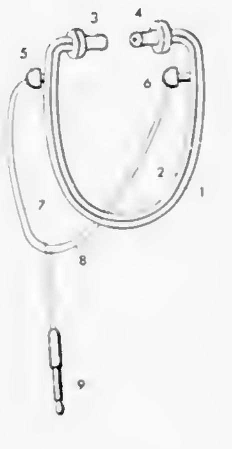
Shin Ojima, and Hiroshi Sano, both of Yao City, Japan, assignors to Hoshi Denki Seizo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 22, 1971, Ser. No. 200,669

Claims priority, application Japan, Nov. 24, 1970, 45/117065

Int. Cl. G10k *11/12;* **H04r** *5/00*

U.S. Cl. 179—1 GP **6 Claims**



A stereophony-simulating earphone which enables a user of the earphone to hear monaural sound as if it were stereophonic sound. The earphone includes a pair of horseshoe-shaped acoustic paths which lead to left and right ears of the uspr. Mounted at a point on one of the acoustic paths which is one-sided from the midpoint of said one path is a woofer electro-acoustic transducer and mounted at a point on the other of the acoustic paths which is one-sided opposite to said woofer from the midpoint of said other path is a tweeter electro-acoustic transducer. Both electro-acoustic transducers are fed by a common monophonic electrical signal to accomplish excellent stereophonic sound simulation.

3,790,712

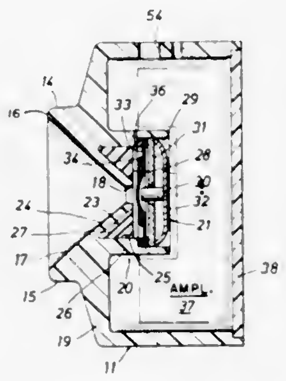
ELECTRONIC STETHOSCOPE SYSTEM

Francis M. Andries, Tomball, Tex., assignor to Computer Medical Science Corporation, Tomball, Tex.

Filed Feb. 24, 1972, Ser. No. 229,088

Int. Cl. H04r *1/46;* **A61b** *7/04*

U.S. Cl. 179—1 ST **5 Claims**



A method and apparatus for the detection of heart sounds and fidelity reproduction for diagnostic purposes including a pick-up or sensing device which has an annular projection forming a pick-up head with a cone-shaped interior and also has a dynamic microphone. The pick-up head has a lip configuration such that a frequency range of between 20 and 1000 cps can be detected with adequate intensity. A dynamic microphone operates a class "A" amplifier to provide amplification without signal distortion. Multiple distribution of detected sound is contemporaneously and simultaneously available to listeners, and at the same time the sound can be recorded on tape. Sound analysis with respect to frequency content and amplitude is made as well as comparison to predetermined heart malfunctions for clinical diagnosis.

3,790,713

FOUR-WIRE SWITCHING OF JUNCTIONS IN TDM PCM SWITCHING CENTERS UNDER STORED-PROGRAM CONTROL

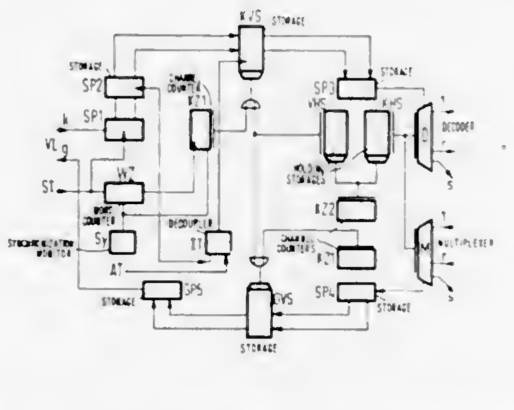
Karlheinz Neufang, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed Feb. 23, 1972, Ser. No. 228,541

Claims priority, application Germany, Feb. 24, 1971, P 21 08 745.6

Int. Cl. H04j *3/00*

U.S. Cl. 179—15 AT **3 Claims**



A telephone exchange serving PCM time division four-wire junction lines having switching centers under the control of a stored program central control unit is described. A connecting-through unit including a complete storage device for the incoming and outgoing directions for holding all the information elements arriving during a complete system scanning period, decoupling means for maintaining the separation of the internal and external pulse repetition rates, and a monitoring means for controlling the synchronization signal in the incoming channel, is allocated to each four-wire junction line. Spatial coupling point elements accessed by the four-wire line provide connections between the incoming and outgoing channels. Holding storage devices link each complete storage device and appropriate coupling points. The holding storage devices and coupling points are controlled by a path finding means to provide the required spatial and time coupling between incoming and outgoing channels. The foregoing apparatus removes the need for specially constructed switching centers for use with pulse code modulated signals.

3,790,714

FM STEREOPHONIC RECEIVER

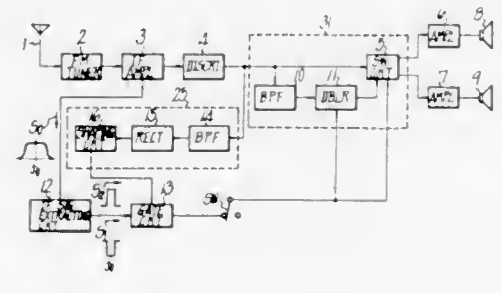
Mitsuo Ohsawa, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed July 12, 1971, Ser. No. 161,437

Claims priority, application Japan, July 13, 1970, 45/61153

Int. Cl. H04h *5/00*

U.S. Cl. 179—15 BT **2 Claims**



A receiver for stereophonic program signals which employs a narrow-band intermediate-frequency signal extracting circuit and a noise signal detecting circuit for producing a gate signal. The receiver further includes a change-over switch which is controlled by the gate signal to select the monaural or stereophonic mode of operation so that the receiver may achieve monaural reproduction when noise in the received signal exceeds a predetermined level.

3,790,715

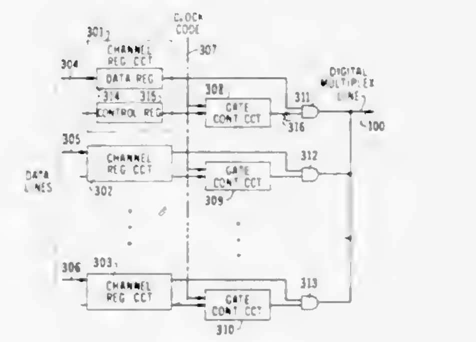
DIGITAL TRANSMISSION TERMINAL FOR VOICE AND LOW SPEED DATA

Hiroshi Inose, Tokyo; Yutaka Masuko, Kawasaki, and Tadao Saito, Tokyo, all of Japan, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 28, 1972, Ser. No. 276,082

Int. Cl. H04j *3/16*

U.S. Cl. 179—15 BV **2 Claims**



Apparatus for multiplexing a plurality of speech and low speed data signals on a single data multiplex channel. In order to accommodate the low speed data signals, a time slot of the recurring time multiplex transmission scheme of the time multiplex transmission channel is organized into a plurality of basic data channels corresponding in number to the number of bits which occur in the time slot. Control circuitry is provided for assigning one or more low speed data signal sources to a basic data channel during frames of the recurring cycle. The frame assignment is dependent on the signaling rate of the assigned data signal source. A control register is associated with each low speed data signal source and in order to minimize register size each control register is arranged to store a first set of signals defining one-out-of-*n* bit times in a coded form where *n* bit times occur in each time slot, a second set of signals defining one-out-of-*m* frames in a recurring sequence of *m* frames and to store a third set of signals which define the data rate of the corresponding data signal source.

3,790,716

SYNCHRONIZATION CIRCUIT FOR A PCM-TDM EXCHANGE

Michel Jean Herry, Aulmay-Sous-Bois, and Augustin Lejay, Verrieres-le-Buisson, both of France, assignors to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 5,381, Sept. 12, 1969. This application Dec. 6, 1971, Ser. No. 205,082

Int. Cl. H04j *3/06*

U.S. Cl. 179—15 BS **2 Claims**

A channel synchronization control circuit is disclosed for a PCM telecommunication system in which for each group of trunks there is provided a synchronization circuit with data memories for each trunk. Each message is constituted by a plurality of digits equal to the number of trunks. Received

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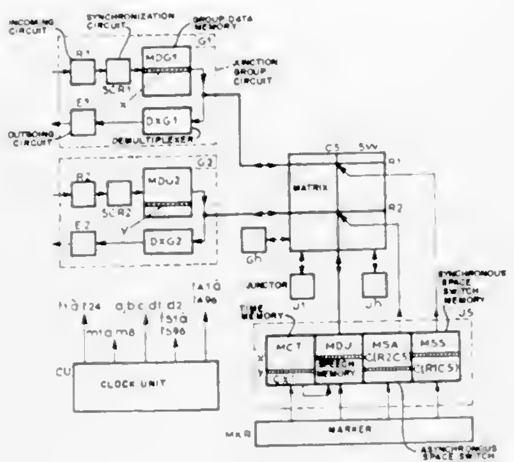
3,790,719

type is used to decode multiple frequency telephone message signals are stored in a buffer memory in which the time modification due to failure of channel synchronization



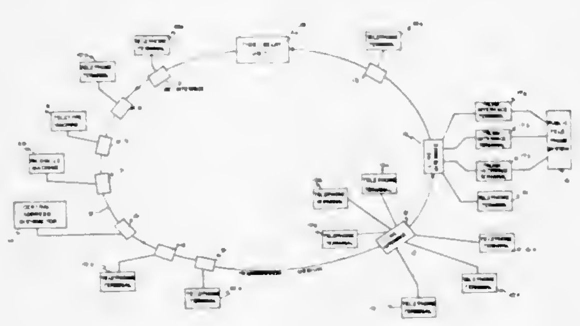
can be corrected. The circuit continuously checks the channel synchronization and continuously applies such corrections as are necessary.

3,790,717
TELEPHONE COMMUNICATIONS SYSTEM WITH DISTRIBUTED CONTROL

Carl N. Abramson, Somerville, and Nicholas A. D'Agosto, III, Piscataway, both of N.J., assignors to Adaptive Technology, Inc., Piscataway, N.J.

Filed Aug. 7, 1972, Ser. No. 278,646
Int. Cl. H04j *3/00*

U.S. Cl. 179—15 AL **35 Claims**



A system for accomplishing distributed PABX functions without tying up lines or channels of communication for each communication. Station identifying address codes are assigned to the subscribers with a plurality of address codes being available to a single subscriber at a given time. The address codes are stored in registers located at the subscriber stations and transferred to receiving stations to effect communication. The processing and handling of the address codes is accomplished locally at the subscriber stations by the user himself by a technique which facilitates the implementation of such conventional PABX functions as call transfer, call storage, call forwarding and call hold. The subscriber terminals are connected in a communications network wherein the subscribers communicate on the transmission media using a predetermined period format. The period format includes assigned portions for handshaking and distribution of address codes as well as portions for communicating textual data. Generally, an originator goes off hook and dials the handshake address code of the party he desires communication with. This address code is placed in a REQUEST FOR SERVICE subperiod of the period (P) on the transmission line. At the receptor terminal, a distributed address code is received for identifying the communications between the two terminals. Each subscriber is provided with registers for storing the address codes to be used by respective communicating subscribers. The possible address codes stored by these registers includes address codes providing handshake identification codes, transferee address codes identifying those subscribers which a given subscriber desires to transfer or forward calls to, the addresses of subscribers calling a given subscriber when such given subscriber is busy with a third party and, essentially, includes the addresses associated with any subscribers which the given subscriber is or will subsequently speak to, or transfer calls to. An address selector and control circuit controls the entry and removal of the address codes into and out of the address registers. The control circuit is connected to both a keyboard for receiving telephone operation command codes, and to an address code detector so as to control the entry and removal of address codes on the transmission media.

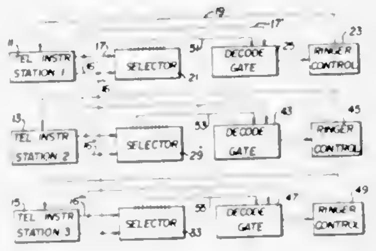
In the subject system, the general telephone functions as well as the special telephone features noted above are available on a distributed basis. The subject system provides the characteristic whereby the interface circuitry to the public telephone network very closely approximates the circuitry required at each subscriber station. Therefore, the system does not have the present day limitations on the ratio of the number of stations to the number of trunks. Since the special features are available on a distributed basis, the cost increases linearly as stations are added to the system. In accordance with the subject system, there is no requirement for a central attendant's terminal or a central switching unit, but rather the basic telephone functions are accomplished on an independent basis by the individual subscriber terminals.

3,790,718
SOLID STATE DIAL SELECTOR SIGNALLING APPARATUS

Edgar W. Jenkins, Jr., P.O. Box 6, Belle Chasse, La.

Filed Dec. 21, 1970, Ser. No. 99,979
Int. Cl. H04m *13/00*

U.S. Cl. 179—17 D **29 Claims**



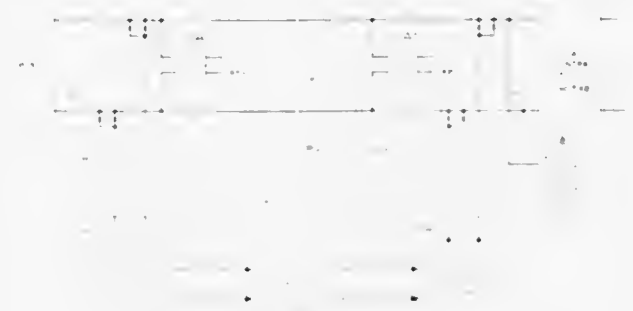
The invention comprises a separate signalling apparatus for use with a party line communications system to signal the called party. Each station includes a dial selector interconnected to all telephone instruments of the other stations for producing an output to the associated decoder and ringer units when its station is dialed. The decoder unit provides a go or no-go signal to actuate the ringer only when its station is being called. Integrated chips and JK flip-flops provide a reliable solid state apparatus. For use with an intercom system, the stations share a single dial selector but the other components are the same.

3,790,719
METHOD AND MEANS FOR CONNECTING BRANCH EXCHANGES

Bernard R. Montague, Dollard des Ormeaux, Quebec; Derek Leyburn, Mississauga, Ontario; John Barker, Richmond, British Columbia; Ray John Hannley, Edmonton, Alberta; Vincent G. Leblanc, St. John, New Brunswick, all of Canada, and Leslie K. Tam, Galion, Ohio, assignors to Bell Canada, Montreal, Quebec, Canada

Filed Oct. 28, 1971, Ser. No. 193,413
Int. Cl. H04m *7/14*

U.S. Cl. 179—18 AD **20 Claims**



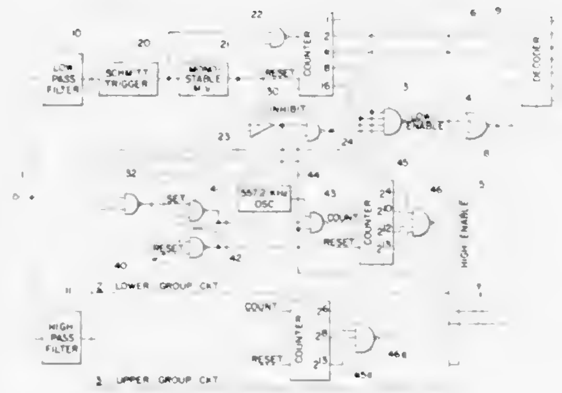
Two private branch exchanges are each associated with different central offices and are connectible to their associated central office by one or more associated trunks. Action initiated by the subset of one of the private branch exchanges to seize an associated trunk, causes connection of that trunk through the conventional telephone system to a trunk associated with the other private branch exchange (preferably through the direct distance dialling network). Seizure by the subset of the associated trunk also causes the seizure of register sender means. After this latter seizure dialled digits are stored in the register sender until the above connection is established. The stored digits are then sent along the connection to achieve connection to the terminating end subset. Preferably the dialled digits are sent over the established connection in the form of tones within the voice band. Preferably the call is timed by a timer optionally associated with either the originating or the terminating end. Preferably the originating and terminating ends are interchangeable.

3,790,720
DIGITAL DECODER FOR MULTIPLE FREQUENCY TELEPHONE SIGNALLING

Knut Roger Schartmann, Montreal, Quebec, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Oct. 27, 1972, Ser. No. 301,506
Int. Cl. G01r *23/10*

U.S. Cl. 179—84 VF **6 Claims**



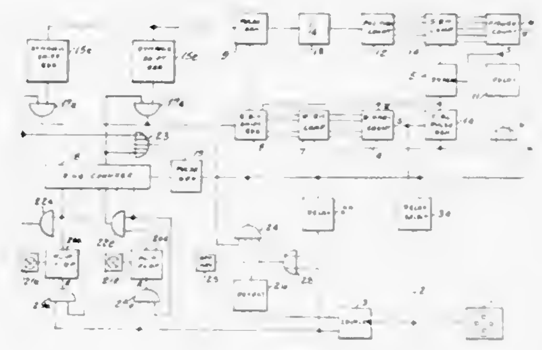
A signal selected from a family of signals having different predetermined frequencies is identified, within predetermined frequency limits. In one embodiment a decoder of the digital type is used to decode multiple frequency telephone signalling. A filter separates two signalling frequency signals into upper and lower frequency groups. Each of the signals is counted in upper and lower group circuits and after a predetermined count, to allow for a settling time, upper and lower group timing interval signals are generated. At the end of the time interval the upper and lower group circuits cease to count. In the continuing presence of the signals the counts are decoded to identify the signalling frequency signals received. The use of digital circuitry yields a space and cost saving over previously used analogue circuitry.

3,790,721
AUTOMATIC DIALING DEVICE

Heinz Muhlbauer, Erchanastrasse 7, Dachau, and Franz Hofstetter, Franz Schellerstrasse 12, Herbertshausen, both of Germany

Filed June 13, 1972, Ser. No. 262,230
Int. Cl. H04m *1/44*

U.S. Cl. 179—90 B **12 Claims**



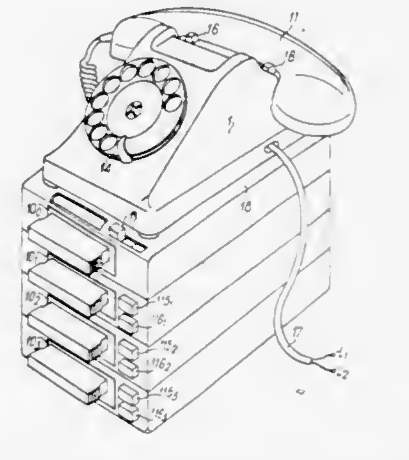
Automatic dialing apparatus in which a plurality of storage registers each containing a representation of a directory number are serially interrogated and are read out in response to the concomitant presence of the interrogating signal and actuation of an associated selecting means to produce calling signals and in which the interrogating means is stepped past a selected register when the called number is busy, when the called party does not answer within a certain period of time or when the call is completed.

3,790,722
MAGNETIC TAPE CARTRIDGE DIALER

Andre Faye, 14, Rue du Foubourg Saint-Honare, Paris, France

Filed Oct. 11, 1972, Ser. No. 296,545
Int. Cl. H04m *1/46*

U.S. Cl. 179—90 BB **5 Claims**



Automatic call transmitter comprising a plurality of cartridge tape recorders and readers with recording heads, readout heads, capstans and capstan motors. Magnetic cartridges can be inserted into these recorders and readers. The capstan of the recorder and reader drives the magnetic tape of the cartridge. Alternating current pulses are generated under the control of the dial of a telephone set and these pulses are applied to the recording heads and recorded on a cartridge tape. An amplifier is connected to the readout heads for reading out the recorded pulses and the read out pulses are applied to a relay connected in parallel to the dial terminals. The operation of this relay simulates the dial actuation.

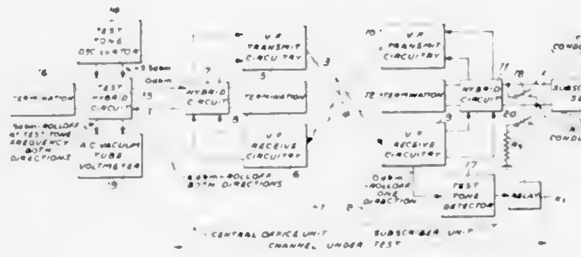
3,790,723
TEST ARRANGEMENT FOR A TWO-WIRE TELEPHONE CHANNEL

Edward F. Stewart, Raleigh, N.C., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Oct. 11, 1972, Ser. No. 296,728

Int. Cl. H04b *3/46*

U.S. Cl. 179—175.3 **6 Claims**



There is disclosed an arrangement to test the transmission and signaling function of a two-wire carrier telephone channel. The arrangement includes a central office unit to which a test tone is applied for transmission to a subscriber unit. At the subscriber unit a test tone detector detects the test tone and actuates a switching arrangement to connect the tip conductor and ring conductor of a subscriber set together so as to cause a mistermination of a hybrid circuit in the subscriber unit thereby causing the test tone to be looped back to the central office unit where the magnitude of the test tone is measured. From the measurement of the test tone a faulty operation of the channel can be detected. The test tone detector includes a tuned circuit tuned to the frequency of the test tone, a precision halfwave rectifier circuit including a first solid state operational amplifier coupled to the tuned circuit and an output circuit including a second solid state operational amplifier coupled to the output of the rectifier circuit and to the tuned circuit to produce a full wave rectified output signal with voltage gain upon detection of the test tone to actuate the switching arrangement.

3,790,724
ELECTROMAGNETIC MICROPHONE INCLUDING AT LEAST ONE ACOUSTIC RESISTANCE

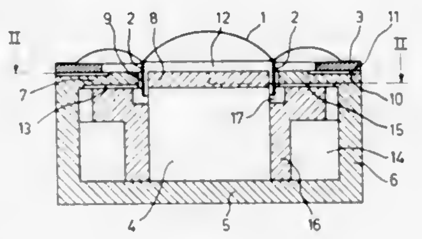
Gerrit Schenkel, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 31, 1972, Ser. No. 240,012

Claims priority, application Netherlands, Apr. 1, 1971, 7105001

Int. Cl. H04r *1/28, 9/08*

U.S. Cl. 179—180 **10 Claims**



Electrodynamic microphone provided with a diaphragm having a moving coil which is disposed in the active air-gap of a magnet system.

The air volume behind the diaphragm is connected to acoustic resistances. Each acoustic resistance comprises a groove which is pressed in a part of the magnet system made of a sintered material and is covered by a cover plate. The advantage is that in manufacture by mass-production methods acoustic resistances having very small tolerances are obtained.

3,790,725
LINEARLY EXTENDING ELECTRICAL DISTRIBUTION SYSTEM HAVING EXTRUDED SHAPE CONDUCTOR RAILS

Pierre Charamel, Les Cotes de Sassenage, and Raymond Bresson, Grenoble, both of France, assignors to Merlin Gerin, Societe Anonyme, Grenoble, France

Filed Nov. 23, 1971, Ser. No. 201,510

Claims priority, application France, Nov. 30, 1970, 7043078; Jan. 22, 1971, 7102907; May 11, 1971, 7117070

Int. Cl. B60m *1/30*

U.S. Cl. 191—29 **5 Claims**

A linearly extending electrical distribution system for a high speed vehicle driving a current collecting head. At least three conductor rails are provided by longitudinal aligned and spaced apart extruded shapes clamped to transverse C-shaped insulating support members. Expansion joints are provided by connector bars in telescoping relationship with the extruded shapes.

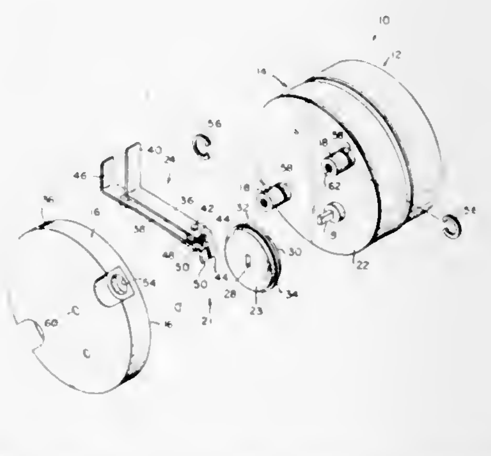
3,790,726
CAM OPERATED ELECTRICAL TIMER ASSEMBLY WITH IMPROVED CONTACT AND ASSOCIATED PERIPHERAL RIB CAM

William Ray Brown, Beech Grove, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed June 12, 1972, Ser. No. 262,137

Int. Cl. H01h *43/10*

U.S. Cl. 200—38 B **6 Claims**



A timer switch utilizing a modular stacked configuration and a switching arrangement wherein one each of a pair of switch blades are responsive to a pair of cam surfaces separated by a peripheral rib of a single cam.

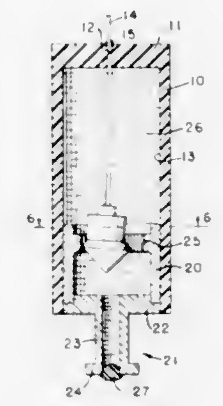
3,790,727
INERTIA SWITCH WITH RESILIENT CONDUCTIVE SUPPORT ARM IMMERSED IN SILICONE BASE VISCOUS FLUID MEDIUM

Gregory L. Laserson, Scarsdale; Harvey Feinman, Bronx; Mille Stand, New York; Stephen G. Glatzer, New Rochelle, and Rocco Scappatura, Mount Vernon, all of N.Y., assignors to Sealectro Corporation, Mamaroneck, N.Y.

Filed Dec. 13, 1972, Ser. No. 314,609

Int. Cl. H01h *35/02*

U.S. Cl. 200—61.49 **10 Claims**



A force actuated electrical switch which discriminates between forces having varying time duration. A pendulum, including a conductive wire secured at one end and fastened to a conductive bob at the other end. The pendulum is enclosed in a cylindrical insulator containing a thick viscous fluid. At the lower end of the cylinder a metal ring is positioned adjacent to the bob and surrounding it Under normal conditions the bob remains at the center of the ring and there is no contact. When the cylinder is moved in a horizontal direction for an extended time interval, contact is made between the bob and the ring and the switch is closed.

3,790,728
YARN WRAP DETECTOR ASSEMBLY WITH BUTTERFLY TYPE SENSOR AND SWITCH ACTUATOR

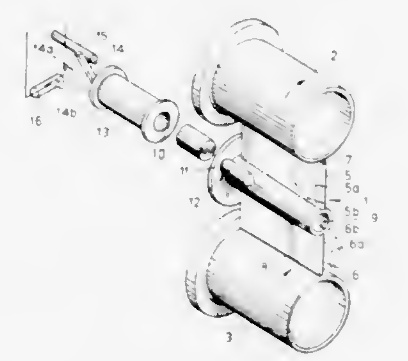
Harold Whittaker, Manchester, England

Filed May 30, 1972, Ser. No. 257,785

Claims priority, application Great Britain, June 19, 1971, 28,869/71

Int. Cl. B65h *25/14*

U.S. Cl. 200—61.18 **6 Claims**



A wrap detector for detecting a yarn wrap on a roller, comprising a pivotally mounted butterfly-type sensing member arranged adjacent to the surface of the roller and having a predetermined normal position relative to said roller, apparatus allowing a limited range of angular deflection of the sensing member from the normal position, apparatus operative, when the limited range is exceeded, to move the sensing member through a greater angle to a limit position lying well clear of the roller, and a switch mechanism actuated by the sensing member when in the limit position to control further yarn feed.

3,790,729
ELECTRIC SWITCH ASSEMBLIES WITH SPRING BIASED ROTATABLE KNOB ACTUATOR FOR GEAR SHIFT LEVER OR THE LIKE

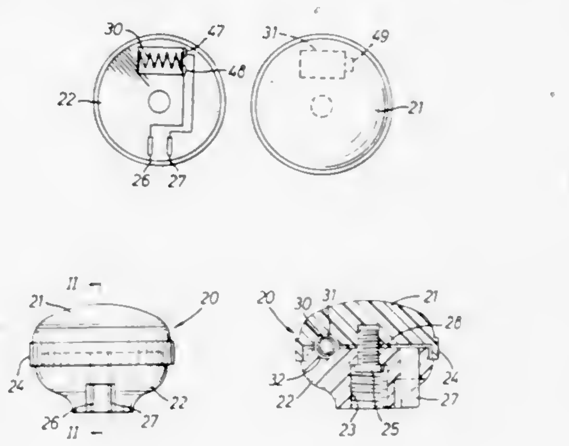
Geoffrey Lionel Guy Bradshaw, York Cottage, Church Rd., Leatherhead, England

Filed Nov. 23, 1971, Ser. No. 201,462

Claims priority, application Great Britain, Nov. 27, 1970, 56,558/70; Apr. 30, 1971, 12,359/71; June 18, 1971, 28,612/71

Int. Cl. H01h *21/24, 9/06*

U.S. Cl. 200—61.88 **15 Claims**



An electric switch in the shape of a knob arranged for mounting on the end of a mechanical control lever, the knob being in two parts of which one is rotatable to perform an electrical switching function. The switch is preferably spring biassed to a 'normal' position by a compression spring lying between the two parts.

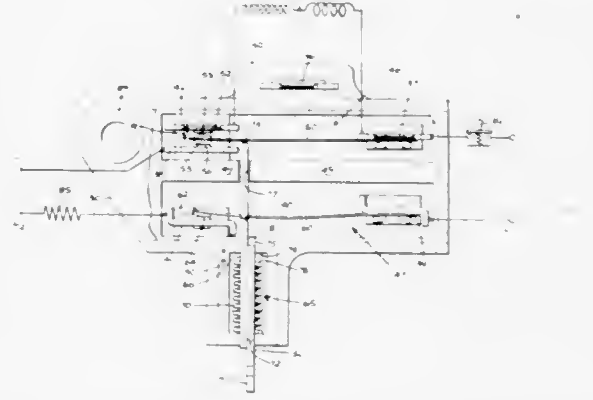
3,790,730
SWITCH CONTROL WITH LOST MOTION ACTUATOR

Alvin D. Wyland, Morrison, Ill., assignor to General Electric Company, New York, N.Y.

Continuation-in-part of Ser. No. 246,457, April 21, 1972. This application Oct. 13, 1972, Ser. No. 297,193

Int. Cl. H01h *3/48*

U.S. Cl. 200—153 V **17 Claims**



A switch control is disclosed for an electric motor having a push collar mounted on a shaft for substantially coaxial movement with respect to the shaft from a first motor run push collar position through successive second, third and fourth push collar imparting switch control operative event positions to a fifth motor stop push collar position. The switch control comprises first means for engaging the push collar with the switch actuator at the push collar second position, and second means for engaging the actuator with a resilient switch blade at the push collar third position. Third means are provided for bring-

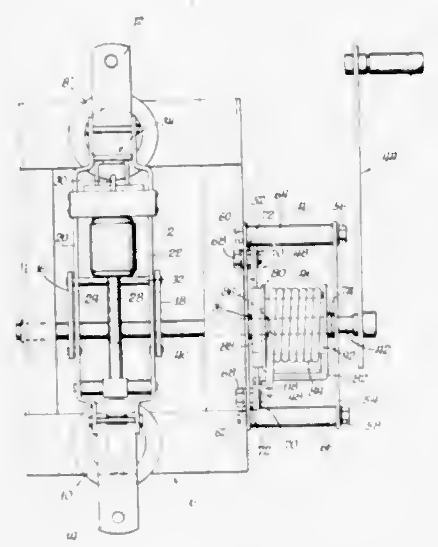
ing a mobile switch contact on the resilient switch blade into

a pair of conducting pins which are movable with respect to

causes the push button to return to its fully extended position

supported within the sides of the outer housing with the side of ing a mobile switch contact on the resilient switch blade into engagement with an immobile switch contact at the push collar fourth position. The switch control further comprises fourth means for causing the push collar to apply force against the switch actuator at a first rate of force increase as the push collar moves from the fourth push collar position to a push collar position intermediate the fourth and fifth collar positions, and for causing the push collar to apply force against the switch actuator at a second rate of force increase as the push collar moves from the intermediate position towards the fifth push collar position with the second rate of force increase being less than the first rate of force increase.

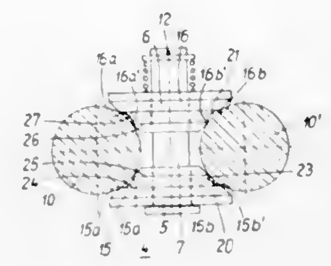
3,790,731
SPRING CHARGING SWITCH OPERATOR WITH WELD-BREAKING MEANS
Kazuo H. Date, South Milwaukee, Wis., assignor to McGraw-Edison Company, Elgin, Ill.
Filed Oct. 6, 1972, Ser. No. 295,456
Int. Cl. H01h *3/30*
U.S. Cl. 200—153 SC **5 Claims**



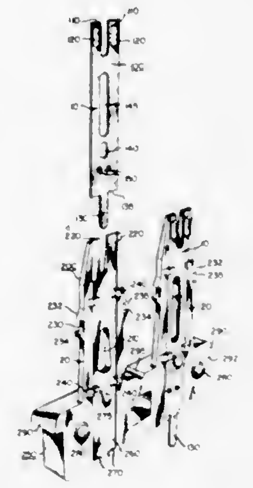
A switch operator is provided in which an operating shaft is rotatable in opposite directions to charge a torsion spring for supplying a snap action opening or closing operation of a switch. The switch is operated by a switch shaft which is latched stationary while the operating shaft is being rotated to charge the spring. At the point during the rotation of the shaft at which the torsion spring reaches a desired degree of charge, the latch is released and the switch shaft and switch are allowed to snap either open or closed. A forcing mechanism is positioned within the torsion spring and provides a direct, non-spring connection between the operating shaft and switch shaft. The forcing mechanism provides a direct opening or closing force on the switch shaft and switch means to overcome friction or contact weld in the event that the spring is unable to rotate the switch shaft upon release of the latch.

3,790,732
ELECTRICAL CONTACT APPARATUS
Ernst Slamecka; Hans Kapitany, and Egon Zemann, all of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munchen, Germany
Filed Aug. 10, 1972, Ser. No. 279,383
Claims priority, application Germany, Aug. 12, 1971, 2141138
Int. Cl. H01h *1/06*
U.S. Cl. 200—166 BB **8 Claims**

Electrical contact apparatus for high voltage circuit breakers and the like includes a pair of conical rollers mounted on a shaft and held under spring compression against a pair of conducting pins which are movable with respect to each other, upon the energization of the breaker. Each conical roller has a peripheral groove formed therein, the radius of the groove being less than the radius of either pin. The wedges of the grooves engage the surfaces of the pins to make an electrical connection therewith.



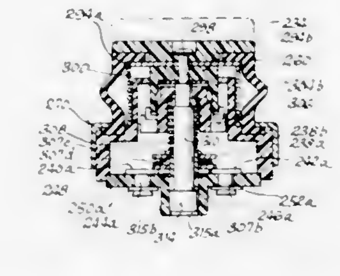
3,790,733
CONTACT SPRING AND SWITCH CONSTRUCTION
Karl-Heinz Pohl, Boulder, Colo., assignor to Bell Telephone Laboratories, Murray Hill, N.J.
Filed Nov. 3, 1972, Ser. No. 303,497
Int. Cl. H01h *1/26*
U.S. Cl. 200—166 J **20 Claims**



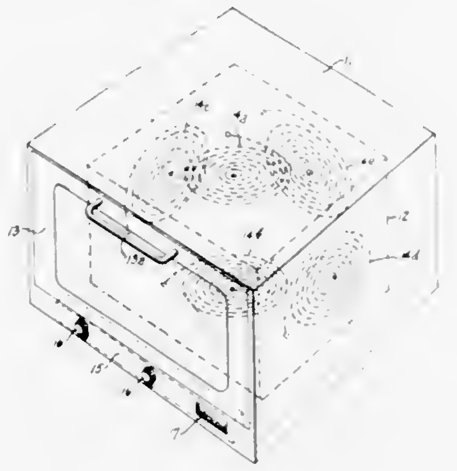
The contact spring of this invention comprises a dielectric spring member having a base portion and a generally linear cantilever portion extending from the base portion. A generally linear discrete conductor is mounted on the spring member in close proximity thereto. The conductor extends along the length of the cantilever portion and is so mounted on the spring member that the portion of the conductor extending adjacent to the free end of the cantilever portion is movable longitudinally relative to the cantilever portion when the cantilever portion is deflected.

3,790,734
ALTERNATE ACTION SWITCH WITH SEALING BOOTH GIVING VISUAL INDICATION OF SWITCH POSITION
Andrew F. Raab, Morton Grove, and William J. Schaad, Winnetka, both of Ill., assignors to Indak Manufacturing Corp., Northbrook, Ill.
Continuation-in-part of Ser. No. 73,295, Sept. 18, 1970, abandoned. This application Nov. 12, 1971, Ser. No. 198,328
Int. Cl. H01h *13/06, 13/56, 9/16*
U.S. Cl. 200—168 G **11 Claims**

The illustrated switch comprises a push button which is movable in a casing and is enclosed by a boot made of flexible material. A latching mechanism is provided in the casing to retain the push button in a partially depressed position after alternate depressions of the push button. The mechanism causes the push button to return to its fully extended position after the intermediate depressions of the push button. The end of the boot is caused to follow the movement of the push button, preferably by means of a disk on the push button which is received in an annular groove within the boot, or by clamping a flange on the boot between two disks on the push button. Thus, the length of the boot indicates the position of the push button. A contactor is connected to the push button and is movable to different positions corresponding to the fully extended and partially depressed positions of the push button. A stem or pin is provided between the push button and the contactor. The stem also extends through a latch which is rotatable in successive steps by the operation of the push button. In alternate positions of the latch, it engages elements on the casing which retain the push button in its partially depressed position. Camming elements are provided on the push button, the latch and the casing to rotate the latch, with the assistance of a spring, mounted on the stem and acting between the contactor and the latch. The contactor may engage a set of contacts in the partially depressed position of the push button. In a modified construction, a second set of contacts is also provided for engagement by the contactor in the extended position of the push button. To provide a make-before-break action, the contactor may comprise two disks with a spring therebetween, slidably mounted on a sleeve which in turn is slidably mounted on the pin or shaft.

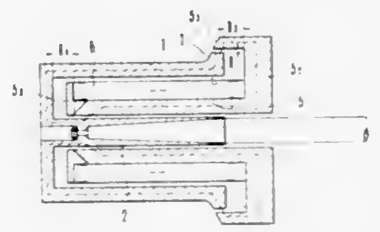


3,790,735
INDUCTIVE HEATED BAKE OVEN
Philip H. Peters, Jr., Greenwich, N.Y., assignor to Environment/One Corporation, Schenectady, N.Y.
Filed Oct. 6, 1971, Ser. No. 186,961
Int. Cl. H05b *5/04*
U.S. Cl. 219—10.49 **24 Claims**



An inductively heated bake oven for heating and warming cookware disposed in the oven comprising an outer housing fabricated from a magnetically non-permeable material and having a plurality of different sides joined together to form an enclosed space with one of th sides forming a door to provide access to the enclosed space. An inner housing is supported within the outer housing and may be fabricated from magnetically susceptible metal material or insulating material and have a plurality of different sides joined together to form an enclosed oven space. The inner housing is spaced from and supported within the sides of the outer housing with the side of the inner housing facing the door of the outer housing being open or accessible to provide access to the interior of the inner housing. A plurality of inductive heating coils preferably of planar, helically wound, pancake-shaped heating coil design are supported within the space intermediate the respective confronting sides of the inner and outer housings and arranged to maximize the inductive coupling to magnetically susceptible metal material either comprising the inner housing or supported within the inner housing if it is of insulating material. Electric circuit means is provided for electrically exciting the inductive heating coils at relatively high frequency of the order of 20 kilohertz to thereby magnetically induce the generation of heat in the inner housing or a metal based cookware disposed within the inner housing if it is of insulating nature. The outer housing may be formed of aluminum, copper or other highly conductive metal material which serves as an effective magnetic shield to confine the magnetic induction field to the space within the outer housing, and the inner housing may be formed of iron, stainless steel, titanium or the like or of an insulating material. If the inner housing is formed of a magnetic susceptible metal material, such as iron, stainless steel, insulation is placed in the space between the induction heating coil and the inner housing and the interior of the inner housing may be porcelainized or otherwise provided with an attractive, easy to clean interior surface similar to known oven interiors. If the inner housing is fabricated from insulating material, a pyroceramic insulating material, high temperature glass, etc. may be used. Preferably, individual excitation circuits are provided for each induction heating coil and the individual excitation circuits can be individually controlled to excite any desired number of coils. Preferably, a plurality of coils are provided one on each of five different sides of the oven so as to assure uniform and even heating of the interior of the oven. Temperature sensor units may be employed for sensing the actual temperature of the inner housing, or a metal base cookware disposed in the inner housing space. Cooling vents may be formed in either the inner or the outer housing or both to provide for removal of moisture in the oven space as well as to provide a flow of cooling air across the induction heating coils thereby maintaining their resistance at a low value and improving the overall efficiency of operation of the bake oven. If desired, self-cleaning of the oven can be provided for the inner housing member, if formed of a magnetically susceptible metal material, by raising its temperature to sufficiently high value to achieve self-cleaning action. The inductive heating coils may be a helix wound from electrically insulated Litz wire or the like, or may be fabricated from a helix cut out of sheet metal.

3,790,736
HEATING ROLLERS
Shinji Matsumura, and Mitsuhiro Konno, both of Tokyo, Japan, assignors to Koshei Arita, Ohta-ku, Tokyo, Japan
Filed Nov. 21, 1972, Ser. No. 308,397
Claims priority, application Japan, Oct. 21, 1972, 47-105664
Int. Cl. H05b *5/08*
U.S. Cl. 219—10.49 **9 Claims**



In a heating roller of the type comprising a cylindrical cup shaped magnetic roller, a magnetic boss at the center of the inner surface of the bottom of the roller, a driving shaft connected to the boss, a stationary magnetic sleeve surrounding the boss and the shaft, a magnetic radial flange secured to one end of the sleeve to confront the open end of the roller and an exciting coil disposed in a space between the roller and the sleeve, a magnetic ring is secured to the outer end of the radial flange to extend in the axial direction for surrounding the peripheral surface of the open end of the roller with a narrow air gap therebetween.

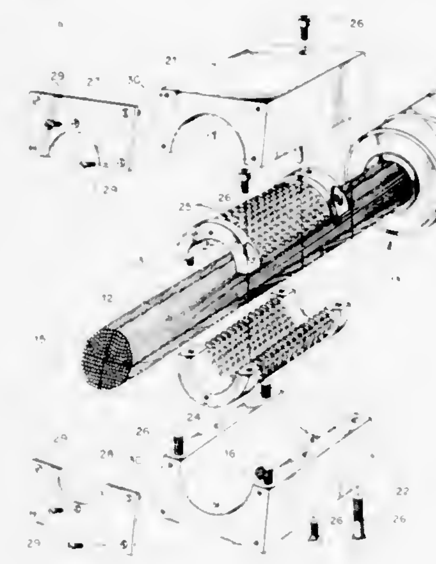
3,790,737
PREPARING CABLE FOR SPLICING

James L. Stoneberger, Topsfield, and Charles B. Sylvester, Boxford, both of Mass., assignors to Utec Constructors, Inc., Lynnfield, Mass.

Filed Mar. 29, 1972, Ser. No. 239,295

Int. Cl. B23k *9/04*

U.S. Cl. 219—76 **2 Claims**



A high vacuum chamber surrounds each exposed end of a segmented aluminum conductive paper insulated cable for preventing the oil from the impregnated cable insulation from migrating to the end of the conductor after the aluminum conductor is cleaned with solvents to permit heliarc welding or buttering of the end of the conductor prior to splicing.

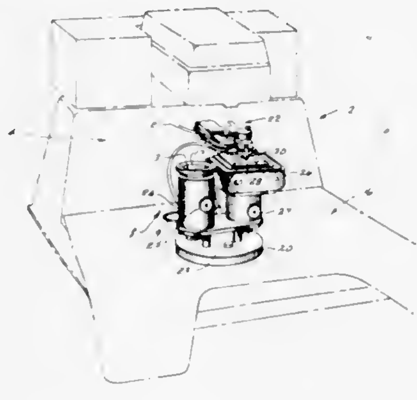
3,790,738
PULSED HEAT EUTECTIC BONDER

Joseph L. Laub, Claremont, and Derek Jenkins Griffiths, Arcadia, both of Calif., assignors to Unitek Corporation, Monrovia, Calif.

Filed May 30, 1972, Ser. No. 257,782

Int. Cl. B23k *1/02*

U.S. Cl. 219—85 **14 Claims**



A pulsed heat hybrid semiconductor die bonding apparatus utilizing a pair of heating electrodes which bracket a die collet and contact the substrate area immediately adjacent each side of the die or chip to be bonded. A heating pulse of a predetermined magnitude and duration produces localized substrate heating via a discharge of current to the metalization under the chip. A conductivity monitor connected to the electrodes indicates the quality of the electrical contact of the heating electrodes with the substrate. Simultaneous with the substrate heating current pulse, a low frequency, unidirectional mechanical scrubbing motion is applied to the arm holding the die collet. The arm is supported in the apparatus by means of a flexure type of mounting. The combination of heating current applied to the substrate in pulses with scrubbing action precisely controls the heating and eutectic bonding of the substrate and chip, preventing subsequent unbonding or heat damage to the semiconductor die. The bonding arm mechanism accepts quickly interchangeable, floating die collet tools.

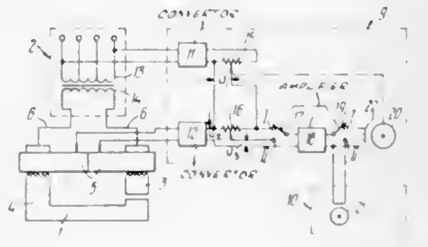
3,790,739
MACHINE FOR CONTINUOUS FLASH BUTT-WELDING OF PARTS

Viktor Senderovich Lifshits, Kavkazsky bulvar, 21 Korpus 2, kv. 41; Vladimir Rubenovich Andrianov, Proezd Zarevy, 3, kv. 19; Nikolai Nikolaevich Rykalin, Ulitsa Akademika Gubkina, 4 kv. 64; Tibor Ferentsevich Krasnev, Slarokerpechny Pereulok 4, kv. 1, all of Moscow; Nikolai Vasilievich Podola, Kiev, ulitsa Pushkinskaya 8, kv. 12, and Vadim Petrovich Krivonos, Kiev, ulitsa Repina, 13, kv. 1, both of Kiev, all of U.S.S.R.

Filed July 10, 1972, Ser. No. 270,284

Int. Cl. B23k *11/04*

U.S. Cl. 219—97 **3 Claims**



A machine for continuous flash butt-welding in which a movable clamp automatic rate-of-travel control device for use during flashing comprises two a.c. to d.c. convertors, two potentiometers, two synchronized switches either of which might be set to two positions, an amplifier and a reversing electric motor coupled so that the above device regulates the ratio between the effective values of the electric voltage across the parts to be welded during the flashing operation and secondary voltage of a welding transformer at no-load.

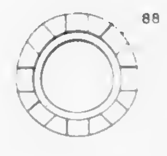
3,790,740
THROUGH DECK WELDING

Thomas E. Shoup, Amherst, Ohio, assignor to TRW Inc., Cleveland, Ohio

Division of Ser. No. 53,368, July 9, 1970, Pat. No. 3,736,401. This application Dec. 13, 1971, Ser. No. 207,690

Int. Cl. B23k *9/00*

U.S. Cl. 219—98 **1 Claim**



This invention is directed to a drawn-arc welding gun with means for providing a rotary flow of air, or stream of fluid, around the weld area. This invention is also directed to ferrules which are designed to enhance movement of air or fluid around the weld area.

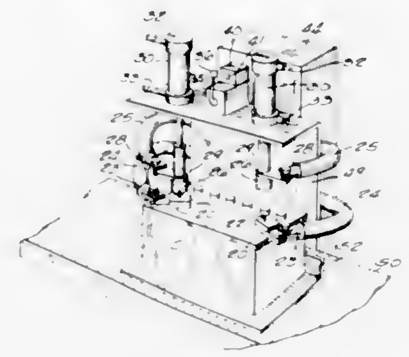
3,790,741
METHOD FOR FABRICATING A THREADED STUD IN A BATTERY POST

Daniel Orlando, New Berlin, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.

Filed Jan. 8, 1973, Ser. No. 321,824

Int. Cl. H01m *5/00*; **B23k** *11/02*

U.S. Cl. 219—107 **14 Claims**



A threaded stud is secured in a battery post fabricated from the usual lead alloys by simultaneously applying a force and welding current to the threaded member so as to melt portions of the lead post while forcing the threaded member into the post. The force and the welding current are controlled in such a manner to prevent overheating of the stud and arcing of welding current. This control can be effected by the intermittent application of welding current with constant application of force on the stud. In one embodiment, the post is provided (preferably by drilling) with a slightly undersized passage and in an alternative embodiment, a hollow, threaded member is utilized without providing the passageway. An apparatus is also described for driving and welding the threaded member into the post which allows for intermittent welding and driving as well as a combined positioning and welding electrode member for the threaded stud and battery post.

3,790,742
NOZZLE

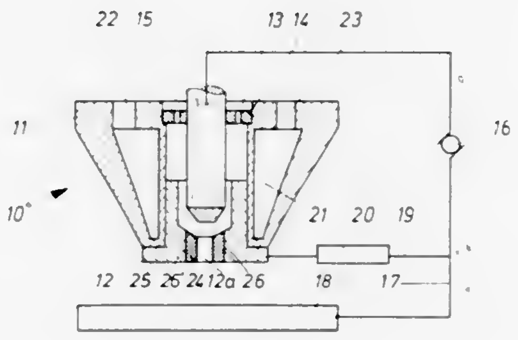
Rupert Auer, Frankfurt/Main, Germany, assignor to Messer Griesheim GmbH, Frankfurt/Main, Germany

Filed Aug. 16, 1972, Ser. No. 281,137

Claims priority, application Germany, Aug. 24, 1971, P 21 42 331.4

Int. Cl. B23k *9/00*

U.S. Cl. 219—121 P **7 Claims**



Disclosed is a nozzle for a welding or plasma torch. The nozzle has an inner and an outer housing, each made of a different material. Thus, the inner housing, through which passes the plasma arc, is made of a highly heat resistant meterial. The outer housing is made of a highly heat conductive material for quickly conducting heat away from the inner housing.

3,790,743
WELDING ELECTRODE HAVING A NON-CONDUCTIVE TIP FOR SEMI-AUTOMATIC CONTINUOUS ARC WELDING MACHINE

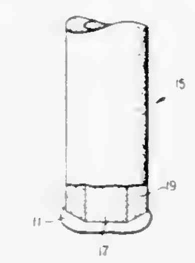
Shinji Kimura, Fujisawa; Norihiro Fukui, and Yasuhiro Nagai, both of Kamakura, all of Japan, assignors to Kobe Steel, Ltd., Kobe City, Hyogo-Prefecture, Japan

Filed Mar. 18, 1970, Ser. No. 20,491

Claims priority, application Japan, Mar. 31, 1969, 44-24548

Int. Cl. B23k *9/00*

U.S. Cl. 219—130 **3 Claims**



A coated welding electrode for use in a semi-automatic continuous arc welding apparatus is provided with a layer of predetermined thickness of a material which is electrically insulative at normal atmospheric temperature painted on the tip end thereof.

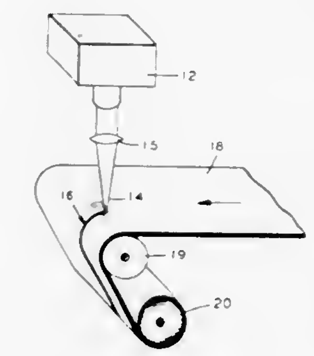
3,790,744
METHOD OF FORMING A LINE OF WEAKNESS IN A MULTILAYER LAMINATE

William Edmund Bowen, Trenton, N.J., assignor to American Can Company, Greenwich, Conn.

Filed July 19, 1971, Ser. No. 163,567

Int. Cl. B23k *27/00*

U.S. Cl. 219—121 LM **30 Claims**



A method of forming a line of weakness in at least one but not all layers of multilayer laminate which comprises effecting relative movement between a beam of radiant energy of a particular predetermined wavelength and intensity and the laminate so that the energy is selectively relatively absorbed by at least one layer in an amount and manner that alters the structure of the layer and thereby forms a line of weakness in the laminate. The source of radiant energy preferably is a laser. The laminate layers can be comprised of any material used in manufacturing multilayer packaging laminates such as thermoplastics, thermosets, paper and foil. Preferably, the laminate includes at least one layer of thermoplastic material. The layer that absorbs more energy can be an adhesive.

3,790,745

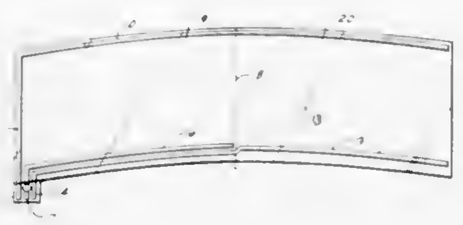
TEMPERATURE CONTROL FOR ELECTRICALLY HEATABLE WINDOW

Berton P. Levin, Santa Monica, Calif., assignor to The Sierracin Corporation, Sylmar, Canada

Filed Oct. 13, 1972, Ser. No. 300,403

Int. Cl. B601 *1/02*

U.S. Cl. 219—203 **15 Claims**



A laminated electrically heatable window has a transparent electrically conductive layer embedded in the window to act as a sheet resistor, and a conductive bus bar in contact with the resistive layer. A portion of the bus bars extends outside an edge of the window for making electrical contact with a power supply such as an automobile alternator. The temperature sensor for preventing overheating of the windshield is mounted in thermal contact with at least one of the bus bars external to the edge of the window rather than in thermal contact with the window itself.

3,790,746

STRUCTURAL ELEMENT OF REINFORCED CONCRETE

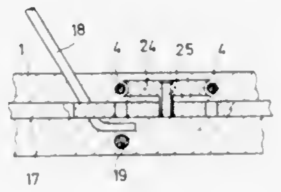
Heinrich Krieger, am Bernbaum 57, Wiesbaden-Sonnenberg, Germany

Filed Oct. 28, 1971, Ser. No. 193,281

Claims priority, application Germany, Nov. 5, 1970, 7040944; Aug. 4, 1971, 2138961; Apr. 27, 1971, 7116248

Int. Cl. H05b *1/00*

U.S. Cl. 219—213 **5 Claims**



A heating cable is embedded in a reinforced concrete slab in serpentine formation, adjacent loops of the cable having bent over portions at opposite edge portions of the slab. Mounting supports are embedded in the slab and hold the cable in the loop formation, and guide members are affixed to respective ones of the mounting supports at the opposite edge portions for guiding the bent-over loop portions and for tensioning the heating conductor.

3,790,747

REGULATOR FOR XEROGRAPHIC FUSING APPARATUS

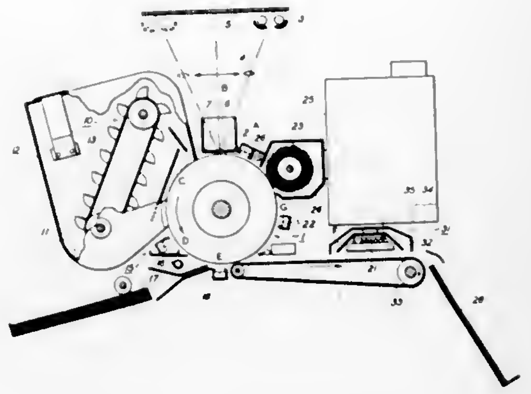
Uldis Klavsons, Fairport, and Thomas B. Michaels, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1971, Ser. No. 211,381

Int. Cl. H05b *1/00*

U.S. Cl. 219—216 **9 Claims**

Electrical fusing apparatus for intermittent operation is controlled by maintaining the apparatus at a bias temperature during standby and by varying the length of its warm up period inversely proportional to the duration of a minimum standby period. During the warm up period, an auxiliary heating element is actuated and a boost power level is employed to accelerate the rise of the fusing apparatus temperature to a desired level for bonding or fusing particles to a support.



3,790,748

MIRROR HAVING ELECTRICAL HEATING MEANS

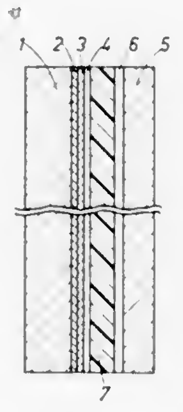
Robert Van Laethem, Loverval; Pol Baudin, Ransart, and Jean-Claude Hoyois, Gilly, all of Belgium, assignors to Glaverbel, Watermael-Boitsfort, Belgium

Filed June 9, 1972, Ser. No. 261,420

Claims priority, application Great Britain, June 9, 1971, 19736/71

Int. Cl. H05b *1/00*

U.S. Cl. 219—219 **20 Claims**



A mirror comprising a sheet of chemically tempered glass has a light reflecting coating on one face thereof and an electrically conductive heating element positioned either on the other face of the glass or on a face of a second glass sheet. A layer of electrically insulating material is positioned between the heating element and light reflecting coating and this layer may constitute the sheet of glass, a sheet of plastic, or a space having a gaseous medium therein. The heating element is connectable to a source of electricity and generates heat by the Joule effect. The heating element is in heating relationship to the mirror so that this generated heat is transmitted to the mirror.

3,790,749

ELECTRIC LEAD POT WITH INCREASED EFFICIENCY

Richard J. Lee, R.R. No. 2, Hartford, Wis.

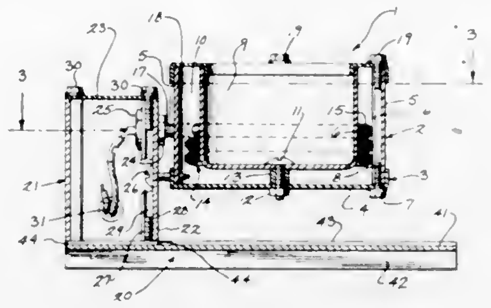
Filed Mar. 26, 1973, Ser. No. 344,733

Int. Cl. F27b *14/06*

U.S. Cl. 219—424 **4 Claims**

An electrically heated lead melting device includes a thin steel pot disposed within a bright aluminum housing of high reflectivity, with a substantially dead air chamber therebetween. An electric heating coil surrounds the pot within the chamber, with the straight cold ends of the coil

passing horizontally into a control box mounted on a base. A single screw and the said coil ends provide the sole support for the pot-housing assembly, which is disposed substantially above the base. The control box may contain suitable temperature regulation mechanism. The construction provides a minimum of contact between the box and base, as well as providing for upward movement of cooling air through the box.



3,790,750

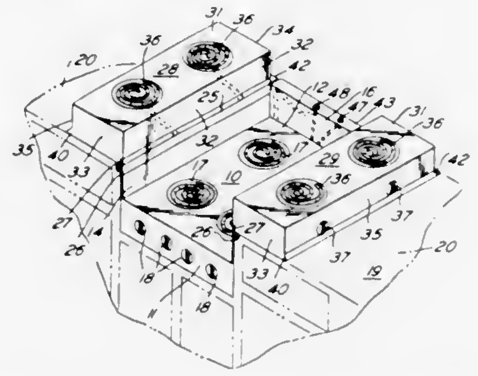
KITCHEN RANGE WITH FOLDING HEATER UNITS

Anthony J. Giannini, 530 Wayne Dr., King of Prussia, Pa.

Filed Jan. 12, 1973, Ser. No. 323,117

Int. Cl. H05b *3/68*

U.S. Cl. 219—444 **9 Claims**



A kitchen range is disclosed which includes a center section with a plurality of fixed electrical resistance heaters and side electrical resistance heater units hingedly connected to the center section for outward disposition for increased capacity and storable thereon in out of use position providing a flat work surface, with provisions for deactivation of all the heaters when the movable units are stored.

3,790,751

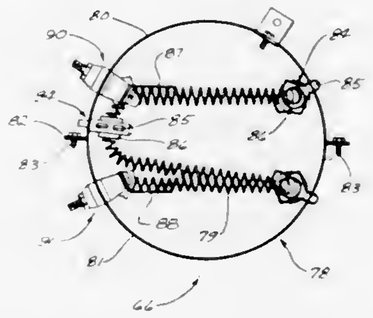
HEATER ASSEMBLY FOR DRYER

L. Dean Kuhn, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed July 24, 1972, Ser. No. 274,646

Int. Cl. H05b *3/06*

U.S. Cl. 219—525 **7 Claims**



An electric heater assembly includes a housing comprising a pair of generally similar wall portions and further includes an elongated heating coil supported from the inside of said housing by a plurality of spaced and staggered insulating support members in a sinuous path extending transversely back and forth in a first plane and in a second plane. The coil is assembled to the respective wall portions while they are in an openly accessible side-by-side relationship. The wall portions are then closed like a clamshell to form the heater assembly with the coil supported on the interior surface thereof.

3,790,752

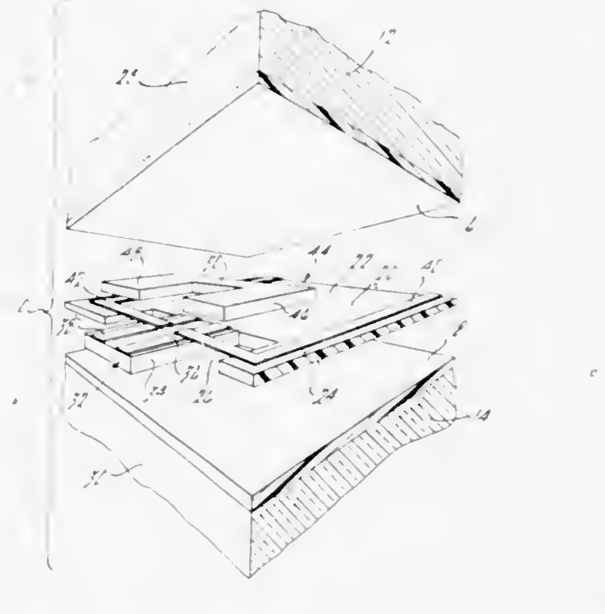
HEATABLE LAMINATED WINDSHIELD CONSTRUCTION

Premakaran T. Boaz, Southgate, and Roman Surowiex, Center Line, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 26, 1973, Ser. No. 345,168

Int. Cl. H05b *3/06*

U.S. Cl. 219—522 **4 Claims**



A heatable, laminated windshield construction is disclosed in which an electrical connection is made to a transparent interlayer which has a conductive coating thereon. When power is supplied to the conductive coating, the result is a heating of the windshield. The connection to the conductive coating is completely sealed so that the moisture is unable to penetrate the laminated construction.

3,790,753

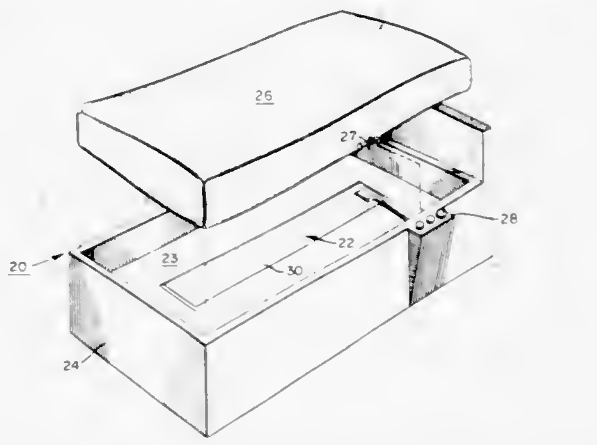
WATER BED HEATER

Robert C. Miller, Madison, Conn., assignor to Safeway Products, Inc., Middletown, Conn.

Filed Dec. 1, 1971, Ser. No. 203,535

Int. Cl. H05b *3/34*

U.S. Cl. 219—528 **6 Claims**



Two sheets of a styrene-butadiene (SBR) type rubber molded together totally encapsulating a heating wire network and a crimp-set overheat thermostat provide a greatly improved water-proof water bed heater. By incorporating a hydrostatic pressure resisting shield or cover for protection of the crimp-set thermostat, and by using uncured styrene-butadiene type rubber, an efficient, economical water bed heater is manufactured by vulcanization under high fabrication pressures which exceed the normal thermostat pressure tolerances.

3,790,754

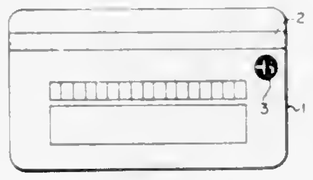
SECURITY ACCESS MEDIUM

Robert Black, Kenley; David Provan, Mitcham, Surrey, and Christopher Rainey, Croydon, all of England, assignors to Burroughs Machines Limited, Detroit, Mich.

Filed Aug. 4, 1972, Ser. No. 278,070

Int. Cl. G06k *5/00, 19/06*

U.S. Cl. 235—61.7 B **42 Claims**



Disclosed is a security access medium and a security system utilizing the medium which is adapted to prevent fraudulent reproduction of the medium bearing member. Within the system the data representation has a predetermined relationship with a signature "developed" from the medium. When the medium is not in the system the signature is latent and not dectaotable. A plurality of substances capable of bearing records are incorporated in the medium, as a plurality of paramagnetic materials having different coercivity, to permit "development"of a secure signature.

3,790,755

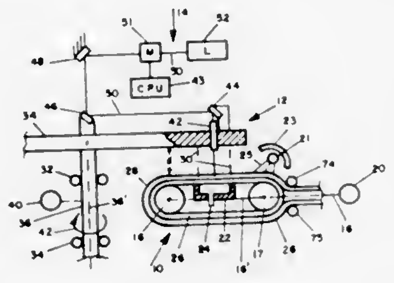
HIGH DENSITY INFORMATION SYSTEM USING MULTIPLE STRIPS

Daniel Silverman, 5969 S. Birmingham, Tulsa, Okla.

Continuation-in-part of Ser. No. 888,461, Dec. 29, 1969, which is a continuation-in-part of Ser. Nos. 304,789, Aug. 27, 1963, Pat. No. 3,523,183, and Ser. No. 158,000, Dec. 8, 1961, Pat. No. 3,179,001, and Ser. No. 612,698, Jan. 30, 1967, Pat. No. 3,550,085, and Ser. No. 721,998, April 17, 1968, and Ser. No. 67,135, Aug. 26, 1970, abandoned, said Ser. No. 612,698, Continuation-in-part of Ser. No. 462,679, is a continuation-in-part of Ser. No. 462,679, June 9, 1965, Pat. No. 3,322,033, which is a continuation-in-part of Ser. No. 158,000, Dec. 8, 1961, Pat. No. 3,179,001. This application Dec. 8, 1970, Ser. No. 96,186

Int. Cl. G06k *7/00*

U.S. Cl. 235—61.11 E **37 Claims**



This invention describes an information system in which the information is recorded on strip records in the form of patterns of closely spaced magnetic or high-magnification-optical spots. Transducer means are mounted in a rotating scanning assembly. The strip to be transduced is constrained to be moved longitudinally in a "strip" plane which is parallel to and precisely spaced from the plane of the scanning assembly. The longitudinal direction of the strip is radial to the scanning assembly. A plurality of strips, each in separate strip handling means are positioned radially, equally spaced around the axis of rotation of the scanning assembly. An equal number of transducer elements are equally spaced around the scanning assembly so that each strip can be transduced simultaneously or sequentially. Means are provided to record information on one strip simultaneously with the reading of information on another strip.

3,790,756

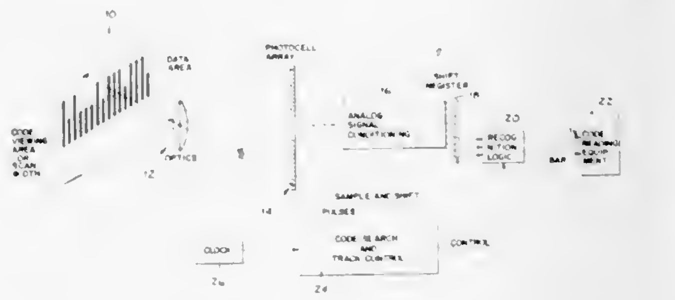
BAR CODE READING CIRCUITRY

Kenneth E. Graves, Saratoga; Kay Madsen, San Jose, and Warren J. Schmidt, Sunnyvale, all of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Nov. 8, 1972, Ser. No. 304,870

Int. Cl. G06k *7/10;* **G08c** *9/06*

U.S. Cl. 235—61.11 E **14 Claims**



Circuitry for a bar/half bar code reader which includes a stationary array of photodetectors aligned to scan over a relatively large scan width to detect and decode a data line which occupies only a fraction of the area of the scan width. The circuitry includes counting means for locating the relative position of the bottom of the first bar in the data line with respect to the scan width. The remaining bars in the data line are then tracked by interrogating only the information from those photodetectors which located and analyzed the first bar. Means are also provided for continuously determining the relative position of the bottom of each bar in the data line and for incrementally adjusting the tracking circuitry so that codes which are skewed with respect to the scan width can be successfully tracked.

3,790,757

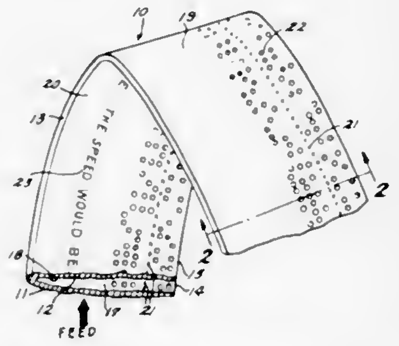
DATA RECORDING AND READOUT TAPE

Joseph Denman Shaw, 508 Church St., Brownsville, Pa.

Filed July 18, 1972, Ser. No. 272,772

Int. Cl. G06k *19/00*

U.S. Cl. 235—61.12 R **8 Claims**



A tape having a longitudinally folded, two-ply structure adapted for the recordation of machine readable language on at least one of said plies while the other ply is adapted to receive printed data corresponding to the machine readable language in an arrangement whereby upon unfolding of the tape the printed data is visible to an operator as the corresponding language is sensed and read out by the tape reader.

3,790,758

CARD READER

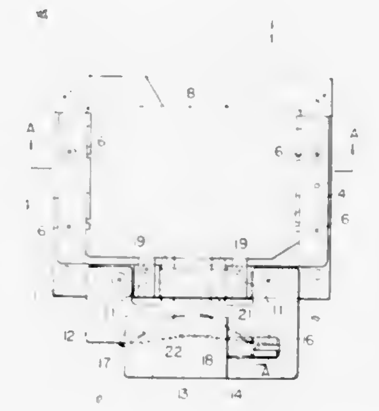
Shizuhiko Tanigawa, Moriguchi; Shinzaburo Ishikawa, and Natsumi Ono, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed June 19, 1972, Ser. No. 264,331

Claims priority, application Japan, June 22, 1971, 46-54317[U]; June 22, 1971, 46-54318[U]; June 22, 1971, 46-54319[U]

Int. Cl. G06k *7/01*

U.S. Cl. 235—61.11 R **8 Claims**



A card reader for reading the predetermined information stored on a card, comprising a card kicker plate slidable in the direction of card insertion and capable of contacting with the end of an inserted card. After reading an inserted card, the card kicker plate is moved to elevate the read card from the device by a certain amount, thereby making the ejection of the card easy.

3,790,759

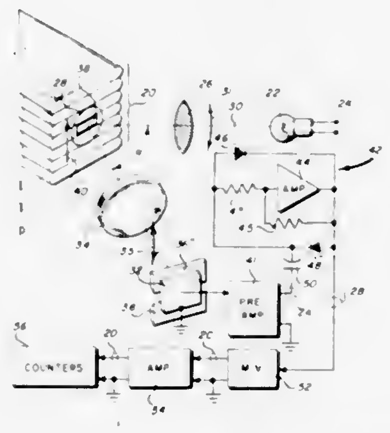
PITCH MATCHING DETECTING AND COUNTING SYSTEM

William L. Mohan, and Samuel P. Willits, both of Barrington, Ill., assignors to Spartanics, Ltd., Village of Palatine, Ill.

Division of Ser. No. 780,367, Dec. 2, 1968, Pat. No. 3,581,067. This application Mar. 4, 1971, Ser. No. 120,889. The portion of the term of this patent subsequent to May 25, 1981, has been disclaimed.

Int. Cl. G06m *9/00*

U.S. Cl. 235—92 SB **34 Claims**



An apparatus for counting stacked sheet-like materials having no sheet separation requirements. The active area of the sensor array is matched to the width of a sheet of the stack and the sensor array caused to traverse the stack, the complex signal output of the sensor array being stripped of the unwanted components in a high gain, diode clamped capacitive input operational amplifier whose square wave output is processed and counted in conventional counting circuits.

3,790,760

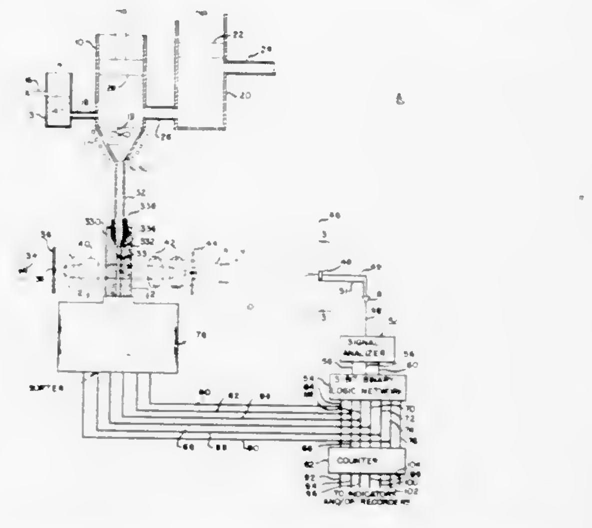
APPARATUS FOR COUNTING, DIFFERENTIATING AND SORTING PARTICLES ACCORDING TO THEIR MICROSTRUCTURE VARIATIONS

Paul F. Stiller, Clarence, N.Y., assignor to Cornell Aeronautical Laboratory, Inc., Buffalo, N.Y.

Continuation of Ser. No. 877,729, Nov. 18, 1969, abandoned. This application Sept. 27, 1971, Ser. No. 184,183

Int. Cl. G06m *11/02*

U.S. Cl. 235—92 PC **45 Claims**



An apparatus for counting and sorting the formed elements of blood, comprising the phase illumination of sample flow through a microcapillary passage, photodetectors responsive to the microstructure of the formed elements, a signal analyzer responsive to the photodetectors, a logic network for generating control signals, a sorter responsive to the control signals for separating and collecting the formed elements.

3,790,761

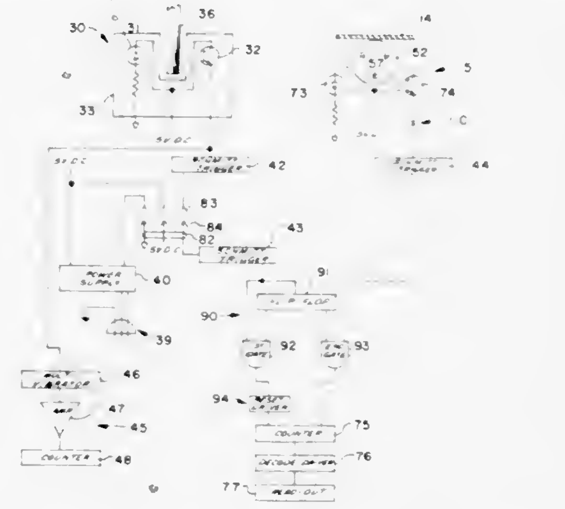
MACHINE FEED AND OUTPUT MONITORING APPARATUS

Charles R. Crabtree, P.O. Box 179, Seagrove, N.C.

Filed Sept. 29, 1971, Ser. No. 184,807

Int. Cl. D04b *37/02*

U.S. Cl. 235—92 PD **8 Claims**

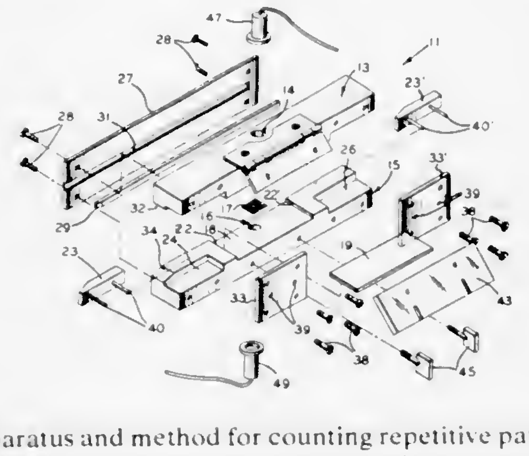


An electric pulse generator of photoelectric form emits pulses corresponding to the formation of discrete courses in a knitted fabric by a circular knitting machine. A second electric pulse generator of the same type emits pulses corresponding to units of length of yarn used in the formation of each discrete course. The two sets of pulses are shaped by shaping circuits, forming input signals for logic circuits and a counting circuit. In the logic circuits, the signals corresponding to course formation control input to the counting circuit of the signals corresponding to units of yarn length. In the counting circuit, units of length of yarn are accumulated during the formation of selected courses and visually displayed on a readout panel. A second counting circuit may be used to accumulate a continuous count of courses in the knitted fabric. A metering unit associated with the second electric pulse generator includes a measuring-wheel-enclosing housing assembly, telescopically assembled and disassembled. The metering unit is mounted as a portable hand unit.

3,790,762
APPARATUS AND METHOD FOR COUNTING REPETITIVE PATTERNS IN STRIPS OF MOVING APERTURED MATERIAL

James C. Redman, Hadley, Pa., and Lynn E. Trent, Shawnee, Okla., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Jan. 6, 1972, Ser. No. 215,853
Int. Cl. G06m *1/272*
U.S. Cl. 235—92 V **5 Claims**

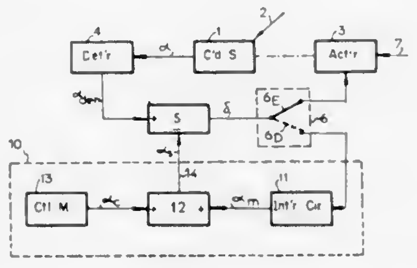


An apparatus and method for counting repetitive patterns in strips of moving apertured material in which the material is passed between a light source and photodetector positioned respectively on an opposing pair of aligning body members, the photodetector in turn being electrically connected to a counter located externally of the body members. A representation member substantially identical to one of the patterns to be counted is also positioned between the light source and photodetector and as the strip of material passes over and mates with the representation in a predetermined manner, the flow of light to the photodetector is temporarily suspended, thereby providing the counter with a one count.

3,790,763
DIFFERENTIAL AND DISCONNECTIBLE ELECTRONIC CIRCUIT SYSTEM

Guy C. Willoteaux, Saint Germain en Laye, France, assignor to Societe Francaise d'Equipiments pour la Navigation Aerienne, Velizy Villacoublay, France

Filed July 26, 1971, Ser. No. 165,910
Claims priority, application France, July 27, 1970, 70.27637
Int. Cl. G05b *11/01*
U.S. Cl. 235—150.1 **11 Claims**

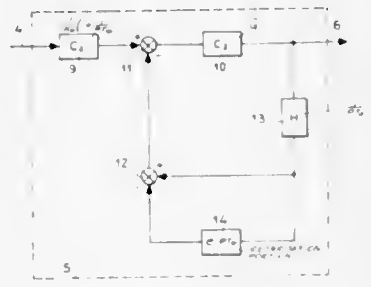


A disconnectible electronic control system which automatically assumes zero during disconnection and which at the instant of re-connection gives a zero value signal. In connection with a controlled system, a detector provides a signal depending on the controlled parameter in the controlled system. A control command device provides a signal depending on the control command and a comparator receives at a first input the signal coming from the detector and at a second input the signal coming from the said control command device. An actuator acts on the controlled parameter. A secondary control loop is formed whose output signal can modify the signal coming from the said control command device. A switch is used with two positions, namely a connected position in which the output signal from the comparator is applied to the actuator to form a main control loop and a disconnected position where the output signal of the comparator is fed to the input of the secondary control loop.

3,790,764
TIME DELAY COMPENSATION IN A CLOSED LOOP PROCESS CONTROL SYSTEM

Roland Rouxel, Seyssinet, and Gabriel Chevalier, Grenoble, both of France, assignors to Societe Generale de Constructions Electriques et Mecaniques, Paris, France

Division of Ser. No. 16,212, March 3, 1970, Pat. No. 3,644,719. This application Dec. 23, 1971, Ser. No. 211,803
Claims priority, application France, Mar. 3, 1969, 69.05752
Int. Cl. G05b *6/02*
U.S. Cl. 235—150.1 **2 Claims**



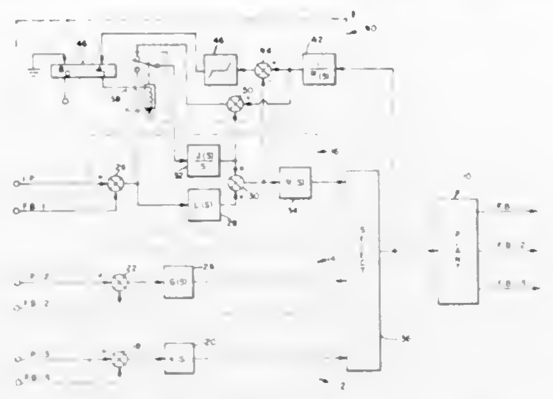
The deleterious effect of time lag in an industrial process on the operation of a closed loop feedback control system in which such process is regulated may be substantially eliminated without sacrificing static accuracy of the system by a specially designed process controller. The controller includes first and second networks connected in tandem in the main path of the feedback loop through one input of a first subtracter. The controller output is coupled to one input of a second subtracter through a third network whose transfer function is equal to the product of the first network transfer function and the equivalent unretarded transfer function of the controlled process. The output of the third network is also coupled to the other input of the second substracter through a retardation circuit having the same delay characteristics as that of the process. The output of the second subtracter is connected to the second input of the first subtracter to provide the required process control signal at the output of the second network.

3,790,765
GOVERNOR WITH INTEGRATOR RESET

Terry Morrison, Elmwood, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.

Filed Feb. 1, 1973, Ser. No. 328,864
Int. Cl. F02c *9/08*
U.S. Cl. 235—150.1 **9 Claims**

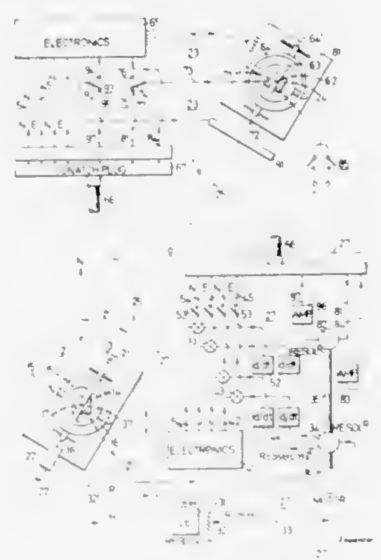
A control system employing, in one of a plurality of control loops, an isochronous governor and means for controlling the output of the integrator of the governor as a function of the control signal selected by the system logic. During closed loop control under command of the isochronous governor the integrator operates normally whereas during isochronous governor open loop operation the integrator is operated closed loop on the selected control system output.



3,790,766
INERTIAL NAVIGATION SYSTEMS

Kenneth Robson Brown, Midlothian, Scotland, assignor to Ferranti Limited, Hollinwood, Lancashire, England

Filed Mar. 5, 1971, Ser. No. 121,604
Int. Cl. G06f *15/50*
U.S. Cl. 235—150.25 **8 Claims**

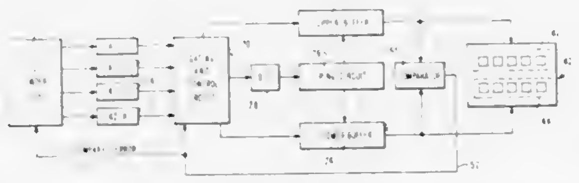


Apparatus for quickly levelling and orientating the inertial navigation platforms of shipborne fighter aircraft prior to take-off including a shipborne reference inertial platform common to all the aircraft and stabilised against the ship's pitch, roll and yaw, together with a computer system for slaving to that reference platform the platform of each aircraft in turn.

3,790,767
PULSE ANALYZING TESTER

Arthur Duane Alexander, 4412 Embleton Dr., Raleigh, N.C.

Continuation of Ser. No. 88,298, Nov. 10, 1970. This application Dec. 4, 1972, Ser. No. 311,584
Int. Cl. G01r *19/16*
U.S. Cl. 235—151.31 **51 Claims**

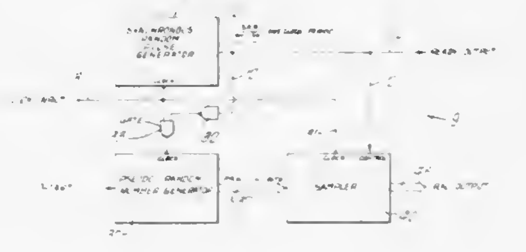


A test instrument is provided for performing analysis and control functions. Analogue input signals in excess of a clipping level are converted to digital signals which are sampled at numerous points in real time in order to provide a digital pattern representative of the sampled signal. The digital pattern is stored for subsequent analysis, and the stored pattern is displayed in digital form for visual analysis by an operator. Repetitive signals can be analyzed by the test instrument for the purpose of measuring pulse parameters such as amplitude, width, pulse shape, pulse separation, and the like. Controls are included for stopping the test instrument and signaling the device under test in response to any one of several conditions which may be selected. The test instrument includes equipment for detecting and storing signals which deviate from a reference pattern. When a deviation is detected, the test instrument may be stopped in which event the device under test is signaled, and the pattern of the deviation signal is displayed.

3,790,768
RANDOM NUMBER GENERATOR

Paul Chevalier; Claude Menard, both of Montreal, and Bertrand Dorval, Quebec, all of Canada, assignors to Prayfel Inc., Montreal, Quebec, Canada

Filed Sept. 28, 1972, Ser. No. 292,861
Int. Cl. G06f *7/00*
U.S. Cl. 235—152 **12 Claims**

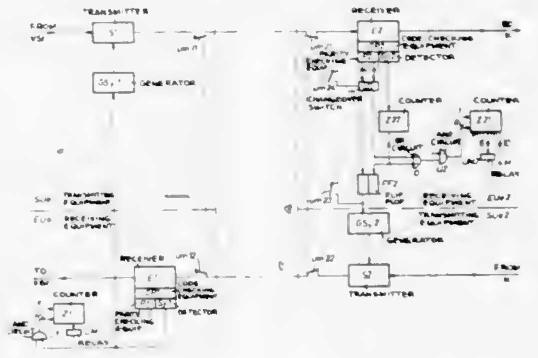


A method of generating random numbers which comprises sampling, in a random manner, a pseudo-random generator The random number generator comprises a pseudo-random number generator for generating pseudo-random numbers, a synchronous random pulse generator for generating synchronous random pulses and sampling means for sampling a pseudo-random number, the sampling being done at each instance one of the synchronous random pulses is generated, whereby to generate an output random number.

3,790,769
SYSTEM FOR FAULT DETECTION AND LOCATION ON DATA LINES

Reinhold Ziegler, Stuttgart-Munster, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 21, 1972, Ser. No. 308,378
Claims priority, application Germany, Dec. 1, 1971, P 21 59 675.8
Int. Cl. G06f *11/04*
U.S. Cl. 235—153 AK **16 Claims**



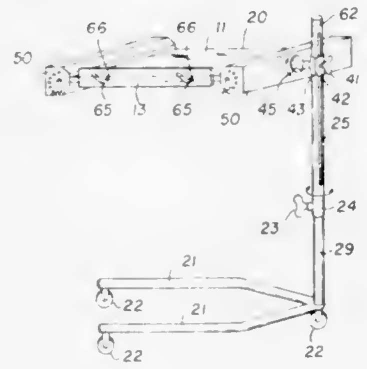
Whenever faults or errors are detected in the receive data signal at one station of a data link, a predetermined signal requesting transmission of a special signal is transmitted to the other station of the data link. If the special signal is not correctly received at the one station, a changeover occurs and the transmitter and receiver within each station are interconnected. Check signals are transmitted and from the results it can be determined whether the fault is due to bit errors, a faulty transmitter and/or a faulty receiver of either or both of the stations or a faulty line interconnecting the stations.

ERRATUM

For Class 235—151.3 see:
Patent No. 3,790,910

3,790,770
ILLUMINATED BOOK SUPPORT

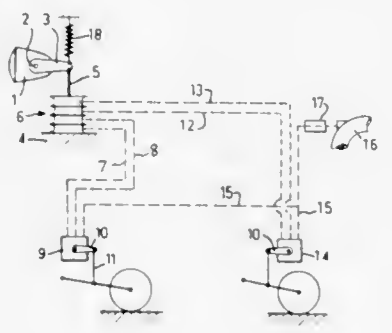
Eric P. Stern, Casilla 2662, Quito, Ecuador
Filed Nov. 20, 1972, Ser. No. 308,234
Int. Cl. F21v *33/00*
U.S. Cl. 240—2 P **8 Claims**



An adjustable support apparatus to hold books or other reading matter in position so as to enable lying or seated individuals to read. The apparatus consists of a transparent plate, preferably of acrylic plastic, which is supported by an adjustable arm attached either to the bed head board or to a portable stand. Shielded tubular light bulbs on each side of the transparent plate may be rotated so as to cast light from either below the plate, or to a position above the plate so that the reading matter may be illuminated for reading from below, or from above the support level.

3,790,771
DIP CORRECTORS FOR HEADLAMPS OF VEHICLES

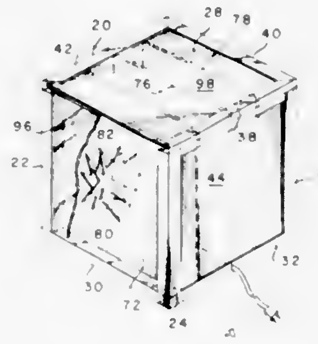
Michel Tixier, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France
Filed Jan. 10, 1972, Ser. No. 216,583
Claims priority, application France, Jan. 19, 1971, 71.01627
Int. Cl. B60g *1/10*
U.S. Cl. 240—7.1 LJ **1 Claim**



A vehicle headlamp is pivotally mounted and rigid with an arm connected to the vehicle body through a link and a deformable bellows comprising a plurality of pairs of compartments in which one pair is connected through corresponding pipe lines to a rotary valve. The rotation of the movable member of the rotary valve is controlled by the front suspension through a linkage comprising at least an arm and a link. The other pair of compartments of the bellows is connected likewise through pipe lines to another rotary valve of which the rotary member is responsive to the movements of the rear suspension. With this device, the misadjustment of the headlamp dip due to variations in the trim of a vehicle having a rather flexible suspension system is corrected automatically.

3,790,772
LIGHT BOX ASSEMBLY

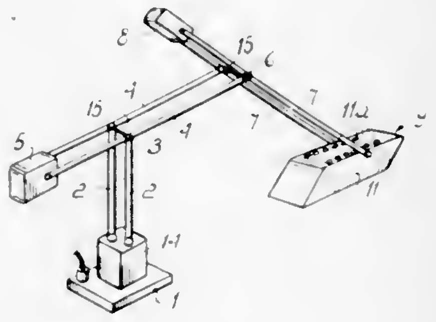
Peter M. Newman, Box 61, Rt. 4, Charlottesville, Va., and Daniel P. Rowan, 934 N. Longfellow St., Arlington, Va.
Filed May 18, 1972, Ser. No. 254,490
Int. Cl. F21p *1/02*
U.S. Cl. 240—10 R **18 Claims**



This invention is a light box assembly which includes a box-like structure having interiorly mirrored walls. Multiple illuminating members are mounted on the walls within the box and interchangeable exterior wall panels are removably engaged with the box. Interior wall panels having cut-out portions are removably positioned within the box. The illuminating members are sequentially activated and deactivated and a constantly changing visual and color effect is thereby produced within the box itself, on the surface of the box and projected on surrounding walls and ceiling. Various effects are obtainable through the use of different interior and exterior wall panels.

3,790,773
LAMP WITH AN ARTICULATED SUPPORT

Richard Sapper, Loewenstrasse 96-7, Stuttgart, Germany
Filed Oct. 4, 1971, Ser. No. 188,709
Int. Cl. F21v *21/26*
U.S. Cl. 240—81 BD **1 Claim**

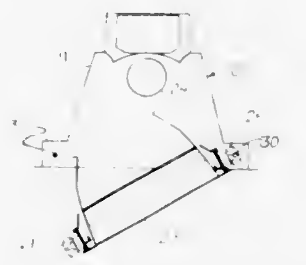


A lamp with an articulated support comprising a stem and a plurality of arms disposed in succession and connected in an articulated manner to each other at intermediate points. A terminal one of the arms remote from the stem supports at the one end a lamp holder and its relative accessories and at the other end a counter weight is arranged in such a manner as to balance the terminal arm and the components supported by it. Each other arm has one end connected in an articulated

manner to the next arm in the direction of the terminal arm, and its other end supports a counterweight arranged in such a manner as to balance the said other arm with all the components supported by it.

3,790,774
FLUORESCENT LUMINAIRE

Jack V. Miller, Sierra Madre, and Rudolph D. Galindo, Buena Park, both of Calif., assignors to Sunbeam Lighting Co., Los Angeles, Calif.
Filed June 23, 1972, Ser. No. 265,949
Int. Cl. F21v *21/30*
U.S. Cl. 240—147 **2 Claims**

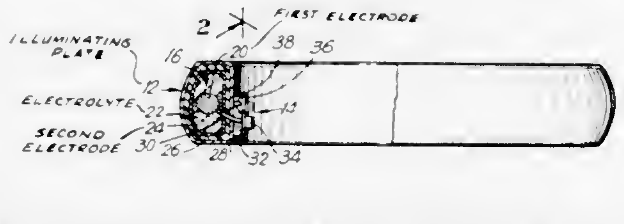


Disclosed is an improved ceiling fluorescent luminaire employing a recessed hinged door which supports not only a diffuser or a louver for light control, but the parabolic section reflector as well. The reflector is effective to enhance light output and does not interfere with relamping of the luminaire.

The door is openable from either side and totally removable through the use of integral corner clip spring catch hinge members which are disclosed. The light distribution characteristics of the luminaire may be changed simply by removal and replacement of the diffuser or louver in combination with the reflector.

3,790,775
BODY ORNAMENT WITH ELECTROLUMINESCENT PORTION

Richard D. Rosenblatt, 4941 Arlington Ave., Riverdale, N.Y.
Filed Nov. 19, 1971, Ser. No. 200,312
Int. Cl. A44c *5/00*
U.S. Cl. 240—2.25 **3 Claims**

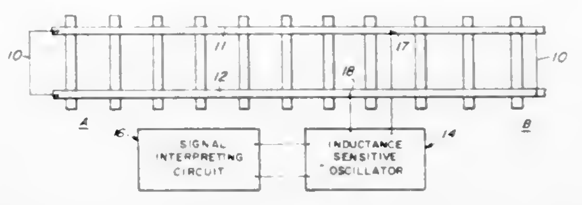


An ornament which may be worn on the neck, arm, waist, etc., and which employs light which may be electroluminescent, incandescent, or fluorescent. The ornament itself is constructed out of battery material which provides the electrical power for illumination; the surface of the ornament is provided with light sources or light emitting devices and connections are provided for energizing the sources. In an alternative embodiment the light sources are internal to the ornament and fiber optics guide the light from the source to the ornaments outer surface.

3,790,776
TRACK SIGNAL RESPONSIVE TO VARIABLE FREQUENCY

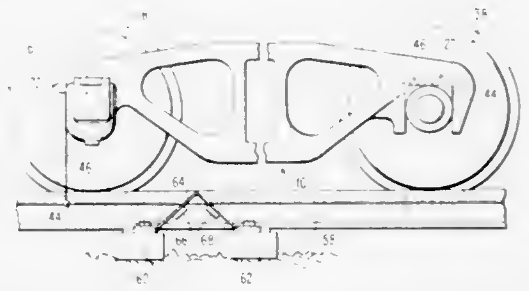
Wendell G. Rawlins, 913 Croix St., Topeka, Kans.
Continuation-in-part of Ser. No. 845,195, July 28, 1969, abandoned. This application July 13, 1971, Ser. No. 162,201
Int. Cl. B61l *1/02*
U.S. Cl. 246—40 **14 Claims**

A system providing a signal of an approaching train wherein an inductive loop formed by the railway tracks on which the train rolls serves to change the frequency of an oscillator when a railway vehicle enters the inductive loop thereby changing its inductance. A circuit serves to detect the change in frequency and provides a signal of the approach of a railway vehicle.



3,790,777
INDICATOR FOR OVERHEATED BEARINGS

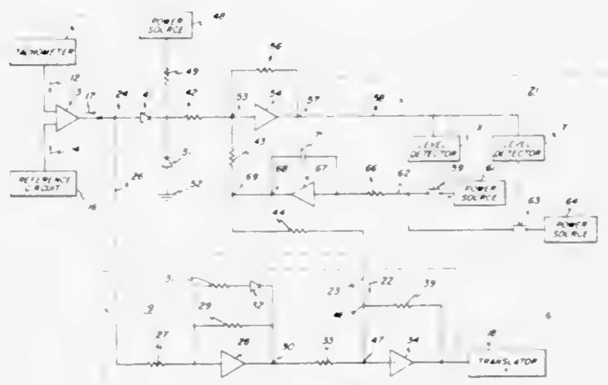
William M. Pelino, Richmond, Va., assignor to Railtron Corporation, Richmond, Pa.
Filed May 26, 1972, Ser. No. 257,292
Int. Cl. B61k *9/00*
U.S. Cl. 246—169 A **22 Claims**



An indicator for overheated vehicle bearings including means for releasing a tethered weight at a predetermined bearing temperature, the depending weight providing an alarm indication visually and both audibly and electrically in combination with associated strike plates and electromechanical transducers.

3,790,778
DYNAMIC BIASING ARRANGEMENT FOR SPEED REGULATION

Lloyd Robert Oster, Erie, Pa., assignor to General Electric Company, Erie, Pa.
Filed Dec. 13, 1972, Ser. No. 314,742
Int. Cl. B60l *15/20*
U.S. Cl. 246—182 C **7 Claims**



A speed regulator arrangement for traction vehicles wherein, in response to velocity error, motoring and braking functions are modulated in comparatively infrequent cycles to monitor vehicle speed within comparatively narrow tolerance limits. A low gain amplification of the velocity error is obtained when the amplitude thereof lies within a predetermined band of operation and a higher gain characteristic is obtained when the amplitude thereof lies outside the predetermined band of operation.

3,790,779
VEHICLE CONTROL APPARATUS

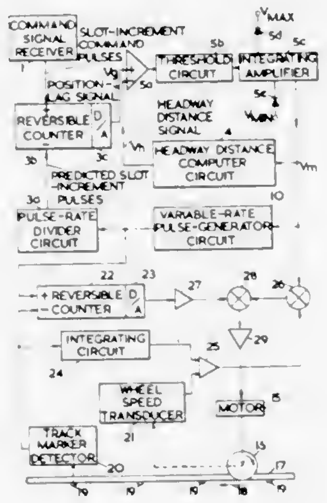
Denys Ian Paddison, Godalming, England, assignor to Secretary of State for the Environment in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Oct. 5, 1971, Ser. No. 186,754

Claims priority, application Great Britain, Oct. 6, 1970, 47433/70

Int. Cl. B60l *15/40*

U.S. Cl. 246—182 C **12 Claims**



Control apparatus for use in a vehicle, for controlling the vehicle throughout all stages of journeys in a versatile transport system wherein individual vehicles without drivers may be directed independently to different destinations over a network of predetermined paths or tracks. The apparatus includes a command signal receiver, means for deriving progress signals and a rate-of-progress signal, a first differencing circuit for deriving a position-lag signal dependent on the difference between a count of the command signals and a count of the progress signals, a computer circuit for deriving a headway-distance signal dependent on the rate-of-progress signal, a second differencing circuit for deriving a control signal dependent on the difference between the position-lag signal and the headway-distance signal, an integrating and limiting circuit for deriving a modified speed-demand signal dependent on the control signal, and a speed-control system for controlling the speed of the vehicle according to the value of the modified speed-demand signal. The command signals and the progress signals are pulses each representing increments of distance, whereas the position-lag signal, the headway-distance signal and the modified speed-demand signal are analogue voltage signals. The second differencing circuit and the integrating and limiting circuit may comprise means for developing a voltage V_1 when the headway-distance signal is less than the position-lag signal and a voltage V_2 when the headway-distance signal is greater than the position-lag signal, and a circuit for cumulatively integrating these voltages.

3,790,780
METHOD AND MEANS FOR VARYING THE SPEEDS OF VEHICLES MOVING ALONG A TRACK

Conrad D. Helmcke, Munich, and Hans J. Wendt, Buxtehude, both of Germany, assignors to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Germany

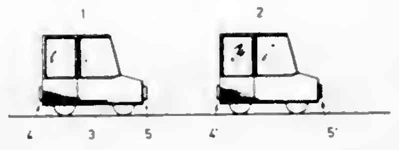
Filed Mar. 14, 1972, Ser. No. 234,604

Claims priority, application Germany, Mar. 26, 1971, P 21 14 621.4

Int. Cl. B60l *15/20*

U.S. Cl. 246—187 C **20 Claims**

In the disclosed method and system, vehicles travelling along a track in single file transmit signals to the following vehicles and receive signals from the preceding vehicles. The information content of the transmitted signals varies with the speed of the transmitting vehicle. The information content of the received signals is also modulated by the speed of the receiving vehicle. The speed of the receiving vehicle is varied in dependence upon the signals received.



3,790,781
CATHODOLUMINESCENCE DEVICE FOR SCANNING ELECTRON MICROSCOPES

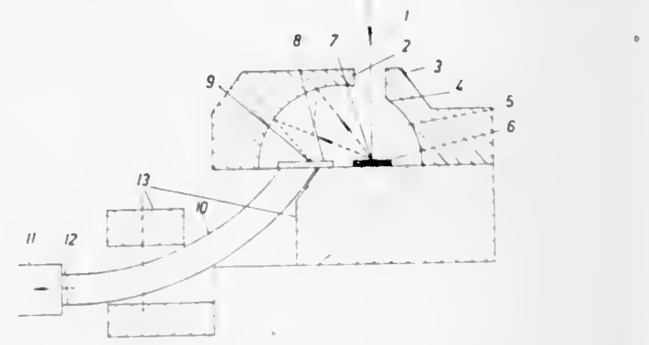
Erwin Horl; Peter Scholze, and Eduard Mugschl, all of Vienna, Austria, assignors to Oesterreichische Studiengesellschaft fur Atomenergie Gesellschaft m.b.H., Vienna, Austria

Filed Sept. 28, 1972, Ser. No. 292,954

Claims priority, application Austria, Oct. 5, 1971, 8603/71

Int. Cl. H01j *37/26*

U.S. Cl. 250—310 **6 Claims**



A cathodoluminescence device for scanning electron microscopes which comprises a hollow space for arranging a specimen therein, and said hollow space having at least one focus and provided with a reflecting cover.

3,790,782
TOPOGRAPHIC RADIOISOTOPE CAMERA HAVING AN ADJUSTABLE COLLIMATOR THEREON

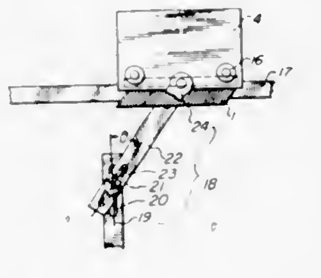
Minoru Inoue; Kenji Ishimatsu, both of Tokyo, and Hideho Tabuchi, Hachioji-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 21, 1969, Ser. No. 809,138

Claims priority, application Japan, Mar. 25, 1968, 43/18920

Int. Cl. G01n *23/00*; **H01j** *37/00*

U.S. Cl. 250—61.5 **7 Claims**



A radioisotope camera adapted to detect radioisotopes on a particular tomographical plane exclusively with high accuracy and high resolution, comprising a multi-hole parallel collimator formed into a special form and a gamma ray detector coupled to the collimator to be movable with respect to the tomographical plane.

3,790,783
RADIATION DOSEMETERS OF THE THERMOLUMINESCENT TYPE

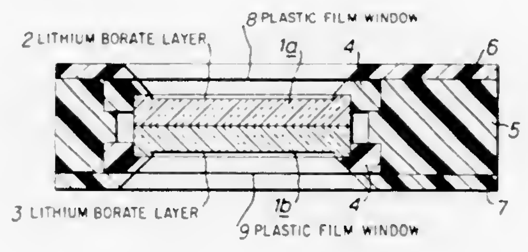
Robert Thompson Brunskill, Holmrock, and Walter Alfred Langmead, Wantage, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Sept. 20, 1971, Ser. No. 181,808

Claims priority, application Great Britain, Nov. 6, 1970, 52,980/70

Int. Cl. G01t *1/11*

U.S. Cl. 250—362 **2 Claims**



A radiation dosemeter comprising thermoluminescent powder mounted on a base of graphite or other material which can be heated by radiofrequency.

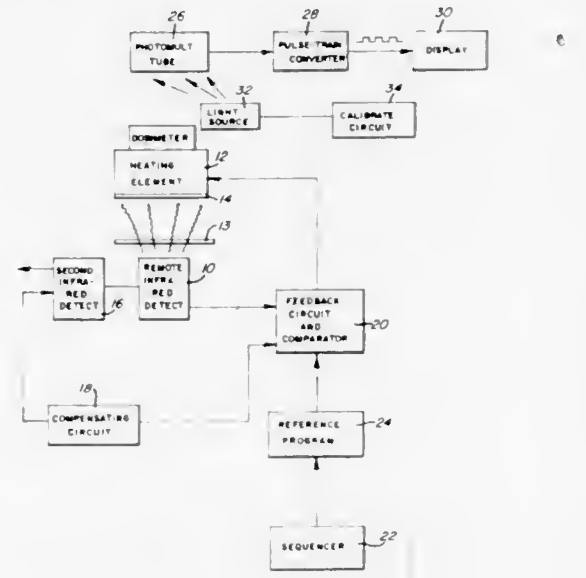
3,790,784
METHOD AND APPARATUS FOR TREATING THERMOLUMINESCENT DOSIMETERS DURING READ-OUT TO ENABLE THEIR IMMEDIATE REUSE

Geoffrey A. M. Webb, Wantage, England, and Howard P. Phykitt, Hillsdale, N.J., assignors to Isotopes, Incorporated, Westwood, N.J.

Filed June 6, 1972, Ser. No. 260,330

Int. Cl. G01t *1/11*

U.S. Cl. 250—362 **23 Claims**



A method and apparatus for treating thermoluminescent dosimeters to enable read-out of the dosimeters and to permit their prompt reuse by eliminating the conventional annealing cycle. The dosimeter is initially preheated to a first temperature and is maintained at that temperature for a predetermined time. The dosimeter is then heated to a second read-out temperature and is maintained at the read-out temperature for a selected time interval. The dosimeter is then immediately heated further to an annealing temperature which is maintained for a selected interval, followed by cooling of the dosimeter whereby the dosimeter can again be promptly reused for accurately determining radiation dosage without the necessity of subjecting the dosimeter to the conventional and lengthy annealing cycle.

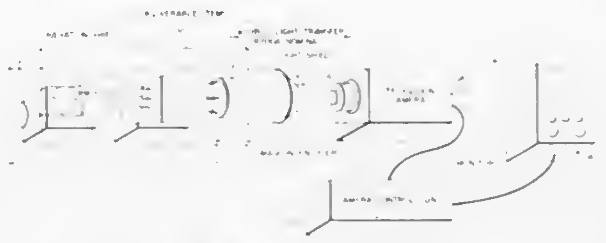
3,790,785
RADIOGRAPHIC IMAGING

Frank Paolini, Stamford, Conn., and Alfred Kuhnel, Stow, Mass., assignors to American Science & Engineering, Inc., Cambridge, Mass.

Filed Nov. 18, 1971, Ser. No. 199,881

Int. Cl. G01t *39/18*

U.S. Cl. 250—71.5 R **10 Claims**



An X-ray imaging system includes a thin sodium iodide single crystal or matrix of single crystals for converting an X-ray image into a visible image. Preferably an electro-optical amplifier amplifies the detected image and delivers the amplified image to a closed circuit television viewing system.

3,790,786
PROCESS AND DEVICE FOR DETERMINING RADIOACTIVE ISOTOPES

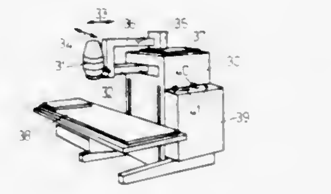
Hanns-Immo Friei, Erlangen; Rudolf Prag, Marloffstein, and Heidi Schlichting, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Mar. 8, 1972, Ser. No. 232,868

Claims priority, application Germany, Apr. 10, 1971, P 21 17 698.7

Int. Cl. G01t *1/20*

U.S. Cl. 250—71.5 S **5 Claims**



Process and device for ray diagnosis are used to determine the distribution of radioactive isotopes located in a body by a line by line feeling of a measured surface through which the rays pass. The feeling takes place by means of a measuring probe which changes the intensity distribution into a sequence of impulses which are summed up one after the other through adjustable partial lengths of image rows in an integration counter combined with an inscribing device operated by the sums of impulses to provide an image reproducing the intensity distribution. The invention is particularly characterized in that the sums of impulses are fed to corresponding sections of storing elements and are transmitted for operating the inscribing device at the earliest during the feeling of the next image line.

3,790,787
METHOD AND DEVICE FOR PRODUCING BY CHARGE-TRANSFER A BEAM OF NEUTRAL PARTICLES OR OF IONS HAVING MULTIPLE CHARGES

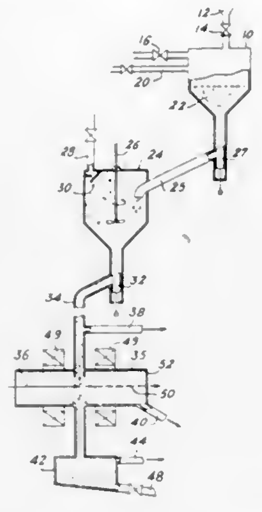
Richard Geller, Grenoble, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed Apr. 4, 1972, Ser. No. 240,947

Int. Cl. H01j *35/00*

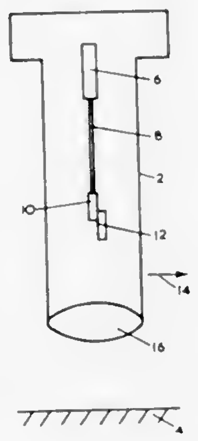
U.S. Cl. 250—251 **8 Claims**

A method and device for the production of a beam of neutral particles or of heavy ions charged a plurality of times in which electric charges are neutralized or transferred between the charged particles of an incident beam and a substance traversed by the beam. A substantially homogeneous stream of powder consisting of grains having a diameter of the order of 100 A is caused to pass through the incident beam of charged particles in order to form a target which is traversed by said beam, the rate of circulation being such that each charged particle should meet either one grain or at least a plurality of atoms of one grain.



3,790,788
LINE-FOLLOWER

Paul Frank Lister, Birmingham, England, assignor to The British Oxygen Company Limited, London, England
Filed Nov. 3, 1971, Ser. No. 195,333
Claims priority, application Great Britain, Nov. 5, 1970, 52,746/70
Int. Cl. G05b *1/00*
U.S. Cl. 250—202 **1 Claim**

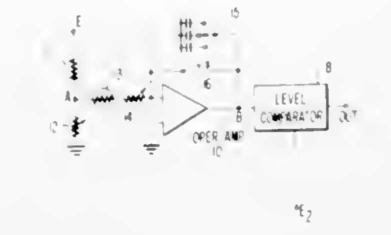


A line-follower including two photoelectric cells able to be oscillated in unison transversely to the axis of the line being followed. One cell is arranged to produce a steering signal and the other an error-displacement signal.

3,790,789
CIRCUIT FOR CONTROLLING EXPOSURE

Isao Takahashi, and Tsutomu Kimura, both of 210 Minami, Ashigara-shi, Kanagawa, Japan
Filed Sept. 22, 1972, Ser. No. 291,481
Claims priority, application Japan, Sept. 22, 1971, 46/74031
Int. Cl. G03b *27/74, 27/78*
U.S. Cl. 250—209 **2 Claims**

A circuit for controlling exposure which has a Miller integrator for integrating a photocurrent from a photoelectric converting light acceptor, a circuit for generating a predetermined set level, and a level comparator for generating an exposure finishing signal when the output of the integrator arrives at the predetermined level set by the level generating circuit. Thus, a great deal of electric current can be obtained without using a photoelectric tube or thyratron. A low impedance circuit may be used which is not affected by leaking current or dark current so as not to deteriorate the elements and thereby improve circuit reliability.



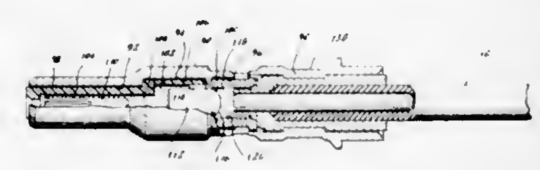
3,790,790
POLARITY SENSITIVE ELECTRONIC SWITCH AND POLARITY INDICATOR

William L. Norman, Sylmar, Calif., assignor to Norman Enterprises, Inc., Burbank, Calif.
Filed May 19, 1972, Ser. No. 255,141
Int. Cl. H01j *39/12*
U.S. Cl. 250—211 J **1 Claim**

A solid state switch for performing a control operation which is operated by a voltage of a particular polarity and a diode and indicating means connected in series across the switch. The diode and indicating means are connected in series across the switch so that current flows through the diode and the indicating means in response to the application of a voltage of incorrect polarity to the switch means. Flow of current through the indicating means causes it to signal the application of a voltage of incorrect polarity.

3,790,791
OPTOELECTRONIC CABLE ASSEMBLY

Norman Richard Anderson, Cicero, Ill., assignor to Bunker Ramo Corporation, Oak Brooks, Ill.
Filed July 20, 1972, Ser. No. 273,527
Int. Cl. G02b *5/16*
U.S. Cl. 250—227 **15 Claims**

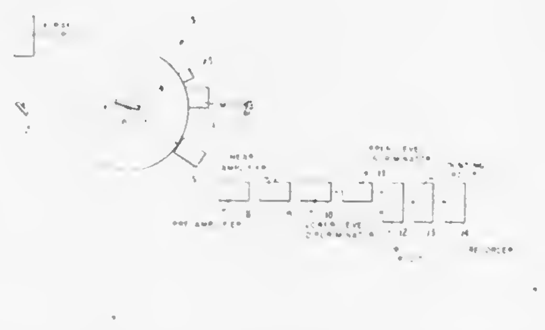


This invention relates to an optoelectronic cable assembly which utilizes standard connector elements as part of the termination assemblies. Mounted in each termination assembly are a plurality of termination elements each of which is adapted to have a fiber optic light conducting cable secured therein. An active optoelectronic device is mounted in a suitable mounting means in each of the termination elements and contact means are attached at one end through the mounting means to make electrical contact with the active device. The contacts project at the other end for connection to external elements. The mounting means is supported by a suitable

means in the bore of the element body. A lens or other suitable device is mounted in front of the device for transmitting light between the device and the cable. The assembly design, particularly that for the termination assembly containing a light emitting device, is specially designed for dissipating heat from the device.

3,790,792
DEVICE FOR X-RAY ANALYSIS

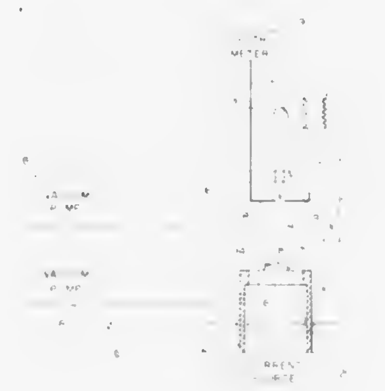
Hiroshi Ishijima, Tokyo, Japan, assignor to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 30, 1972, Ser. No. 285,059
Int. Cl. G01n *23/20*
U.S. Cl. 250—278 **5 Claims**



This specification discloses a device for X-ray analysis having a pulse height analyzer in which the window width of the analyzer is varied in proportion to $\sqrt{\sin\theta}$ in order to discriminate pulses attributable to the X-rays satisfying the Bragg equation.

3,790,793
MOLECULAR SCANNER

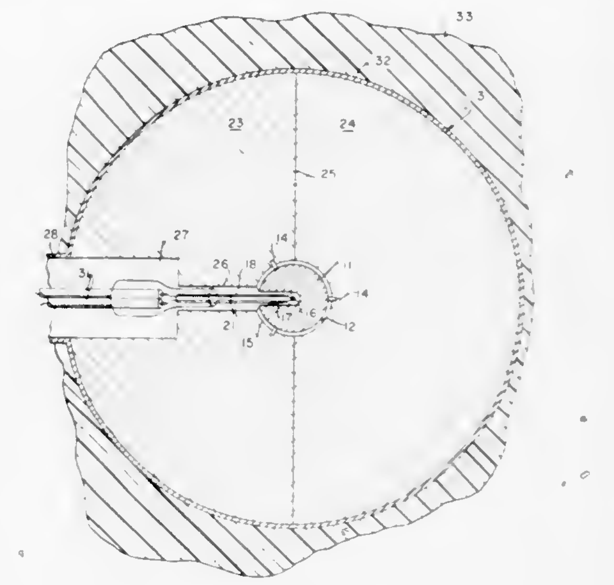
John G. King, Brookline, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.
Continuation of Ser. No. 56,056, June 25, 1970, abandoned, which is a continuation of Ser. No. 713,969, March 18, 1968, abandoned. This application Nov. 5, 1971, Ser. No. 196,236
Int. Cl. G01n *27/78,* **H01s** *1/00*
U.S. Cl. 250—251 **19 Claims**



A device and method in which neutral atoms or molecules are used to observe surfaces of samples and capable in particular of producing information from inhomogeneous samples where the forces and interactions are of strength characterized by moderate temperatures in the range of 100°K to 500°K. Molecules evaporating from the surface of a sample are shown selected by a pin-hole and detected and converted to an ion current by a surface ionizing detector. With relative scanning movement of components of the system, the ion current is monitored and recorded, indicating the spatial variation in evaporation of the molecules from the sample.

3,790,794
ABSOLUTE CALORIMETRIC DOSIMETER

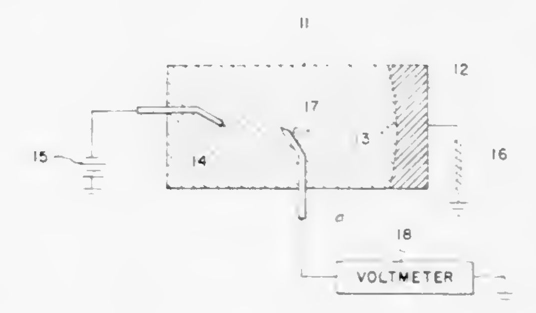
Kenneth M. Murray, Alexandria, Va., and Frank H. Attix, Oxon Hill, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Dec. 21, 1972, Ser. No. 317,322
Int. Cl. G01t *1/12*
U.S. Cl. 250—352 **7 Claims**



A device for determining radiation dose by measuring a change of temperature in a material due to incident radiation on the material.

3,790,795
HIGH FIELD CDS DETECTOR FOR INFRARED RADIATION

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Ramesh C. Tyagi, Delhi, India; James B. Robertson, Yorktown, Va.; Karl W. Boer, Kennett Square, Pa., and Henry C. Hadley, Jr., Newark, Del.
Filed July 26, 1972, Ser. No. 275,118
Int. Cl. G01j *1/02*
U.S. Cl. 250—338 **6 Claims**



An infrared radiation detector including a cadmium sulfide (CdS) platelet having a cathode formed on one of its ends and an anode formed on its other end. The platelet is suitably doped such that stationary high-field domains are formed adjacent the cathode when biased in the negative differential conductivity region. A negative potential is applied to the cathode such that a high-field domain is formed adjacent to the cathode. A potential measuring probe is located between the cathode and the anode at the edge of the high-field domain and means are provided for measuring the potential at the probe whereby this measurement is indicative of the infrared radiation striking the platelet.

cepted by a rotating disc with radial slits that provides the

The apparatus may also contain means for carrying the

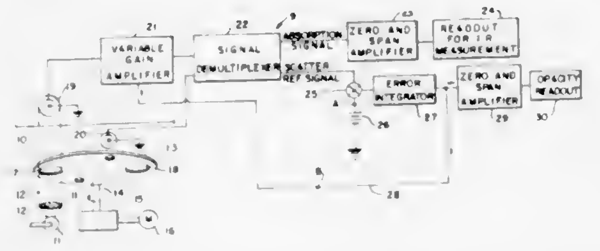
3,790,796
METHOD AND APPARATUS FOR MEASUREMENT OF SHEET OPACITY

Donald C. Brunton, and Carl R. Soltesz, both of Columbus, Ohio, assignors to Infra Systems, Inc.

Division of Ser. No. 114,520, Feb. 11, 1971, abandoned. This application June 5, 1972, Ser. No. 260,017

Int. Cl. G01j *3/00*

U.S. Cl. 250—339 **9 Claims**



An embodiment of the invention includes a method and apparatus for measurement of sheet opacity in combination with any optical ratio measurement of the same sheet such as weight wherein a reference band of infrared radiations which lies outside of any absorption band of the sheet material is utilized.

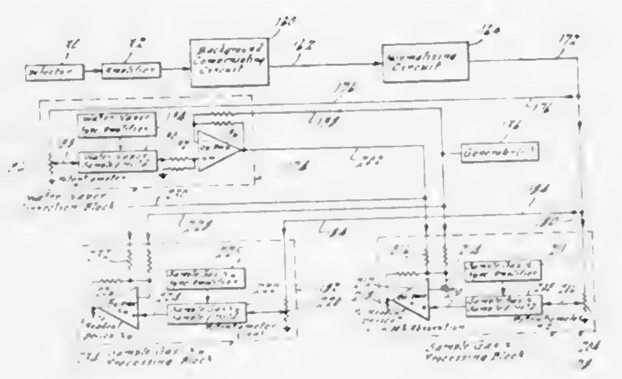
3,790,797
METHOD AND SYSTEM FOR THE INFRARED ANALYSIS OF GASES

Stanley R. Sternberg, 5591 Textile, Ypsilanti, Mich.; James E. Young, 5282 Grayton, Detroit, Mich., and John W. Lennington, 1018 Congress, Ypsilanti, Mich.

Continuation-in-part of Ser. No. 809,752, March 24, 1969, abandoned. This application Sept. 7, 1971, Ser. No. 178,260

Int. Cl. G01n *21/26*

U.S. Cl. 250—345 **37 Claims**



A dual path analyzer and a single path analyzer are disclosed, each for determining the concentration of one or more gaseous components in a mixture of gases. The preferred analyzer is a single path instrument which includes a source of infrared energy, a detector for the energy, a sample cell for the gas mixture positioned between the source and detector, and a filter wheel having a plurality of filters and a source blocking device positioned between the sample cell and detector for sequentially interposing the filters and the source blocking device between the source and the detector. Means are provided for amplifying the output signal of the detector and for processing the signal to provide a direct readout display which indicates the concentration of the gaseous components being analyzed. The processing electronics preferably include provision for calibrating the analyzer with clean ambient air, for compensating for background levels of radiation, and for correcting the displayed output signal for the effects of absorption band interferences between two or more gases in the gas mixture. The structure of the dual path analyzer includes a source of infrared energy, a detector for the energy, a sample cell for the gas mixture, a cell for a reference gas, and optical path means between the source and detector for sequentially directing the source energy through the sample cell, the reference cell, and through neither cell. Processing electronics similar to the single path instrument can be incorporated to compensate for background radiation and absorption band interferences.

3,790,798
METHOD AND SYSTEM FOR THE INFRARED ANALYSIS OF GASES

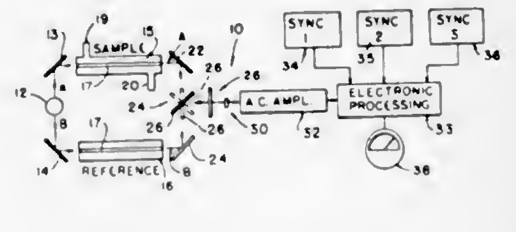
Stanley R. Sternberg, Ypsilanti; James E. Young, Detroit, and John W. Lennington, Ypsilanti, all of Mich., assignors to Metro Hydraulics, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 178,260, Sept. 7, 1971, which is a continuation-in-part of Ser. No. 809,752, Mar. 24, 1969, abandoned.

Filed Aug. 18, 1972, Ser. No. 281,958

Int. Cl. G01n *21/26*

U.S. Cl. 250—345 **36 Claims**



A dual path analyzer and a single path analyzer are disclosed, each for determining the concentration of one or more gaseous components in a mixture of gases. The preferred analyzer is a single path instrument which includes a source of infrared energy, a detector for the energy, a sample cell for the gas mixture positioned between the source and detector, and a filter wheel having a plurality of filters and a source blocking device positioned between the sample cell and detector for sequentially interposing the filters and the source blocking device between the source and the detector. Means are provided for amplifying the output signal of the detector and for processing the signal to provide a direct readout display which indicates the concentration of the gaseous components being analyzed. The processing electronics preferably include provision for calibrating the analyzer with clean ambient air, for compensating for background levels of radiation, and for correcting the displayed output signal for the effects of absorption band interferences between two or more gases in the gas mixture. The structure of the dual path analyzer includes a source of infrared energy, a detector for the energy, a sample cell for the gas mixture, a cell for a reference gas, and optical path means between the source and detector for sequentially directing the source energy through the sample cell, the reference cell, and through neither cell. Processing electronics similar to the single path instrument can be incorporated to compensate for background radiation and absorption band interferences.

3,790,799
RADIANT ENERGY IMAGING WITH ROCKING SCANNING

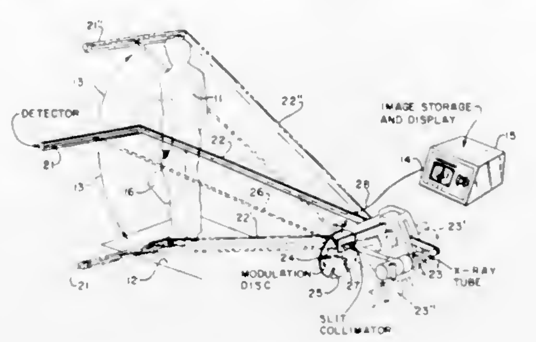
Jay A. Stein, Framingham, and Gerald Polucci, Cambridge, both of Mass., assignors to American Science & Engineering Inc., Cambridge, Mass.

Filed June 21, 1972, Ser. No. 264,857

Int. Cl. G01t *1/20*

U.S. Cl. 250—363 **10 Claims**

A pencil beam of X-rays scans an object along a line of direction along a line X-ray detector to produce an image of the line along a picture tube. The object scanned and the line of scan are relatively displaced by rocking the X-ray source and line detector about an axis substantially passing through a slit which collimates the X-ray energy into a fan beam intercepted by a rotating disc with radial slits that provides the scanning pencil beam. The X-ray detector preferably comprises sodium iodide elements imbedded in a light pipe with a photocell at each end of the light pipe.



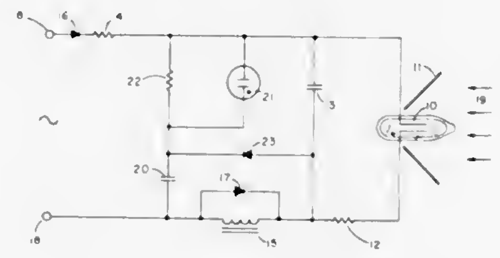
3,790,800
RADIATION DETECTION SYSTEM WITH FAIL SAFE FEATURE

Leslie Richard Linner, Chaffee, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 27, 1972, Ser. No. 318,958

Int. Cl. G01j *5/36*

U.S. Cl. 250—372 **7 Claims**



An internal ionization radiation sensor operates to discharge a capacitor in the presence of incident radiation. The recharging current is sensed by a threshold output device. In one embodiment, the threshold output device is prevented from receiving the additional current necessary to be triggered if the radiation sensor fails in the runaway mode. The additional current to trigger the threshold output device is supplied from a second capacitor which is prevented from charging by a runaway radiation sensor.

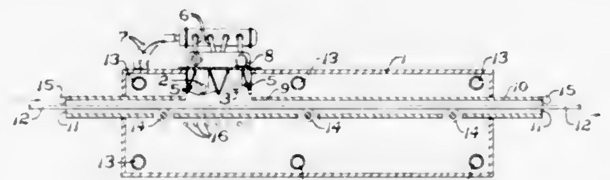
3,790,801
APPARATUS FOR ULTRAVIOLET LIGHT TREATMENT IN A CONTROLLED ATMOSPHERE

George E. Coleman, Elmhurst, Ill., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sept. 8, 1972, Ser. No. 287,400. The portion of the term of this patent subsequent to July 11, 1989, has been disclaimed.

Int. Cl. H01j *37/20*

U.S. Cl. 250—453 **11 Claims**



Apparatus which permits treatment of products with ultraviolet light in a controlled atmosphere comprises an inner chamber positioned within an outer chamber, the workpiece to be treated passing through the inner chamber. The outer chamber has a means for supplying ultraviolet light in the upper surface of a second or inner chamber whereby ultraviolet light may be radiated in the inner or second chamber. The apparatus may also contain means for carrying the product to be treated, as well as cooling means at either end of the path of treatment.

3,790,802
X-RAY FILM IDENTIFICATION MEANS

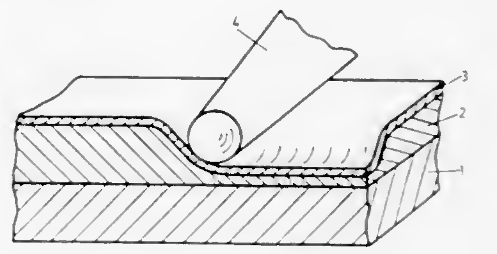
Norbert Mika; Peter H. Grassmann, and Wilhelm Reis, all of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Oct. 13, 1971, Ser. No. 190,467

Claims priority, application Germany, Oct. 13, 1970, P 20 50 150.2

Int. Cl. G03b *17/26*

U.S. Cl. 250—476 **7 Claims**



A material to identify images produced by X-rays or similar transmitting rays contains a layer absorbing the X-rays and has identifying markings impressed therein. According to the present invention the absorbing layer has indium as its main component.

3,790,803
SIGHTING AND RELATING DEVICE FOR X-RAY TUBE HEAD

Willis Paul Phillips, 200 E. Rentz St., Weatherford, Tex.

Filed Oct. 25, 1972, Ser. No. 300,512

Int. Cl. G01n *23/00*

U.S. Cl. 250—490 **10 Claims**

Apparatus to maintain a human head in a fixed position in combination with X-ray film cassette holding means and X-ray tube head sighting means arranged to permit periodic exposure of X-ray film at a prescribed angle and distance. The film holding means comprises a film cassette holder movable arcuately about a reference point positionable to substantially correspond to the center of the dental arc of a patient's mouth, said holder being movable radially relative to the reference point to position film at a prescribed distance and in a prescribed angular relationship to a patient's head. The X-ray tube head sighting apparatus comprises a target positionable in a prescribed angular relationship to a patient's head and a sighting tube secured to the X-ray tube head such that the X-ray film cassette and the X-ray tube head are accurately positionable in prescribed locations on opposite sides of a head.

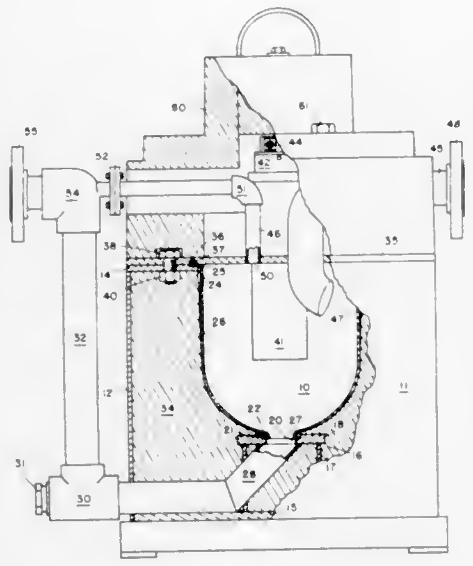
3,790,804
RADIOACTIVITY MONITORING APPARATUS FOR FLUIDS IN FLOW

David O. Hunt, Bedford, Mass., assignor to Lee Corporation, Waltham, Mass.

Filed May 1, 1972, Ser. No. 249,689

Int. Cl. G01n *23/12*

U.S. Cl. 250—506 **14 Claims**



Unusually high sensitivity is obtained in a radioactivity monitor for fluid in flow by blocking external background "-noise" with four pi shielding, minimizing residual contamination as a source of internal noise with a dynamic swirl in a removable bowl-shaped container having a smoothly curving surface passing into a bottom outlet, and providing a constant sampling volume by maintaining an external fluid level above that of the container and by venting through the top of the container.

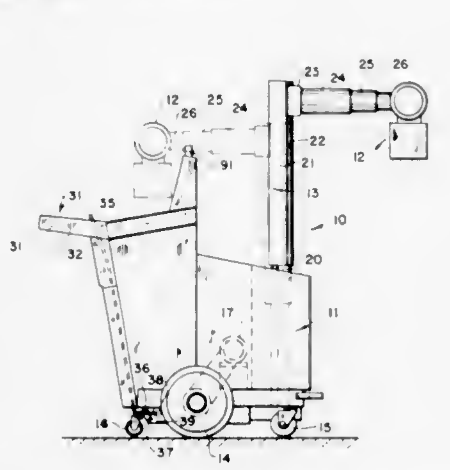
3,790,805
MOBILE X-RAY UNIT

Anthony J. Foderaro, Middleburg Heights, Ohio, assignor to Picker Corporation, Cleveland, Ohio

Filed Apr. 19, 1971, Ser. No. 135,094

Int. Cl. G03b *41/16*

U.S. Cl. 250—522 **12 Claims**



A power driven mobile X-ray unit having greatly improved maneuverability through the provision of an X-ray source nestable for transit and a drive control handle which gives the operator the feel of pushing or pulling the unit during transit. The handle comprises a horizontally disposed gripping bar, movable horizontally forwardly and rearwardly of a neutral position. The handle is biased toward the neutral position where the drive means is deactivated and serves to break the unit from moving. Increased pressure on the handle causes the unit to move at a higher speed. A limit switch is provided to prevent the operation of the power drive at any other than the slowest speed when the X-ray tube is in a position other than its storage position. A novel telescoping mast supports the X-ray tube.

3,790,806
REMOTE ENGINE STARTING SYSTEM

Victor Lessard, 3335 Willow, Dearborn, Mich.

Filed Aug. 18, 1972, Ser. No. 281,847

Int. Cl. B60k *33/00*

U.S. Cl. 290—37 **28 Claims**

A remotely controlled automobile engine starting control system which includes a radio transmitter remotely located from a radio receiver and the control circuit, the actuation of the control circuit from the transmitter initiating the timing of two preselected periods, the first of which controls the actuation of the automobile ignition and engine cranking systems until such time as the engine is started and the second of which controlling the period which the engine will run after actuation of the radio transmitter. The system further includes various safety features to preclude theft of the automobile as a result of the engine running and a system for initiating the energization of the accessory circuitry to permit energization of, for example, the air conditioning or heating system.

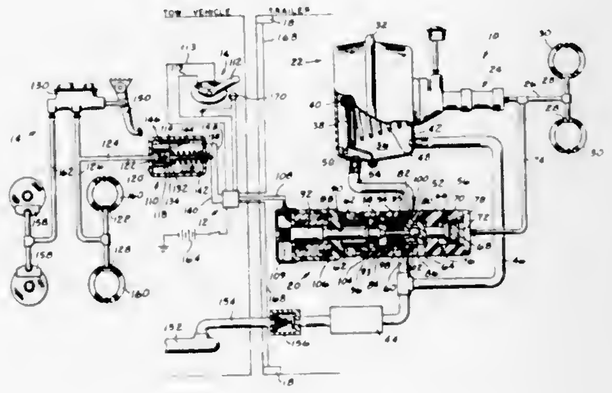
3,790,807
TOW VEHICLE TRAILER BRAKING SYSTEM

Louis P. Rossigno, South Bend, Ind., assignor to The Bendix Corporation

Filed Dec. 22, 1972, Ser. No. 317,859

Int. Cl. B60t *13/60*

U.S. Cl. 303—7 **12 Claims**



A solenoid operated control valve for establishing an operational pressure differential in a servomotor located in a trailer to activate the wheel brakes of the trailer in response to an operational electrical signal derived from corresponding hydraulic actuation of the wheel brakes of a tow vehicle.

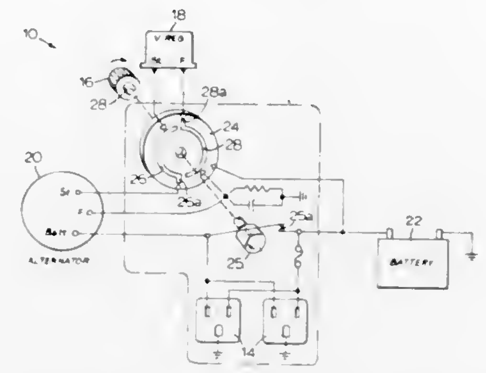
3,790,808
POWER TAKE-OFF SWITCH

Rudolph J. C. Sagl, Clarkson, Canada, assignor to B.E.L.-Tronics Limited, Mississauga, Ontario, Canada

Filed May 2, 1973, Ser. No. 356,509

Int. Cl. H02g *3/00*

U.S. Cl. 307—10 R **6 Claims**



A power take-off and switching device for use in a circuit of an internal combustion engine which includes a source of low voltage direct current, voltage regulator means, alternator means, and conductor means for connecting the source of low voltage current to the alternator by way of the voltage regulator in a conventional manner, said device comprising a normally closed first switch means in the power input circuit of an alternator, normally closed second switch means in the power output circuit of said alternator, power output receptacle means connected to the output of said alternator, supplementary conductor means for connecting said source of low voltage directly to the power input side of said alternator, normally open third switch means in said supplementary conductor means, actuator means for sequentially opening said first switch means to deactivate said alternator and thereafter opening said second switch means to disconnect the power output of the alternator from the low voltage source when the alternator is deactivated and thereafter closing said third switch means to supply low voltage power directly to said alternator such that when the alternator is driven a high voltage is supplied to said power output receptacle.

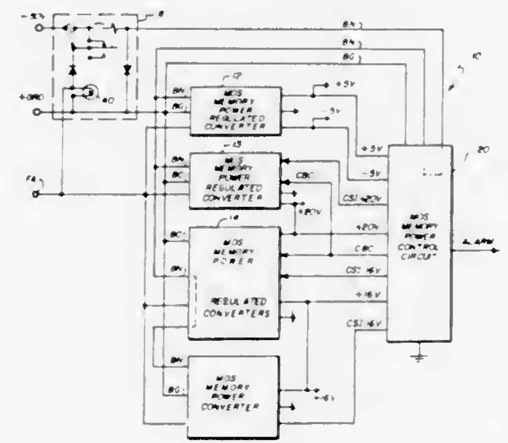
3,790,809
MOS MEMORY POWER SUPPLY

Karl H. Kuster, Glendale Hgts., Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sept. 25, 1972, Ser. No. 292,023

Int. Cl. H02h *3/00*

U.S. Cl. 307—41 **3 Claims**


MOS MEMORY POWER REGULATED CONVERTER
REGULATED CONVERTERS
MOS MEMORY POWER CONVERTER
+5V
-5V
+16V
10
20
12

An MOS memory power supply system including voltage monitoring and sequencing circuits to properly control voltage levels during turn-on, turn-off and fault detection. A first voltage monitoring circuit for measuring the 16 volt output of a regulated power supply, a second voltage monitoring circuit for measuring the 20 volt output of a regulated power supply, the monitor circuits including means for detecting a deviation of the respective output voltage levels from a predetermined range and providing a fault signal, a ramp signal generator providing a signal starting from approximately zero and continuously increasing in level whenever a fault is detected, respective crowbar circuits for the 16 volt and 20 volt output terminals, the 16 volt and 20 volt crowbar circuits including respective means for shorting the output levels at different ramp signal levels, the 16 volt output shorted prior to shorting of the 20 volt output level. An inhibit circuit is also provided for responding to a fault signal from the 20 volt monitor circuit and inhibiting the formation of the 16 volt output level thus insuring that the 20 volt output is always greater than the 16 volt output.

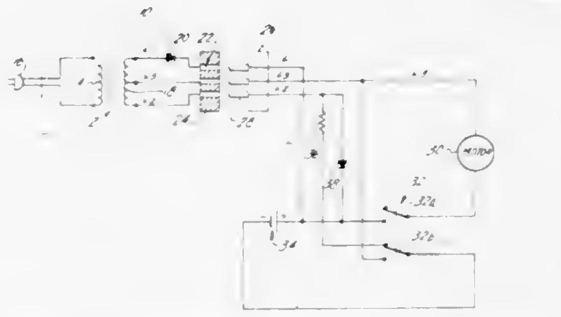
3,790,810
DIRECT CURRENT POWER SUPPLY FOR ELECTRICAL APPLIANCES

Fred A. Rogers, Brooklyn, and David Berend, New York, both of N.Y., assignors to J. Wiss & Sons Co., Newark, N.J.

Filed June 30, 1972, Ser. No. 268,098

Int. Cl. H02j *9/04*

U.S. Cl. 307—66 **12 Claims**



An arrangement in which a center-tapped transformer supplies power for operating a DC motor, as well as charging a battery. Alternating current from the secondary winding of the transformer is rectified through one diode mounted within the transformer unit, and a second diode mounted within the unit carrying the motor. The transformer unit is connected with a three wire plug to the load means, for example, a motor or appliance unit. When the transformer unit is not connected to the applicance unit, the battery operates the motor.

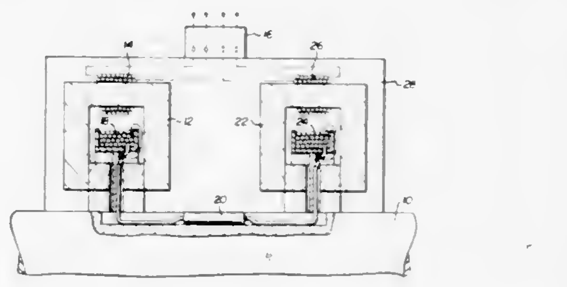
3,790,811
GROUND REFERENCE NETWORK

Phillip V. Cooper, Southfield, and Albert E. Brendel, Lake Orion, both of Mich., assignors to Lebow Associates, Inc., Troy, Mich.

Filed Dec. 7, 1972, Ser. No. 313,143

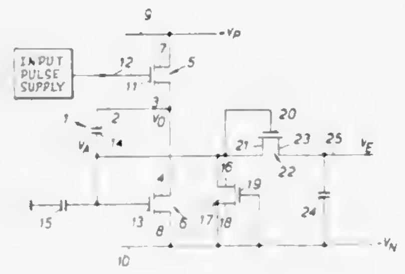
Int. Cl. G01l *3/00*

U.S. Cl. 307—94 **8 Claims**



An external ground reference network for a transducer system in which the transducer is coupled by transformers to both the input and output of the system. In one embodiment, the external ground reference network has one portion coupled across the input and another portion coupled across the output and is in a star configuration. In another embodiment, the external ground reference network is a connection between center-taps of the transformers.

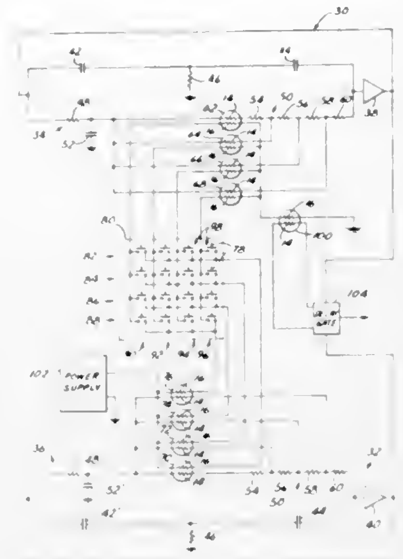
3,790,812
DEVICE FOR GENERATING A HIGH VOLTAGE SUPPLY
Peter William Fry, Dorchester, England, assignor to Integrated Photomatrix Limited
Filed July 13, 1972, Ser. No. 271,239
Claims priority, application Great Britain, July 26, 1971, 34,982/71
Int. Cl. H02m *3/18;* **H03k** *17/66*
U.S. Cl. 307—110 **7 Claims**



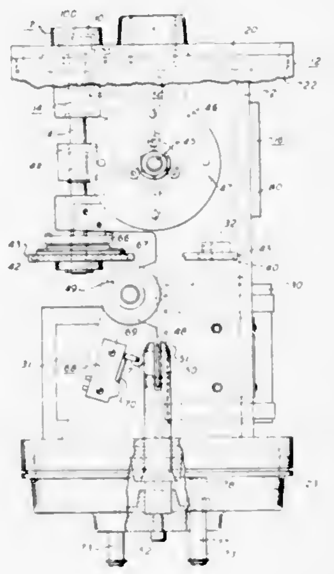
A voltage generator comprises a capacitor and positive and negative power supply rails. Normally non-conducting first and second field-effect transistors are arranged to isolate the capacitor from the power supply rails in the non-conducting state thereof and to connect the power supply rails to respective plates of the capacitor in a conducting state thereof. Means are provided to trigger the first and second transistors into the conducting state for a limited period to charge the capacitor and then isolate the capacitor when the transistors revert to their normal state. A normally non-conducting field-effect transistor is operative, on isolation of the capacitor subsequent to charging thereof, to adopt a conducting state in which such third transistor connects one of the plates of the capacitor to the opposite supply rail to that to which it can be connected by the respective first or second transistor, whereby to produce an enhanced voltage on the other capacitor plate. The enhanced output is delivered across an output capacitor connected via a fourth field-effect transistor to the said other plate of the first mentioned capacitor.

3,790,813
FILM SWITCHING SYSTEM FOR MUTUALLY ISOLATED CIRCUITS
Thomas E. Ennis, Niles, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Nov. 30, 1972, Ser. No. 311,026
Int. Cl. H04g *1/45*
U.S. Cl. 307—115 **6 Claims**

A switching system utilizing film switches permits selection of respective impedances in a plurality of mutually isolated circuits, particularly the selection of resistors in the frequency determining filters of a plurality of tone generators in a multifrequency dial signal generator for a telephone set. In one form of the invention, a group of film switches is associated with the frequency determining resistors of each tone generator. The heater element of a film switch from one group is placed in series with the heater element of a film switch from another group and connected to a source of power, as by operation of a single closure push button switch. The temperature-sensitive resistors of the respective film switches thereupon place the corresponding selected resistors in circuit, whereupon signals of selected predetermined frequencies are produced by the respective tone generators.

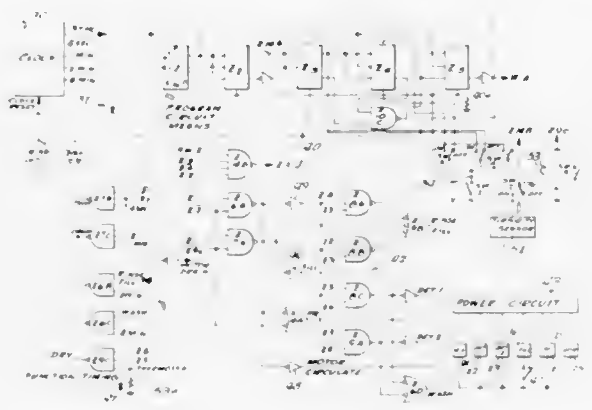


3,790,814
ELECTRICAL LOWERING APPARATUS
Henry C. Pfaff, Jr, Summit, and Wenard Bowser, Jr, Martinsville, both of N.J., assignors to Pfaff & Kendall, Newark, N.J.
Filed June 6, 1972, Ser. No. 260,303
Int. Cl. H01h *35/00*
U.S. Cl. 307—119 **14 Claims**



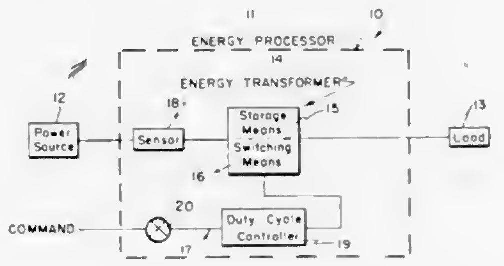
An electrical lowering apparatus, for lowering and elevating a mounted fixture, which is provided with braking means which secure the brake by coupling the brake directly to the moving means to prevent brake bypass in the event of mechanical or electrical failure and which engage the brake for the initial distance of lowering and for the final distance of elevating by correlating the tripping of the brake limit switch to movement of the moving means to cushion the separation and connection operations, which is further provided with electrical operating means which control the driving means by independently generating the control signal for the power circuit to prevent extraneous electrical interference and which control the braking means by separately operating the brake solenoid and the motor in the power circuit to prevent motor-generated current interference, and which is further provided with overriding means which bypass the driving means by enabling coupling of a shaped portion of the moving means to an external drive to provide continued operation of the apparatus in the event of electrical or mechanical failure.

3,790,815
ELECTRONIC CONTROL CIRCUIT FOR APPLIANCES
Joseph Karklys, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Division of Ser. No. 837,163, June 27, 1969, Pat. No. 3,662,186. This application Apr. 4, 1972, Ser. No. 240,966
Int. Cl. H01h *43/00*
U.S. Cl. 307—141 **11 Claims**



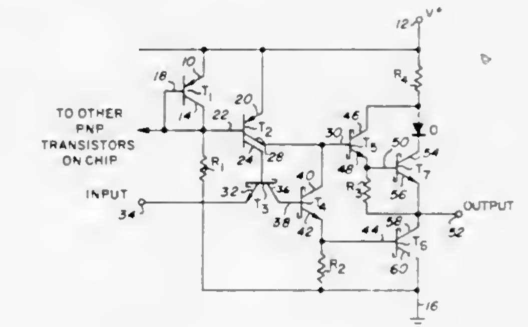
A control for a multiple function apparatus, such as an appliance, utilizing an electronic clock, or timer, electronic program circuitry and digital circuitry to select and control the functions to be performed. The electronic program circuitry has a plurality of bistable circuits, one portion controlling a series of steps repeated in each of several subcycles and the other portion controlling the sequence of subcycles. The second portion may be preset to establish a desired operating program. The digital circuitry is responsive to the condition of the bistable program circuits and to the clock to control the operation of the appliance.

3,790,816
ENERGY STORAGE AND TRANSFER POWER PROCESSOR WITH SELF-CONTAINED PARAMETRIC REGULATING LOOP
Baruch Berman, Palos Verdes Peninsula, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed Mar. 30, 1972, Ser. No. 239,568
Int. Cl. H02j *7/00*
U.S. Cl. 307—149 **7 Claims**



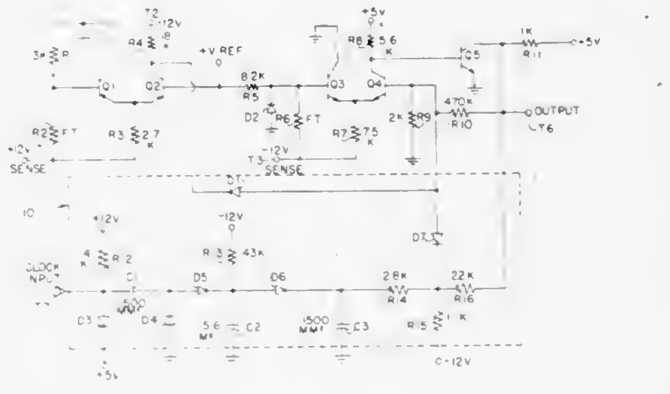
An energy storage and transfer power processor having an inductive or inertial energy transformer for transferring energy from a power source to a load in repetitive energy transfer cycles each having an energy storage phase during which the transformer stores energy from the power source and an energy delivery phase during which the transformer delivers stored energy to the load. The power processor has its own parametric regulating loop for sensing a control parameter which deviates from a steady state value concurrently with deviation of the processor from an equilibrium condition wherein the energy stored in and the energy delivered by the energy transformer during successive transfer cycles remain equal and constant, such that average stored energy level in the storage means remains constant at a steady state level. The regulating loop regulates the transformer duty cycle in response to departure of the control parameter from its steady state value as a result of changes in the processor input and/or output conditions to instantaneously restore the processor to equilibrium. The invention may be utilized in both electrical and mechanical energy transfer systems to maintain a selected system output quantity at a steady state value which may be fixed or varied by command.

3,790,817
SCHOTTKY CLAMPED TTL CIRCUIT
Robert C. Dobkin, Menlo Park, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.
Filed Feb. 14, 1972, Ser. No. 225,742
Int. Cl. H03k *19/40, 19/08*
U.S. Cl. 307—214 **10 Claims**



A low power TTL gating circuit wherein PNP transistors have been used in place of the usual current source resistors and Schottky-clamped NPN have been used in place of the usual gold doped NPN gating elements to obtain a faster operating circuit which requires less chip area than similar prior art circuits.

3,790,818
SUPPLY VOLTAGE AND CLOCK SIGNAL MONITOR
Ronald L. Bruckner, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio
Filed Mar. 26, 1973, Ser. No. 344,826
Int. Cl. H03k *5/00;* **H02h** *3/26*
U.S. Cl. 307—235 R **8 Claims**



In the present disclosure, a first supply voltage is monitored by a first differential amplifier through comparison with a reference potential. Clock pulses are monitored by an R-C diode network. The outputs from the first differential amplifier and the R-C diode network are applied to one input of a second differential amplifier. The other input of the second differential amplifier monitors a second supply voltage, with the output signal of the second differential amplifier being a signal which assumes a first state when the first and second supply voltages are of a proper value and the clock rate is also of a proper value. If either supply voltage or the clock period is not of a proper value, the output signal assumes a second state.

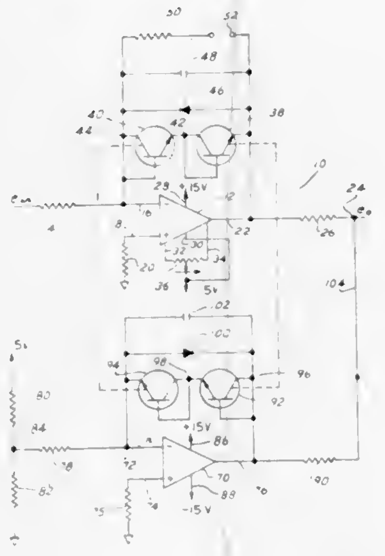
3,790,819
LOG AMPLIFIER APPARATUS

Morteza Chamran, Elmhurst, Ill., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Mar. 17, 1972, Ser. No. 235,565

Int. Cl. G06g *7/12, 7/24*

U.S. Cl. 307—229 **8 Claims**



An apparatus for increasing the stabilization of a logarithmic amplifier. In the embodiment disclosed, a first operational amplifier is provided to yield a logarithmic output. A semi-conductor device for providing a first logarithmic transfer characteristic is connected to the first amplifier. In order to prevent variation in the amplifier output resulting from the varying parameters of the semi-conductor device, the second amplifier is provided with the semi-conductor device and connected differentially to the first amplifier. The semi-conductor devices utilizes first and second PN junctions of semi-conductor material mounted in intimate thermal coupling on a single header or alternatively utilizes a monolithic integrated circuit including a substrate of semiconductor material and means on the substrate for providing the logarithmic transfer characteristic for the first amplifier and means on the substrate for providing the logarithmic transfer characteristic for the second amplifier both deposited on the substrate in intimate thermal coupling with each other.

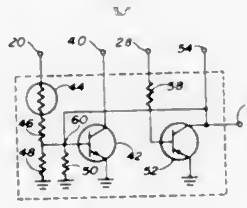
3,790,820
AUTOMATICALLY ADJUSTABLE SWITCHING CIRCUIT

James J. Jones, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 837,497, June 30, 1969, abandoned. This application Sept. 27, 1971, Ser. No. 184,222

Int. Cl. H03k *17/00*

U.S. Cl. 307—237 **4 Claims**



A vehicle skid control braking system including means for generating a signal having a magnitude varying in accordance with braking conditions such as vehicle speed, wheel speed and road surface conditions, circuit means for generating a retarding force signal proportional to such braking control factors and circuit means for generating a ramp signal varying in accordance with vehicle speed, and a speed switch responsive to vehicle wheel speed signals, retarding force signals and velocity ramp signals for producing a speed dependent control signal for controlling the vehicle braking system.

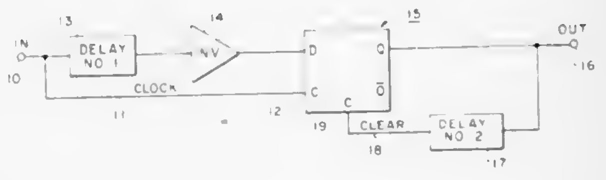
3,790,821
CIRCUIT FOR SUPPRESSION OF SPURIOUS PULSES RESULTING FROM RELAY OPERATION

Gerald P. Adamson, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Aug. 21, 1972, Ser. No. 282,884

Int. Cl. H03k *3/286, 5/00*

U.S. Cl. 307—247 A **11 Claims**



Pulses are generated by connecting the closure of a reed relay switch across a charged capacitor in an RC network. The pulses are then inverted and coupled into the "CLOCK" input of a "D" type flip-flop circuit.

3,790,822
CIRCUIT ARRANGEMENT FOR THE INTERRUPTION-FREE SWITCH-OVER FROM AN OPERATING CURRENT SUPPLY APPARATUS TO A STANDBY CURRENT SUPPLY APPARATUS

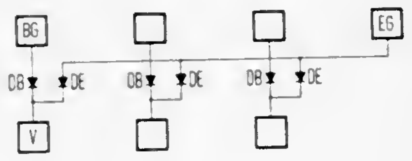
Fritz Giebler, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin und Munich, Germany

Filed Dec. 7, 1970, Ser. No. 95,448

Claims priority, application Germany, Dec. 29, 1969, P 19 65 315.7

Int. Cl. H03k *17/00*

U.S. Cl. 307—254 **3 Claims**



A switching circuit for switching a standby power supply into operation when the voltage output from the operating supply drops below a predetermined and adjustable minimum is described. The standby power supply is connected to the consumer apparatus over the emitter-collector path of a transistor. The transistor is rendered conductive in dependence on the voltage from said operating supply and the error signal generated by a supervision system in said operating supply.

3,790,823
HIGH-SPEED TRANSISTOR DIGITAL GATING

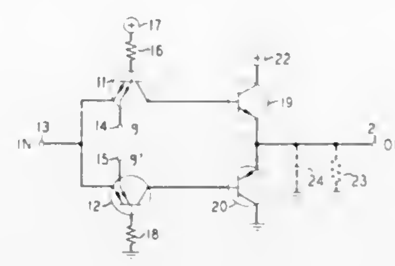
Bruce Edwin Briley, Countryside, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 3, 1972, Ser. No. 231,658

Int. Cl. H03k *17/00*

U.S. Cl. 307—255 **8 Claims**

A transistor digital gating circuit includes an output stage containing two transistors of opposite conductivity type which are held out of saturation at all times and an input stage containing two multiple-emitter transistors of opposite conductivity type which are kept in saturation continuously. The gate affords a high degree of isolation when disabled and avoids switching speed limitations which would be encountered if transistors were switched into and out of saturation.



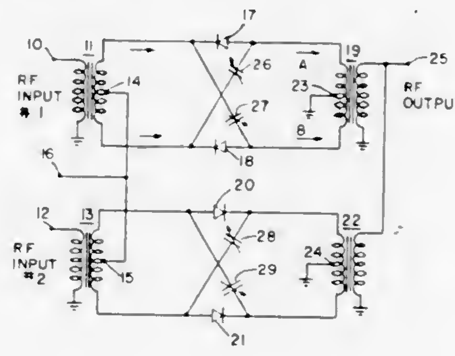
3,790,824
RADIO FREQUENCY SWITCHING CIRCUIT

John E. Krupa, Moorestown, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 10, 1972, Ser. No. 296,456

Int. Cl. H03k *17/00*

U.S. Cl. 307—256 **4 Claims**



A high speed switching circuit wherein the polarity of a control pulse determines which of two discrete RF signals is applied to an output terminal. Each RF signal is coupled through input and output transformer circuits to a common output terminal. A pair of diodes connected between the input and output transformers of one circuit are oppositely biased from similarly connected diodes in the other circuit. The control pulse is fed to a center tap of the secondary of each input transformer. Capacitive shunts are connected between each pair of diodes. Thus a simple switch is obtained having low power requirements, high speed and improved isolation.

3,790,825
GATE-DIFFUSION ISOLATION FOR JFET DEPLETION-MODE BUCKET BRIGADE CIRCUIT

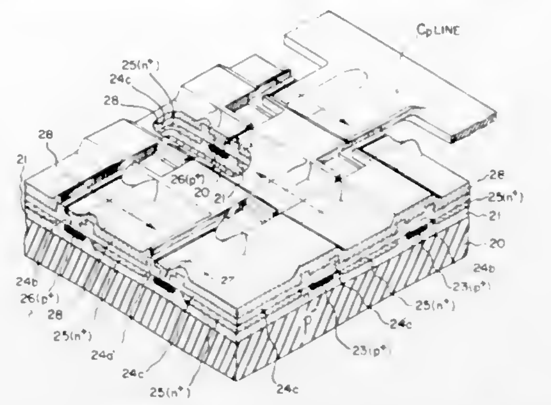
Mark B. Barron, and Walter J. Butler, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 10, 1972, Ser. No. 295,872

Int. Cl. H01l *19/00*

U.S. Cl. 307—304 **12 Claims**

Undesired coupling of JFET bucket-brigade stages through the epitaxial layer in a monolithic integrated bucket-brigade circuit is prevented by isolation diffusion regions formed in the epitaxial layer along the two sides of a row of bucket-brigade stages. The isolation diffusion regions are slightly spaced from the JFET gate diffused regions and are reverse-biased so that depletion regions extend down to the substrate. The close spacing of the gate and isolation diffusion regions results in the gate and isolation depletion regions joining upon application of voltage to the gate to pinch off the transistor. The storage capacitors of the bucket-brigade stages are MOS devices formed by metal layers overlapping the JFET drain electrode regions diffused in the epitaxial layer with the capacitor dielectric being a dielectric layer therebetween.



3,790,826
HIGH VOLTAGE GENERATING DEVICE HAVING AN OPERATIONAL MONITORING DEVICE

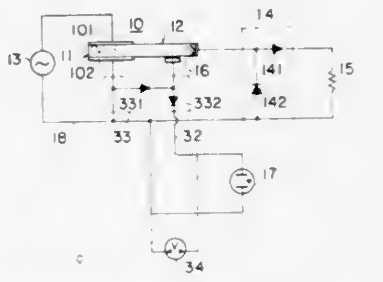
Takehiko Kawada, Yokohama, Japan, assignor to Denki Onkyo Co., Ltd., Tokyo, Japan

Filed Dec. 19, 1972, Ser. No. 316,474

Claims priority, application Japan, Dec. 23, 1971, 47-1306

Int. Cl. H04r *17/00*

U.S. Cl. 310—8.1 **21 Claims**



A high voltage generating device consisting of a ceramic transformer and a drive power source, said ceramic transformer being composed of a drive portion and electrical generating portion integral therewith and said drive power source being adapted to supply a drive voltage to said drive portion. This high voltage generating device is provided with a novel operational monitoring device which is adapted to operate for identifying the normal operation of said ceramic transformer by using the voltage induced to an electrical receiving unit located in the close vicinity of said electrical generating portion of said transformer.

3,790,827
PIEZO-ELECTRIC CONTROL DEVICE FOR CLOCK WORK AND THE LIKE TIMING SYSTEMS

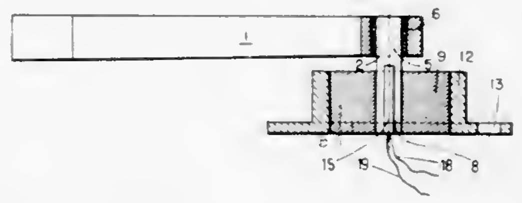
Louis C. C. Brunet, Le Bois Jettaz, Le-Vieux, and Pierre R. P. Corroyer, 82, Avenue de la Plaine, Annecy, both of France

Filed Nov. 18, 1971, Ser. No. 199,890

Claims priority, application France, Sept. 27, 1971, 71.36861

Int. Cl. H04r *17/00*

U.S. Cl. 310—9.4 **3 Claims**



A piezo-electric control device more particularly for clockwork. A vibrating rod is mounted at one end by means of a dielectric on the free end of a piezo-electric rod, the other end portion of which is supported by a dielectric and flexible elastic bushing on a support adapted to be secured to the mounting plate of a watch or the like. Electrodes are applied to the piezo-electric rod, to transmit a voltage variation corresponding to the oscillating frequency of the vibrating rod to an electronic maintenance oscillator acting on a known device for maintaining vibration of the rod. The resulting device is highly accurate and, because there is no vibration transmitted to the watch casing and wrist band, the timing mechanism is in turn not affected by variable energy transferred from the environment, which would affect the isochronism of the vibrating rod.

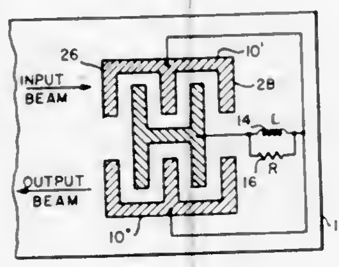
3,790,828
ELECTROACOUSTIC SURFACE ACOUSTIC WAVE BEAM DEFLECTOR

Gene Chao, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 23, 1972, Ser. No. 265,867

Int. Cl. H04r *17/00*

U.S. Cl. 310—9.7 **5 Claims**



Means for reflecting a microwave surface acoustic wave to provide long delays (long path length) on normally sized piezoelectric crystals comprising reflecting transducers, each consisting of a pair of interdigital transducers in a back-to-back arrangement with electrical components for tuning out the distributed capacity of the transducers and for loading the transducers for maximum efficiency relative to their radiation resistance. The transducers and components are fabricated as thin films on a piezoelectric crystal substrate.

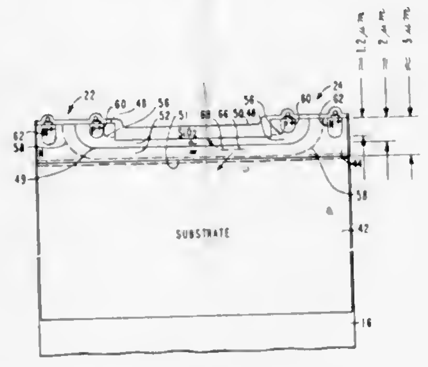
3,790,829
THERMOELECTROMAGNETIC ENERGY CONVERSION SYSTEM

Gregory L. Roth, 5712 Park West Cir., Alhambra, Calif.

Filed July 13, 1972, Ser. No. 271,246

Int. Cl. H02n *3/00*

U.S. Cl. 310—4 **16 Claims**



A thermoelectromagnetic energy conversion system includes a p-n semiconductor junction having a space charge region on either side thereof and a magnet providing a magnetic flux through the space charge region in a direction parallel to the junction, and a source of thermal energy. Electrical contact may be made to two end regions of the junction which are spaced apart in a longitudinal direction perpendicular to the flux direction and centrally located dielectric regions on either side of the depletion region permit electrical communication between the end regions only through the depletion region. As electrons and holes which are thermally generated within the space charge region drift toward the edges thereof, the magnetic flux provides a longitudinally directed force on the mobile carriers which establishes a voltage potential between the two end regions.

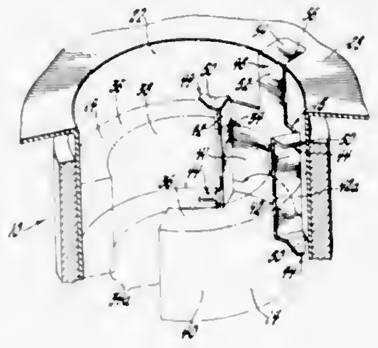
3,790,830
MAGNET MOUNTING CLIP FOR A DYNAMOELECTRIC MACHINE

Charles P. Bonfiglio, Rochester, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 9, 1972, Ser. No. 279,044

Int. Cl. H02k *15/00*

U.S. Cl. 310—42 **2 Claims**



This disclosure relates to a magnet mounting clip for retaining arcuately shaped magnets within a cylindrical, annular housing of a dynamoelectric machine. The clip comprises a pair of deflectable bent end flanges positioned between the magnets and which are adapted to engage the respective end portions of the magnets to bias the magnets apart and into circumferential engagement with the inside of the housing. The clip also comprises a pair of end tabs on said bent end flanges and which are adapted to engage the respective opposite side portions of each magnet to retain the magnets in an axial relationship with each other within the housing. A key means or tab between the bent end flanges is also provided for cooperating with the housing to prevent circumferential and axial movement of the magnets relative to the housing.

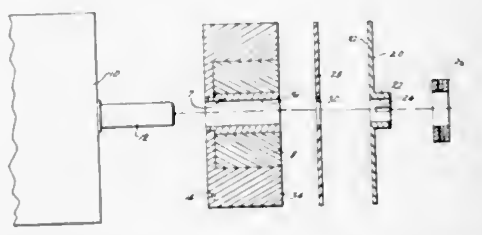
3,790,831
APPARATUS FOR DAMPING OSCILLATIONS IN A STEPPING MOTOR

Anthony P. Morreale, Whittier, Calif., assignor to Computer Devices Corporation, Sante Fe Springs, Calif.

Filed June 9, 1972, Ser. No. 261,501

Int. Cl. H02k *7/02*

U.S. Cl. 310—74 **2 Claims**



A stepping motor damping unit in which the freely rotating flywheel is journaled on the shaft of a stepping motor. The flywheel is provided with a permanent magnet. A plate of magnetic material is secured to the shaft of the motor and the magnet of the flywheel attracts it to the plate. A disk of friction material is positioned between adjacent parallel surfaces of the flywheel and the plate to provide a non-magnetic gap and at the same time provide wear-resistant low friction surfaces allowing for relative rotation between the plate and the flywheel.

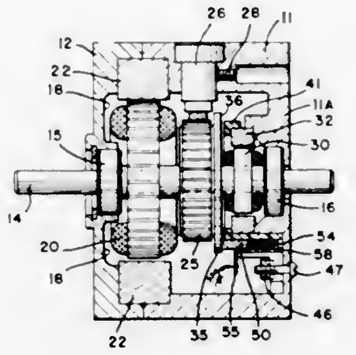
3,790,832
MOTOR-TACHOMETER

Jayant K. Patel, Dayton, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Feb. 3, 1972, Ser. No. 223,089

Int. Cl. H02k *47/04*

U.S. Cl. 310—113 **1 Claim**



A combined motor and tachometer in a single housing incorporates an axial commutator for the motor and a radial commutator for the tachometer, in back-to-back relation, providing a maximum length reluctance path between the field for the motor and the field for the tachometer, and also between the armature of the motor and the armature of the tachometer. In this manner, the relatively sensitive tachometer is effectively isolated from adverse affects of the relatively heavier motor field.

3,790,833
SYNCHRONOUS MOTOR

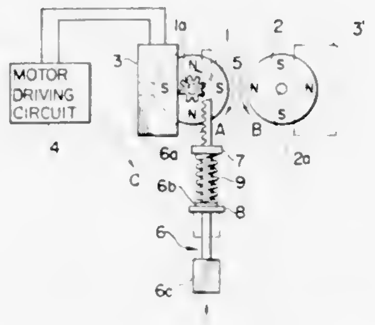
Sukehiro Hasebe, Sukagawa, Japan, assignor to Kabushiki Kaisha Koparu, Yokyo, Japan

Filed May 24, 1973, Ser. No. 363,316

Claims priority, application Japan, May 26, 1972, 47/52357; May 26, 1972, 47/52358

Int. Cl. H02k

U.S. Cl. 310—162 **3 Claims**



A non-self-starting type synchronous motor comprises a pair of permanent-magnet rotors rotatable in directions opposite to each other by means of magnetic coupling in order to prevent the rotational motion of the rotators from being stopped by step-out of the synchronous motion because of vibration or impact and also a field coil for giving a turning force to said pair of rotors.

3,790,834
LOW SPEED SYNCHRONOUS MOTOR

Tetsuro Tanaka, 2, Shimo-Kamo Yako-cho, Sadyo-ku, Kyotoshi, Japan

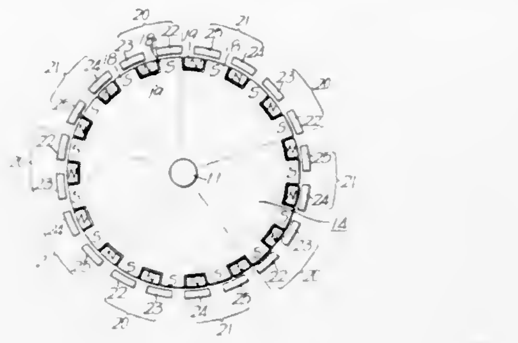
Filed Nov. 11, 1971, Ser. No. 197,872

Claims priority, application Japan, Nov. 21, 1970, 45/102415; Aug. 4, 1971, 46/58332

Int. Cl. H02k *19/02*

U.S. Cl. 310—162 **7 Claims**

A plurality of stationary poles, each comprising a pair of sub-poles, are disposed in opposite relationship with a plurality of rotor magnet poles. The ratio of the number of stationary poles to the number of rotor magnet poles is chosen to be 2:3, 2:5 or 3:5 alternatively. A rotating magnetic field is produced in the array of stationary poles, and for every $\pi/2$ interval of the period thereof, the rotor maintains a stabilized position in which there exists at least one set of a stationary sub-pole and a rotor pole of opposite polarities and attracted to each other. Also in this position, there exist an even number of sets of one sub-pole of a stationary pole and a rotor pole which are of like polarity, are displaced in angular position from each other and repel each other, these different sets producing a balance between their rotating efforts acting upon the rotor.



3,790,835
DISC ARMATURE

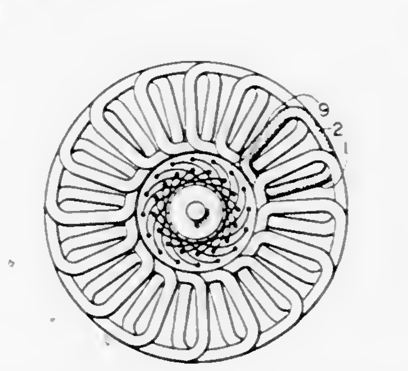
Naozi Takeda, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 7, 1972, Ser. No. 232,481

Claims priority, application Japan, Mar. 10, 1971, 46/13335; June 18, 1971, 46/44376; June 23, 1971, 46/45933; June 30, 1971, 46/48432; Oct. 4, 1971, 46/78072; June 30, 1971, 46/57492

Int. Cl. H02k *1/22, 13/04*

U.S. Cl. 310—268 **3 Claims**



A disc armature having a plurality of armature coils assembled in the form of a disc, each coil comprising at least one turn of conductor covered with insulating sheath, the thickness of the effective portion of the armature winding or the coil side portion which lies within the field air-gap being equal to that of one individual armature coil and the coil end portions of the armature winding being thickner than the coil side portion since the coil ends of one individual armature coil overlap those of another, and the thicker coil end portions being accommodated in a space defined by the field magnet and the frame so that a very high space factor can be attained.

3,790,836
COOLING MEANS FOR ELECTRODES

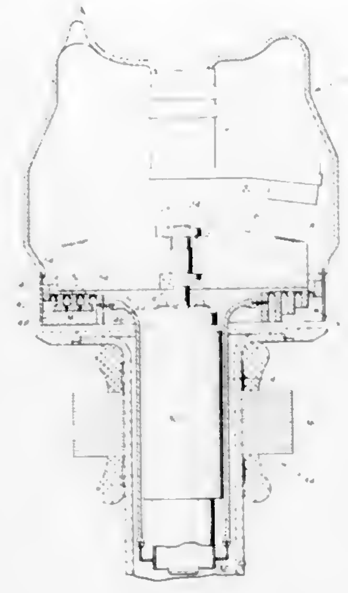
Martin Braun, 1435 Bedford St., Stamford, Conn.

Filed Oct. 2, 1972, Ser. No. 293,904

Int. Cl. H01j *1/02, 7/24, 35/10*

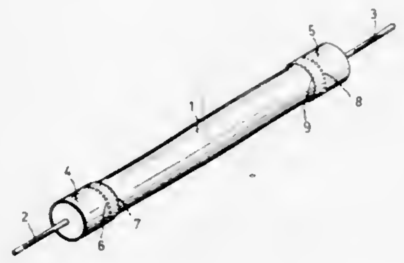
U.S. Cl. 313—13 **20 Claims**

An electron discharge device having a movable electrode within an evacuated envelope, and means comprising retractable elements associated with the envelope and movable into engagement with the electrode for providing a thermally conductive path for dissipation of heat from the electrode outside the envelope.



3,790,837
METHOD OF MAKING A GAS- AND/OR VAPOUR DISCHARGE TUBE READY FOR OPERATION

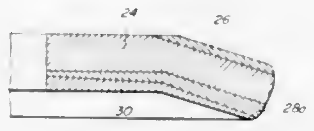
Abraham Timmermans, Emmasingel, Eindhoven, Netherlands
Filed May 4, 1972, Ser. No. 250,348
Claims priority, application Netherlands, May 8, 1971, 7106348
Int. Cl. H01j *1/02, 61/52*
U.S. Cl. 313—44 **6 Claims**



The invention relates to a method of making a discharge tube, for a high pressure sodium vapour discharge lamp, ready for operation by adjusting a heat shield. According to the invention the heat shield consists of a ductile metal strip provided with perforations. The heat shield is adjusted by tearing off a portion of this heat shield on these perforations until the correct temperature is obtained in the operating condition of this discharge tube.

3,790,838
X-RAY TUBE TARGET

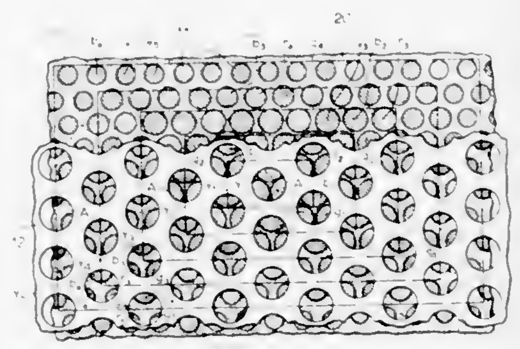
Charles L. Baum, Stamford, Conn., assignor to The Machlett Laboratories, Incorporated, Springdale, Conn.
Filed Feb. 27, 1973, Ser. No. 336,283
Int. Cl. H01j *35/10*
U.S. Cl. 313—60 **11 Claims**



A target for anodes of X-ray tubes, particularly rotating anodes, having a compensated bimetallic structure which comprises a base matrix carrying coatings of selected material on both opposed surfaces for resisting distortion caused by high thermal energies.

3,790,839
RECTANGULAR GRADE BLACK SURROUND SCREEN

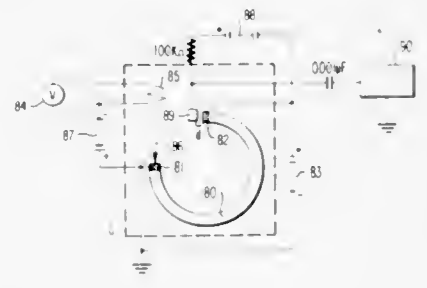
Leonard Dietch, Skokie, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Apr. 4, 1972, Ser. No. 240,931
Int. Cl. H01j *29/32*
U.S. Cl. 313—92 R **7 Claims**



The screen structure of a black surround type rectangular color cathode ray tube has a plurality of viewable image elements which decrease in area from the center of the faceplate to the periphery. However, instead of having a uniform grade in all radial directions from the center, the viewable image elements of similar area are located along a substantially rectangular locus centered with respect to the face plate.

3,790,840
SECONDARY ELECTRON MULTIPLYING DEVICE USING SEMICONDUCTOR CERAMIC

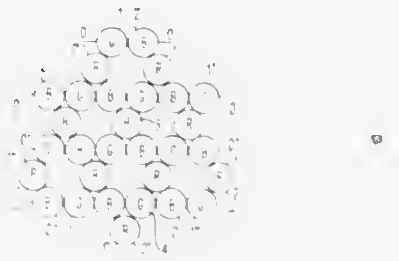
Minoru Toyoda, Takatsuki, Japan, assignor to Murata Manufacturing Co., Ltd., Otokuni-gun, Kyoto-fu, Japan
Filed Mar. 31, 1972, Ser. No. 240,032
Int. Cl. H01j *43/00*
U.S. Cl. 313—105 **11 Claims**



A secondary electron multiplying device having high sensitivity for various kinds of electrically charged particles (e.g. electrons, positive ions, negative ions), X-rays, radio active rays, etc., is made of a molded article of a zinc oxide-titanium oxide type semiconductor ceramic, and is provided with at least two electrodes and having at least one hole. The molded article of the device can be produced in form of a single tube or a bundle of a plurality of such tubes. Electrons fed into the tube or tubes impact with the semiconductor ceramic causing secondary electron emission and the number of electrons emitted is greater than the number of electrons fed into the device.

3,790,841
GAS DISCHARGE DISPLAY FIELD FOR MULTICOLOR DISPLAY

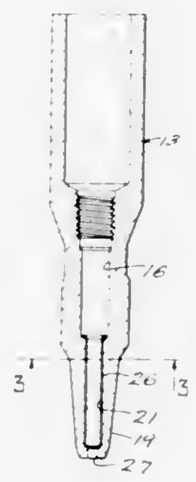
Frank Tsui, and Katherine Tsui, both of Boeblingen, Germany, assignors to International Business Machines Corporation, New York, N.Y.
Filed Jan. 15, 1973, Ser. No. 323,585
Int. Cl. H01j *1/62*
U.S. Cl. 313—108 B **10 Claims**



A gas discharge display/storage apparatus in which a multicolor display is achieved by a combination of a modified plasma display apparatus and associated cell driving configuration. The apparatus includes two display panels in a sandwich arrangement having one common drive line, the drive system comprising a three-coordinate nonorthogonal selections system, each of the coordinates being displaced by 120°. The individual cells may be arranged in various configurations, each cell having a phosphor representative of one of three basic colors, red, blue and green, whereby coincident selection of selected cells provide the multicolor display.

3,790,842
SPARK PLUG

Frank A. Westenkirchner, Toledo, Ohio, and Paul E. Rempes, Jr., Royal Oak, Mich., assignors to Champion Spark Plug Company, Toledo, Ohio
Division of Ser. No. 224,456, Feb. 8, 1972. This application Mar. 5, 1973, Ser. No. 337,916
Int. Cl. H01t *13/16*
U.S. Cl. 313—118 **3 Claims**



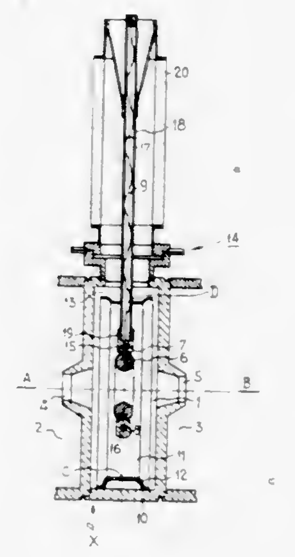
In a spark plug including an insulator mounted in a tubular shell and an electrode assembly mounted within a bore through the insulator and projecting from a nose portion of the insulator to define a spark gap with a ground electrode, a method for improving the resistance of the nose portion to cracking caused by thermal stresses. The electrode assembly includes a high heat conducting portion in close proximity with the wall of the portion of the bore extending through the nose portion of the insulator. The method comprises applying a coating of a glaze slip to the interior wall of the portion of the insulator bore which will be in proximity with the heat conducting portion of the electrode and then firing the glaze at a controlled time and temperature to form an uninterrupted glassy coating on at least the portion of the nose bore adjacent the end of the insulator. The fired glaze must have a lower coefficient of thermal expansion than the insulator, an appreciably lower thermal conductivity than the insulator and a softening temperature above the highest operating temperature encountered by the glazed bore wall.

ERRATUM

For Class 313—299 see:
Patent No. 3,790,000

3,790,843
ELECTROSTATIC FOCUSSING DEVICES ESPECIALLY FOR MICROWAVE TUBES

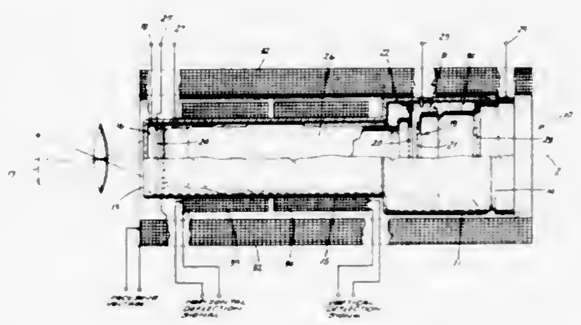
Alain Bert; Roger Enjalbert, and Pierre Kern, all of Paris, France, assignors to Thomson-CSF, Paris, France
Filed Apr. 5, 1972, Ser. No. 241,163
Claims priority, application France, Apr. 27, 1971, 71.14989
Int. Cl. H01j *23/08*
U.S. Cl. 315—5.34 **9 Claims**



The focussing devices of the invention comprise a metal electrode (**6**) assembled in the envelope (**10**) through which the electron beam being focussed propagates; said assembly being realised by means of a fixing system comprising a flexible skirt (**11**) attached around the envelope, and rigid insulating components rigidly attached on the one hand to the electrode (**6**) and on the other to the skirt (**11**).

3,790,844
IMAGE COMPARISON TUBE AND METHOD OF COMPARING RADIATION IMAGES

C. Scott Nevin, Albion, Ind., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed June 22, 1965, Ser. No. 465,922
Int. Cl. H01j *31/48*
U.S. Cl. 315—11 **12 Claims**



An image comparison tube stores a first image on a storage electrode and projects a deflectable second image thereon to provide an output signal dependent upon the coincidence of the two images. Electrons generated by the second image passing through the storage electrode are accelerated and focused onto a collector anode which may be a portion of an electron multiplier or a display screen.

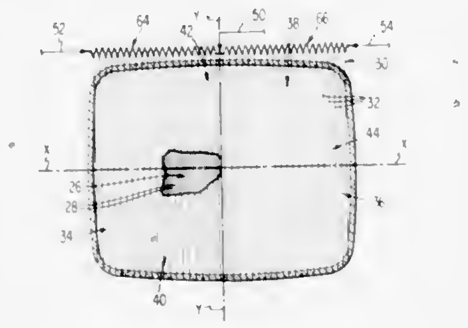
3,790,845
FOCUS-GRILL CATHODE-RAY TUBE IMAGE REPRODUCER MODULATION WITH GRILL VOLTAGE

Francis Joseph Campbell, Yardley, Pa., assignor to RCA Corporation, New York, N.Y.

Filed June 28, 1972, Ser. No. 267,063

Int. Cl. H01j *29/70*

U.S. Cl. 315—31 R **5 Claims**



Voltage applied to the grill of a focus-grill, color cathode ray tube is modulated at vertical scanning frequency. When scanning along the top and bottom edge portions of the grill, potential applied to the intermediate portion of the grill is increased, thereby correcting for overfocus in the vicinity of the vertical axis by narrowing the width of the focused electron beam on the screen. This avoids color impurity at the top and bottom regions of the screen. When scanning along the region of the horizontal axis, potential applied to the intermediate portion of the grill is decreased, thereby correcting for underfocus in the vicinity of the vertical axis by narrowing the width of the focused beam and thus avoiding color impurity in that region. The voltage modulations are progressively proportioned or damped by resistor means in directions outwardly toward the left and right edge portions of the grill, to which constant potential is applied. Damping the applied voltage modulation to a constant potential avoids color impurity at the edge portions, which have very high color purity sensitivity to grill voltage change.

3,790,846
AUTOMATIC LOAD MONITORING AND TRANSFER CIRCUIT

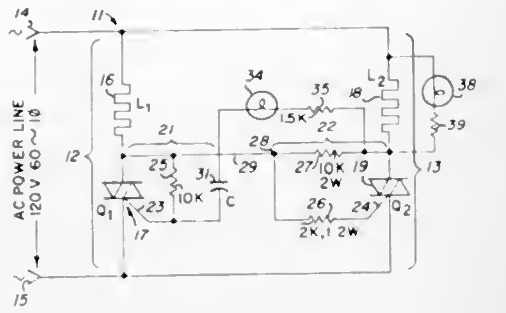
Marion H. Morris, 1810 Austin Ave., Los Altos, Calif.

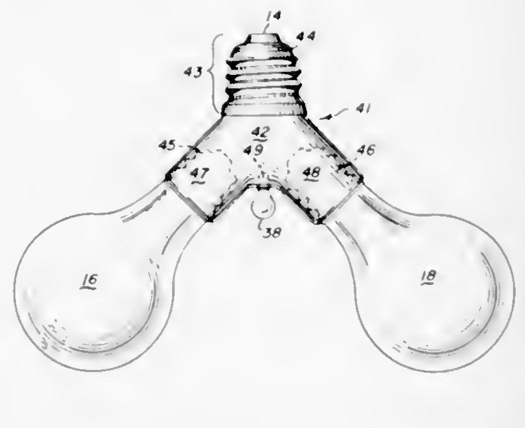
Filed Dec. 18, 1972, Ser. No. 316,263

Int. Cl. H05b *39/10*

U.S. Cl. 315—91 **10 Claims**

Primary and standby loads are connected in parallel with a source of AC power. Primary and standby bidirectional thyristors are connected in series with the primary and standby loads respectively. Gate control circuits for the bidirectional thyristors are coupled together in such a manner that as one of the gate control circuits is energized it shunts current from the other to provide a bistable mode of operation. A phase shifter is provided for advancing the phase of the gate current to the primary thyristor relative to the phase of the gate current to the standby thyristor to initiate operation of the primary load. Upon an open circuit failure of the primary load, operation automatically switches to the standby load. The entire load monitoring and transfer circuit is conveniently housed in a twin lamp light socket. An indicator light is provided for indicating that the standby load is in operation or that the standby load is good as held in reserve.





3,790,847
ARRANGEMENT PROVIDED WITH AN ELECTRONIC FLASH BULB

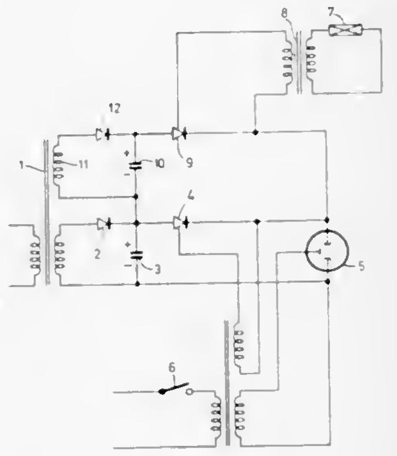
Harald Hintz, Hamburg, Germany, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed Feb. 24, 1970, Ser. No. 13,373

Claims priority, application Germany, Mar. 1, 1969, P 19 10 544.3

Int. Cl. H05b *37/00*

U.S. Cl. 315—151 **13 Claims**



The invention relates to an arrangement provided with an electronic flash bulb which is fed from a main capacitor.

In a known arrangement a so-called quench tube is arranged across the bulb. This quench tube is ignited when sufficient light is emitted by the bulb. A drawback of the known arrangement is that the main capacitor is substantially discharged when this quench tube is ignited.

The invention provides a solution wherein the bulb is fed through a thyristor which is extinguished after some time by a circuit including a second thyristor. The advantage is that the main capacitor is now less discharged and the arrangement is thus sooner ready for the next flash.

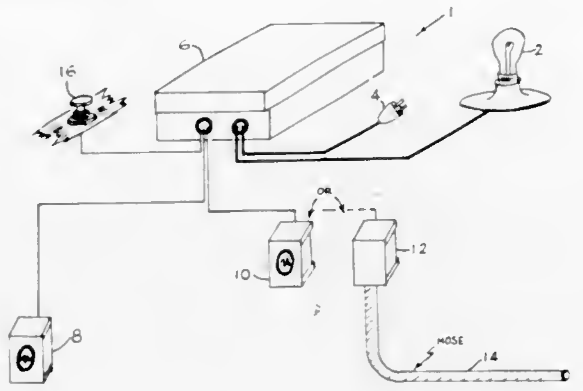
3,790,848
AUTOMATIC LIGHT CONTROL SYSTEM

Thomas K. Y. Lai, 38A Nialopa Pl., Honolulu, Hawaii

Filed Apr. 10, 1972, Ser. No. 242,351

Int. Cl. H05b *37/02, 39/04, 41/36*

U.S. Cl. 315—155 **18 Claims**



Garage lights are automatically turned on by a photocell which is illuminated by automobile headlights. A timing circuit keeps the lights on for a predetermined period after automobile headlights are turned off. House current is stepped down, rectified and smoothed. Direct current is applied across a variable voltage divider. A starter which may be a push button, a headlight receiving photocell or a roll over switch supplies voltage to a mid point of the divider. Voltage at the mid point is reduced during daylight hours by an exterior photocell in a conductive condition. During darkness the exterior photocell's high resistance as compared to the low resistance of a headlight actuated photocell creates a high mid point voltage. The high mid point voltage breaks down a zener diode, gating current to a capacitor and biasing an electronic switch for turning on the garage lights. When the voltage applied to the breakdown device falls, the gate turns off, and the capacitor slowly discharges through a resistor. A directional limiting device in the gate and cascaded transistors in the switch biasing connection prevent discharge of the capacitor except through the desired resistor. The electronic switch employs cascaded transistors for controlling the application of direct current to a reed relay. Power contacts of the relay complete a diac circuit, which biases on a triac, turning on the lights.

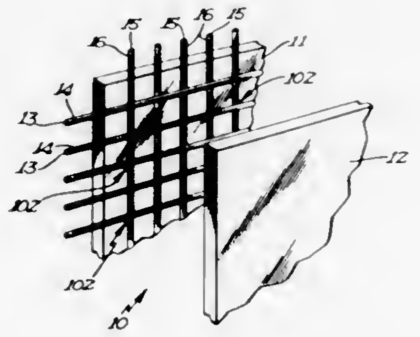
3,790,849
CAPACITIVE MEMORY GAS DISCHARGE DISPLAY DEVICE HAVING INTERNAL CONDUCTORS

William N. Mayer, White Bear Lake; Richard A. Strom, Minneapolis, and Meredith S. Ulstad, Edina, all of Minn., assignors to Control Data Corporation, Minneapolis, Minn.

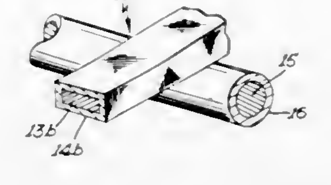
Filed Apr. 24, 1972, Ser. No. 247,073

Int. Cl. H05b *37/00*

U.S. Cl. 315—169 TV **2 Claims**



A capacitive memory gas discharge display device having a pair of drive lines for each cell of the device located directly within the gaseous environment. The conductors are at least partially covered with a dielectric serving as a means of providing a uniform spacing between the wires, a means to keep the wires from shorting and a means for developing a capacitive charge from the firing of the cell, such charge providing a memory for the particular cell such that the voltage required for refiring the cell is less, by the amount of the charged voltage, than the voltage required for the initial firing.



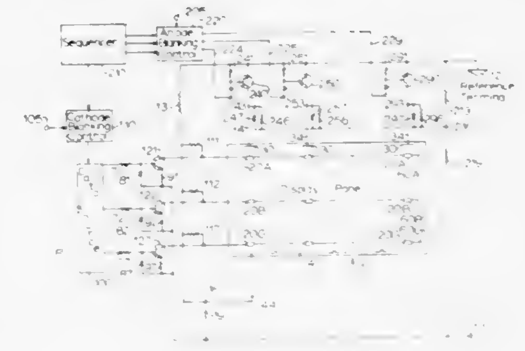
3,790,850
APPARATUS FOR OPERATING MULTIPLE POSITION DISPLAY TUBES

John C. Doane, Somerset; George E. Holz, North Plainfield; James A. Ogle, Neshanic Station, and Arpod Samlyody, Somerville, all of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Filed Feb. 1, 1973, Ser. No. 328,761

Int. Cl. H05b *41/00;* **H01j** *17/48*

U.S. Cl. 315—169 TV **19 Claims**



The apparatus of the invention is adapted for operating multiple position display devices having a plurality of groups of display cathode segments or elements, with corresponding elements electrically interconnected, an anode electrode associated with each group of display segments, and an auxiliary electrode common to all of the groups of electrodes for preventing spurious glow between them. The simplified circuit biases the OFF cathodes from a voltage divider common to them and the auxiliary electrode, thus eliminating separate biasing for the OFF cathodes. The signals applied to the display tube or panel are also blanked during an interval in advance of signal transitions in the device, for inhibiting spurious glow under varying conditions of operation. Voltage divider apparatus also is provided for biasing the OFF anodes in a nonconductive state at a potential proportional to the tube bias potentials.

3,790,851
ELECTRON BEAM TUBE WITH MOVING DISPLAY OR MEMORY

John A. Baring, Golden, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

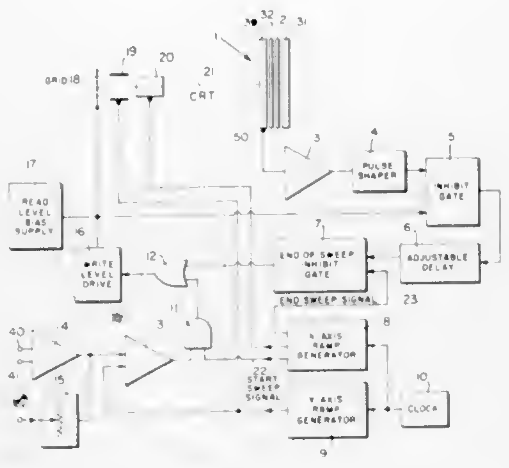
Continuation of Ser. No. 25,882, April 6, 1970, abandoned.

This application Aug. 9, 1972, Ser. No. 278,960

Int. Cl. H01j *29/70*

U.S. Cl. 315—22 **10 Claims**

A signal display tube includes composite strips placed uniformly across a phosphor coating of the screen. Each strip comprises a photoconductive, a conductive and an insulative member. The electron beam sweeps the viewing screen with an intensity insufficient to excite the phosphor coating. The presence of a bright spot is sensed by an adjacent composite strip, which then causes the electron beam to produce a new bright spot. The time involved between sensing existing spots and producing new ones is such that the existing bright spots either move laterally or are refreshed in the same position.

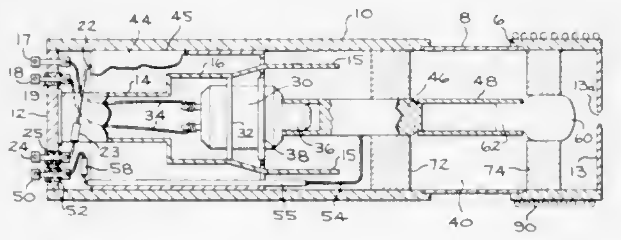


3,790,852
MICROWAVE-EXCITED LIGHT EMITTING DEVICE

Larry R. Bolin; Claude Hopper, Jr., both of Owensboro, Ky., and Shelby A. Jolly, Rockport, Ind., assignors to General Electric Company, Owensboro, Ky.

Filed Apr. 28, 1972, Ser. No. 248,478
Int. Cl. H05b *41/24*

U.S. Cl. 315—267 **9 Claims**



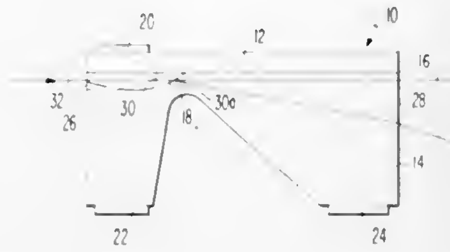
A microwave-excited light emitting device is provided comprising an electrodeless evacuated discharge lamp containing ionizable elements and mounted in the frequency determining resonator of a microwave oscillator. The oscillator resonator is tuned to provide a microwave frequency of sufficiently high frequency to provide ionization and excitation of the elements within the electrodeless discharge lamp while mitigating deterious ion bombardment of the walls of the electrodeless discharge lamp. By placing the lamp in the oscillator resonator any changes in the electrical characteristics of the lamp after firing will cause a frequency change in the oscillator allowing the lamp and the oscillator to remain in tuned relationship. However, the oscillator is further provided with thermal isolation means to isolate the lamp from the active device within the oscillator such as a vacuum tube or a solid state device. The light-emitting device is further provided with heating means to conduct externally generated heat to the lamp thermally independently of the active device. In this manner the lamp may be operated at a steady, and preferably elevated, temperature without exposing the active device to excessive heat which would have a deleterious effect on the life of the active device.

3,790,853
SEMICONDUCTOR LIGHT RAY DEFLECTOR

Jacques Isaac Pankove, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 19, 1973, Ser. No. 325,074
Int. Cl. H01l *15/00*

U.S. Cl. 317—235 R **8 Claims**



A semiconductor light ray deflector is presented which provides for the deflection of rays of light due to changes in the refractive index within a semiconductor caused by modulation of the distribution of excess carriers in the semiconductor.

3,790,854
APPARATUS FOR REMOVING STATIC CHARGE FROM WEBS OF MATERIAL

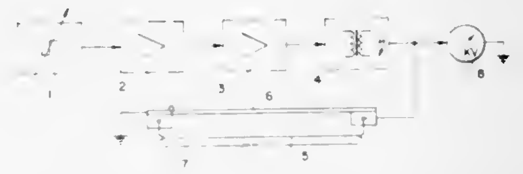
Kurt Dryczynski; Heinz Kramer; Dieter Messner, and Walter Seifried, all of Wiesbaden-Biebrich, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden, Biebrick, Germany

Filed Sept. 7, 1971, Ser. No. 178,313

Claims priority, application Germany, Sept. 10, 1970, 2044828

Int. Cl. H05f *3/04;* **H01t** *19/00*

U.S. Cl. 317—2 F **29 Claims**



This invention relates to a method and apparatus for discharging a statically charged web of material. The method comprises bombarding the web with charge carriers produced by a high-frequency A.C. voltage of 1 to 1,000 kilocycles per second and having a current intensity of between a few μ amp./cm of web width and several hundred μ amp./cm of web width.

3,790,855
ELECTRONIC CONTROL MODULE FOR ANTI-SKID BRAKING SYSTEMS

Allen F. Hillman, Jr., Muncy, Pa., assignor to GTE Laboratories Incorporated, Waltham, Mass.

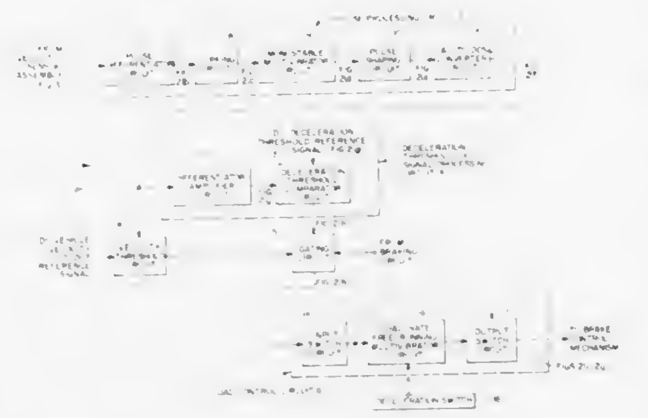
Filed Dec. 4, 1972, Ser. No. 311,927
Int. Cl. B60t *8/08;* **G01p** *15/08*

U.S. Cl. 317—5 **15 Claims**

An electronic control module for an automatic anti-skid braking system for vehicles such as automobiles. A velocity-sensing mechanism associated with a vehicle operates while the vehicle is in motion to produce a pulse train having a frequency varying in direct proportion to the rotational velocity of the rear wheels. The varying-frequency pulse train is converted to an amplitude-varying dc "velocity" voltage signal, also directly proportional to the rotational velocity of the rear wheels, and differentiated by a capacitor included in a differentiator-amplifier circuit to produce positive-going and negative-going voltage pulses corresponding respectively, to increases and decreases in the voltage level of the "velocity" voltage signal. The negative-going voltage pulses, corresponding to decreases in velocity, are then amplified and inverted by

the differentiator-amplifier circuit and compared with a dc "-deceleration" reference voltage having a value corresponding to a predetermined value of wheel deceleration existing during braking of a vehicle and indicating the imminence of a skidding or wheel lock-up situation.

If the wheel deceleration of a vehicle being braked exceeds the predetermined value of wheel deceleration at any given moment, thereby indicating an impending wheel lock-up situation, and, in addition, the decelerating vehicle is traveling at a velocity exceeding a predetermined cut-out velocity below which anti-skid braking operation is not considered necessary (e.g., below five miles/hour), an output pulse is produced by the differentiator-amplifier circuit which exceeds the value of the dc "deceleration" reference voltage level. A load control pulse is then produced and applied to a load control circuit. The load control circuit operates in response to the load control pulse, and also to voltages from a vehicle deceleration switch associated with the vehicle, to apply to a load (e.g., a brake-control mechanism) control signals of either a first repetition rate or a second repetition rate for releasing the brakes of the vehicle. Control signals of the first repetition rate are applied to the load when a first voltage is produced by the deceleration switch during an impending wheel lock-up situation and control signals of the second repetition rate are applied to the load when a second voltage is produced by the deceleration switch during an impending wheel lock-up situation. The first voltage is produced by the deceleration switch when the vehicle being braked is decelerating at a rate less than a predetermined rate and, when it occurs during an impending wheel lock-up situation, indicates that the road surface on which braking is taking place has a low coefficient of friction, that is, it is a wet road surface or a snow, ice, or oil-covered surface. The second voltage is produced by the deceleration switch when the vehicle being braked is decelerating at a rate greater than the predetermined rate and, when it occurs during an impending wheel lock-up situation, indicates that the road surface on which braking is taking place has high coefficient of friction, that is, it is a dry road surface.



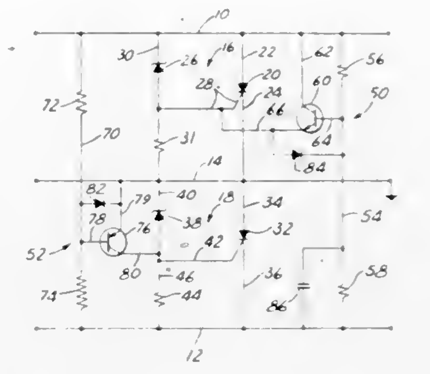
3,790,856
OVERVOLTAGE PROTECTION CIRCUIT FOR DUAL OUTPUTS OF OPPOSITE POLARITY

Homer F. Hutchinson, Wheaton, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed June 4, 1973, Ser. No. 367,064
Int. Cl. H02h *3/20*

U.S. Cl. 317—16 **11 Claims**

An overvoltage protection circuit for two output circuits having output voltages of opposite polarity relative to ground includes a crowbar overvoltage protection circuit for each of the outputs, each comprising a thyristor which is triggered by a zener diode which becomes conductive if the voltage of the output exceeds a predetermined value. The two crowbar circuits are interconnected so that triggering of either of the thyristors will trigger the other thyristor and clamp both output circuits to approximately ground potential.

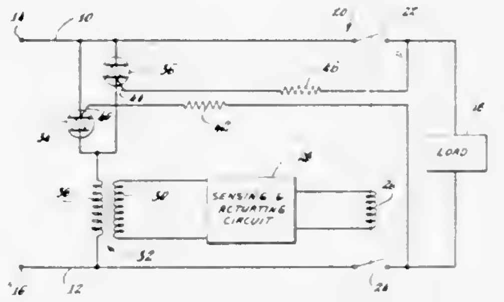


3,790,857
PROTECTIVE CIRCUIT FOR NONSEQUENCING MULTIPOLE GROUND FAULT CIRCUIT INTERRUPTER

Sung Chuel Lee, Bridgeport, and Paul Muchnick, Norwalk, both of Conn., assignors to Harvey Hubbell Incorporated, Bridgeport, Conn.

Filed Dec. 29, 1972, Ser. No. 319,186
Int. Cl. H02h *3/28*

U.S. Cl. 317—18 D **15 Claims**



A protective circuit for a ground fault interrupter having a multipole circuit interrupter for ensuring that the sensing and actuating circuit is energized as soon as any one of the poles of the circuit interrupter closes, thereby preventing potential hazards. More specifically, switching devices each responsive to the closing of a different pole are connected between the sensing and actuating circuit and the power source. As soon as any one of the poles closes, the sensing and actuating circuit is energized. The circuit is arranged so that the sensing and actuating circuit is deenergized when all the poles are open to reduce the consumption of energy and the wear on the circuit components.

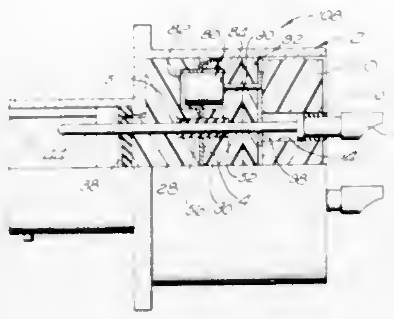
3,790,858
ELECTRICAL CONNECTOR WITH COMPONENT GROUNDING PLATE

Salvatore T. Brancaleone, Scottsdale, and Leland W. Oliver, Tempe, both of Ariz., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 29, 1973, Ser. No. 327,682
Int. Cl. H05k *7/04*

U.S. Cl. 317—99 **14 Claims**

An electrical connector in which circuit components are integrated into the connector by mounting the same within the grounding plate in the shell of the connector. Conductors of the circuit components are connected to selected electrical contact elements in the connector preferably by means of a printed circuit board which is removably mounted in the shell of the connector. Examples of circuit components which may be integrated into the connector are electro-magnetic pulse absorbers and radio frequency filter elements.



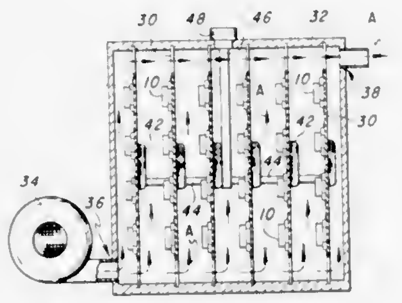
3,790,859
ELECTRONIC PACKAGE HEADER SYSTEM HAVING OMNI-DIRECTIONAL HEAT DISSIPATION CHARACTERISTIC

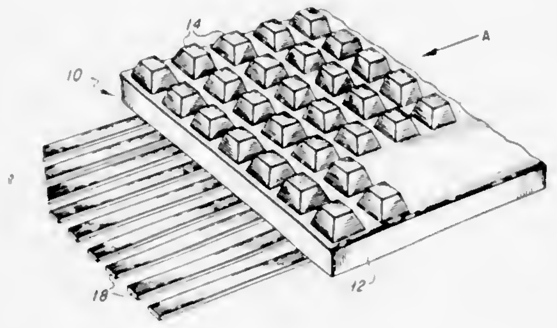
Charles R. Schraeder; Samuel N. Rea, both of Dallas; Yung Tao, Richardson, and Elias G. Hanna, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 12,749, Feb. 19, 1970, abandoned. This application Mar. 7, 1972, Ser. No. 232,502

Int. Cl. H05k *2/20*

U.S. Cl. 317—100 **7 Claims**





Disclosed is an improved header system for an electronic package of the type used to support and enclose integrated circuits, for example, which system advantageously provides omni-directional heat dissipation characteristics through the novel utilization of a plurality of spaced members that are secured to and protruding from at least one surface of the main body of the header system and are in the flow path of a fluid coolant.

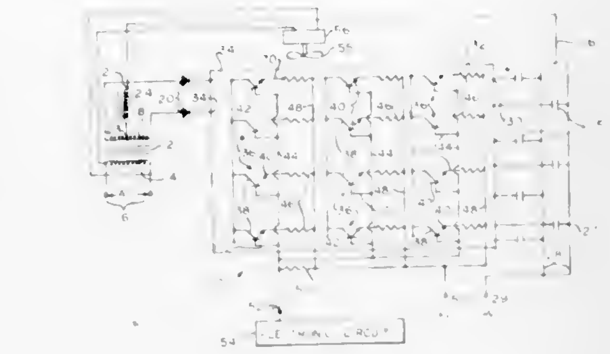
3,790,860
POWER SUPPLY CHASSIS ASSEMBLY FOR ELECTRONIC CIRCUIT WITH COOLING

Anthony Verdisco, Port Jefferson Station, N.Y., assignor to Trygen Electronics, Inc., Westbury, N.Y.

Filed July 17, 1972, Ser. No. 272,338

Int. Cl. H05k *7/20*; **H02b** *1/04*

U.S. Cl. 317—100 **2 Claims**



A power supply assembly comprises an electrical and thermally conductive chassis frame and a base plate carrying a power transformer and a choke coil. A sub-assembly on the base plate includes another plate having spaced parallel flanges carrying semiconductive solid state members. Spaced bars carried by the base plate and insulated therefrom are electrically connected to the solid state electronic members. A hood on the subassembly defines a passage for an air stream (provided by a blower) to convey heat away from the assembly by thermal convection while the chassis frame, plates, flanges and bars serve to convey heat away from the solid state members by thermal conduction and radiation, in addition to servicing as a mechanical support and an electrical conductor.

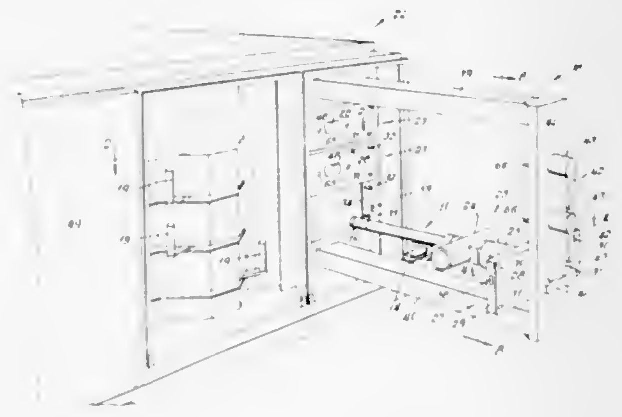
3,790,861
SWITCHGEAR WITH FUSES INDIVIDUALLY MOUNTED ON FUSE CARRIERS AND SWITCHES THEREFOR FOR INTERLOCKS

Gerald Sakats, Arlington Heights, Ill., assignor to S & C Electric Company, Chicago, Ill.

Filed Oct. 10, 1972, Ser. No. 295,826

Int. Cl. H02b *1/18*

U.S. Cl. 317—114 **14 Claims**



High voltage fuses are mounted on individual carriers for movement into and out of engagement with stationary contacts under the control of a carriage that can be connected to any or all of the carriers. Switches are arranged to connect any or all of the fuses in circuits. A locking bolt holds each fuse carrier in closed position and can be moved to locking position only when the fuse carrier is closed. Interlocks between the fuse carriers and operators for the switches prevent opening the carrier when the switches are closed and closure of the switches when the carriers are open.

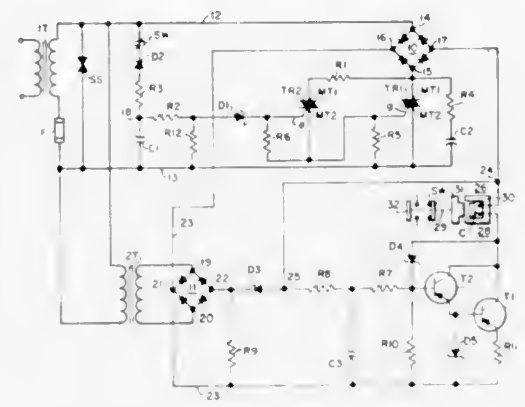
3,790,862
EXCITATION CONTROL CIRCUIT FOR ELECTROMAGNET COIL

Julian C. Kampf, Grafton, and Kenneth W. Retzer, Wauwatosa, both of Wis., assignors to Square D Company, Park Ridge, Ill.

Filed Dec. 21, 1972, Ser. No. 317,448

Int. Cl. H01h *47/32*

U.S. Cl. 317—148.5 R **10 Claims**



A circuit controlling the flow of direct current in a coil winding of a contactor from an alternating current source. The circuit includes a pair of full wave bridge rectifiers connected to be energized by the source so the rectifiers have unequal output voltages. The rectifiers have output terminals connected to the base, emitter and collector circuits of a transistor and the coil winding so the output of the higher voltage rectifier provides the base to emitter current for the transistor and energizes the coil when both rectifiers are energized and the transistor conducts current induced in the coil winding when the control circuit is de-energized to shorten the drop-out time of the contactor.

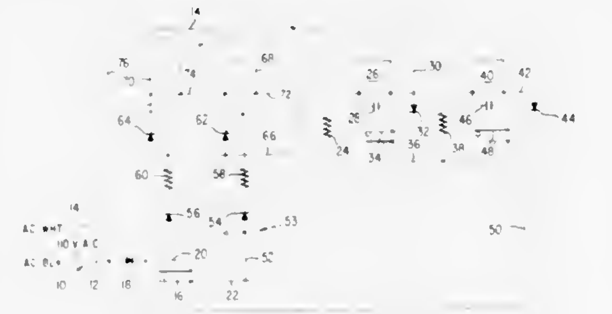
3,790,863
SCR CONTROL CIRCUIT

Laurence Allan Cross, Jr., Groveville, N.J., assignor to Randomatic Data Systems, Inc., Trenton, N.J.

Filed Oct. 20, 1972, Ser. No. 299,315

Int. Cl. H01h *47/32*

U.S. Cl. 317—148.5 B **9 Claims**



Closure of a switch controlling flow from a source of alternating current effects a single triggering of a silicon controlled rectifier to produce a precisely timed pulse of a given, uniformly maintained magnitude, utilized to actuate a solenoid or other load. On closure of the switch, the circuit becomes operative only upon the initiation or the ascendancy of the next positive half of an AC sine wave, to energize a relay that operates to trigger one or more SCR's during the negative half of the same wave. A Class F commutation of the SCR occurs during the positive half of the next following sine wave. Means is included in the circuit to prevent re-triggering of the SCR if the switch is held closed, thus to produce one and only one load-actuating pulse of a duration precisely timed at less than a single cycle of alternating current.

3,790,864
ALKALINE ELECTROLYTES FOR CELLS WHICH PROVIDE EFFICIENT COULOMBIC STORAGE AND TRANSFER FUNCTIONS

Raffaele F. Muraca, Los Altos Hills, Calif., assignor to Western Applied Research and Development, Inc., Menlo Park, Calif.

Filed July 24, 1969, Ser. No. 844,665

Int. Cl. H01g *9/00*

U.S. Cl. 317—231 **8 Claims**

There are disclosed compositions of alkaline electrolytes for use in electrolytic cells of the kind which are intended to provide accurate or reproducible coulombic storange and transfer functions. The electrolytes are free of dissolved oxygen and contain, among a variety of ionic species in solution, the complex-cyanide ions of only one reversibly electrodepositable and electrosoluble metal; they may also contain borate buffers. The initial dissolved-oxygen content of the electrolytes may be removed by an excess of alkali metal or alkaline earth sulfite; because excess sulfite acts as an oxygen scavenger, the electrolytes may be loaded into electrolytic cells in a normal air environment.

3,790,865
PLURALITY OF ELECTRICALLY CONNECTED SEMICONDUCTORS FORMING A HIGH VOLTAGE RECTIFIER

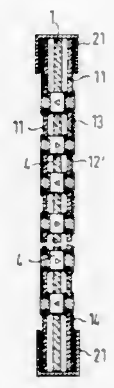
Theodor Tovar, Nuremberg, Germany, assignor to Semikron Gesellschaft fur Gleichrichterbau und Elektronik m.b.H., Nurnberg, Germany

Filed Aug. 2, 1971, Ser. No. 168,337

Claims priority, application Germany, July 31, 1970, 2038070

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 317—234 R **11 Claims**



A semiconductor high voltage rectifier including a plurality of strips of insulating material, each strip containing a plurality of openings. One of the strips contains a semiconductor wafer within each of its plurality of openings while, two of the strips contain a conducting body within each of their openings. The strips are assembled as a unit by two end caps so that the wafers are bounded on each side by a strip containing the conducting bodies. The assembly is such that the conducting bodies each engage a conducting surface of a wafer. A series circuit is established by connecting each successive pair of conducting bodies by conducting strips and the two conducting caps with the conducting bodies closest thereto by conducting strips, with the caps constituting the external terminals of the rectifier.

3,790,866
SEMICONDUCTOR DEVICE ENCLOSURE AND METHOD OF MAKING SAME

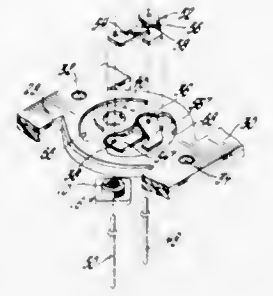
Carl L. Meyer, and Eugene H. Sayers, both of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed May 14, 1973, Ser. No. 360,366

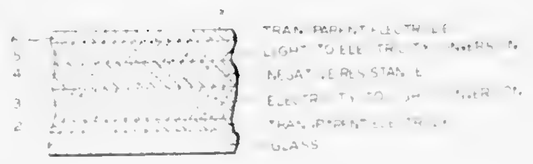
Int. Cl. H01l *5/00*

U.S. Cl. 317—234 R **7 Claims**

An economical power transistor housing and method for making it. The housing base member is of a reinforced plastic with a unique circuit pattern on it. A metal heat sink member nests in an aperture in the base member and connects with the circuit pattern. The heat sink has orientation means. A semiconductor device die with mutually parallel wire bond contact pads is affixed to the heat sink member in a predetermined manner. Terminal pins extend through the base member and connect with uniquely configured discrete portions of the circuit pattern. These portions have elongated mutually parallel wire bonding areas oriented perpendicular to the contact pads on the die. A cup-shaped cover encloses the die and associated wire bonds on the board. The structure permits automated assembly, soldering and wire bonding, and includes the manufacture of subassemblies for testing prior to device completion.

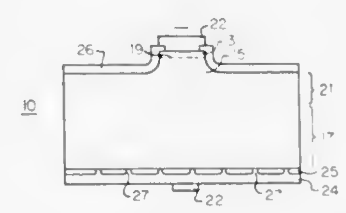


3,790,867
LIGHT-INTENSIFYING DEVICE
Shigeru Hayakawa, Osaka, Japan, assignor to Matsushita Electric Industral Co., Ltd., Osaka, Japan
Filed Feb. 16, 1973, Ser. No. 332,793
Claims priority, application Japan, Feb. 22, 1972, 47-18691
Int. Cl. H01l *15/00*
U.S. Cl. 317—234 R **5 Claims**



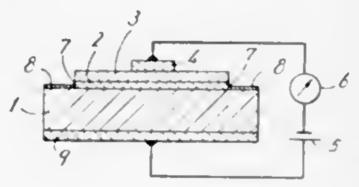
A light-intensifying device comprises a panel of integrated layers composed of a transparent base, a first transparent electrode layer, a photoconductive layer, a negative resistance layer, an electroluminescent layer, and a second transparent electrode. The device can prevent the halation appearing around the bright field of an output image.

3,790,868
EFFICIENT RED EMITTING ELECTRGLUMINESCENT SEMICONDUCTOR
Richard W. Soshea, Portola Valley, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Oct. 27, 1972, Ser. No. 301,705
Int. Cl. H05b *33/00*
U.S. Cl. 317—235 R **6 Claims**



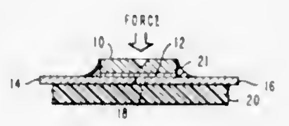
A solid state light source includes a gallium arsenide phosphide electroluminescent semiconductor in a mesa structure, a substrate substantially transparent to the radiation emitted by the semiconductor, a region of varying composition connecting the substrate to the semiconductor, and a reflective backing.

3,790,869
HUMIDITY SENSITIVE SEMICONDUCTOR DEVICE
Shigeru Tanimura, Kyoto; Nobuaki Miura, Nagaokakyo; Osamu Asano, Nagaokakyo, and Nobuyuki Yamamura, Takatsuki, all of Japan, assignors to Omron Tateisi Electronics Co., Okyo-ku, Kyota, Japan
Filed Nov. 8, 1972, Ser. No. 304,808
Claims priority, application Japan, Nov. 10, 1971, 46-90138; Mar. 21, 1972, 47-28789
Int. Cl. H01l *9/00*
U.S. Cl. 317—235 T **27 Claims**



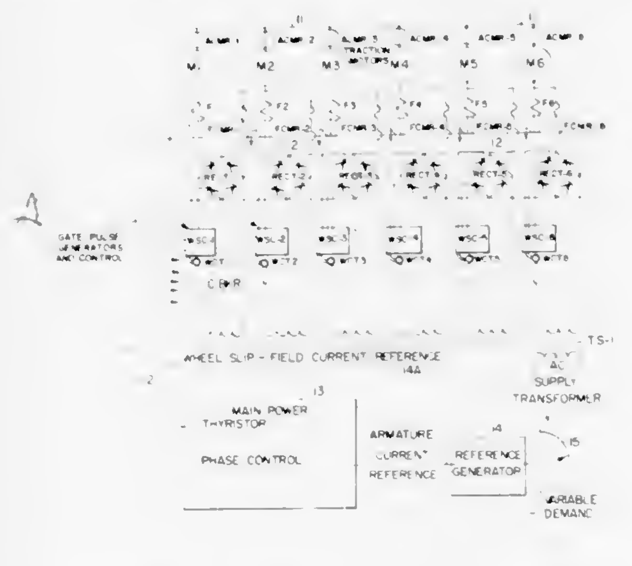
A semiconductor composite having a rectifying and humidity sensitive characteristic is provided by depositing a tin oxide film on a semiconductor substrate, preferably with an insulating film of a semiconductor compound such as SiO_2 of a thickness of 15A to 500A therebetween, and by exposing a portion of the barrier to the atmosphere. It was observed that the rectifying characteristic of the composite becomes easy at a quick response rate at an avalanche current region as the ambient relative humidity is increased and that the composite as supplied with a predetermined reverse bias voltage higher than a breakdown voltage of the composite shows a change in the reverse current at a quick response rate in reverse proportion to the relative humidity of the atmosphere. It was also observed that interposition of the insulating film between the SnO_2 film and the semiconductor substrate in a preferred embodiment decreases the reverse leakage current, raises the reverse breakdown voltage and makes uniform the reverse breakdown voltage.

3,790,870
THIN OXIDE FORCE SENSITIVE SWITCHES
Robert J. Mitchell, 1180 E. Rubio St., Altadena, Calif.
Filed Mar. 11, 1971, Ser. No. 123,245
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—238 **22 Claims**



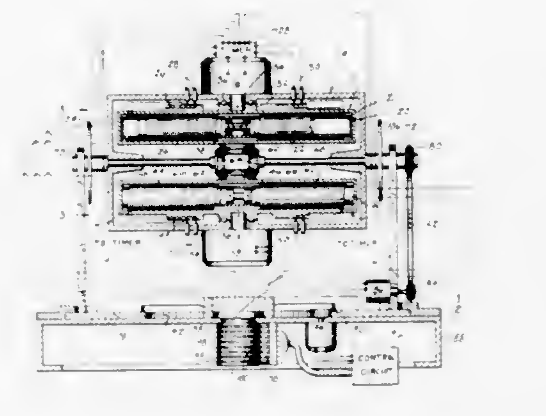
A new class of bi-stable solid state switching devices, designated Force Switchable Diodes or FSD's, are provided by copper/cuprous oxide rectifying or "blocking" junction devices, exemplified in elemental form by a copper substrate, a contacting thin cuprous oxide layer and the interface between them, such devices are arranged to avalanche from a blocking state to an essentially conducting state on the application of force when under a related voltage, and avalanche back to a blocking state on the removal of at least a portion of that force. The transition between the states is sharp, predictable and free of arcing effects. A single copper/cuprous oxide junction provides unidirectional switching, and an assembly comprising a set of copper/cuprous oxide/copper junctions provides bi-directional switching or polarity insensitivity. Deswitching does not require a reduction of applied voltage, nor does switching require an increase in applied voltage. Force Switchable Diodes, however, provide an inverse relationship between switching force and voltage, and a positive relationship between switching force and thickness of the cuprous oxide layer. The invention provides for both discrete switches and integrated matrix switching arrays, and further comprises mechanical and electrochemical methods of forming blocking junctions.

3,790,871
INDIVIDUAL AXLE WHEEL SLIP CONTROL SYSTEM
Russell M. Smith, North East, Pa., assignor to General Electric Company, Erie, Pa.
Filed Jan. 2, 1973, Ser. No. 322,896
Int. Cl. B61c *15/12*
U.S. Cl. 318—52 **12 Claims**



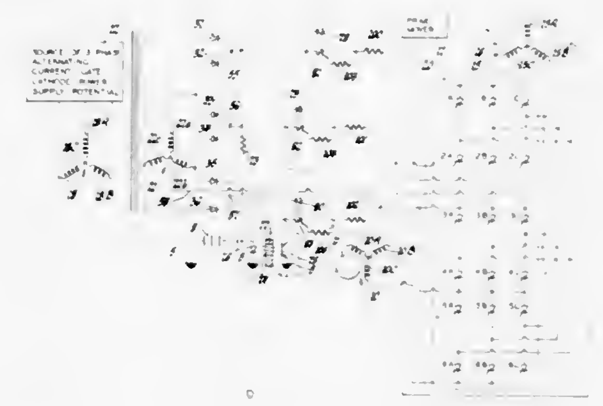
An individual axle wheel slip control system for electric traction motor drives employing series type direct current traction motors is described. With this system an auxiliary source of direct current is connected to the series field winding of each individual traction motor in parallel with and in addition to the normal direct current excitation with the polarity of the auxiliary source of direct current being such that when added to the normal excitation direct current, results in a reduction of the armature current and consequently a reduction in the tractive effort of the traction motor. A field current sensor responsive only to the field current of the traction motor being controlled, is provided along with a phase control circuit which is responsive to the output of the field current sensor and to a reference signal source for establising a reference median value of field current. The phase control circuit in turn is coupled to and controls the output of the auxiliary source of direct current for increasing the auxiliary field current in response to the field current sensor detecting a sudden decrease in the field current of the traction motor below the reference median value such as which would be produced upon the occurrence of slippage. A rate of change responsive network is coupled to the field current sensor for detecting relatively rapid rates of change in the sensed field current such as would occur with a rapidly accelerating wheel slip. The rate of change network is coupled to and additionally controls the phase control circuit for further increasing the auxiliary field current supplied to the field winding of the traction motor upon the occurrence of rapidly accelerating wheel slip. A sensitivity modifying circuit is provided for decreasing the sensitivity of the rate of change network for increasing values of field current whereby for relatively low values of field current, relatively fast and large auxiliary field current corrections are provided, and for relatively large values of field current, the auxiliary field current correction is slower and of lower value. The wheel slip control system further includes an overload protection circuit that is coupled to and controls the wheel slip control circuit and that is responsive to a current transformer that senses the overall value of the auxiliary field current supplied to the traction motor. By this arrangement the level of auxiliary field current being supplied from the auxiliary direct current source is regulated to some predetermined maximum level upon the current transformer sensing an overcurrent condition.

3,790,872
IMPULSE ENGINE
Arthur J. Gaffney, W232 S8785 Bronk Dr., Big Bend, Wis.
Filed Mar. 16, 1972, Ser. No. 235,375
Int. Cl. H02k *7/06*
U.S. Cl. 318—139 **10 Claims**



Two non-magnetic tubes are journalled to a frame for rotation about a common axis which is transverse to the longitudinal axes of the two tubes. The tubes are rotated in opposite directions about their common axis by corresponding electric motors. Each tube has an electrical coil wound therearound and a ferro-magnetic mass slideably mounted therein. Each ferro-magnetic mass is normally urged outwardly in its tube by centrifugal force due to the rotation of the tube. A source of electrical energy is periodically coupled to the coils of each tube at a predetermined angular position of the tube in its cycle of rotation to abruptly oppose centrifugal movement of the ferro-magnetic mass therein, thereby generating a reaction force tending to impart motion to the frame.

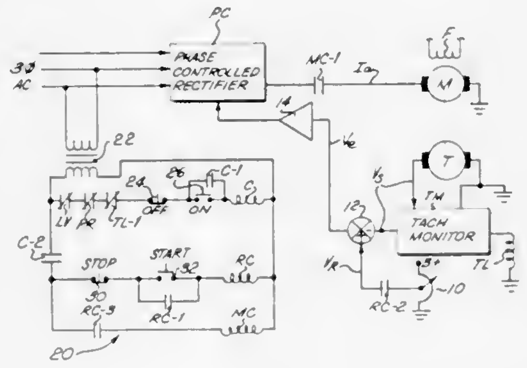
3,790,873
GATE-CATHODE POWER SUPPLY FOR A CYCLOCONVERTER NETWORK OF SILICON CONTROLLED RECTIFIERS
Arthur L. Witten, Santa Barbara, Calif., assignor to General Motors Corporation, Detroit, Mich.
Filed May 29, 1973, Ser. No. 364,886
Int. Cl. H02p *5/40*
U.S. Cl. 318—227 **3 Claims**



A gate-cathode power supply for the silicon controlled rectifiers of a cycloconverter network, through which the phase windings of a three-phase alternating current motor may be cyclically energized by a source of three-phase alternating current motor supply potential, of the type having three common anode and three common cathode silicon controlled rectifiers for each phase of the motor supply potential arranged in groups of three common anode silicon controlled rectifiers and groups of three common cathode silicon controlled rectifiers for each motor phase winding. The potential of each two phases of a three-phase alternating current gate-cathode power supply potential, each of the phases of which is in phase with the corresponding phase of the motor supply potential, are inverted, combined and rectified to produce three separate positive polarity direct current gate-cathode power potential pulses, each of which corresponds to the phase of the motor supply potential to which the other phase corresponds for each group of three common anode silicon controlled rectifiers and each two phases of the gate-cathode power supply potential are combined and rectified for producing three separate other positive polarity direct current gate-cathode power potential pulses, each of which corresponds to the phase of the motor supply potential to which the other phase corresponds for the three common cathode silicon controlled rectifiers for the phase of the motor supply potential to which it corresponds.

3,790,874
MOTOR DRIVE CONTROL SYSTEM

Robert G. Klimo, Parma, Ohio, assignor to Cleveland Machine Controls, Inc., Cleveland, Ohio
Filed July 27, 1972, Ser. No. 275,533
Int. Cl. H02p *5/00;* **H02h** *3/04*
U.S. Cl. 318—327 19 Claims

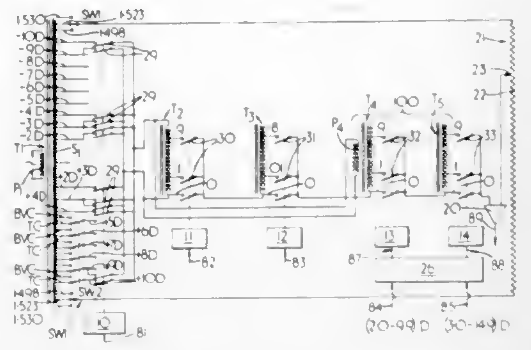


A motor drive control system for driving an electrical motor such that the motor speed is dependent upon an error signal representative of the difference between a desired or reference speed, and a speed signal provided by a DC tachometer generator. The tachometer generator is located in a feedback loop for providing a DC signal having a magnitude that varies with motor speed. A monitoring circuit serves to monitor electrical characteristics of the tachometer generator for purposes of preventing energization of the motor in the event of an unwanted electrical characteristic taking place in the tachometer generator feedback loop. The unwanted characteristic may be an improper connection of the tachometer generator in the feedback loop or a faulty tachometer generator, such as shorted armature windings or an open circuit condition between the tachometer brushes.

3,790,875
DIGITAL TO ANALOGUE CONVERTER

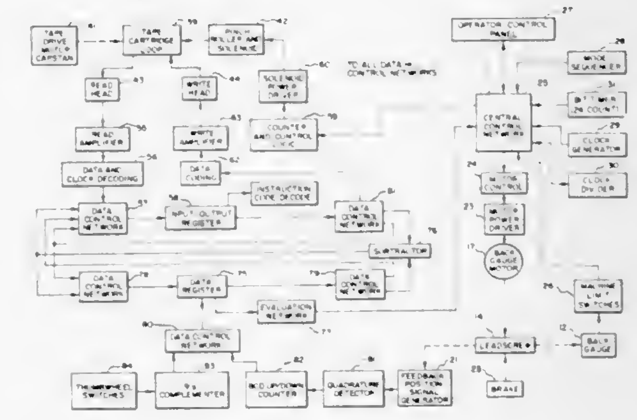
Robert Trevor Craxton, Rugby, England, assignor to Autoflow Engineering Limited, Rugby, England
Filed Nov. 24, 1971, Ser. No. 201,747
Int. Cl. G05b *11/14*
U.S. Cl. 318—573 9 Claims

A lens generating machine is provided with electrical digital to analogue converters for controlling various functions of the machine, the converters each including a specially-wound transformer provided on a secondary winding thereof with tapping points corresponding to digital control instructions concerning various lens optical parameters associated with said machine functions, operation of the machine being controlled through switch means for selectively effecting connection to said tappings to make available voltages which are the analogue equivalents of the corresponding control instructions and which are utilised to effect the necessary machine functions to produce a lens with the desired optical characteristics, for example, a toric lens.



3,790,876
PAPER CUTTING MACHINE

Robert W. Vail, Newport Beach, Calif., assignor to Rockwell International Corporation, Pittsburgh, Pa.
Filed Feb. 15, 1973, Ser. No. 332,732
Int. Cl. G05b *19/28*
U.S. Cl. 318—603 4 Claims



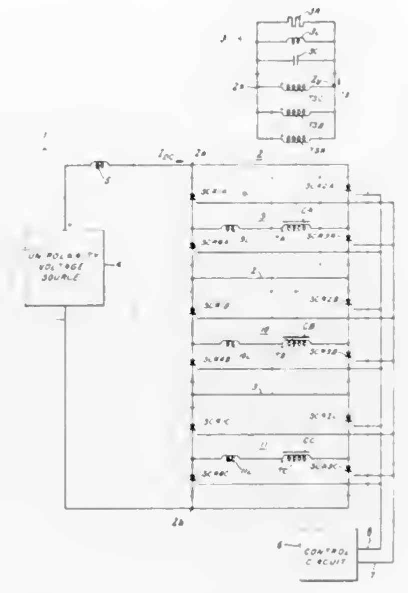
An improved paper cutting machine is provided with a novel servo control system for repeatedly, precisely positioning the machine movable backgauge assembly at different intermediate positions in its total length of traverse. The control system utilizes conventional command signals and also feedback signals which provide binary-coded position information associated only with key control positions established at selected intervals in the backgauge total traverse and pulsed counting information for incremental position changes in each interval between the key control positions.

3,790,877
POWER DELIVERY SYSTEM FOR A TANK LOAD CHARACTERIZED BY SERIES-CONNECTED INVERTER BRIDGES AND A HIGH VOLTAGE SOURCE

Ronald B. Bailey, Waynesboro, Va., assignor to General Electric Company, Philadelphia, Pa.
Filed Feb. 2, 1973, Ser. No. 328,893
Int. Cl. H02m *7/00*
U.S. Cl. 321—27 R 2 Claims

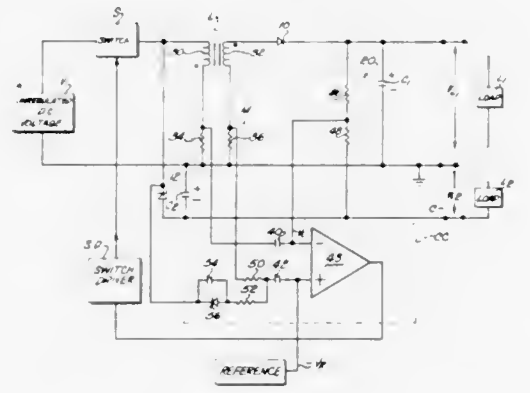
Electric power conversion apparatus, including series-connected current-source inverter bridges, safely delivers alternating current to a tank load from a source of unipolarity voltage of relatively high magnitude. Each inverter bridge comprises at least one pair of alternately conducting thyristors and a separate transformer. The secondary windings of the respective transformers are connected in parallel with one another to the load, and the inverter bridges are connected in series with

each other and with a current smoothing reactor to the source of high voltage which is divided among the bridges. The source voltage can therefore be higher than the individual voltage handling capacity of the thyristors.



3,790,878
SWITCHING REGULATOR HAVING IMPROVED CONTROL CIRCUITING

Adrian Paul Brokaw, Woburn, Mass., assignor to Keithley Instruments Inc., Solon, Ohio
Filed Dec. 22, 1971, Ser. No. 210,999
Int. Cl. G05f *1/20*
U.S. Cl. 323—17 29 Claims

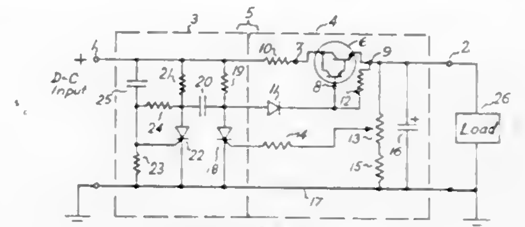


An electrical circuit particularly applicable for use as a switching regulator having a storage inductor which periodically receives energy from a D.C. voltage source through a switch. Energy is released from the inductor when the switch is off to supply a load circuit. The ratio of switch on time to switch off time is controlled in dependence upon changes in the amount of supplied energizing current and the released inductor current.

3,790,879
SWITCHING VOLTAGE REGULATOR

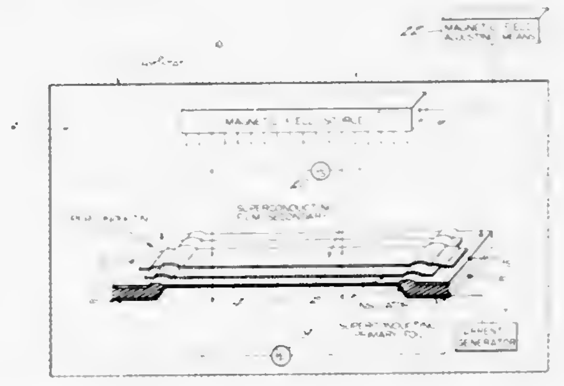
Slavko Milovancevic, P.O. Box 402, Torrance, Calif.
Filed Nov. 12, 1971, Ser. No. 198,311
Int. Cl. G05f *1/56*
U.S. Cl. 323—22 T 3 Claims

A switching voltage regulator for providing constant voltage to a load from an unregulated d-c source of any form, employing a series control transistor whose on and off state is controlled by a modified static switch either directly, or through a transistor driver stage. The modified static switch serves also the purpose of sensing the output voltage magnitude and initiating the conduction of said control transistor, when the same is supplied with an input d-c voltage.



3,790,880
VARIABLE COUPLING DC SUPERCONDUCTING TRANSFORMER

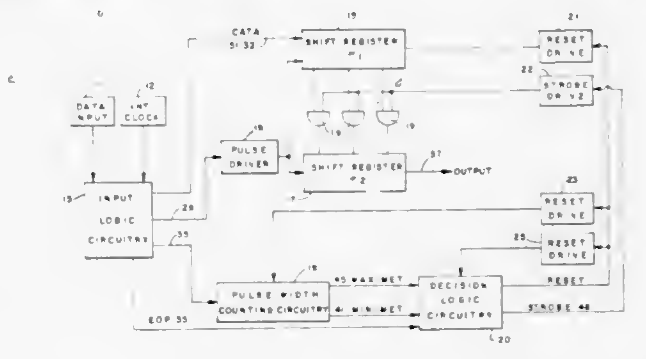
Peter R. Solomon, Bloomfield, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Jan. 9, 1967, Ser. No. 608,175
Int. Cl. G05f *7/00;* **H01f** *10/00*
U.S. Cl. 323—44 F 2 Claims



A dc transformer consisting of two Type I superconducting strips separated by an insulating layer, the assembly being situated in a magnetic field and cooled below the transition temperature of the superconductors. The coupling between the primary and secondary may be varied by varying the strength of the magnetic field.

3,790,881
PULSE WIDTH SELECTOR

David K. Smith, Beltsville, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Continuation of Ser. No. 200,777, Nov. 22, 1971, abandoned. This application Mar. 6, 1973, Ser. No. 338,494
Int. Cl. H03k *5/20*
U.S. Cl. 328—112 9 Claims



An apparatus for accepting or rejecting pulses on the basis of pulse duration. Each pulse in an incoming pulse train is clocked into a first shift register, while a counter records the duration of the pulse. When the end of the pulse is recognized, the counter is checked to establish whether the pulse duration is within the predefined limits which have been established by the operator and set into the counting circuitry. If the pulse duration (width) is within the established limits, the pulse is shifted in parallel, out of the first shift register to a second shift register. If the pulse duration is outside the established limit, it is eliminated entirely (depending on the mode of operation). The first shift register is reset and is ready to receive the next pulse in the pulse train. The pulses in the second shift register are then shifted to an output line completing the selection process.

3,790,882
DIP MAGNET MAGNETOMETER HAVING A DAMPED PENDULOUS SUPPORT AND TEMPERATURE COMPENSATION

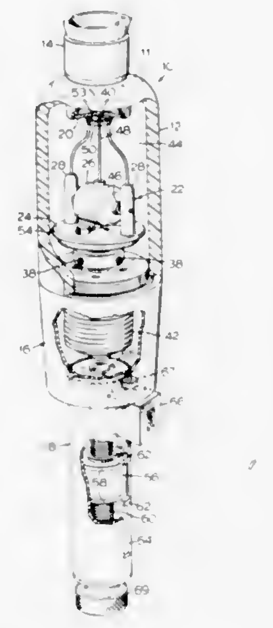
Edgar John Sharpe, Willowdale, Ontario, Canada, assignor to Coniagas Research Inc., Toronto, Ontario, Canada

Filed Jan. 8, 1973, Ser. No. 321,759

Claims priority, application Canada, Nov. 30, 1972, 158009

Int. Cl. G01r *33/02*

U.S. Cl. 324—48 **5 Claims**



This invention relates to a magnetometer having a dip magnet housing pivotally mounted on a damping base in a chamber filled with damping fluid. The damping base has an index means which has a zero reference line that overlies the locus of the end of a pointer carried by the dip magnet housing and the locus of the end of the pointer carried by the dip magnet housing has a direction that traverses the zero reference line. A viewing system overlies the index means and has a field of view that includes the zero reference line and the locus of the end of the pointer. A dip compensating magnet is adjusted as to position to rotate the dip magnet housing to align the pointer with zero reference line and the movement of the compensating magnet is an indication of the earth's magnetic field.

3,790,883
PARTICLE STUDY APPARATUS HAVING IMPROVED PARTICLE RESOLUTION MEANS

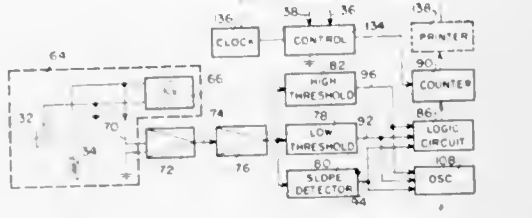
Pierre Bergegere, Aignan, France, assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed May 9, 1972, Ser. No. 251,773

Int. Cl. G01n *27/00*

U.S. Cl. 324—71 CP **14 Claims**

Electronic particle study apparatus of the Coulter type having a sensing zone arrangement wherein pulses are generated by particles in liquid suspension passing through the scanning ambit of a minute scanning aperture of said arrangement. Particle resolution means are provided which includes a low threshold level detector circuit, a high threshold level detector circuit, and a positive slope detector circuit including a differentiating circuit. The output signals from the detector circuits are fed through a logic circuit to a counter circuit so that each positive slope end of each pulse whose amplitude is between the low threshold and high threshold enables a signal in the form of a trigger pulse to be fed to the counting circuit to register a count signal representative of the passage of a particle through the scanning ambit of the scanning aperture to enable resolution or distinguishment between two particles following each other at a short time interval therebetween.



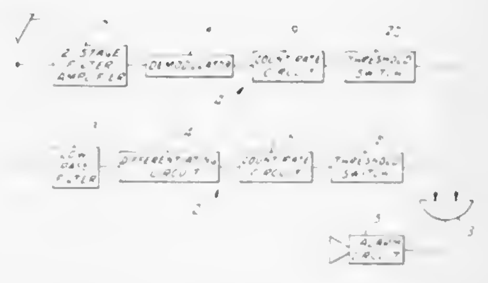
3,790,884
SEVERE THUNDERSTORM DETECTOR

Douglas A. Kohl, 417 Sixth Ave. N.E., Osseo, Minn.

Filed Aug. 2, 1972, Ser. No. 277,473

Int. Cl. G01w *1/00*

U.S. Cl. 324—72 **16 Claims**



Electrical circuitry provides for the detection of severe thunderstorms in a local area. Severe thunderstorms are those accompanied by damaging winds, hail or tornados. An antenna, which may be directional or omnidirectional, is used to detect the electromagnetic and electrostatic fields at a location. The electrostatic field at the location is applied to a circuit which provides a first signal indicating the presence of a severe thunderstorm in the local area when the rate of occurrence of maxima and minima variation of the electrostatic field exceeds a predetermined level. The electromagnetic field is applied to a second circuit which serves to provide a second signal when the variations in the electromagnetic field indicate the presence in the local area of any thunderstorm. Concurrence of the first and second signals is required to activate an alarm.

3,790,885
SERIAL TEST PATTERNS FOR MOSFET TESTING

Randell Leland James, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

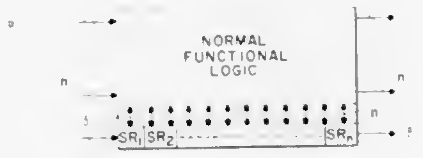
Filed Mar. 27, 1972, Ser. No. 238,268

Int. Cl. G01r *15/12*

U.S. Cl. 324—73 R **9 Claims**

A technique of decreasing the number of test patterns required to test a MOSFET module and/or provide the ability to test elements on the module which can not be tested by conventional test techniques. Conventionally, test patterns are applied to the input pins of a MOSFET module and the output monitored at the output pins of the module. Interwoven with the normal test pattern testing is the application of a serial test

pattern to selected elements on the module. The serial test pattern is applied to a single input pin on the module and a serial test pattern is stored in a shift register which is on the module. Each of the stages of the shift register are used to control or monitor an element or point which may be otherwise inaccessible or untestable and the shift register is also utilized in an output mode to provide an indication serially on a single output pin as to the functioning of the points accessed on the module. The sequence then is to input onto a single input pin a serial test pattern for testing, controlling or monitoring various elements or nets on the module; reload the shift register in accordance with the test results; and then serially shift the contents of the shift register out onto the single output pin while monitoring this output to determine whether the elements or nets are functioning properly. In addition, while the serial test pattern is applied the output appearing at the output pins of the module may be monitored.



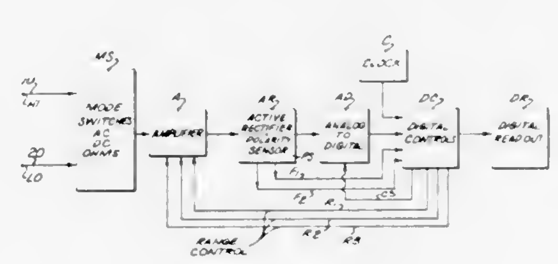
3,790,886
ELECTRICAL MEASUREMENT INSTRUMENT HAVING AN IMPROVED ANALOG TO DIGITAL CONVERTER

Stephen Kurtin; Michael Anthony, both of Pasadena, and Willis Watrous, Saratoga, all of Calif., assignors to Keithley Instruments, Inc., Solon, Ohio

Filed Oct. 4, 1971, Ser. No. 186,006

Int. Cl. G01r *17/06;* **H03k** *13/10*

U.S. Cl. 324—99 D **21 Claims**



An electrical measuring instrument is disclosed which may be used for measuring the magnitude of an unknown source, such as the magnitude of an A.C. signal, or the magnitude and polarity of a D.C. signal, or the resistance of a resistor. A voltage signal is developed having a magnitude dependent on the unknown source and this signal is applied to an analog to digital converter which employs a capacitor, a charging circuit and a discharging circuit. The capacitor charges at a rate dependent on the magnitude of the voltage signal. The stored energy crosses a given level and, then, in response to a clock pulse the capacitor is discharged at a known rate. The capacitor discharges through a particular level and the charging operation is thereafter commenced in response to another clock pulse. Counter and logic circuitry serve to provide an output indication of the magnitude of the unknown source as a function of a relationship of the number of clock pulses occurring during the discharge operations and a fixed number of clock pulses. Autoranging circuitry serves to sequentially uprange and downrange the scaling of the magnitude of an input signal prior to being applied to the analog to digital conversion circuitry. Other features are disclosed.

3,790,887
AMPLIFYING AND HOLDING MEASUREMENT CIRCUIT

Theodore A. Rich, Schenectady, N.Y., assignor to Environment/One Corporation, Schenectady, N.Y.

Division of Ser. No. 840,775, July 10, 1969, Pat. No. 3,664,740. This application Dec. 3, 1971, Ser. No. 204,471

Int. Cl. G01r *15/08, 19/16*

U.S. Cl. 324—111 **1 Claim**

A measure and hold amplifying circuit comprised by a sampling capacitor and a holding capacitor and first and second switches for transferring an amplified output signal to be measured from the output of a preamplifier to the sampling capacitor and thereafter to the holding capacitor with the holding capacitor being connectible across the input of a field effect transistor operational amplifier whose output supplies a suitable indicating meter. The holding and measuring amplifying circuit further includes a discharge resistor that intermittently is connected in circuit relationship across the sampling capacitor for sequentially discharging it intermediate each sampling operation, and a properly poled coupling diode which is connected between the output of the preamplifier and the first switching device whereby the blocking diode blocks reverse current flow from the sampling capacitor back into the output of the preamplifier and prevents the sampling capacitor and discharging resistor from unduly loading the output of the preamplifier.

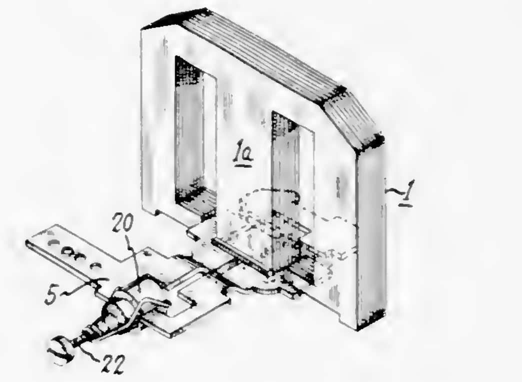
3,790,888
LAG ADJUSTMENT MEANS FOR A WATTHOUR METER

William H. Morong, Jr., Durham, N.H., assignor to General Electric Company

Filed Oct. 6, 1972, Ser. No. 295,449

Int. Cl. G01r *11/02*

U.S. Cl. 324—138 **15 Claims**



A watthour meter is provided with an improved reactor assembly for a lag plate. The reactor assembly is linearly adjustable to selectively and precisely vary the inductance of the lag plate so that its lag effect on the meter performance can be accurately, and reversibly, adjusted. This linearity of adjustment is afforded by mounting a flux-shunting adjustable screw in threaded engagement with opposite sides of an air gap in a reactor that has a flux path of varied cross-section parallel to the direction of movement of the screw. A resilient holding means is used to mount the screw for movement in a direction transverse to the magnetic field induced in the reactor by the lag plate.

3,790,889
EDDY CURRENT SPEEDOMETER

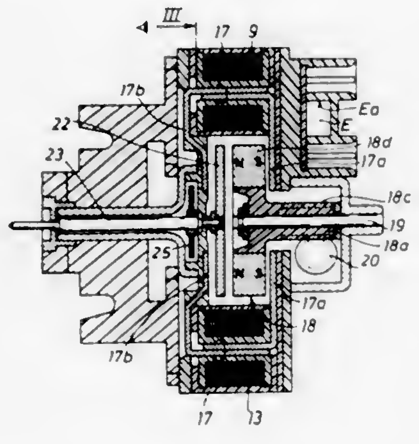
Antonio Mincuzzi, Milano, Italy, assignor to Societe Internationale De Mecanique Industrielle S. A., Luxembourg, Luxembourg

Filed June 19, 1972, Ser. No. 263,869

Claims priority, application France, June 17, 1971, 71.22062

Int. Cl. H02k *49/04*

U.S. Cl. 324—167 **1 Claim**



A counter, for example a counter-speedometer for automobile vehicles, comprising a motion take-off actuating a signal emitter and a receiving unit comprising a rotary magnet which drives, by the effect of Foucault's currents, a non-magnetic movable element integral with an index and subjected to the action of a return spring, a rotating field generator driving in synchronism said rotary magnet and supplied with power by said signal emitter, wherein the rotating field generator is constituted by at least one stator winding having at least one core terminating in pole pieces which encompass therebetween the rotary magnet and the non-magnetic element, said non-magnetic element being a disc rotating coaxially with the rotary magnet which is constituted by at least one elementary magnet oriented axially, and said pole pieces being disposed in such manner that the lines of force therebetween are also parallel to said common axis.

3,790,890
DEVICE FOR MEASURING A TIME INTERVAL

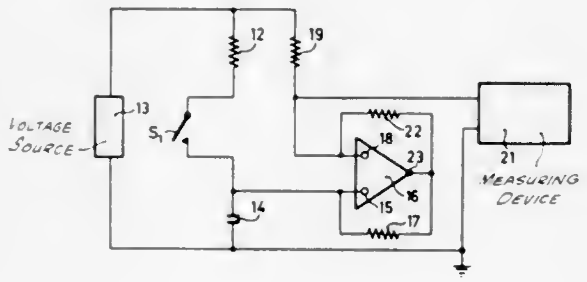
Francois-Xavier Doittau, Paris; Jean-Pierre Ythier, Maisons-Alfort, and Marcel Herbert, Paris, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 13, 1972, Ser. No. 243,564

Claims priority, application France, Apr. 20, 1971, 7113938

Int. Cl. G04f *9/00*

U.S. Cl. 324—189 **10 Claims**



Device for measuring a time interval which comprises a capacitor which is charged during a first time interval and is discharged during a second time interval and also comprises two resistors which are connected to the inputs of an operational amplifier and to the capacitor in a manner such that the ratio between the charge and the discharge times is proportional to the ratio between the values of the resistors. By making this resistance ratio one to ten thousand short time intervals in the nanosecond range may be converted into time intervals which lie in the microsecond or millisecond range and hence can be measured with a higher degree of accuracy.

3,790,891
RECEIVER FOR A FREQUENCY-MODULATED ELECTRO-ACOUSTICAL SIGNAL HAVING SQUELCH MEANS FOR SUPPRESSING NOISE WHEN NO SIGNAL IS COMING THROUGH THE RECEIVER

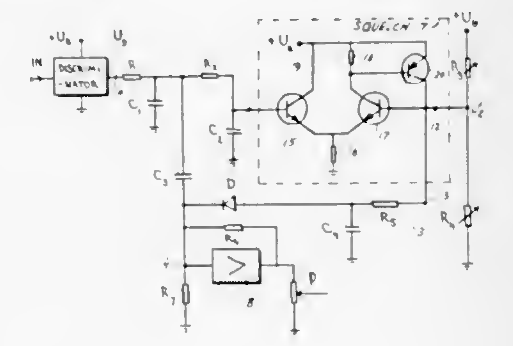
Sven William Bjelvert, Anells vag 6, 633 69, Eskilstuna, Sweden

Filed Aug. 8, 1972, Ser. No. 278,814

Claims priority, application Sweden, May 24, 1972, 6730/72

Int. Cl. H04b *1/10*

U.S. Cl. 325—348 **3 Claims**



The invention relates to a receiver for a frequency-modulated electro-acoustical signal system and more particularly to a compression wave transmission system having a receiver which is adapted to suppress noise signals of frequencies other than the frequencies of the electro-acoustical frequencies, only during periods when no electro-acoustical or compression wave frequency is received. The receiver according to the invention is especially suitable for use in a wireless diver communication system for ultrasonic voice transmission.

3,790,892
CLOCK PULSE REGENERATING CIRCUIT FOR DEMODULATING INPUT PULSE SIGNAL HAVING UNEVEN TIME PULSE DISTRIBUTION

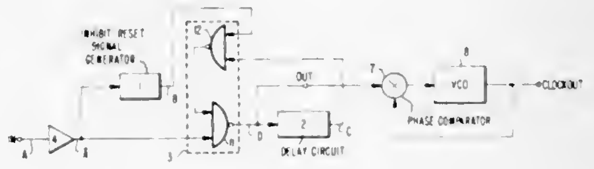
Yoichi Tan, and Toshihiko Ryu, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo-to, Japan

Filed May 18, 1972, Ser. No. 254,723

Claims priority, application Japan, May 24, 1971, 46/34774

Int. Cl. H03k *5/18*

U.S. Cl. 328—120 **4 Claims**



A clock pulse regenerating circuit for stably extracting clock pulses from a signal pulse train having an uneven pulse distribution in the time domain. The regenerating circuit includes circuitry for generating auxiliary clock pulses corresponding to recycled previously extracted clock pulses when the signal pulse train lacks pulses for a predetermined time interval.

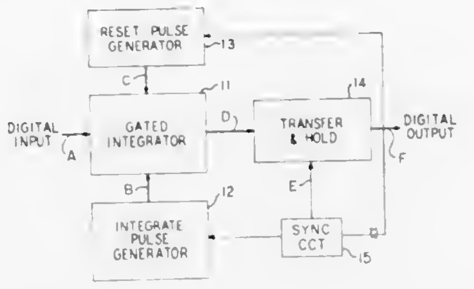
3,790,893
SAMPLE AND HOLD CIRCUIT FOR DIGITAL SIGNALS

Walter Leo Corwin, Freehold, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 16, 1972, Ser. No. 307,034

Int. Cl. H03k *5/00*

U.S. Cl. 328—151 **7 Claims**



A sample and hold circuit wherein the digital signal to be sampled is differentially applied to a pair of gated transistors. Once during each time slot, the transistor pair is gated to provide a sampling aperture during which an integration of the digital signal is performed. The results of each integration are evaluated to determine whether a pulse (or a space) occurred in the digital signal during the time slot.

3,790,894
BINARY SHAPING CIRCUIT

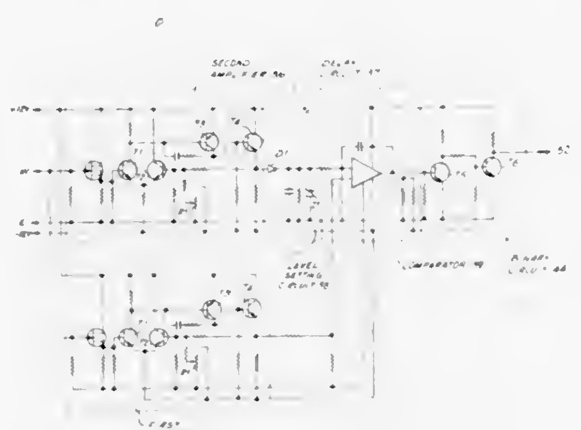
Yoshio Iizuka, Yokohama, and Tetsuro Morita, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 23, 1971, Ser. No. 211,524

Claims priority, application Japan, Dec. 30, 1970, 45/122223

Int. Cl. H03k *5/18, 5/08, 5/156*

U.S. Cl. 328—164 **3 Claims**



A level setting circuit changes the level of the input signals to a predetermined reference level when the input signals exceed the reference level. A comparator is connected to the level setting circuit and to the input for comparing the input signals with the signals having the reference level produced by the level setting circuit. The comparator produces an output corresponding to the difference in level between the input signals and the reference level. A binary circuit connected to the comparator produces a pulse when the output of the comparator exceeds a predetermined level.

ERRATUM

For Class 328—112 see:
Patent No. 3,790,881

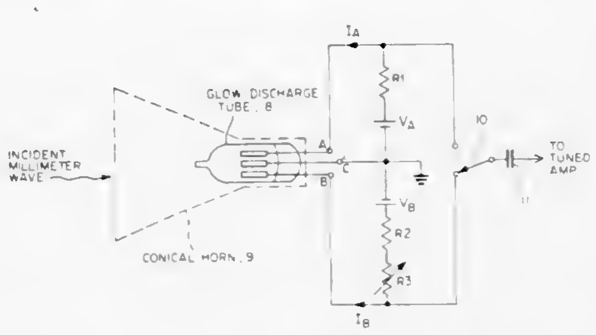
3,790,895
GLOW DISCHARGE MILLIMETER WAVE DETECTOR AND METHOD OF BIASING SAME

Nabil H. Farhat, Philadelphia, Pa., and Norman S. Kopeika, Kfar Haroe, Israel, assignors to University of Pennsylvania, Philadelphia, Pa.

Filed Oct. 19, 1972, Ser. No. 299,002

Int. Cl. H01j *17/36;* **H03d** *1/00*

U.S. Cl. 329—157 **8 Claims**



A millimeter wave glow discharge detector biased to achieve an improvement in signal to noise ratio of about 20 dB. The glow discharge detector tube comprises three or more electrodes, including an anode biased with respect to a cathode so as to generate a first discharge current which forms a high density plasma of electrons in a specific region of the tube, and a sensing electrode positioned with respect to the cathode such that it is affected by the area of high electron density, and biased to draw a relatively small second discharge current. Incident millimeter wave radiation interacts with electrons in the plasma region of the tube, resulting in changes in the second discharge current and the voltage at the sensing electrode.

3,790,896
AUTOMATIC GAIN CONTROL CIRCUIT

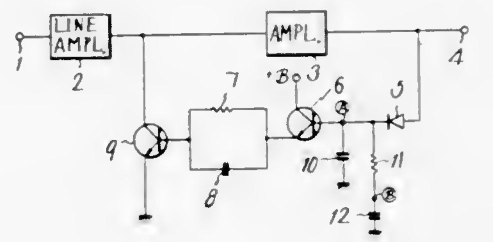
Kunio Shimizu, Tokyo; Isao Tamaki, Yokohama, and Noriyuki Yamashita, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 5, 1973, Ser. No. 321,239

Claims priority, application Japan, Jan. 11, 1972, 47/5395; Aug. 7, 1972, 47/78889

Int. Cl. H03g *3/30, 3/20*

U.S. Cl. 330—29 **19 Claims**



An automatic gain control circuit particularly desirable for use in a magnetic recording and/or reproducing apparatus includes a variable impedance element interposed in a signal shunt path to control the gain in accordance with the impedance of such element which is varied by a control signal from a plurality of capacitor charging circuits having different time constants and being supplied with the output of a rectifier for the received signal. The arrangement is such that the automatic gain control function is made dependent on the time duration of the received signal level, that is a short recovery time is provided for restoration of the original gain when an impulse or noise of short duration and high level is received, and a relatively long recovery time is otherwise provided for increasing the dynamic range of the output signal.

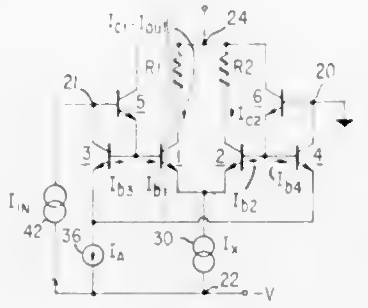
3,790,897
DIFFERENTIAL AMPLIFIER AND BIAS CIRCUIT

Carl Franklin Wheatley, Jr., Somerset County, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 5, 1971, Ser. No. 130,974

Int. Cl. H03f *3/68*

U.S. Cl. 330—30 D **10 Claims**



Differential amplifier having reduced static and cross modulation errors. The amplifier includes first and second pairs of transistors, the emitters of each pair being connected to first and second current sources, respectively. A first additional transistor is connected at its emitter to the base of one transistor from each pair and at its base to the collector of one transistor from the first pair for forming a first input terminal. A second additional transistor is connected at its emitter to the base of the remaining transistors from each pair and at its base to the collector of the other transistor from the first pair for forming a second input terminal. A current signal is applied across the input terminals for controlling the subdivision of the current from the first current source between the two transistors of the first pair thereby controlling the subdivision of the current from the second current source between the two transistors of the second pair.

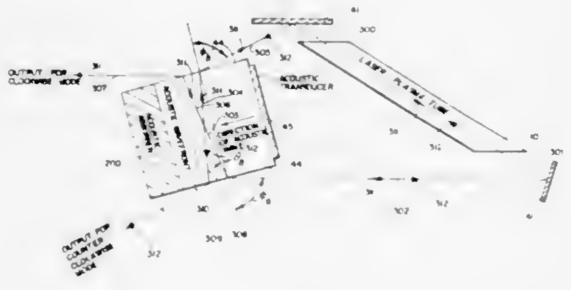
3,790,898
SELECTIVELY TUNABLE GASEOUS LASER

Richard A. Gudmundsen, Santa Ana, and James E. Rau, Anaheim, both of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 837,249, June 27, 1969, Pat. No. 3,624,551. This application July 12, 1971, Ser. No. 161,583

Int. Cl. H01s *3/08, 3/10*

U.S. Cl. 331—94.5 **12 Claims**



The invention relates to a laser device which comprises in combination laser generation means including a laser cavity which has a gaseous medium in at least a portion of the cavity and which produces directed energy comprised of a group of frequency bands. Also included are apparatuses which react with the directed energy, so designed so as to avoid translation and angular rotation of the directed energy. The apparatuses provide selective tuning of the laser cavity to at least one of the frequency bands. Included are equipments for programming the apparatuses so that the laser is tuned to either one of the frequency bands, to all of the frequency bands in a predetermined sequence, or to some of the frequency bands in a random access manner. An additional component interposed in the path of the directed energy beam enables the laser beam to act as a carrier of the electrical signals provided by this additional component.

3,790,899
DISCHARGE TUBE

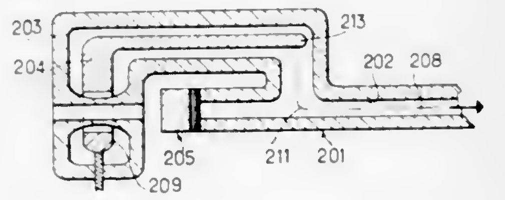
Benjamin Dessus, Paris; Jacques Migne, Bretigny-sur-Orge, and Jean-Michel Catherin, Sav Igny-sur-Orge, all of France, assignors to Compagnie Generale D'Electricite, Paris, France

Filed Oct. 12, 1971, Ser. No. 188,060

Claims priority, application France, Oct. 9, 1970, 7036591

Int. Cl. H01s *3/22, 3/02*

U.S. Cl. 331—94.5 **1 Claim**



A discharge tube which includes two electrodes, one at each end of the tube, for producing a potential barrier to urge charged particles from the end of the tube towards the discharge region of the tube. The electrodes are separated from the interior of the tube by a dielectric layer.

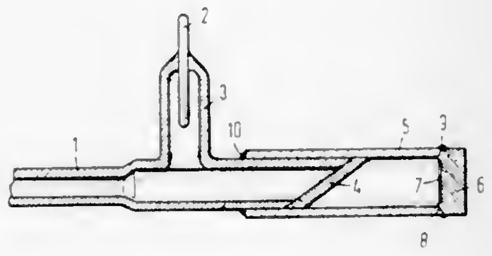
3,790,900
GAS LASER MIRROR ASSEMBLY

Hans Golser, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Continuation of Ser. No. 848,322, Aug. 7, 1969, abandoned. This application Nov. 29, 1971, Ser. No. 203,018

Int. Cl. H01s *3/02, 3/22, 3/05*

U.S. Cl. 331—94.5 **3 Claims**



A gas laser tube structure for generating a laser output comprising an elongated, evacuated envelope containing a gas suitable for producing a glow discharge with the closed ends of said envelope being made non-reflective by cutting them at Brewster's angle, hollow tubular members fixed at each end of said envelope, and reflective mirrors attached to the other end of said tubular members which define a resonant cavity of gas-tight construction.

The gas laser preferably contains a gas in the resonant cavity which does not absorb the laser radiation and the reflective mirrors prior to sealing are adjustable with respect to the tubular member whereby optimum laser output is achieved. Also covers a method of making said gas laser tube structure by providing said envelope with a gas and closing it at its ends, placing around the non-reflective ends of said envelope a tubular member in a fixed manner, energizing the laser tube, fixing an end-piece containing a reflective surface to the other end of said tubular member during the energizing step, adjusting the end-piece with its reflective surface until maximum laser output is reached and then sealing said end-piece in properly adjusted condition to said tubular member in a gas-tight manner.

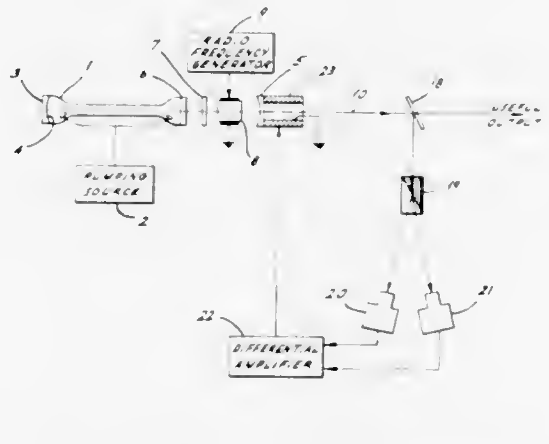
3,790,901
ELECTRO-OPTICALLY INDUCED WEAK COUPLING OF ADJACENT CARBON DIOXIDE LASER MODES

Matthew B. White, Newport Beach, and Wesley Duane Gerber, Santa Ana, both of Calif., assignors to Philco-Ford Corporation, Philadelphia, Pa.

Filed Mar. 22, 1972, Ser. No. 237,038

Int. Cl. H01s *3/10*

U.S. Cl. 331—94.5 **9 Claims**



A low level polarization modulation is applied to a carbon dioxide dual-polarization laser. The modulation frequency is approximately equal to the difference in frequency between allowed orthogonally polarized adjacent laser modes. This modulation insures dual-polarization operation in the carbon dioxide laser, which, in the absence of such modulation, will only oscillate in one mode. Adjacent mode coupling is ordinarily so strong that the oscillating mode suppresses the adjacent mode. Since the polarization modulation offsets the adjacent mode coupling it is called electro-optically induced weak coupling or EIWC.

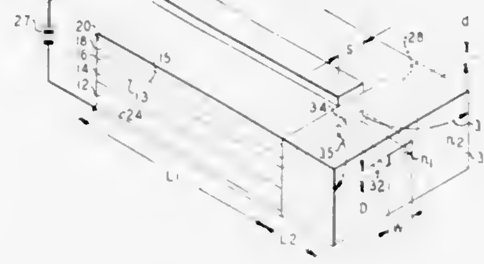
3,790,902
FUNDAMENTAL TRANSVERSE MODE OPERATION IN SOLID STATE LASERS

Stewart Edward Miller, Locust, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 5, 1972, Ser. No. 286,282

Int. Cl. G02f *3/00*

U.S. Cl. 331—94.5 C **10 Claims**



Fundamental transverse mode operation is achieved in a monolithic laser structure comprising an intracavity passive waveguide portion, which is capable of supporting only the fundamental transverse mode, arranged in tandem with the laser active medium, which typically would oscillate in a plurality of transverse modes. Particular embodiments are described for double heterostructure junction lasers.

3,790,903
TRANSISTOR MULTIVIBRATOR SWITCHABLE BETWEEN TWO RATIOS OF OFF/ON PULSE TIMES

Allen F. Hillman, Jr., Muncy, Pa., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 4, 1972, Ser. No. 311,930

Int. Cl. H03k *3/282*

U.S. Cl. 331—113 R **9 Claims**

A dual-rate free-running multivibrator circuit for producing trains of output pulses having different ratios of off/on pulse times. The multivibrator circuit includes first and second transistors and respective first and second capacitors arranged for operation in a conventional multivibrator fashion, and first and second variable-resistance arrangements respectively connected to the first and second capacitors for achieving variable RC time constants for establishing first and second sets of off and on times for the first and second transistors. Each of the variable-resistance arrangements includes first and second resistors connected in series with the associated capacitor and a transistor connected in parallel with the first resistor.

To operate the dual-rate multivibrator circuit to produce a train of output pulses having a first ratio of off/on pulse times, a control voltage having a predetermined first value is applied to the transistor included in the first variable-resistance arrangement and causes the transistor to operate in its conducting state whereby it shunts the first resistor connected in parallel therewith. The transistor in the other (second) variable-resistance arrangement operates at this time in its non-conducting state. As a result, a first set of RC time constants is established for controlling the operation of the first and second transistors, and a first train of output pulses having a first ratio of off/on pulse times is produced at an output terminal connected to the second transistor. To produce a train of output pulses having a second ratio of off/on pulse times, a control voltage having a predetermined second value is applied to the transistor included in the second variable-resistance arrangement and causes the transistor to operate in its conducting state whereby it shunts the first resistor connected in parallel therewith. The transistor in the other (first) variable-resistance arrangement operates at this time in its non-conducting state. As a result, a second set of RC time constants is established for controlling the operation of the first and second transistors, and a second train of output pulses having a second ratio of off/on pulse times is produced at the output terminal.

3,790,904
RF TERMINATION

Leo Lesyk, Walton Hills, and David A. Kaltenborn, Ravenna, both of Ohio, assignors to Bird Electronics Corporation, Salon, Ohio

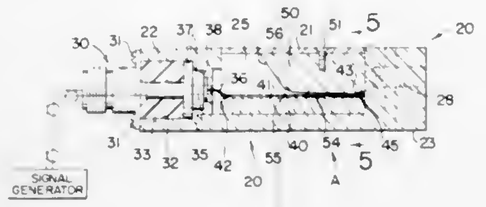
Filed Mar. 19, 1973, Ser. No. 342,784

Int. Cl. H01p *1/26*

U.S. Cl. 333—22 R **6 Claims**

A conduction-cooled load or termination for an RF coaxial transmission line. A flat film resistor coated onto a dielectric substrate of high thermal conductivity is series-connected between the coaxial conductors to convert electrical energy into heat energy. The heat energy is rapidly conducted between the reflected-back signals and the signals from the

waveguide by stripline circuits. The strip-line circuits and linearized, temperature compensated digital pressure signal in into heat energy. The heat energy is rapidly conducted through the substrate to the body of the termination which is in turn, attached in heat transfer relationship to an appropriate heat sink. A shaker with a composite surface of



generally exponential form relative to the path of conduction across the film is located over the exposed surface of the film to establish for the termination a low VSWR characteristic over a wide frequency range.

3,790,905

WAVEGUIDE FOR SIMULTANEOUSLY TRANSMITTING TWO ELECTROMAGNETIC WAVES

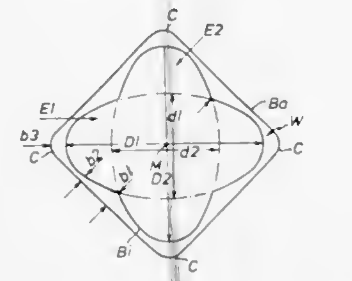
Erich Schuttloffel, Backnang, Germany, assignor to Licentia Patent Verwaltungs-GmbH, Frankfurt, Germany

Filed Nov. 24, 1971, Ser. No. 201,661

Claims priority, application Germany, Dec. 3, 1970, P 20 59 494.9

Int. Cl. H01p *3/12, 3/14*

U.S. Cl. 333—95 A **8 Claims**



A flexible waveguide for the simultaneous transmission of two perpendicularly disposed linearly polarized electromagnetic waves. The waveguide is in the form of a hollow, elongated, thin-walled flexible metal body which has a constant cross-sectional profile along its longitudinal axis. The outer periphery of the cross-sectional profile is approximately quadratic with rounded corners and constitutes a continuous smooth curve free of abrupt changes in slope. The inner periphery of the cross-sectional profile defines the cross section of a longitudinally extending recess. The cross section of the recess is in the form of two, overlapping, identical ellipses having major axes which are perpendicular to one another.

3,790,906

SYSTEM FOR STABILIZING CABLE PHASE DELAY UTILIZING A COAXIAL CABLE UNDER PRESSURE

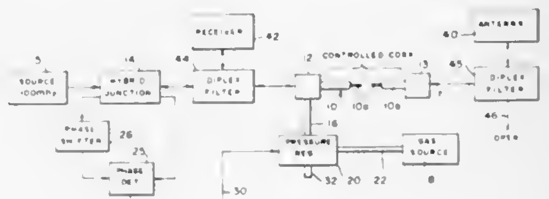
James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Philip A. Clements, La Crescenta, Calif.

Filed Feb. 23, 1973, Ser. No. 335,201

Int. Cl. H04b *3/10*

U.S. Cl. 333—16 **10 Claims**

A system for stabilizing the phase delay of signals passing through a pressurizable coaxial cable is disclosed. Signals from an appropriate source at a selected frequency, e.g., 100 MHz, are sent through the controlled cable from a first cable end to a second cable end which, electrically, is open or heavily mismatched at 100 MHz, thereby reflecting 100 MHz signals back to the first cable end. Thereat, the phase difference between the reflected-back signals and the signals from the source is detected by a phase detector. The output of the latter is used to control the flow of gas to or from the cable, thereby controlling the cable pressure, which in turn affects the cable phase delay. At the start of a period over which the cable phase delay is to be stabilized, the signals from the source which are supplied to the phase detector are phase shifted by a phase shifter until the detector's output is 0 volt, thereby inhibiting gas to flow either to or from the cable. Under these conditions, the cable phase delay represents an initial phase delay which is to be maintained constant over the period of interest. During the period any change in the cable phase delay from the initial phase delay results in an output of the phase detector which is other than 0 volt. The output is used to control gas to flow to or from the cable thereby vary the cable pressure until the output of the detector is again 0 volt, which indicates that the cable phase delay is again equal to the initial phase delay.



3,790,907

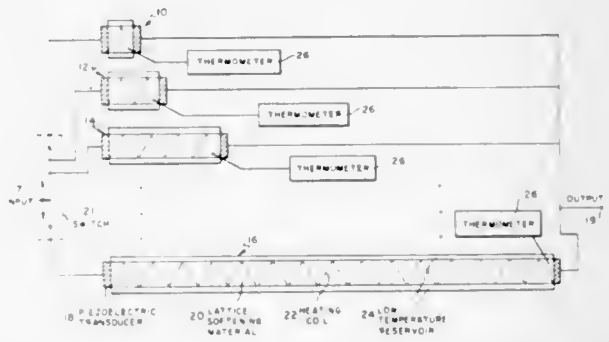
LATTICE SOFTENING VARIABLE DELAY LINE

Edward M. Alexander, College Park, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 30, 1973, Ser. No. 346,538

Int. Cl. H03h *7/20, 7/36, 9/30*

U.S. Cl. 333—30 R **18 Claims**



A device for providing a continuously variable delay for successive pulses in a rf pulse train or for individual pulses by using the principle of variable velocity of acoustic waves in materials in which phonons soften. By employing a series of phonon softening devices, each contributes to the desired total delay while introducing a minimum amount of attenuation.

3,790,908

HIGH POWER DIODE PHASE SHIFTER

Richard W. Burns, Orange, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

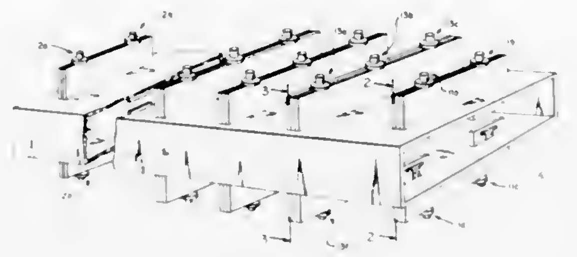
Filed Dec. 29, 1972, Ser. No. 319,271

Int. Cl. H03h *7/18*

U.S. Cl. 333—31 A **11 Claims**

A voltage-controlled phase shifter of the loaded-line type is disclosed employing arrays of diode switches coupled to probes in quarter wavelength spaced planes of a rectangular

waveguide by stripline circuits. The strip-line circuits and probes are adjusted in design and position to give a small value of susceptance per diode in shunt with the waveguide. The



total shunt susceptance across the waveguide in the same plane is thus divided between two or more diode switches to achieve a division of the power being propagated in the waveguide.

3,790,909

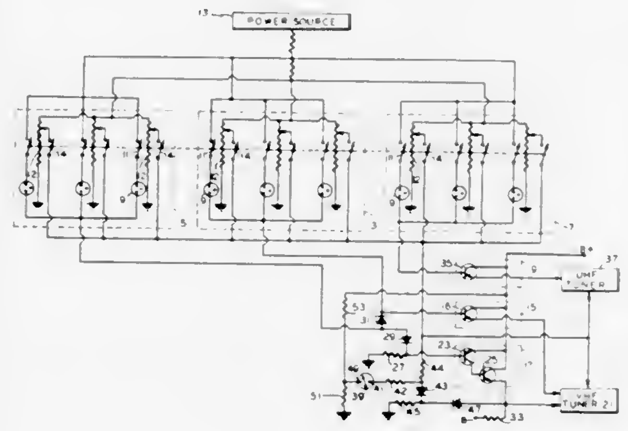
VARACTOR TUNER BAND SWITCH CIRCUITRY

Paul Eshelman Le Fevre, Pavilion, N.Y., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Jan. 26, 1973, Ser. No. 326,758

Int. Cl. H03j *3/06*

U.S. Cl. 334—14 **9 Claims**



A signal receiver having VHF and UHF varactor tuners and a channel indicating group for the upper and lower VHF channels and for the UHF channel includes band switching circuitry for selectively coupling a plurality of power sources to the tuners in accordance with activation of a particular channel indicating group.

3,790,910

CONDITIONING CIRCUIT AND METHOD FOR VARIABLE FREQUENCY SENSOR

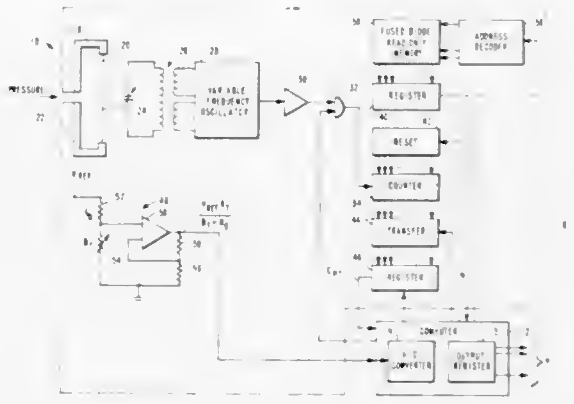
William H. McCormack, San Pedro, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Apr. 21, 1972, Ser. No. 246,471

Int. Cl. G06f *15/34*

U.S. Cl. 235—151.3 **19 Claims**

A conditioning circuit includes a computer connected to a pressure transducer having a variable frequency oscillator the output signal of which varies with pressure, a temperature sensor, a read only memory storing constants which are dependent upon the particular transducer and application, and a counter connected to count the variable frequency output signal when gated. In accordance with the disclosed method, the computer obtains a digital count signal indicative of oscillator frequency by gating the output signal to the counter for a predetermined interval, converts an analog signal from the temperature sensor to a digital signal, and then computes a linearized, temperature compensated digital pressure signal in accordance with a predetermined function which utilizes constants stored in the read only memory to initially scale and translate the count signal for maximum computer accuracy,



corrects for nonlinearities in the count signal, and corrects for variations in the count signal with temperature. The computed signal then appears at the output as a binary digital word accurately representing sensed pressure over a wide range.

3,790,911

ELECTRICAL CIRCUIT-BREAKER

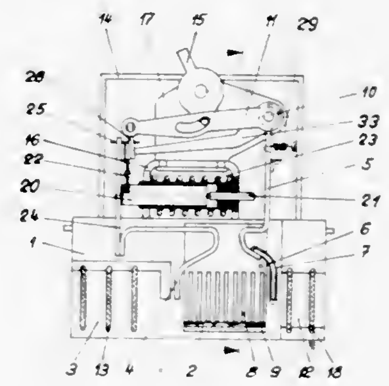
Hermann Kick, Schaffhausen, and Walter Schwyn, Beringen, both of Switzerland, assignors to Carl Maier & Cie, Schaffhausen, Switzerland

Filed Sept. 29, 1972, Ser. No. 293,453

Claims priority, application Switzerland, Sept. 30, 1971, 14378/71

Int. Cl. H01h *9/30*

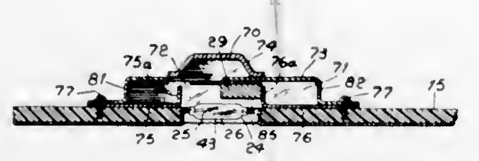
U.S. Cl. 335—201 **8 Claims**



An electrical circuit-breaker having contacts with double rupturing, comprising two fixed contact members and at least one movable contact member. There is provided mechanism for actuating the movable contact member and including an armature which knocks away the movable contact member in case of short circuit, and two arc quenching chambers each having at least one gas outlet opening. Each quenching chamber is equipped with a U-shaped iron plate, the opening of the U facing towards the mechanism. According to the invention, the two arc quenching chambers are arranged along the two opposite sides of a separating wall of insulating material in a manner that the gas outlet opening of the chambers as well as the fixed contact members are separated mechanically and electrically by the wall, and the wall serves as a support for other structural parts of the breaker.

3,790,912
FLASHLIGHT AND SWITCH ASSEMBLY

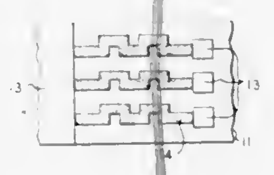
John D. Murphy, 22 E. 22nd St., Bayonne, N.J.
Division of Ser. No. 210,791, Dec. 22, 1971, Continuation-in-part of Ser. No. 156,661, June 25, 1971, abandoned. This application Oct. 2, 1972, Ser. No. 293,922
Int. Cl. H01h *36/00*
U.S. Cl. 335—205 **2 Claims**



An improved flashlight construction which substantially reduces the possibility of arcing, having a glass enclosed magnetic reed switch electrically connected to the conductor strips along the wall of the flashlight case and having the magnet required to close the contact arms of the reed switch incorporated into a slidably mounted switch cover, the conductor strips being electrically connected in a fixed position between the conductor rings at the ends of the case. In a modified form of the switch assembly, the magnet is positioned in a preformed case which is mounted on the outside of the flashlight case so that the movable parts of the switch are completely separated from the internal parts of the flashlight. Other modifications of switch covers having magnets mounted therein which can be locked in either the "On" or "Off" position by means of magnetizable steel are also shown.

3,790,913
THIN FILM RESISTOR COMPRISING SPUTTERED ALLOY OF SILICON AND TANTALUM

Frank Groom Peters, 104 Stanley Ave., Nutley, N.J., and Newton Schwartz, 19 Skyline Dr., Morris Twp., Morris County, N.J.
Division of Ser. No. 268,588, July 3, 1972. This application Apr. 2, 1973, Ser. No. 347,228
Int. Cl. H01c *7/00*
U.S. Cl. 338—308 **1 Claim**

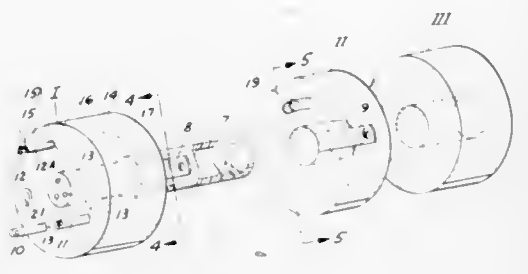


A thin film material capable of functioning as the anode in electrochemically formed thin film capacitors and as the resistive track in anodized resistors in thin film integrated circuits comprising a film of sputtered tantalum and silicon.

3,790,914
DOUBLE LOCK ELECTRIC PLUG

David S. Hough, 17055 Brewer Rd., Dundee, Mich.
Filed May 10, 1973, Ser. No. 358,887
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 P **5 Claims**

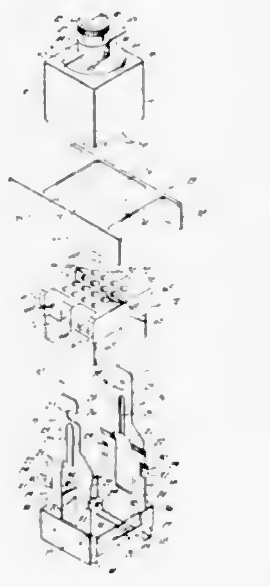
A cylindrical body of di-electric material, having an axial bore with an electric cable received therein, and comprising; a first ring, having on one face, a tubular axial extension, and having on the other face, three conductive prongs, including a ground prong, for being received in a conventional power outlet, said prongs being connected to the wires of said cable; a second ring rotatable on said extension and a third ring on said extension, which serves as a thrust bearing for the second ring and a retainer for said cable. The ground prong has a bifurcated, or split, outer wall in which lies a rotatable cam rod, which extends through the first ring and into a cam slot formed in the second ring. The cam rod has at one end a flat coin-like locking head, which when rotated in one direction, expands the walls of said ground prong to prevent withdrawal of the plug from the socket.



At the other end of said cam rod is a cam for axially rotating the said rod, when the second ring is rotated on the said axial extension. Each said first and second ring has a perforated tab thereon for receiving a padlock, to prevent rotation of the two rings, with respect to each other, when said cam rod is in locking position.

3,790,915
MOUNTING ARRANGEMENT FOR ELECTRICAL PLUG-IN COMPONENTS

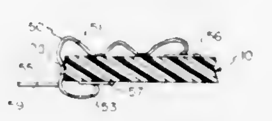
Alanson G. Dugan, East Norwich, and John Lockyer, Smithtown, both of N.Y., assignors to Deutach Relays, Inc., East Northport, N.Y.
Filed Feb. 14, 1972, Ser. No. 225,957
Int. Cl. H01r *13/54;* **H02b** *1/02*
U.S. Cl. 339—88 R **15 Claims**



An arrangement for supporting electrical plug-in components which includes a mounting member defining an opening through which extend the opposed flexible walls of an attaching unit having a bottom portion which carries one component to be secured, this component having abutments to engage the undersurface of the mounting member, while tabs on the opposed walls engage the upper surface of the mounting member, the other component fitting between the opposed walls and having a spring-loaded, manually-operable, rotatable latching arrangement engaging the ends of the opposed walls to hold the other component in place.

3,790,916
EDGE MOUNT CONNECTOR TERMINAL

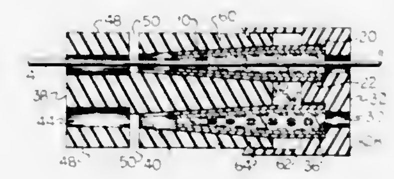
Gerald A. Keitel, Park Ridge, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Aug. 3, 1972, Ser. No. 277,714
Int. Cl. H01r *9/12*
U.S. Cl. 339—95 R **9 Claims**



An edge mount connector terminal connectible to the edge portions of board-like substrates and engageable with edge mounted terminal pads. The connector terminal is comprised of a pair of oppositely disposed elongated jaw members commonly depending from a bight portion and insertable onto the edge portion of the substrate. One of the jaw members is generally greater in length than the other jaw member and has its free end portion serrated for anti-slippage contact with the terminal pad. The end portion is biased onto the terminal pad and has improved mechanical construction to permit improved solder attachment techniques. The one jaw member also engages the substrate other than at its free end portion in a location generally opposite from the area of engagement of the other jaw member with the substrate for providing stabilization of the connector terminal with respect to the substrate and the terminal pad.

3,790,917
STRIP METHOD

Jimmy C. Ray, Rt. 2, Box 28-D, Denison, Tex.
Continuation-in-part of Ser. No. 702,375, Feb. 1, 1968, Pat. No. 3,551,803. This application Oct. 28, 1968, Ser. No. 770,958
Int. Cl. H01r *9/08*
U.S. Cl. 339—95 R **19 Claims**

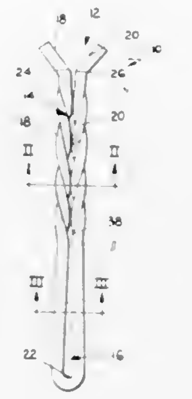


A wire from each of two communication cables to be spliced is inserted into a tang connector, which has a stiff plate above and below the connector. The tanged connector is one of many in a block. The connectors, each containing wire, are crimped by forcing each connector into a tapered hole, the plurality of tapered holes being located in a crimp block. After crimping the connectors, the excess wire is cut off by a cutter in a slot in the crimp block. The crimp block is left permanently attached to the connectors in the completed splice. The holes in the crimp block extend through the crimp block leaving the end of each connector exposed for future connections. A square pin extending from one of the stiff plates provides a pin for making a future connection.

3,790,918
ELECTRICAL CONNECTOR

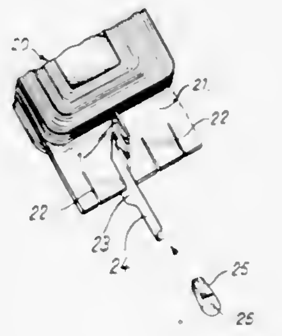
William C. Dauser, North Muskegon, Mich., assignor to Lloyo A. Heneveld, trustee of Dauser Trust IV, Grand Rapids, Mich.
Filed Jan. 21, 1972, Ser. No. 219,711
Int. Cl. H01r *9/08*
U.S. Cl. 339—97 R **15 Claims**

An insulation stripping, solderless electrical connector formed of a twisted length of wire-like resilient material having the lower U shaped portion forming a conductor-engaging pressure junction to securely hold the conductor therein. In one of its embodiments, the connector includes exposed twisted, sharpened portions at the upper or entrance portion which cut and clean the insulation from a conductor. In another embodiment of the invention, the entrance portion or channel is provided with facing serrated edges to clean and strip the insulation from the conductor.



3,790,919
CONTACT PIECE FOR THE SOLDERLESS CONNECTION OF AN INSULATED ELECTRICAL CONDUCTOR AND METHOD OF USING SAME

Josef Landolt, Nafels, Switzerland, assignor to F. Knobel Elektro-Apparatebau AG, Ennenda, Switzerland
Filed Mar. 9, 1972, Ser. No. 233,144
Int. Cl. H01r *9/08*
U.S. Cl. 339—97 P **4 Claims**

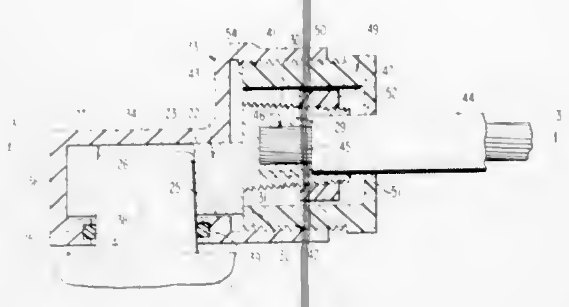


A contact piece for the solderless connection of an insulated conductor comprising a contact piece body having at least two cooperating cutting or knife edges serving to fixedly clamp therebetween the insulated conductor while penetrating through the conductor insulation.

3,790,920
BATTERY TERMINAL CONNECTOR AND HOUSING

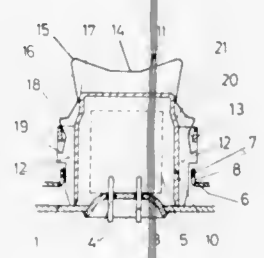
Richard R. Wening, Santa Ana, Calif., assignor to Wening Avionics, Inc., Santa Ana, Calif.
Filed Sept. 29, 1972, Ser. No. 293,334
Int. Cl. H01r *13/52*
U.S. Cl. 339—116 C **11 Claims**

A battery terminal post receives a split connector cap of compatible metal and the cap is firmly clamped to one end of a battery cable. A housing element for the battery terminal post and connector cap is sealed around the post in a fluid-tight manner. A threaded clamping or pressure sleeve is received in a threaded bore of the housing element and exerts pressure on a rear face of the connector cap. The cap and interior of the housing element are configured to cause firm clamping of the split cap on the battery terminal post in response to the pressure exerted by said sleeve.



3,790,921
ELECTRIC CONNECTING DEVICE FOR AN ENCASED REFRIGERATING MACHINE

Erik Nielsen, and Hans Christian Pedersen, both of Nordborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark
Filed Nov. 12, 1971, Ser. No. 198,205
Claims priority, application Germany, Nov. 10, 1970, P 20 55 184.2
Int. Cl. H01r *13/54*
U.S. Cl. 339—75 R **2 Claims**

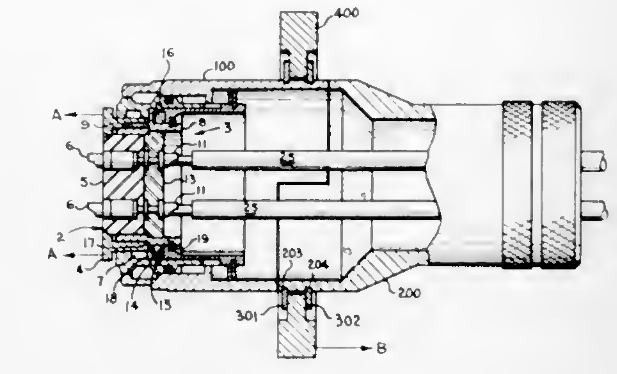


The invention relates to an electrical housing assembly for a refrigeration machine which attaches to the casing wall of the refrigeration machine. The housing assembly encloses a plug element which is mounted on insulated guide pins which extend through the casing wall. The housing assembly comprises a plastic box which surrounds the plug element and a U-shaped spring for attaching the cover to the casing wall. Attaching means for the spring include guide track elements having hooking edges which facilitate the easy snapping of the spring into and out of its attached position.

3,790,922
COUPLING FOR AN ELECTRICAL CONNECTOR

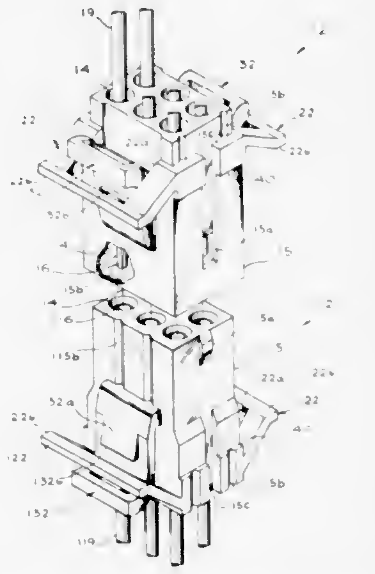
Richard W. Normann, Otego, N.Y., assignor to The Bendix Corporation, Southfield, Mich.
Filed May 8, 1972, Ser. No. 251,158
Int. Cl. H01r *13/46*
U.S. Cl. 339—126 R **6 Claims**

An easily disconnectable sleeve that houses one half of a quick release or emergency release type connector assembly. The rear portion of the sleeve may be removed for access to the junction between the electrical contacts of the connector and the incoming wires, thereby permitting the electrical circuitry to be checked without disconnecting the connector assembly. The rear portion of the sleeve is fixedly secured to the front portion of the sleeve by two snap rings and a coupling ring. Unlike a threaded coupling, this coupling is capable of transmitting torque and resisting vibrations that would normally uncouple a threaded coupling.



3,790,923
ELECTRICAL CONNECTOR HAVING IMPROVED PANEL MOUNTING MEANS AND AN IMPROVED RELEASABLE CONTACT CONSTRUCTION

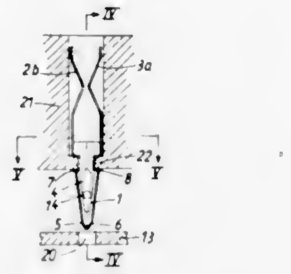
Istvan Mathe, Cicero, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.
Filed Apr. 4, 1972, Ser. No. 241,014
Int. Cl. H02b *1/02*
U.S. Cl. 339—128 **5 Claims**



An electrical connector having an improved panel mounting construction and an improved releasable contact construction. The improved panel mounting construction typically comprises first and second pairs of resilient wings provided on opposite sides of the housing. Each pair of wings comprises a resilient stop wing and a deflectable snap-in wing projecting through an aperture provided in the stop wing. The stop wing provides bearing surfaces for resiliently bearing against the entry side of a panel and the snap-in wing has a locking lip with bearing surfaces for resiliently bearing against the opposite side of the panel after being passed through a panel opening by inward deflection of the snap-in wing. The improved releasable contact construction provides for unusually reliable and rugged retention of a contact in its receiving cavity by the combined action of a deflectable retention tine provided on the contact operating on the principle of long beam deflection with respect to a retention shoulder in the cavity along with two additionally provided radially compressible retention flares operating on the principle of radial compression with respect to the same retention shoulder.

3,790,924
RELAY-PLUG-IN CONTACT SPRING

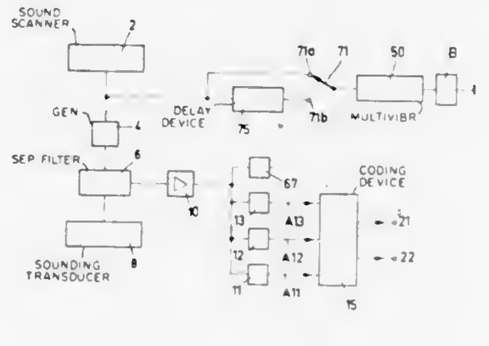
Hans Sauer, Deisenhofen, Germany, assignor to Matsushita Electric Works Ltd., Osaka, Japan
Filed May 8, 1972, Ser. No. 250,958
Claims priority, application Germany, May 21, 1971, P 21 25 169.4
Int. Cl. H01r *13/12*
U.S. Cl. 339—258 R **5 Claims**

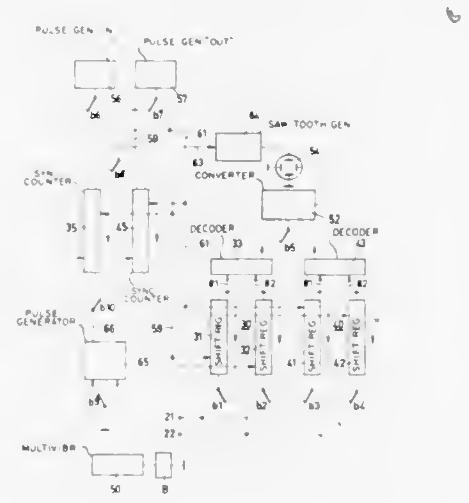


A spring plate is cut and bent along a center axis to form at one end resilient portions for receiving a contact pin and at the other end a generally trough-shaped tapering connector portion adapted to be inserted into a hole of a conductor plate and provided with a converging opening for receiving a connecting wire.

3,790,925
ECHO-SOUNDING APPARATUS HAVING A DIGITAL INTERMEDIATE STORE

Erhard Ahrens, Kiel, Germany, assignor to Electroacustic GmbH, Kiel, Germany
Filed June 19, 1970, Ser. No. 47,770
Claims priority, application Germany, June 26, 1969, P 19 32 346.7
Int. Cl. G01s *9/68*
U.S. Cl. 340—3 R **6 Claims**

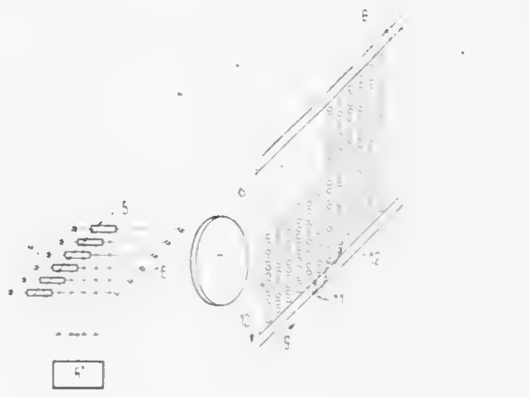




This invention relates to echo-sounding apparatus of the kind employing at least one digital intermediate store and an indicating apparatus, and in which echo signals that arise within a sounding period and which form echo information, are read into the intermediate store and are subsequently interrogated or read out of this store and then fed to the indicating apparatus. In order to remove the defects attendant upon hitherto usual digital intermediate stores, the invention provides at least one timing pulse generator which is associated with the intermediate store and is operable at a selected frequency or, alternatively, at least two timing pulse generators are provided that operate at different pulse frequencies: in either case the intermediate store is operated on read-in of the echo information at a frequency which is different from the read-out frequency. As a result, it is possible to adjust the read-out speed independently of the read-in speed. In this way, either the whole of the echo information can be read-out slower or quicker than the speed of read-in or, alternatively, a portion of the echo information can be read-out slower or quicker than the remaining part of the echo information.

3,790,926
METHOD FOR DETERMINING THE SPEED OF A VEHICLE

Dietlind Pekau, Krailling, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany
Filed June 13, 1972, Ser. No. 262,341
Claims priority, application Germany, July 6, 1971, P 21 33 524.0
Int. Cl. G01s *9/66*
U.S. Cl. 340—3 R **17 Claims**



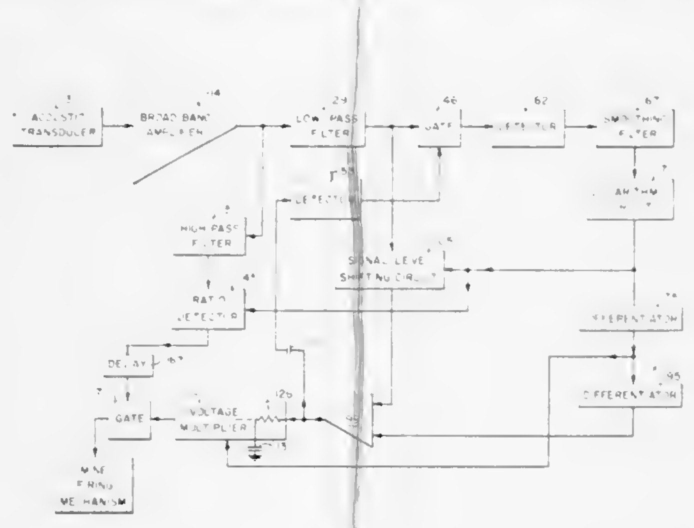
A method of determining the speed of vehicle, particularly a ship by the transmission of coherent waves, with echo signals being received at a plurality of points along a receiving line extending parallel to the azimuth direction, with both phase and amplitude information of the received echo signals being recorded as a function of the receiving time, while applying a reference signal, thereby forming one-dimensional holograms, employing an impulse repetition having a time interval T between successive impulses such that the distance *d*, traveled by the vehicle within the time interval T is less than one-half of the overall distance between the first and last of said receiving points, (defining the length *L* of the receiving line), i.e. $d<L/2$ in which a cross correlation function of the one-dimensional holograms of an impulse and the following impulse is formed, whereby the vehicle speed may be calculated from the positions of the correlation maximums.

3,790,927
UNDERWATER SOUND SIGNAL DISCRIMINATING SYSTEM

Adolph M. Chwastyk, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Oct. 15, 1958, Ser. No. 767,489
Int. Cl. H04b *11/00*
U.S. Cl. 340—5 R **16 Claims**

1. An underwater actuation system comprising means for detecting an underwater sound pressure wave and for

developing an electrical signature signal correlative thereto, means for separating said signature signal into a plurality of different energy components, means for detecting the envelope of one of said energy components, means for deriving a signal corresponding to the logarithm of said detected envelope, means for deriving a signal representative of the first derivative of said logarithm signal, means for deriving a signal representative of the second derivative of said logarithm signal, means for developing a triggering signal corresponding to the product of said first and second derivative signals, means coupled to said triggering signal for developing an output, circuit means normally effective for preventing the application of said triggering signal to said output developing means, means coupled to said logarithm signal deriving means and to said one of said energy components for interrupting the passage of said one of said components within the actuation system, means for developing a control signal correlative to the ratio between the other of said energy components and the average value of said one energy component, and means coupled to said control signal for rendering said circuit means effective when a predetermined relationship between said control signal and said triggering signal is effected.

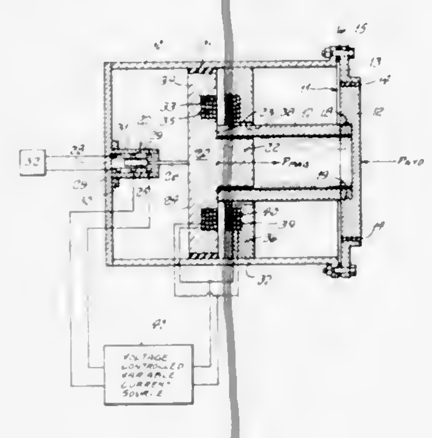


3,790,928
TRANSDUCER PRESSURE RELEASE SYSTEM

Oscar W. Schoen, Jr., Ontario, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 29, 1969, Ser. No. 872,433
Int. Cl. H04r *1/44*

U.S. Cl. 340—8 R **6 Claims**



A transducer pressure release system wherein the transducer element is supported between a radiating and a load mass, both of which are resiliently supported in a watertight housing. A pair of magnetic coacting coils, one of which is affixed to said housing and the other to one of the masses, are supplied current through a control means from a constant voltage source. The control means receives an input signal from a displacement sensor which detects the movement of one of the masses and fixes a current through the coils to restore the masses to a constant separation therebetween, thus providing isolation and proper pressure release.

3,790,929
SKIP-SPREAD METHOD FOR SEISMIC SURVEYING

William Harry Mayne, and Thomas R. Crump, both of San Antonio, Tex., assignors to Petty Geophysical Engineering Company, San Antonio, Tex.

Filed Oct. 19, 1971, Ser. No. 190,478
Int. Cl. G01v *1/24*

U.S. Cl. 340—15.5 MC **18 Claims**

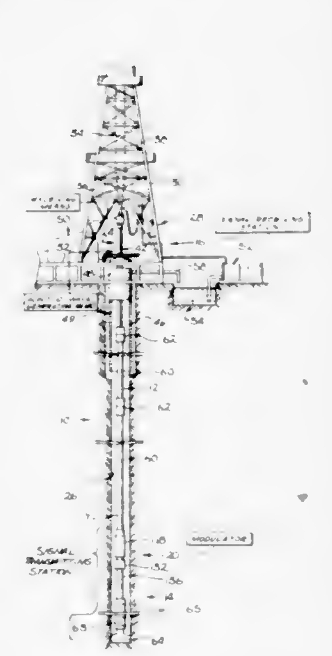
A method of seismic data acquisition wherein the average speed of data acquisition is rapid and the time and total cost necessary for data acquisition are maintained at relatively low levels. A seismic cable may be towed during an activated portion of its travel at a speed sufficiently slow to achieve optimum results of data acquisition and may be towed at a much greater speed during a deactivated portion of its travel thereby causing its average towing speed to be faster than is ordinarily practicable thereby reducing costs of data acquisition without adversely affecting the quality of the seismic data acquired.

3,790,930
TELEMETERING SYSTEM FOR OIL WELLS

Arthur E. Lamel, Arcadia; William D. Squire, and Harper J. Whitehouse, both of San Diego, all of Calif., assignors to American Petroscience Corporation, Bakersfield, Calif.

Filed Feb. 8, 1971, Ser. No. 113,147
Int. Cl. G01v *1/14*

U.S. Cl. 340—18 NC **23 Claims**



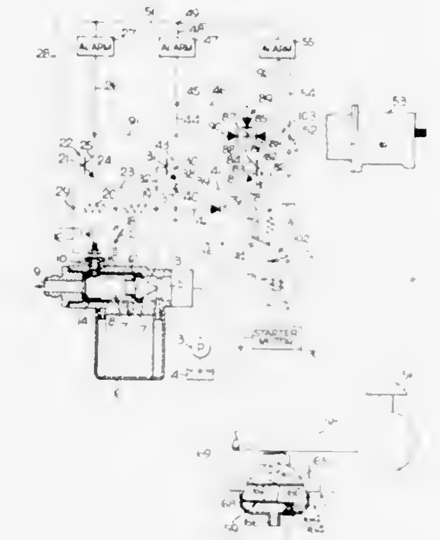
An acoustic communication method and system for transmitting information through a well bore drill string or other pipe by establishing in the pipe modulated torsional acoustic waves, preferably of zero order, which contain the information to be transmitted and travel from a signal transmitting station to a signal receiving station spaced along the pipe, for demodulating the modulated waves arriving at the receiving station to recover the transmitted information. The modulated waves may be established in the pipe either by driving the pipe in torsional oscillation and modulating the resulting torsional waves in the pipe at the transmitting station or by launching modulated torsional waves through the pipe at the transmitting station. In its principal application, the invention is utilized to monitor selected well drilling parameters, such as temperature, formation pressure, formation porosity, drill string orientation, and/or to operate devices within the well bore. Primary advantages of the invention are reduced acoustic transmission losses from acoustic coupling to the drilling fluid and well bore wall and the ability to transmit information while drilling is in progress. According to the preferred practice of the invention, when monitoring drilling parameters, the torsional acoustic waves are launched downwardly through the drill string from the surface by exciting the upper end of the string in a zero order torsional acoustic oscillation at frequencies within the base band of the drill string acoustic transmission characteristics so as to minimize attenuation of the acoustic waves by the couplings between the drill string pipe sections. These torsional acoustic waves are modulated at a subsurface signal-transmitting station along the drill string and returned back through the string to a surface signal-receiving station where the modulated waves are demodulated to recover the transmitted information.

3,790,931
FILTER BYPASS WARNING CIRCUIT ON A MOTOR VEHICLE

James E. Leveraus, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed June 30, 1972, Ser. No. 268,061
Int. Cl. G08b *21/00*

U.S. Cl. 340—60 **10 Claims**



An electric warning circuit operated by a filter bypass valve operating as a switch.

3,790,932
VISUAL BRAKING WARNING DEVICE FOR LAND VEHICLES

Jeffrey David Ridpath, Severn Bridge, Ontario, Canada, assignor to Shakespeare Company, Columbia, S.C.

Filed June 30, 1972, Ser. No. 268,084
Claims priority, application Canada, Jan. 14, 1972, 132,438
Int. Cl. B60q *1/54*

U.S. Cl. 340—62 **10 Claims**

A visual braking warning system for land vehicles, particularly snowmobiles and the like, includes an electrical signal generating means which produces a signal that varies in accordance with the speed of an engine driving the vehicle, measuring means arranged to measure and control the signal from the signal generating means, and means arranged to provide a visual warning to following vehicles when the engine speed is shown by the measuring means to have fallen below a predetermined speed.

3,790,933
VEHICLE SECURITY SYSTEM

Arthur H. Cort, 23 Bittersweet Ln., Weston, Mass.

Filed June 9, 1972, Ser. No. 261,265
Int. Cl. B60r *25/10*

U.S. Cl. 340—63 **8 Claims**

A security system for use in a motor vehicle and particularly one carrying valuable cargo operates to permit normal operation of the vehicle over a predetermined time interval when a proper code has been entered into a code logic means of the system, and subsequently inhibits normal operation of the vehicle such as by locking the brakes of the vehicle after the termination of the predetermined time interval unless a second proper code, preferably different from the previously entered code, has been entered into the code logic means of the system. In a preferred embodiment of the invention the system includes a master timer defining a first time interval the length of which may be dependent upon a portion of the entered code, a warning timer responsive to the termination of the first time interval and defining a second time interval, preferably shorter than the first time interval, and an emergency timer responsive to the termination of the second time interval and operation of an emergency switch for enabling continued operation of the vehicle for a third time interval comparable to the second time interval. The system may also include an electromechanical lock located inside the cargo compartment and second code logic means responsive to entry of a second proper code for opening the lock.

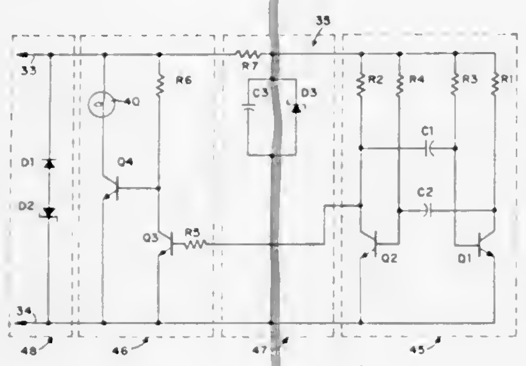
tainer and to a switching means which activates a first electron

doppler modulation information if a matching relation exists between the coded echo signals and the secondary code train.

the modulation on a transmitted radio frequency signal by a null sensing servo which shifts the phase of the ranging tone

3,790,934
BATTERY OPERATED MOTOR VEHICLE LAMP WARNING FLASHING CIRCUIT

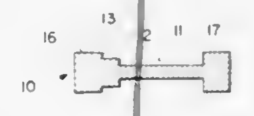
John I. Koeper, New Bremen, Ohio, assignor to Crown Controls Corporation, New Bremen, Conn.
Filed Sept. 5, 1972, Ser. No. 286,030
Int. Cl. B60q *1/46*
U.S. Cl. 340—81 R **2 Claims**



In a battery operated motor vehicle, a warning lamp flasher circuit is provided which includes a free running multivibrator for determining the lamp flashing rate, switch means for controlling current through the warning lamp, a regulated power supply for establishing a regulated voltage for the multivibrator and to suppress any positive transients which may be generated by the vehicle motor control system, and a circuit for suppressing negative voltage transients exceeding a predetermined value.

3,790,935
BUBBLE IN LOW COERCIVITY CHANNEL

Peter Purnell Luff, Ottawa, Ontario, Canada, assignor to Bell Canada-Northern Electric Research Limited, Ottawa, Ontario, Canada
Filed Mar. 26, 1971, Ser. No. 128,285
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 TF **3 Claims**

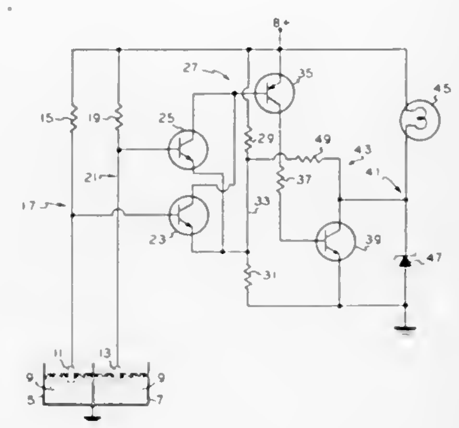


The surface of a magnetic oxide layer, or platelet, has one or more cavities formed therein. The cavities extend in a predetermined pattern and the bottom of each cavity has a coercivity lower than the coercivity at the surface of the layer. Thus magnetic domains follow the pattern of a cavity. A cavity may be formed with a base surface and at least one intermediate surface which has a coercivity intermediate the bottom or base surface, and the outer surface. The bottom of a cavity can be given a stepped formation to provide positive domain locations along a cavity.

3,790,936
FLUID LEVEL DETECTOR

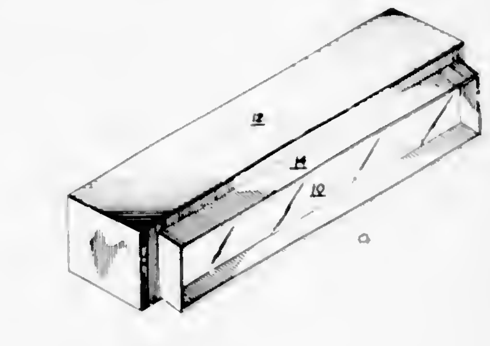
William C. Knoll, Turbotville, Pa., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.
Filed Apr. 27, 1972, Ser. No. 247,971
Int. Cl. B60g *1/00;* **G08b** *21/00*
U.S. Cl. 340—244 E **10 Claims**

A shift in liquid level of apparatus having dual containers each including an electrically conductive liquid is indicated by activation of a voltage divider circuit coupled to each container and to a switching means which activates a first electron device and, in turn, activates a second electron device having a load circuit with an indicator device and a feedback circuit for effecting saturated conduction of the electron devices.



3,790,937
SIGNAL LIGHT

Donald M. Munroe, Ithaca, N.Y., assignor to Charles C. Krawczyk, Brighton, N.Y.
Filed June 29, 1971, Ser. No. 157,843
Int. Cl. G08g *1/95;* **G08b** *5/00*
U.S. Cl. 340—378 R **14 Claims**



An enclosure for a signal light includes an elongated radiation transparent section. An elongated radiation source provides three colors of visible radiation, green, amber and red. The radiation source is electrically controlled for sequentially transmitting the green, amber and red colors through the elongated transparent section to provide signals for traffic control.

3,790,938
MOVING TARGET INDICATOR SYSTEM AND APPARATUS

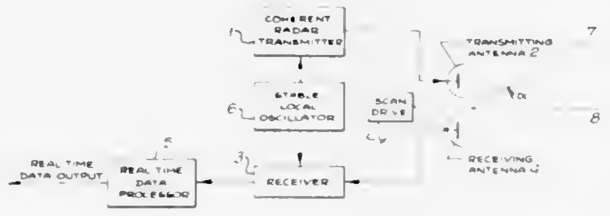
Richard W. Anderson, Reading, Mass.; Bernard J. Weiss, Deerfield, N.H., and Hubert E. Holley, Melrose, Mass., assignors to Cygned, Inc., Salem, N.H.
Filed May 25, 1972, Ser. No. 256,792
Int. Cl. G01s *9/42*
U.S. Cl. 343—7.7 **25 Claims**

A moving target indicator system includes a signal source for generating an RF output signal, a code generator for generating a primary code train and a plurality of secondary code trains delayed relative to the primary code train, and modulator means responsive to the primary code train to modulate the RF output signal to produce a coded RF output signal. The coded RF output signal is transmitted and coded echo signals reflected by targets are compared with a selected secondary code train to produce a unipolar signal train with doppler modulation information if a matching relation exists between the coded echo signals and the secondary code train.

The doppler modulation of the unipolar signal train is detected and a corresponding indicator is actuated.

3,790,939
REAL TIME SYNTHETIC RADAR

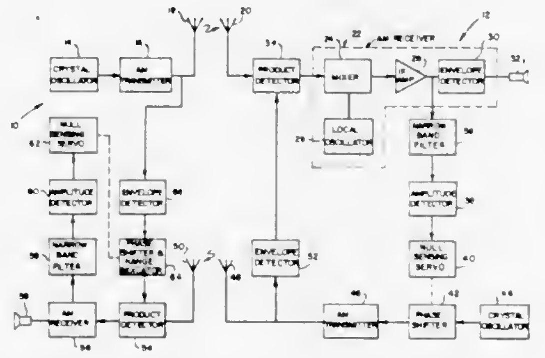
James Nickolas Constant, 1603 Danbury Dr., Claremont, Calif.
Continuation-in-part of Ser. No. 46,409, June 15, 1970, abandoned. This application May 12, 1972, Ser. No. 252,711
Int. Cl. G01s *9/233*
U.S. Cl. 343—10 **14 Claims**



A coherent synthetic aperture radar with a scanning transmitter beam and a data processor, preferably operating in real time and preferably with CW transmitter operation, providing target coordinates, including range, without requiring comparison of echo and transmitted pulses for range data.

3,790,940
COMMUNICATION APPARATUS HAVING A RANGING CAPABILITY

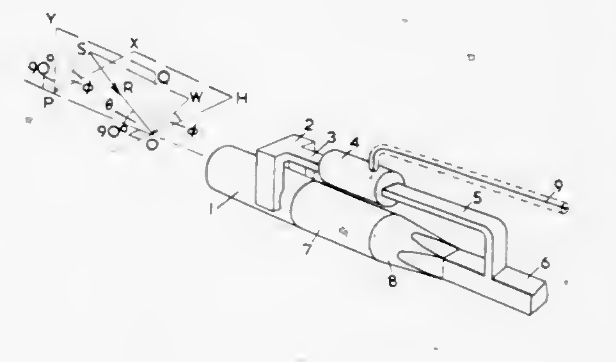
Harold D. Becker, Buffalo, N.Y., assignor to Cornell Aeronautical Laboratory, Inc., Buffalo, N.Y.
Filed Oct. 12, 1971, Ser. No. 188,046
Int. Cl. G01s *9/38*
U.S. Cl. 343—12 R **13 Claims**



A communication apparatus having a ranging capability wherein the phase of a ranging tone is locked to the phase of the modulation on a transmitted radio frequency signal by a null sensing servo which shifts the phase of the ranging tone until the energy at the carrier frequency of the output of a product detector is brought to zero, the inputs to which comprise the radio frequency signal and the ranging tone.

3,790,941
ANTENNA TRACKING SYSTEMS

Malcolm Chivers; Thomas William Grant Dawson; Paul Henry Masterman, all of Christchurch, and Martin Andrew Weston, New Milton, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
Filed Mar. 27, 1972, Ser. No. 238,626
Claims priority, application Great Britain, Mar. 31, 1971, 8,304/71
Int. Cl. H01q *21/24*
U.S. Cl. 343—100 PE **8 Claims**

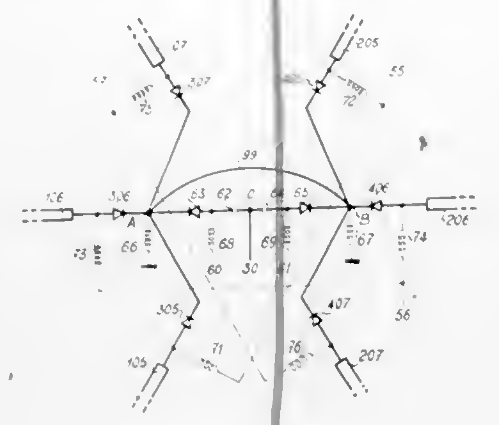


Apparatus for controlling a steerable antenna to track a distant radio source, according to the relative phase and amplitude of TMO1 mode signals and TE11 mode signals developed in a circular waveguide which receives the radio signals collected by the antenna. The apparatus comprises a TMO1 mode coupler and a modulator arranged to apply a cyclic modulation to signals derived from the TMO1 mode, a second coupler connected to combine the modulated signals with signals derived from the TE11 mode signals to form an amplitude-modulated resultant signal, and detector means for deriving tracking control signals from the amplitude modulation on the resultant signal. The modulation may be a sawtooth or a sinusoidal waveform and the detector means may comprise a phase sensitive detector for comparing the amplitude modulation with the modulation control waveform. Alternatively the modulation may be a four-step staircase or a staircase with the steps transposed; then the detector means may comprise four detectors arranged to operate in synchronism with the steps of the staircase and two differential amplifiers. The second coupler may be connected to the circular waveguide by a polarizer. The modulator may be a ferrite phase shifter but a diode balanced modulator may be used if the modulation is sinusoidal.

3,790,942
RADIO BEACON WITH A ROTATING CARDIOID RADIATION PATTERN IN PARTICULAR FOR USE IN LANDING GROUNDS OF SECONDARY IMPORTANCE

Henri Becavin, and Michel Ronsin, both of Paris, France, assignors to Thomson-CSF, Paris, France
Filed May 25, 1972, Ser. No. 256,966
Claims priority, application France, June 1, 1971, 7119689
Int. Cl. G01s *1/40*
U.S. Cl. 343—106 R **4 Claims**

A radio beacon which requires only a low power for its operation and in which maintenance is reduced to a minimum. The rotating lobe is produced by means of an antenna with three dipoles which, by switching, are successively fed in phase with the omnidirectional antenna and then successively,

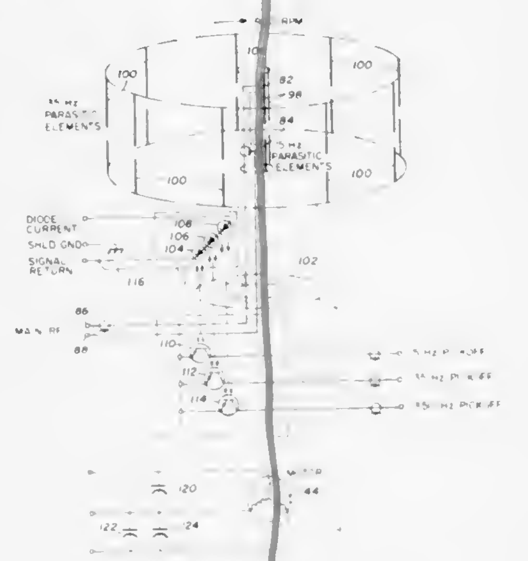


in phase opposition therewith, this giving six positions of the rotating cardioid diagram.

3,790,943

RADIO FREQUENCY ANTENNA SYSTEM

Sidney Pickles, Colusa, Calif., and Dean S. Thornberg, Salt Lake City, Utah, assignors to E-Systems, Inc., Dallas, Tex.
Filed Feb. 9, 1972, Ser. No. 224,783
Int. Cl. G01s *1/44*
U.S. Cl. 343—106 R **22 Claims**

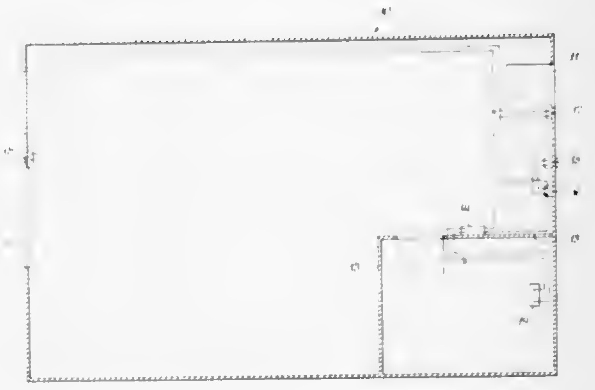


Tactical radio navigation systems provide distance measuring information to an interrogating aircraft in response to pairs of interrogation pulses received at a beacon transponder, the system also provides bearing and identification information. The transponder receives pairs of interrogation pulses which are decoded into a single pulse for operation of a reply transmitter. Bearing, distance and identification determining signals are generated by the reply transmitter and its antennas. A single antenna functions to both receive the interrogation pulses and radiate the position determining signals. To provide the required bearing information, the antenna radiates pulses from a central antenna array that is stationary with respect to a support housing. These pulses are modulated at a 15 Hz frequency by parasitic elements rotating around the stationary central array. Further modulation of the transmitted pulses at a 135 Hz frequency, superimposed on the 15 Hz frequency, is provided by additional parasitic elements also rotating about the central antenna array. Both the low band frequency parasitic elements and the high band frequency parasitic elements have a configuration to provide improved radiation from the antenna above the horizontal. Also to improve the antenna radiation pattern, the 135 Hz parasitic elements are positioned on a rotating drum of a dielectric material, such as fiberglass. To still further improve the amount of radiation energy above the horizontal reference, radio frequency chokes are coupled to the central antenna array in the feed line from the signal transmitter.

3,790,944

BURGLAR ALARM SYSTEM

Peter H. Yarwood, 910 E. Sayles Dr., Palatine, Ill.
Filed July 10, 1972, Ser. No. 270,088
Int. Cl. G08b *21/00, 19/00*
U.S. Cl. 340—274 **4 Claims**

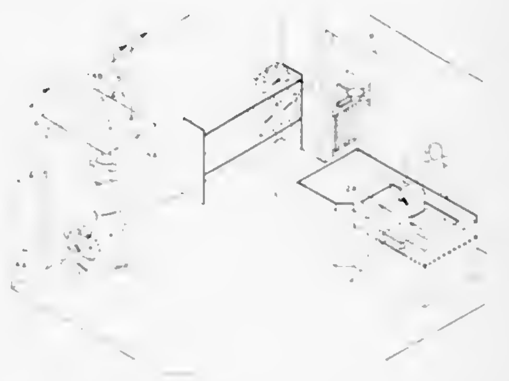


A single battery powered burglar alarm system for building having an alarm and the battery positioned within a locked box and a plurality of sensor switch elements located externally of the box at strategic locations around the building. The electrical circuit is normally open, but once it is closed for actuation of the alarm by closing of any one of the sensor switch elements the alarm cannot be stopped except by access to the locked box.

3,790,945

OPEN-STRIP FERROMAGNETIC MARKER AND METHOD AND SYSTEM FOR USING SAME

Edward R. Fearon, Tulsa, Okla., assignor to Stoplifter International, Inc.
Division of Ser. No. 747,050, March 22, 1968, Pat. No. 3,631,442, and a continuation-in-part of Ser. No. 680,666, Nov. 6, 1967, abandoned. This application Nov. 24, 1971, Ser. No. 201,686
Int. Cl. G08b *13/24*
U.S. Cl. 340—280 **18 Claims**



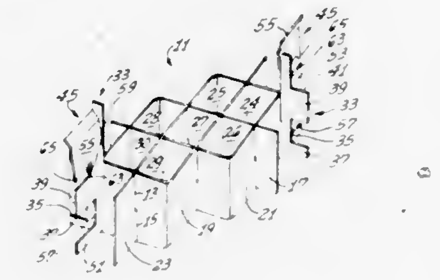
The specification describes an open-strip marker for use in detecting the presence of an object in an interrogation zone. Each object to be detected is provided with a marker comprising an elongated ferromagnetic element having a high permeability and a high ratio of length to cross-sectional area. A periodically varying magnetic field is provided in an area through which the object is to pass. Upon passage of the object through the area, reversal of the magnetization of the

marker results in a uniquely characteristic signal for each alternation of the electromagnetic field. This characteristic signal is sensed to distinguish the presence of the object.

3,790,946

BAR SEGMENT READOUT UNIT

John E. Hendricks, Encino, Calif., assignor to Industrial Electronics Engineers, Inc., Van Nuys, Calif.
Filed Aug. 24, 1970, Ser. No. 66,475
Int. Cl. G09f *9/34*
U.S. Cl. 340—336 **6 Claims**

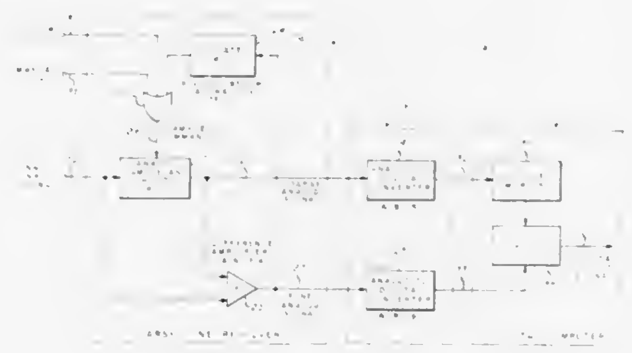


A bar segment readout unit having a face plate against which a viewing screen is positioned by shoulder-forming strips attached to the plate. Lugs formed integral with the strips extend perpendicular from the plate toward the rear of the readout and have locking tabs thereon for holding the ends of an eggcrate light shield in position. A seven segment bar readout mask is positioned between the light shield and the viewing screen such that the lamp receiving cells of the light shield are each positioned over one bar segment. A lamp holder having spring-like fingers extending into each cell is mounted on the end of the light shield opposite the mask and is held thereagainst by a terminal plate. A plurality of lamps are mounted on the terminal plate and extend through the lamp holders into the cells of the light shield. The terminal plate is held in position by means of prongs formed on the ends of the light shield.

3,790,947

METHOD AND MEANS FOR INCREASING THE RESOLTUION OF ANALOG-TO-DIGITAL CONVERTER SYSTEMS

Curtis M. Campbell; Walter J. McConnell, and Edmund R. Skutecki, all of Phoenix, Ariz., assignors to Sperry Rand Corporation, New York, N.Y.
Filed Nov. 17, 1971, Ser. No. 199,698
Int. Cl. H03k *13/02, 13/22*
U.S. Cl. 340—347 AD **9 Claims**



An increased resolution analog-to-digital converter system comprises a sample and hold circuit for storing an instantaneous value of the analog input signal to be converted. A difference amplifier coupled to receive the output of the sample and hold circuit and the analog input signal provides the difference therebetween with a gain of K. The outputs from the sample and hold circuit and the difference amplifier are transformed to digital format by analog-to-digital converter means. The digitally converted signal from the sample and hold circuit is shifted in the direction of increasing bit significance a number of places equal to $\log_2 K$. The digitally converted signal from the difference amplifier is added to the shifted signal to provide the increased resolution digital output signal.

ERRATA

For Classes 340—146.10 F thru 340—173 DR see:
Patents Nos. 3,790,954 thru 3,790,961

3,790,948

RADIO TRANSMITTING HUNTING ARROW WITH FINDING MEANS

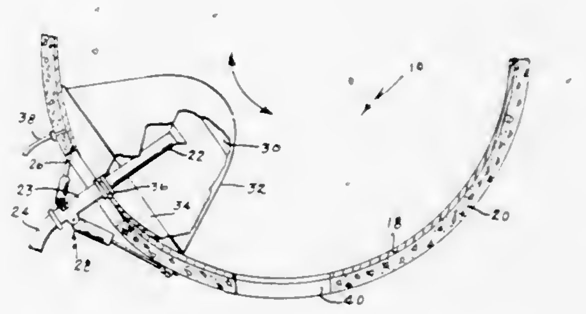
John M. Ratkovich, 1460 Asbury St., Evanston, Ill.
Filed June 12, 1972, Ser. No. 261,705
Int. Cl. G01s *3/14*
U.S. Cl. 343—113 R **8 Claims**

A battery-powered radio transmitter is carried in the tip of a hunting arrow to aid in locating wounded game. The antenna for the transmitter is carried in the hollow shank of the arrow so that breakage of the shaft will not be detrimental to transmission of radio signals from the transmitter.

3,790,949

SURVIVABLE GROUND ANTENNA SYSTEM

Thomas F. McGraw, 7538 Axton St., Springfield, Va.
Filed Dec. 13, 1972, Ser. No. 314,624
Int. Cl. H01q *1/04*
U.S. Cl. 343—719 **10 Claims**



A survivable ground antenna system which relies upon its location within the earth for protection from natural or man-made forces. The antenna system utilizes a "point source" feed located within a main reflector in conjunction with a subreflector for communicating with a target. The feed is adjustably mounted therein and capable of operation even though located beneath the surface of the ground.

3,790,954

3,790,956

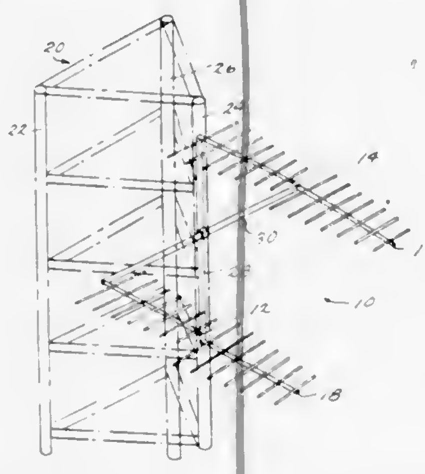
3,790,950
ANTENNA ARRAY FOR MINIMIZING CO-CHANNEL INTERFERENCE

Thomas D. Smith, Doraville, and Jasper B. Weston, Jr., Tucker, both of Ga., assignors to Scientific-Atlanta, Inc., Atlanta, Ga.

Continuation of Ser. No. 18,365, March 12, 1970, abandoned, which is a continuation of Ser. No. 570,570, Aug. 5, 1966, abandoned. This application Sept. 13, 1971, Ser. No. 180,147

Int. Cl. H01q *11/10*

U.S. Cl. 343—792.5 **3 Claims**



An antenna system for reducing co-channel interference in a signal receiving network, said system comprising: at least four logarithmically periodic antenna elements having corresponding points disposed in a common plane, a first two of said antenna elements also disposed within a horizontal plane, the remaining two of said antenna elements also disposed within a vertical plane, said first two elements being substantially equal first distances from the line of intersection of said horizontal and vertical planes and said remaining two elements being substantially equal second distances from the said line of intersection; a support structure; and means for cantilever mounting said antenna elements on said structure with the maximum sensitivities of said antenna elements directed outwardly from said support structure.

ERRATA

For Classes 343—7.7 thru 343—106 R see:
Patents Nos. 3,790,938 thru 3,790,943

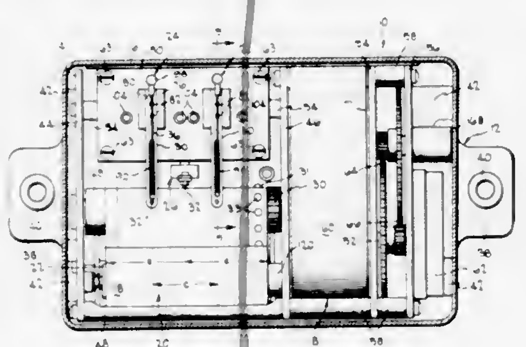
3,790,951
APPARATUS FOR MEASURING AND RECORDING ACCELERATION FORCES

Richard J. O'Neill; Gene M. Blaker, both of Champaign; Edward C. Manthei, and Elmer L. Ronk, both of Mahomet, all of Ill., assignors to Impact Registers, Inc., Champaign, Ill.

Filed Feb. 17, 1971, Ser. No. 116,151

Int. Cl. G01d *9/10*

U.S. Cl. 346—7 **9 Claims**



A compact apparatus for measuring and recording acceleration forces by measuring three mutually perpendicular components and recording the components on a recording chart by means of three independent stylii. The stylii are mounted so that one stylus is displaced longitudinally on the chart with respect to the other stylii to permit lateral overlapping of the tracks of the three stylii resulting in a narrower recording chart and a more compact instrument. The mass affiliated with each stylus is rotatably mounted at its center of mass for increased accuracy and a novel spring mounting on the stylus arms results in an improved accuracy and frequency response.

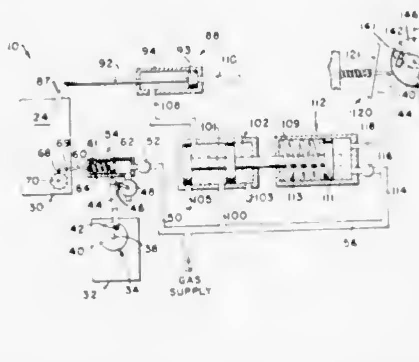
3,790,952
SYSTEM FOR PRINTING OUT THE METERED FLOW OF A FLUID DAILY OR FOR OTHER PREDETERMINED PERIODS OF TIME

Michael P. Dehaets, Worthington, Ohio, assignor to Columbia Gas System Service Corporation, Wilmington, Del.

Filed Apr. 23, 1973, Ser. No. 353,700

Int. Cl. G01d *9/00*

U.S. Cl. 346—33 R **17 Claims**



A system for recording the amount of gas which is metered each day by reading-out the unit measurements of a meter which reads a continuing total. The continuing total of the meter is read monthly, and a printer record shows the amount which is consumed each day of the month. The read-out mechanism and an automatic printer are operated by gas flow once every 24 hours under the control of a battery-operated clock. Other selected print out cycles, such as hourly read out, can be selected by utilizing a battery-operated clock of the proper rotation cycle.

3,790,953
DEFLECTION ELECTRODE ASSEMBLY FOR AN INK JET TYPE PRINTING DEVICE AND A METHOD FOR MANUFACTURING THE SAME

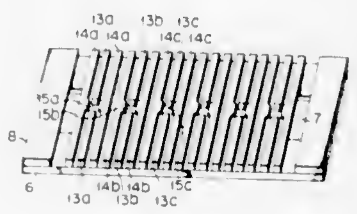
Yuji Sugiya, Tokorozawa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Feb. 22, 1973, Ser. No. 334,924

Claims priority, application Japan, Feb. 28, 1972, 47/20391

Int. Cl. G01d *15/16*

U.S. Cl. 346—75 **3 Claims**



A deflection electrode assembly for an ink jet type printing device has such a construction that plural X- and Y-axis deflection electrodes etch-formed from an electroconductive plate overlie an opening of an insulating substrate through which ink droplets jetted from plural juxtaposed nozzles can be passed all at a time.

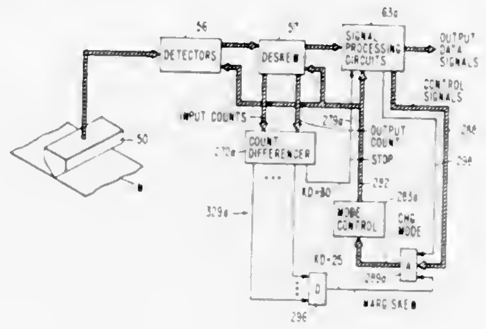
3,790,954
SKEW CONTROLLED READBACK SYSTEMS

Ernest W. Devore, Boulder, and John W. Irwin, Loveland, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1972, Ser. No. 317,985

Int. Cl. G06k *5/04;* **G11b** *27/36*

U.S. Cl. 340—146.1 F **15 Claims**



Marginal skew in a readback system of a digital multitrack magnetic signal recorder selectively actuates a gating system for selectively passing control signals for effecting control functions in signal processing circuits. The control function may include a mode change of handling readback signals, for example, initiating deadtracking operations even though apparent successful readback is occurring.

3,790,955
RASTER PROCESS FOR CLASSIFYING CHARACTERS

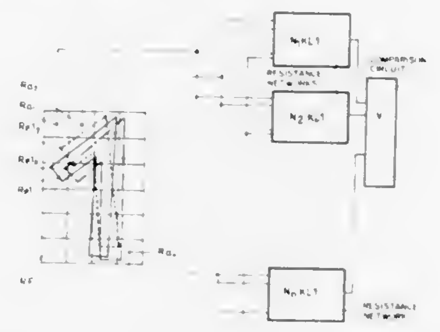
Arthur Klemt, Schwalbeneck, Germany, assignor to Arthur Klemt Kommanditgesellschaft, Schwalbeneck, Germany

Filed May 25, 1971, Ser. No. 146,677

Claims priority, application Germany, May 27, 1970, P 20 26 033.7

Int. Cl. G06k *9/06, 9/10*

U.S. Cl. 340—146.3 MA **4 Claims**



A raster process for classifying presented characters into m classes, the features of each character in a class being variable, is disclosed in accordance with the teachings of the present invention. A character to be classified is imaged onto a raster field having n raster points. Electrical voltages are derived from each raster point and are selectively supplied to no more than n independent resistance networks for each of said m classes. Each resistance network responds to the electrical voltages selectively supplied thereto to produce an output voltage representative of a form part of the character of a class. Said form part is selectively comprised of selected areas of said raster field which should remain darkened for a character of said class, selected areas of said raster field which should remain light for a character of said class, or two selected raster field areas which should exhibit approximately equal degree of darkened areas or lightened areas for a character of said class. The output voltage produced by each resistance network is compared to a threshold level associated with said class. If the output voltage produced by each resistance network in a class is below said threshold level, the presented character is classified as belonging to said class.

3,790,956
ARRANGEMENT FOR PRESETTING A TELEVISION TUNER

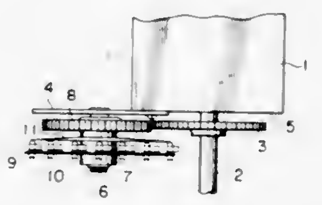
Katsumi Ichikawa, and Shin Fujie, both of Aichi-ken, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 30, 1972, Ser. No. 301,806

Claims priority, application Japan, Nov. 5, 1971, 46/103697; Nov. 30, 1971, 46/113147; Nov. 30, 1971, 46/113148

Int. Cl. H04q *1/00;* **H04b** *1/06*

U.S. Cl. 340—148 **4 Claims**



A compact arrangement for presetting a television tuner, so designed that a motor is driven in response to a signal, such as an ultrasonic wave, given thereto externally and a tuner shaft is rotated by the drive of said motor, whereby channel selection is controlled from a remote point, in which a program switch for stopping the motor at a desired channel but not stopping it at the other channels is arranged on the front side of the tuner, whereby the tuner presetting operation is facilitated.

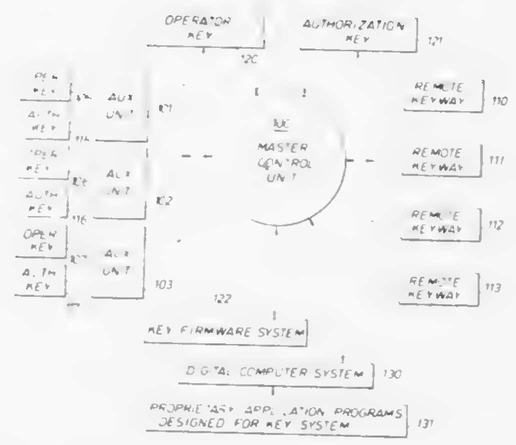
3,790,957
KEY AUTOMATED DATA COLLECTION, CONTROL AND SOURCE INFORMATION SYSTEM

Lee R. Dukes, 2828 Bammel Ln., Houston, and William W. Witt, Richmond, both of Tex.

Continuation-in-part of Ser. No. 167,112, July 29, 1971, abandoned. This application Nov. 24, 1972, Ser. No. 309,469

Int. Cl. G06k *7/06;* **H04q** *3/02*

U.S. Cl. 340—149 R **10 Claims**



Key automated data collection, control and source information system comprising a key operated locking device, a message encoding unit, and connected to a master control. The key operated device includes a conventional lock type receptacle for receiving a key, having a unique digital code associated therewith. A secondary security locking device may be engageable with the key to prevent removal from the lock's key receptacle. The message encoding unit senses the unique digital code and provides electrical signals representative thereof to a master control system. The master control system may be made responsive to the digital key code for recording and verification of the code, selective activation of the key operated device, and release of the key.

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right shifter performs a right shift by translating the data to the

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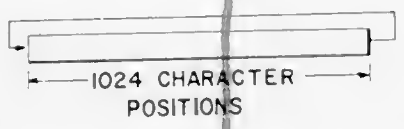
DESIGNS

3,790,958
DATA COMMUNICATION TERMINAL

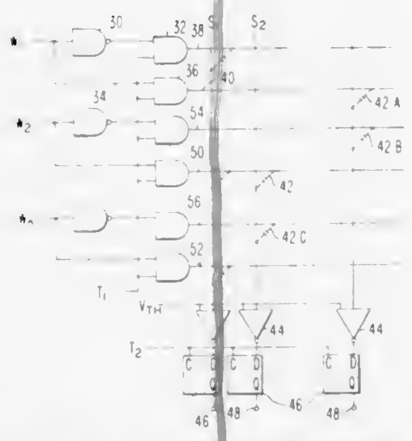
Joseph P. Hruschak, and George R. Ellis, both of Fairport, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Continuation-in-part of Ser. No. 74,095, Sept. 21, 1970, abandoned. This application Sept. 9, 1971, Ser. No. 179,136
Int. Cl. G06f *3/04*
U.S. Cl. 340—172.5 **12 Claims**



A data communication terminal including a storage device having a capacity of n characters. In the compose mode of operation wherein the input to the terminal is a random data source, such as from a keyboard, the input data stored in the storage device is automatically monitored to determine the number of characters stored therein. If the number of characters stored is greater than a predetermined maximum block size of yn characters, a data block comprising kn characters is prepared for transmission to an output device when $k \leq y < 1$. If the block of kn characters is received without error by the output device, the block of kn characters is cleared from the storage device, or, alternatively, the block of kn characters is retransmitted to the output device.

3,790,959
CAPACITIVE READ ONLY MEMORY

Cornelius Eldert, Ypsilanti, Mich., assignor to Burroughs Corporation, Detroit, Mich.
Filed June 26, 1972, Ser. No. 265,963
Int. Cl. G11c *17/00*
U.S. Cl. 340—172.5 **7 Claims**

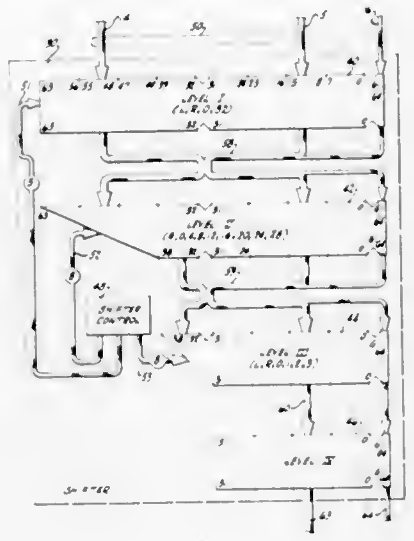


A capacitive read only memory operable to respond to the logical product of the inputs to the memory. The read only memory consists of a pair of plates or memory planes capacitively coupled together. Circuitry logically inverts the input pulses to the first plane and selective capacitor placement creates pulsing on all outputs from the second plane except on the desired output. Circuitry logically inverts the pulses from the second plane resulting in an output which is the logical product of the input signals.

3,790,960
RIGHT AND LEFT SHIFTER AND METHOD IN A DATA PROCESSING SYSTEM

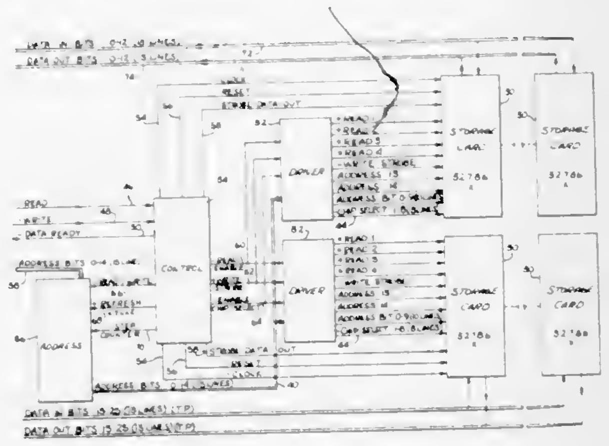
Gene M. Amdahl, Saratoga; Michael R. Clements, and Lyle C. Topham, both of Santa Clara, all of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.
Filed Oct. 30, 1972, Ser. No. 302,227
Int. Cl. G11c *19/00, 13/00*
U.S. Cl. 340—172.5 **13 Claims**

Disclosed is a bidirectional shifter and method for use in a data processing system for right and left shifting of data. A right shifter performs a right shift by translating the data to the right and performs a left shift by rotating the data, translating the data to the right and thereafter rerotating the data. Rotation and translation occur in one logic level. The number of bits translated is decreased in successive logic levels.



3,790,961
RANDOM ACCESS DYNAMIC SEMICONDUCTOR MEMORY SYSTEM

Thomas L. Palfi, Cupertino; Charles Brooks, Sunnyvale, and George J. Miller, San Jose, all of Calif., assignors to Advanced Memory Systems, Inc., Sunnyvale, Calif.
Filed June 9, 1972, Ser. No. 261,427
Int. Cl. G11c *11/24, 13/00*
U.S. Cl. 340—173 DR **7 Claims**



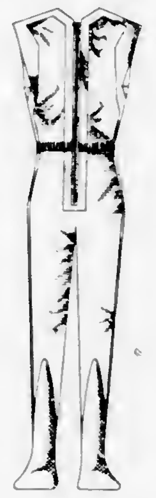
A timing and priority assigning system for the automatic operation and refresh of a dynamic semiconductor memory operative with input-output signals characteristic of a magnetic core memory. A timing means is provided for the automatic execution of a read or write command for the semiconductor memory. A second timing system is provided which is initiated by a refresh oscillator so as to periodically and sequentially refresh a portion of the semiconductor memory. A counter is provided to retain the refresh address and to be advanced by a signal from the refresh oscillator. A means is also provided for automatically assigning priority to an externally received read or write command so as to reset a refresh cycle then in operation, or to prevent the initiation of a refresh cycle, until the execution of the command, whereby the refresh cycle is again automatically reinitiated upon the completion of the command.

DESIGNS

FEBRUARY 5, 1974

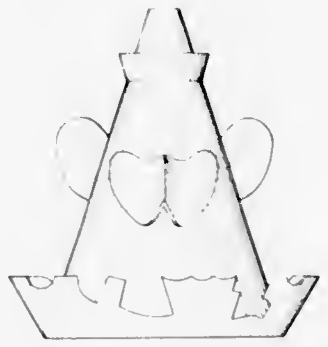
230,224
ONE-PIECE GARMENT

Mary I. Ealy, Monee, Ill., assignor to Merry Jumpsuits
Filed Feb. 4, 1972, Ser. No. 223,815
Term of patent 3½ years
Int. Cl. D2—*02*
U.S. Cl. D2—30



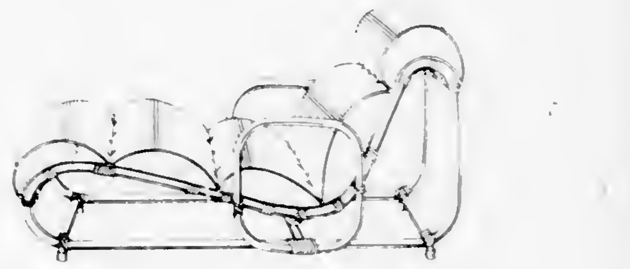
230,225
CONE CAP

Alberto Birlain Schafler, Amsterdam 218-201, Mexico 11, D.F. Mexico
Filed Apr. 20, 1972, Ser. No. 246,119
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—250



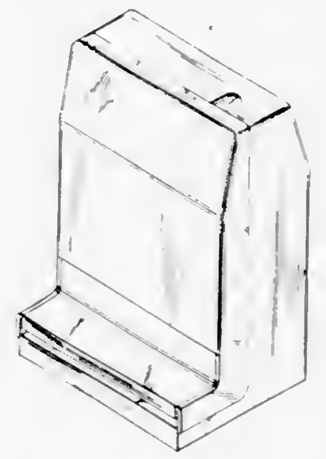
230,226
LOUNGE

Henry Olko, Applegreen Drive, Old Westbury, N.Y. 15568
Filed Jan. 11, 1972, Ser. No. 217,076
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—38

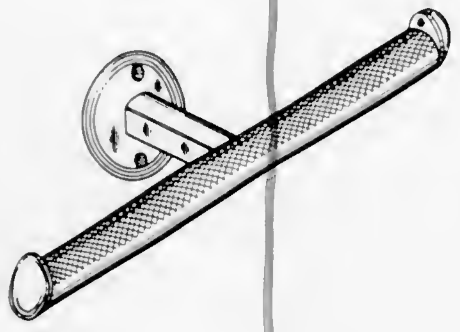


230,227
STORAGE BIN FOR BATHROOM IMPLEMENTS

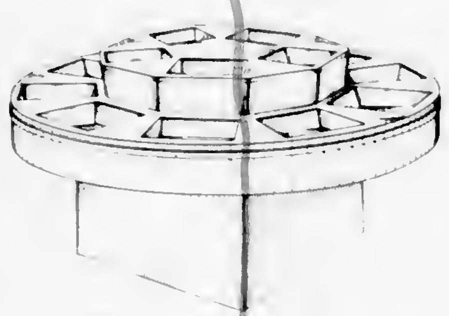
Georg Weihrauch, Burgermeister, Arnold-Strasse, 6949 Aschbach, Odenwald, Germany
Filed July 19, 1971, Ser. No. 164,212
Term of patent 7 years
Int. Cl. D6—*04*
U.S. Cl. D6—86



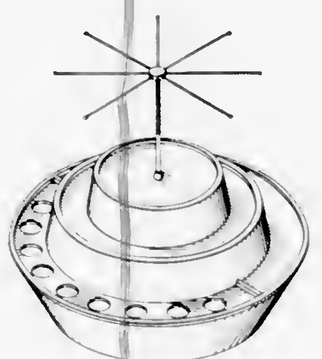
230,228
TOILET PAPER HOLDER
Herman K. Dupre, Seven Springs, Champion, Pa. 15622
Filed Apr. 27, 1973, Ser. No. 355,090
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—97



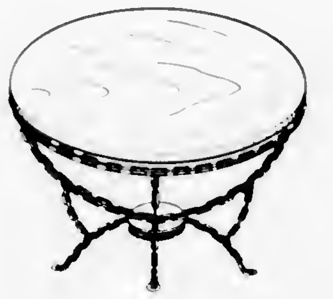
230,229
DISPLAY STAND
Welden L. Dolgoff, Seattle, Wash., assignor to ABC Record & Tape Sales Corp., doing business as Display Equipment Mfg. Co., Inc., Seattle, Wash.
Filed July 28, 1972, Ser. No. 276,054
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—146



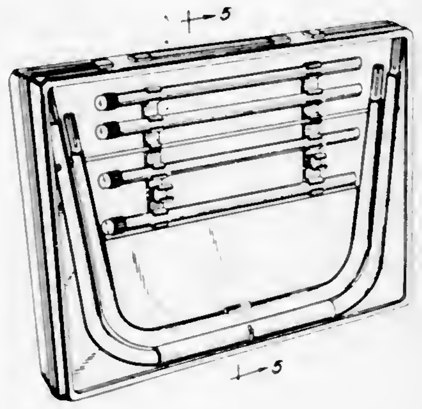
230,230
DISPLAY FOR CUT FLOWERS AND POTTED PLANTS
Robert W. Crowe, 4942 Encinita Ave., Temple City, Calif. 91780
Filed July 19, 1972, Ser. No. 273,336
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—148

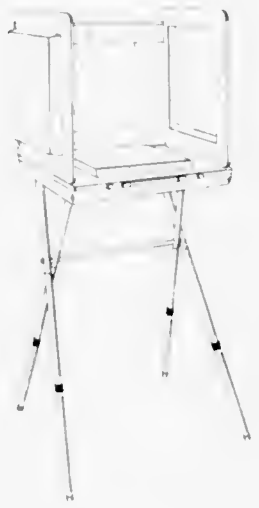


230,231
TABLE
Mackie S. Merritt, 23613 Deanhurst, St. Clair Shores, Mich. 48082
Filed July 19, 1971, Ser. No. 164,174
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177

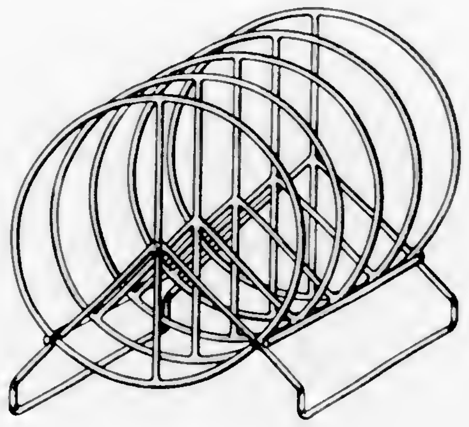


230,232
PORTABLE CARRYING CASE
Fred Howard, New York, and Denis Michetti, Staten Island, N.Y., assignors to Howard Displays, Inc., New York, N.Y.
Filed Nov. 26, 1971, Ser. No. 202,738
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D6—178

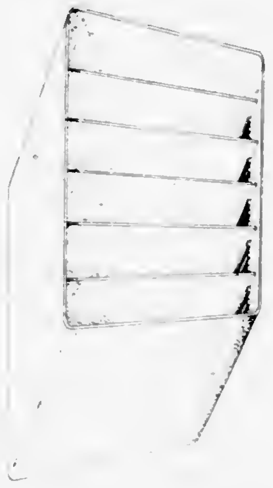




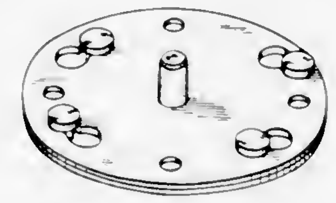
230,233
RECORD RACK
Lawrence P. Gentieu, 2008 Delaware Ave., Wilmington, Del. 19806
Filed Dec. 7, 1970, Ser. No. 26,324
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—185



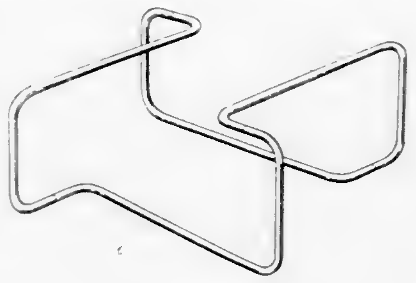
230,234
COMPARTMENT FILE
Sven-Eric Juhlin, Gustavsberg, Sweden, assignor to AB Gustavsbergs Fabriker, Gustavsberg, Sweden
Filed May 10, 1972, Ser. No. 252,149
Claims priority, application Sweden Nov. 12, 1971
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—188



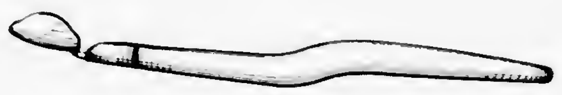
230,235
LOCKABLE PLATE UNIT FOR USE ON A FURNITURE LEG OR SIMILAR ARTICLE
Kenneth A. Green, R.R. 2, Cambridge, Ohio 43725, and Lawrence A. Streblow, 2317 Springbrook Road, Kenosha, Wis. 53140
Filed Nov. 23, 1970, Ser. No. 26,134
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



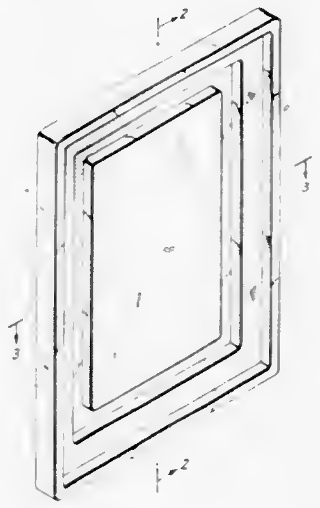
230,236
TABLE BASE
Jeffery R. Fear, 473 Brunswick Ave., and Wolfgang Triebsch, 2 Sultan Court, Apt. 408, both of Toronto 181, Ontario, Canada
Filed Jan. 27, 1972, Ser. No. 221,491
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—194



230,237
DENTAL OPERATING CHAIR SEAT
Daryl Raymond Beach and Tetsuo Oshida, Kyoto, Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan
Filed June 30, 1972, Ser. No. 267,854
Claims priority, application Japan Dec. 30, 1971
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—197



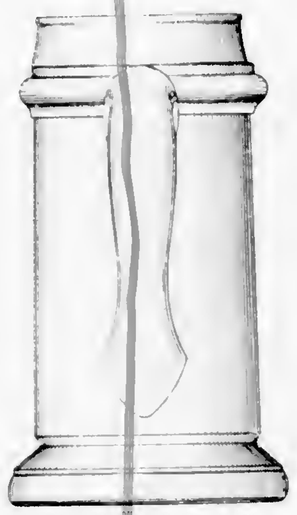
230,238
PICTURE FRAME
Alfred Coda, 48 Wyandemere Drive, Woodcliff Lake, N.J. 07675
Filed May 24, 1971, Ser. No. 143,705
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—241



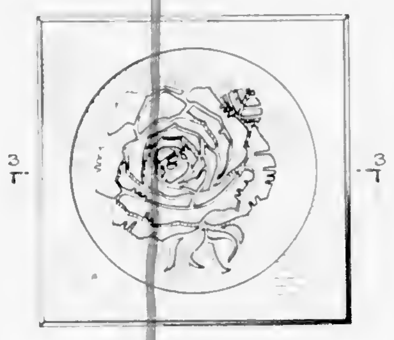
230,245

230,248

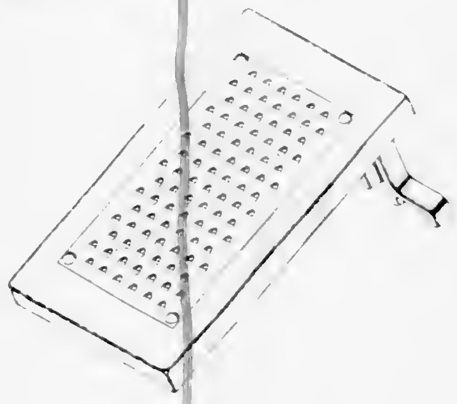
230,239
DRINKING MUG
George Dodge, Westport, N.Y., assignor to Dipak Manufacturing Co. Inc., Westport, N.Y.
Filed Oct. 4, 1972, Ser. No. 298,753
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—9



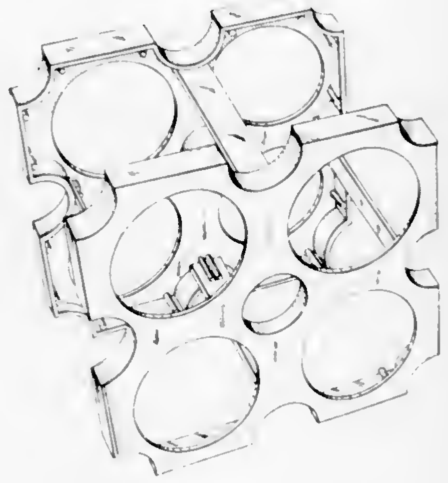
230,240
COASTER
Michael S. Kaffel, 515 E. 89th St., New York, N.Y. 10009
Filed Nov. 10, 1972, Ser. No. 305,562
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—45



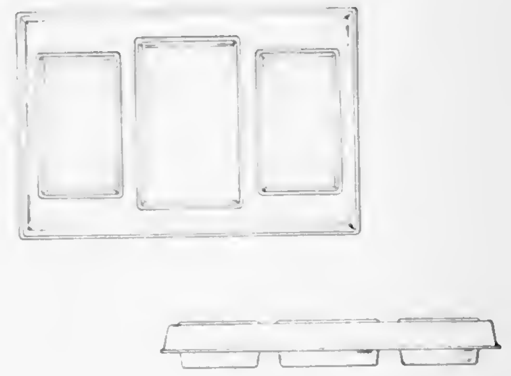
230,241
PRODUCE GRATER
Frederick W. Riddington, Ontario, Calif., assignor to Sunkist Growers, Inc., Sherman Oaks, Calif.
Filed Apr. 5, 1972, Ser. No. 241,487
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—47



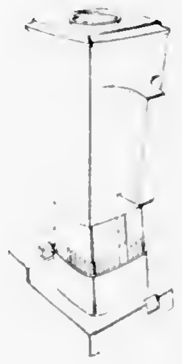
230,242
WINE RACK
Maxwell Bentley, 1331 Newbridge Road, North Bellmore, N.Y. 11710
Filed May 22, 1972, Ser. No. 255,964
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D7—71



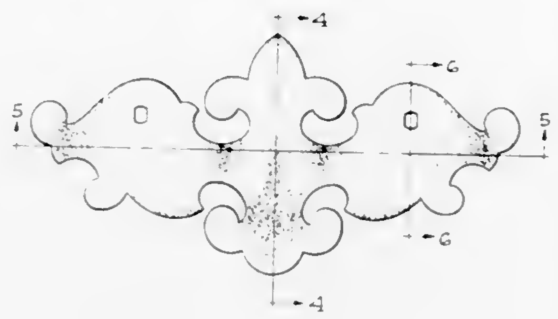
230,243
FOOD WARMER WITH REMOVABLE FOOD COMPARTMENTS
Thomas R. Ottenstein, Bethesda, Md., assignor to Electric Char-B-Que, Inc., Red Bank, N.J.
Filed Feb. 22, 1972, Ser. No. 228,472
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—96



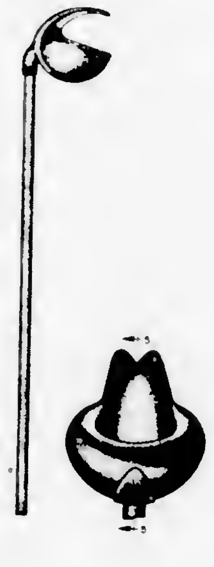
230,244
ELECTRIC BLENDER OR SIMILAR ARTICLE
Jack W. Kalbfeld, Old Bethpage, N.Y., assignor to Van Wyck International Corporation, New York, N.Y.
Filed June 29, 1972, Ser. No. 267,618
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—154



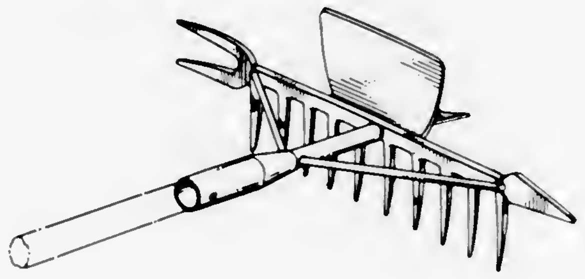
230,245
BACKING PLATE FOR PULLS
Emil J. Bocade, Wyoming, Mich., assignor to Keeler Brass Company, Grand Rapids, Mich.
Filed Sept. 29, 1972, Ser. No. 293,441
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—179



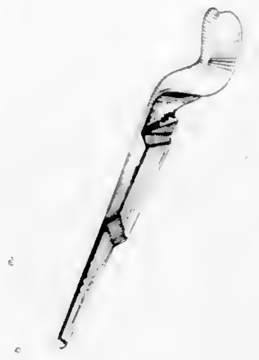
230,246
FRUIT HARVESTING IMPLEMENT
William A. Turner, 205 Sycamore Road, Franklin, Va. 23851
Filed Jan. 10, 1972, Ser. No. 216,917
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—1



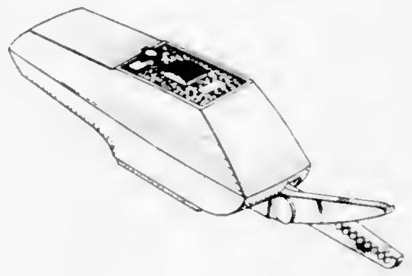
230,247
GARDEN TOOL
Richard K. Parry, St. George, Utah (2855 Canonita Drive, Fallbrook, Calif. 92028)
Filed Feb. 14, 1972, Ser. No. 226,395
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—6



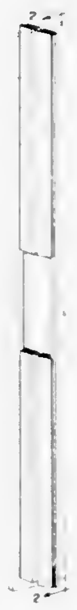
230,248
TUBE BENDER
Laurice D. Ely, 2862 Stromboli Road, Costa Mesa, Calif. 92626
Filed July 6, 1972, Ser. No. 269,470
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—32



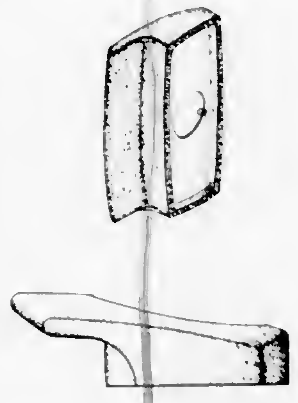
230,249
ELECTRIC SHEARS
John K. Miles, Columbus, Ind., assignor to Arvin Industries, Inc., Columbus, Ind.
Filed Mar. 7, 1972, Ser. No. 232,656
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—61



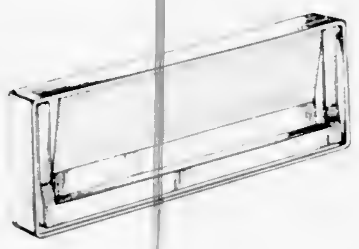
230,250
COMBINED DOOR HANDLE AND LOCK HOUSING
William J. Horgan, Jr., Allegheny County, Pa., assignor to Blumcraft of Pittsburgh, Pittsburgh, Pa.
Continuation-in-part of design applications Ser. No. 13,608, July 18, 1968, Ser. No. 19,456, Oct. 8, 1969, and Ser. No. 21,815, Mar. 9, 1970. This application June 1, 1970, Ser. No. 23,211
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—138



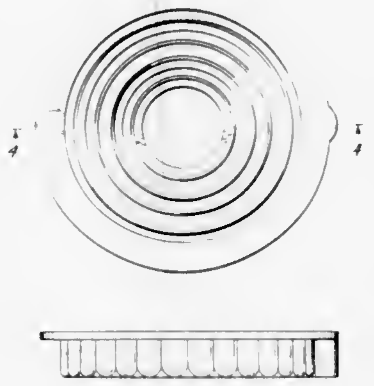
230,251
DOOR HANDLE
Russell W. Waldo, St. Paul, Minn., assignor to Ideal Security Hardware Corporation, St. Paul, Minn.
Filed July 24, 1972, Ser. No. 274,413
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—150



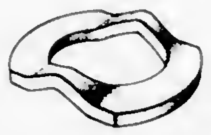
230,252
HANDLE FOR AN INSTRUMENT CASE
Lance A. Wilkes and Edward Vescuso, Jr., Canoga Park, Calif., assignors to System Metals, Inc., Canoga Park, Calif.
Filed Sept. 22, 1971, Ser. No. 182,930
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—154



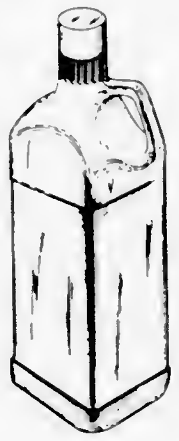
230,253
ESCUTCHEON PLATE
Willard H. Sahloff, Bridgeport, Conn., assignor to Handy-Andy Specialty Co., Inc., New York, N.Y.
Filed Nov. 20, 1972, Ser. No. 308,187
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D8—187



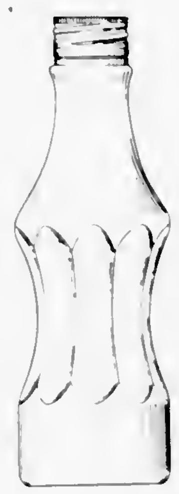
230,254
RETAINER
Robert E. Smith, Kettering, Ohio, assignor to Dayton Progress Corporation, Dayton, Ohio
Filed Feb. 17, 1970, Ser. No. 21,475
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—274



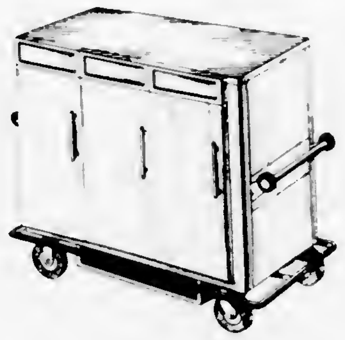
230,255
BOTTLE OR SIMILAR ARTICLE
Livingston C. Douglas, Leonia, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Jan. 25, 1972, Ser. No. 220,725
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—47



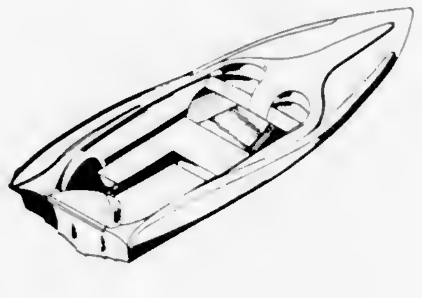
230,256
BEVERAGE BOTTLE
John L. Ckola, 3833 Jewell St., San Diego, Calif. 92109
Filed May 2, 1972, Ser. No. 249,754
Term of patent 3½ years
Int. Cl. D9—*01*
U.S. Cl. D9—102



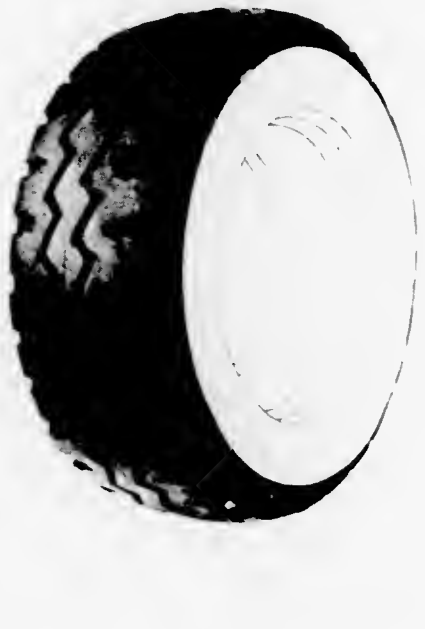
230,257
MOBILE CART
Louis J. Corini, Philadelphia, Pa., assignor to Melbro Corporation, Philadelphia, Pa.
Filed Mar. 23, 1972, Ser. No. 237,605
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—27



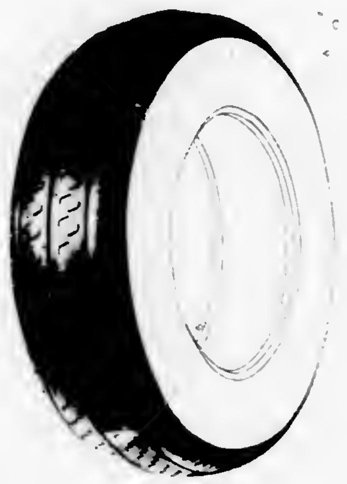
230,258
BOAT
Paul Allison, Old Knoxville Highway, Maryville, Tenn. 37801
Filed July 21, 1972, Ser. No. 273,997
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—62



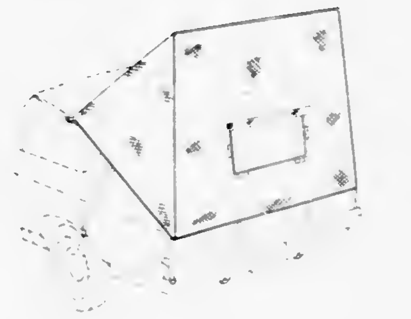
230,259
TIRE
Daniel E. Schuster, North Royalton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 2, 1972, Ser. No. 223,045
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—143



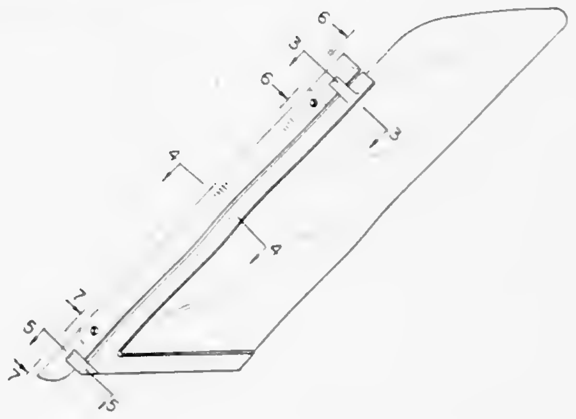
230,260
TIRE
John T. Smith, Norton, and James W. Stiffler, Tallmadge, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Sept. 15, 1971, Ser. No. 180,945
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—145



230,261
TENT FOR REAR-DOORED VEHICLE
Frederick W. Woodward, Dearborn Heights, Mich., assignors to Donald Thornber and B. Bernice Thornber
Filed June 12, 1972, Ser. No. 261,841
Term of patent 14 years
Int. Cl. D21—*04;* D12—*08*
U.S. Cl. D12—156



230,262
WINDOW VENT
Raymond A. McCarroll, 1725 Newcastle, Grosse Pointe Woods, Mich. 48236
Filed Mar. 24, 1972, Ser. No. 238,000
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—181

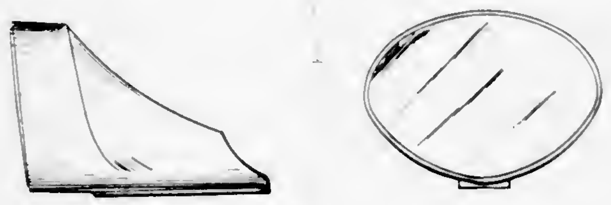


230,268

230,271

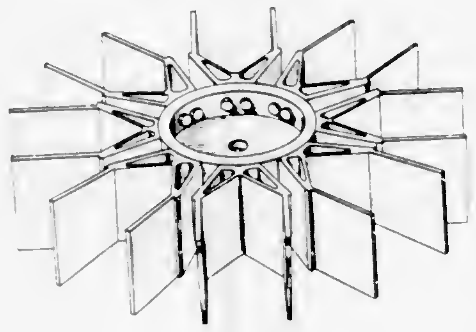
230,263
OUTSIDE REAR VIEW MIRROR FOR VEHICLES

Faustino Trambusti, Corso Orbassano 402/21,
Torino, Italy
Filed Aug. 9, 1971, Ser. No. 170,399
Term of patent 7 years
The portion of the term of the patent subsequent to Jan. 23, 1980, has been disclaimed
Int. Cl. D12—*16*
U.S. Cl. D12—187



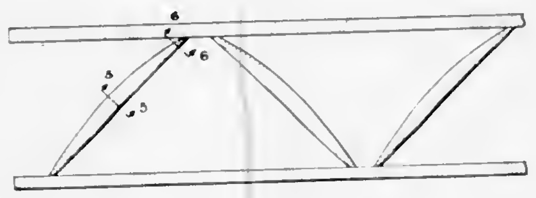
230,264
HUB STRUCTURE

Thomas C. Howard, Raleigh, N.C., assignor to Charter Industries, Inc., Raleigh, N.C.
Filed Sept. 28, 1971, Ser. No. 184,644
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1 H



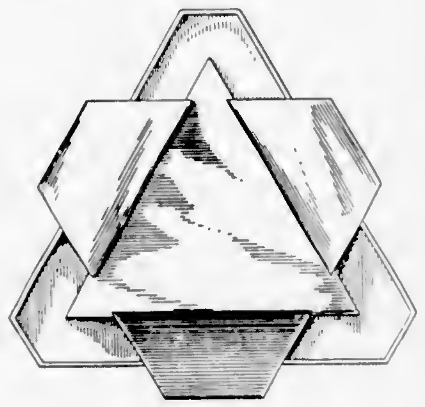
230,265
TRUSS

Melvin L. Ollman, Detroit, Mich., assignor to C-O, Inc., Detroit, Mich.
Filed Aug. 11, 1971, Ser. No. 171,030
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1 H



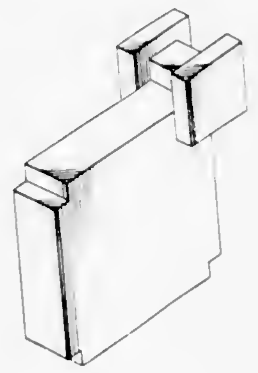
230,266
HOUSE OR SIMILAR ARTICLE

James Reid Thomson, 705 N. 25th St.,
Philadelphia, Pa. 19130
Division of design application Ser. No. 22,894, May 8, 1970, now Patent No. 222,130, which is a continuation-in-part of abandoned application Ser. No. 19,606, Oct. 17, 1969. Divided and this application July 8, 1971, Ser. No. 160,995
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 A



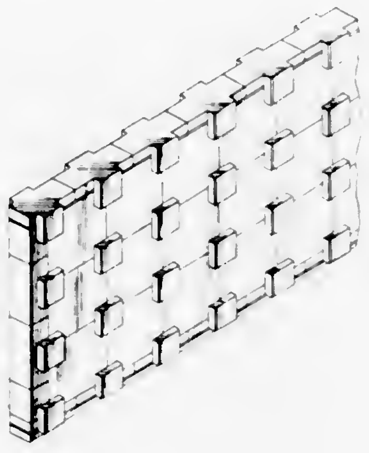
230,267
COMBINATION BUILDING BLOCK

Bernice W. Shuey, 3323 Latham Drive,
Dallas, Tex. 75229
Filed July 19, 1971, Ser. No. 164,206
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2 R



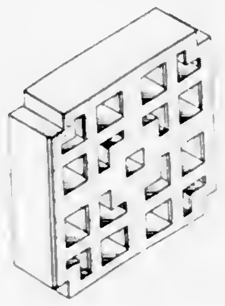
230,268
BUILDING BLOCK WALL

Bernice W. Shuey, 3323 Latham Drive,
Dallas, Tex. 75229
Filed July 19, 1971, Ser. No. 164,207
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2 R



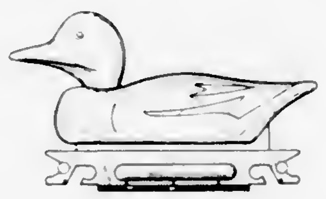
230,269
SOLAR BUILDING BLOCK

Bernice W. Shuey, 3323 Latham Drive,
Dallas, Tex. 75229
Filed July 19, 1971, Ser. No. 164,208
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2 R



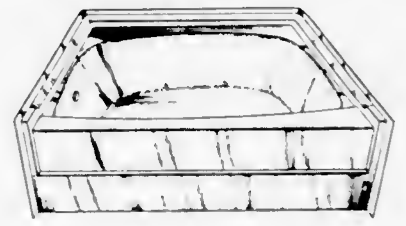
230,270
WATERFOWL DECOY

Kenneth M. Gagnon, 302 Reservoir Ave.,
Lincoln, R.I. 02865
Filed Dec. 26, 1972, Ser. No. 318,559
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—21



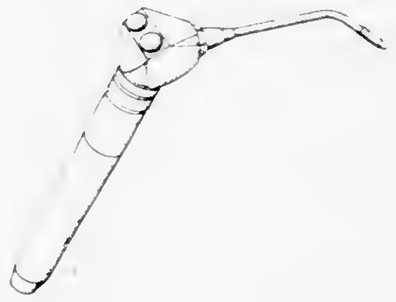
230,271
BATHTUB

Harold H. Weiss, 56 Dorian Way,
San Rafael, Calif. 94901
Continuation-in-part of design application Ser. No. 218,646, Jan. 17, 1972, now Patent No. 227,100, dated June 5, 1973. This application Apr. 2, 1973, Ser. No. 347,196
Term of patent 14 years
The portion of the term of the patent subsequent to June 5, 1987, has been disclaimed
Int. Cl. D23—*02*
U.S. Cl. D23—55



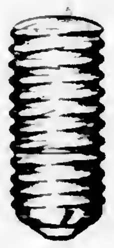
230,272
THREE-WAY DENTAL SYRINGE

George F. Bueckle, 1021 Laguna Ave.,
Burlingame, Calif. 94010
Filed Mar. 16, 1973, Ser. No. 342,273
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—1 D



230,273
ELECTRIC LIGHT BULB

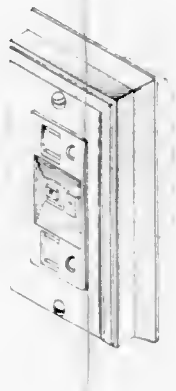
Jack N. McCarthy, Meadowood Road,
Tolland, Conn. 06084
Filed Oct. 4, 1971, Ser. No. 186,573
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D26—8



230,274

COMBINED GROUND FAULT INTERRUPTER AND RECEPTACLE WITH MOUNTING FRAME

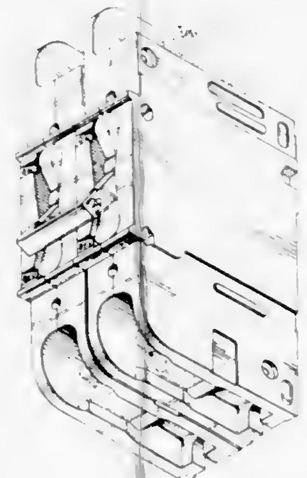
Arthur J. Pulos, Syracuse, N.Y., assignor to Pass & Seymour, Inc., Syracuse, N.Y.
Filed Dec. 27, 1972, Ser. No. 319,013
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R



230,275

CIRCUIT BREAKER CASE

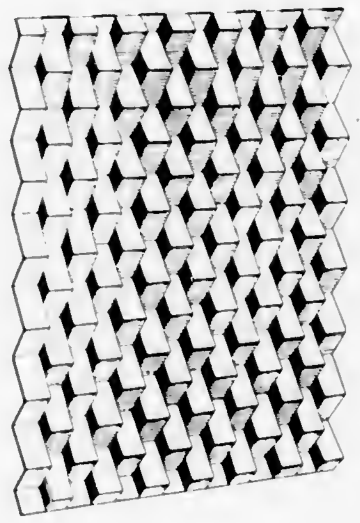
Charles Mune, Trenton, N.J., assignor to Heineman Electric Company, Trenton, N.J.
Filed Aug. 2, 1971, Ser. No. 168,534
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13

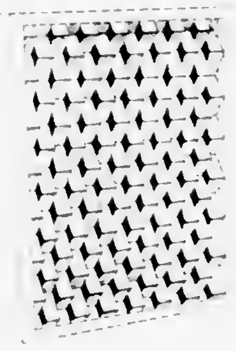


230,276

COVERING FOR A LOUDSPEAKER ENCLOSURE

Gordon L. Duern, Kitchener, Ontario, Canada, assignor to Electrohome Limited, Kitchener, Ontario, Canada
Filed Sept. 17, 1971, Ser. No. 181,656
Term of patent 14 years
Int. Cl. D14—*99*
U.S. Cl. D26—14 G

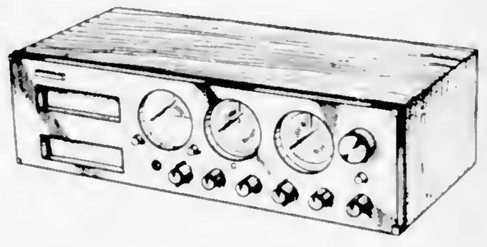




230,277

AMPLIFIER

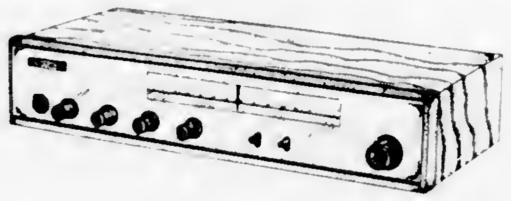
Masaaki Miyamoto and Kikuo Ohta, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed June 18, 1973, Ser. No. 371,237
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 L



230,278

AMPLIFIER

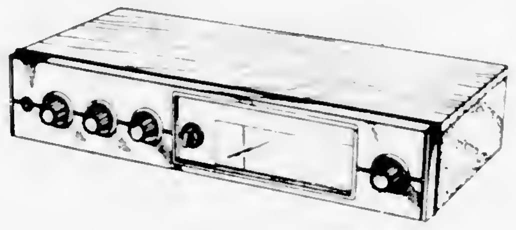
Katsuhiko Makino and Hironosuke Koda, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed June 18, 1973, Ser. No. 371,239
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 L



230,279

AMPLIFIER

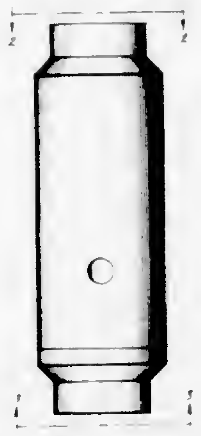
Takeyoshi Kawano, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed June 18, 1973, Ser. No. 371,236
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 L



230,280

HOUSING FOR AN ARTIFICIAL EAR

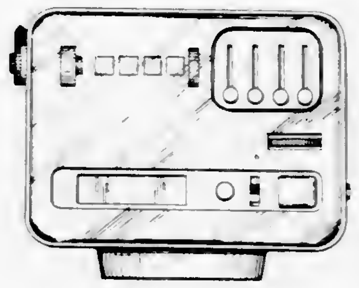
Clifford A. Nygard, Phoenix, Ariz., assignor to Royal Industries, Inc., Pasadena, Calif.
Filed Jan. 17, 1972, Ser. No. 218,649
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 H

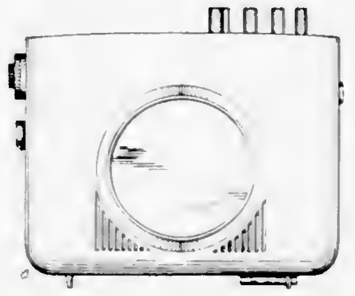


230,281

COMBINED STEREO TAPE PLAYER RECEIVER AND DIGITAL CLOCK

Michio Tatsuta, Tokyo, Japan, assignor to Tokyo Trading Co., Ltd., Tokyo, Japan
Filed Mar. 8, 1973, Ser. No. 339,253
Term of patent 14 years
Int. Cl. D14—*03*; D10—*01*
U.S. Cl. D26—14 B

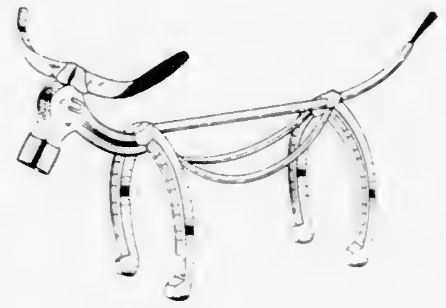




230,282

FIGURINE

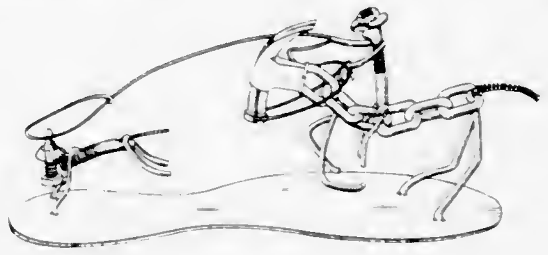
Jimmy J. Johnson, Rte. 3, Box 533, Wichita Falls, Tex. 76308
Filed May 24, 1972, Ser. No. 256,638
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 B



230,283

FIGURINE

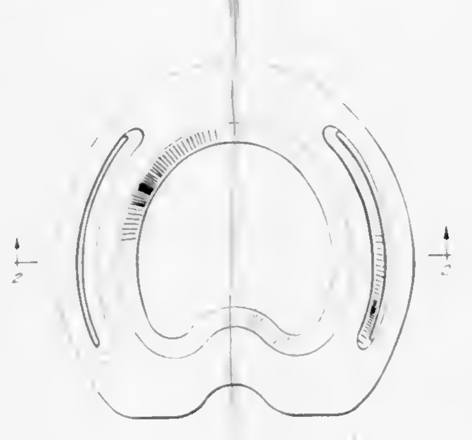
Jimmy J. Johnson, Rte. 3, Box 533, Wichita Falls, Tex. 76308
Filed May 24, 1972, Ser. No. 256,637
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 A



230,284

HORSESHOE

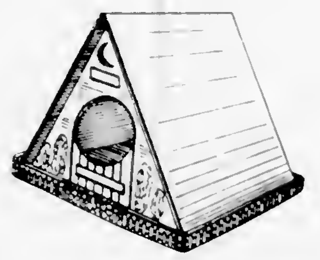
Christopher Stephen Shenton, Suite 203T, 550 Cottonwood Drive, Coquitlam, British Columbia, Canada, and Michael David Cox, 16106 84th Ave., Surrey, British Columbia, Canada
Filed Mar. 31, 1972, Ser. No. 240,341
Claims priority, application Canada Mar. 30, 1972
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—35



230,285

COMBINED LITTER PAN AND COVER THEREFOR FOR CATS

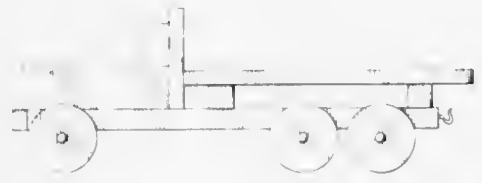
John A. Dilley, P.O. Box 3207,
Champaign, Ill. 61820
Filed May 8, 1972, Ser. No. 251,555
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—99



230,286

TOY FLATBED TRUCK

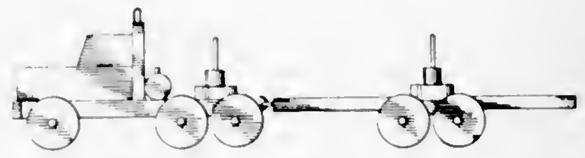
Robert E. De Graw, 13811 116th Ave. NE.,
Kirkland, Wash. 98033
Filed Nov. 27, 1972, Ser. No. 309,781
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



230,287

TOY LOGGING TRUCK

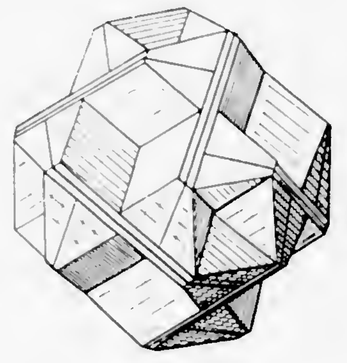
Robert E. De Graw, 13811 116th Ave. NE.,
Kirkland, Wash. 98033
Filed Nov. 27, 1972, Ser. No. 309,782
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



230,288

SYMMETRICAL POLYHEDRAL INTERLOCKING PUZZLE

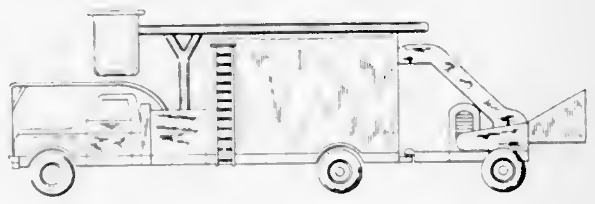
Stewart T. Coffin, Old Sudbury Road,
Lincoln, Mass. 01773
Filed Feb. 28, 1972, Ser. No. 230,197
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 M



230,289

COMBINED TOY TRUCK AND WOOD CHIPPER

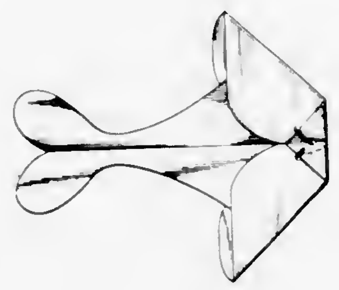
Elaine Ouellet, 3 Oakmont Ave.,
Westminster, Mass. 01473
Filed Aug. 4, 1972, Ser. No. 277,894
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



230,290

TOY AIRPLANE

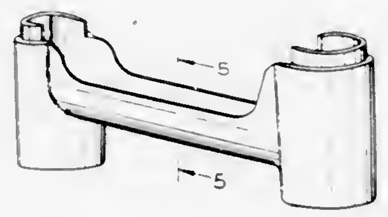
Irvin L. Fields, P.O. Box 1083,
Ormond Beach, Fla. 32074
Filed Aug. 2, 1972, Ser. No. 277,238
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 HH



230,291

MARBLE RUNWAY

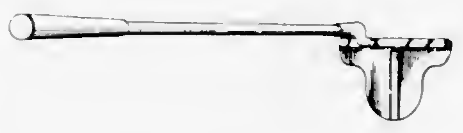
Thomas Josef Derrick Paul Karen, Ashwell, England, assignor to Hilary Page "Sensible" Toys Limited, Kenley, Surrey, England
Filed Apr. 27, 1972, Ser. No. 248,343
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 K



230,292

PUTTER

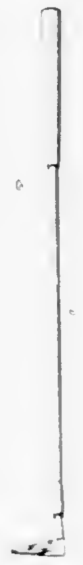
Rudolph A. Gall, 7800 Webster Road,
Middleburg Heights, Ohio 44130
Filed June 22, 1972, Ser. No. 265,186
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GC



230,293

PUTTER

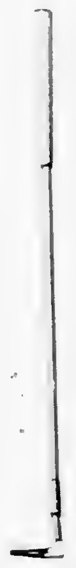
Rudolph A. Gall, 7800 Webster Road,
Middleburg Heights, Ohio 44130
Filed June 22, 1972, Ser. No. 265,187
Term of patent 14 years
The portion of the term of the patent subsequent to Feb. 5, 1988, has been disclaimed
Int. Cl. D21—*02*
U.S. Cl. D34—5 GC



230,294

PUTTER

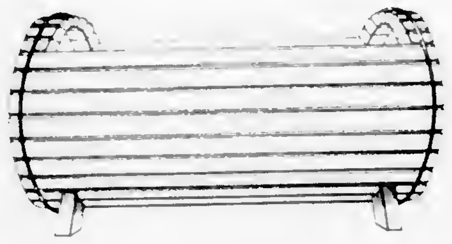
Rudolph A. Gall, 7800 Webster Road,
Middleburg Heights, Ohio 44130
Filed June 22, 1972, Ser. No. 265,188
Term of patent 14 years
The portion of the term of the patent subsequent to Feb. 5, 1988, has been disclaimed
Int. Cl. D21—*02*
U.S. Cl. D34—5 GC



230,295
PLANTER FOR FLOWERS

Wallace Rosenwach, 2 Harbour Road,
Great Neck, N.Y. 11024
Filed Nov. 11, 1971, Ser. No. 198,037
Term of patent 14 years
Int. Cl. D11—*02*

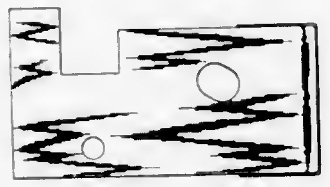
U.S. Cl. D35—3 A

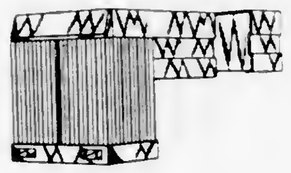


230,296
COMBINED HOOD AND GRILLE FOR A SELF-PROPELLED FORAGE HARVESTER OR THE LIKE

Joe P. Leinhauser and James L. Vogt, Ottumwa, Iowa, and James M. Conner, Mamaroneck, and Charles W. Pelly, Scarsdale, N.Y., assignors to Deere & Company, Moline, Ill.
Filed Mar. 28, 1972, Ser. No. 238,998
Term of patent 14 years
Int. Cl. D12—*09*

U.S. Cl. D40—1 E

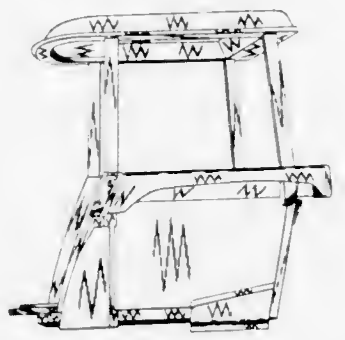




230,297
TRACTOR ROLL-OVER PROTECTION FRAME

William F. H. Purcell, New York, James M. Conner, Mamaroneck, and Charles W. Pelly, Scarsdale, N.Y., assignors to Deere & Company, Moline, Ill.
Filed Mar. 22, 1972, Ser. No. 237,227
Term of patent 14 years
Int. Cl. D12—*09*

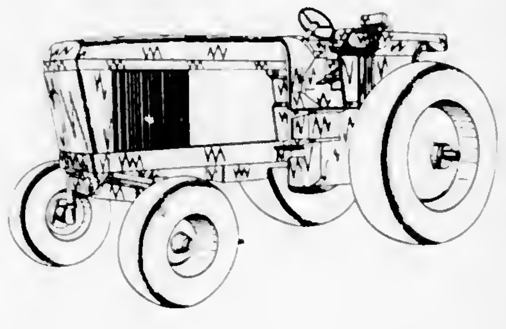
U.S. Cl. D40—5



230,298
TRACTOR

William F. H. Purcell, New York, James M. Conner, Mamaroneck, Charles W. Pelly, Scarsdale, and Niels Diffrient, New York, N.Y., assignors to Deere & Company, Moline, Ill.
Filed Mar. 22, 1972, Ser. No. 237,225
Term of patent 14 years
Int. Cl. D12—*09*

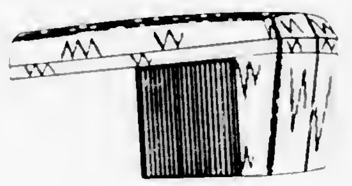
U.S. Cl. D40—5

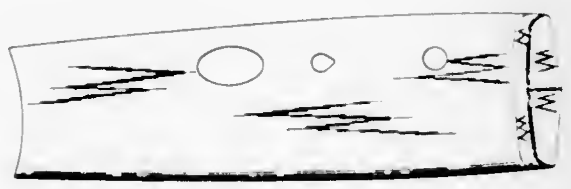


230,299
COMBINED TRACTOR HOOD AND GRILLE

William F. H. Purcell, New York, James M. Conner, Mamaroneck, Niels Diffrient, New York, and Charles W. Pelly, Scarsdale, N.Y., assignors to Deere & Company, Moline, Ill.
Filed Mar. 22, 1972, Ser. No. 237,224
Term of patent 14 years
Int. Cl. D12—*09*

U.S. Cl. D40—5

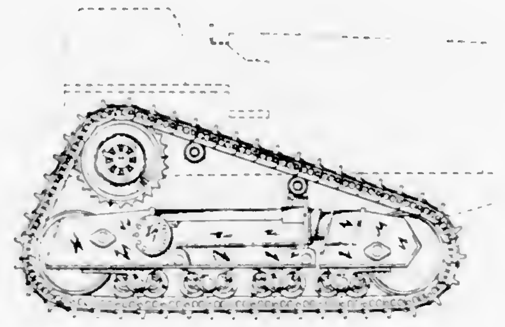


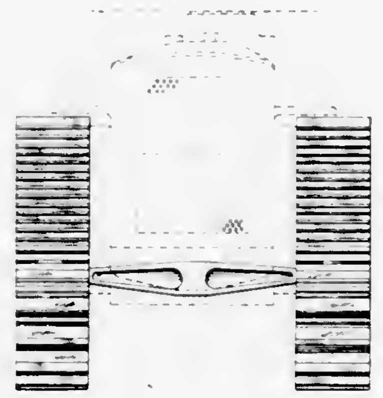


230,300
TRACK ASSEMBLY

Eldon D. Oestmann, Washington, Ronald L. Krolak, Metamora, George F. Alexander, Pekin, and James T. Duke, Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Aug. 23, 1972, Ser. No. 283,066
Term of patent 14 years
Int. Cl. D15—*04*

U.S. Cl. D40—5

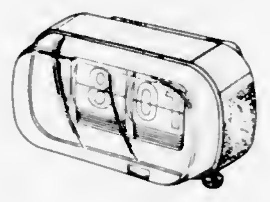




230,301
DIGITAL CLOCK OR SIMILAR ARTICLE

Hideaki Nagata, Tokyo, Japan, assignor to Kabushiki Kaisha Koparu, Tokyo-to, Japan
Filed Aug. 1, 1972, Ser. No. 277,036
Claims priority, application Japan Feb. 2, 1972
Term of patent 14 years
Int. Cl. D10—*01*

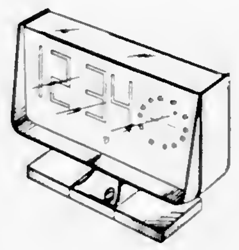
U.S. Cl. D42—7 R



230,302
CLOCK OR SIMILAR ARTICLE

Jiro Ochiai, Yokohama, and Tatsubiko Machida, Chiba, Japan, assignors to Tamura Electric Works, Ltd., Tokyo, Japan
Filed Feb. 11, 1972, Ser. No. 225,709
Claims priority, application Japan Aug. 13, 1971
Term of patent 14 years
Int. Cl. D10—*01*

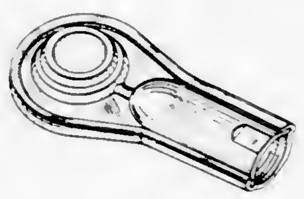
U.S. Cl. D42—7 R



230,303
STAMPED BEARING ASSEMBLY

Vincent C. Wachter, Milford, Joseph R. Keller, Fairfield, and Frederick J. Feldmann, Stratford, Conn., assignors to MPB Corporation, Keene, N.H.
Filed Aug. 27, 1971, Ser. No. 175,800
Term of patent 14 years
Int. Cl. D15—*99*

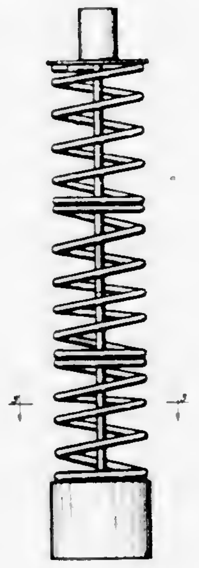
U.S. Cl. D46—1 R



230,304
LAMP BASE

John Sara, 5825 N. Rogers Ave., Chicago, Ill. 60646
Filed Jan. 17, 1973, Ser. No. 324,317
Term of patent 7 years
Int. Cl. D26—*05*

U.S. Cl. D48—20 R



230,305

CIGARETTE LIGHTER

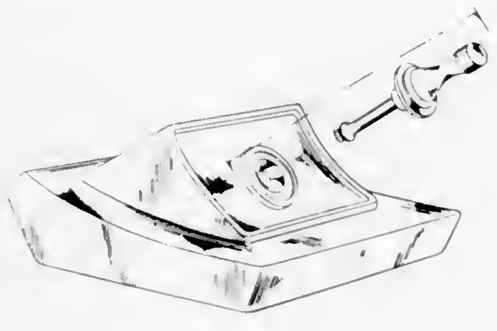
Samuel J. Koch, % Korex Industries, 821 Malcolm Road, Burlingame, Calif. 94010

Continuation-in-part of design application Ser. No. 211,838, Dec. 23, 1971. This application Nov. 9, 1972, Ser. No. 304,958

Term of patent 14 years

Int. Cl. D27—*05*

U.S. Cl. D48—27 R



230,306

LENS

John Smith, Willowdale, Ontario, Canada, assignor to Dominion Auto Accessories Limited, Toronto, Ontario, Canada

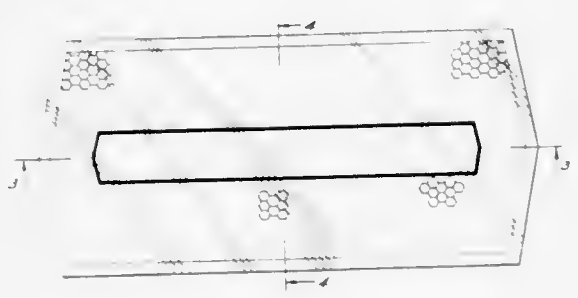
Filed Feb. 4, 1972, Ser. No. 223,812

Claims priority, application Canada Aug. 13, 1971

Term of patent 14 years

Int. Cl. D26—*06*

U.S. Cl. D48—32 A



230,307

LENS

John Smith, Willowdale, Ontario, Canada, assignor to Dominion Auto Accessories Limited, Toronto, Ontario, Canada

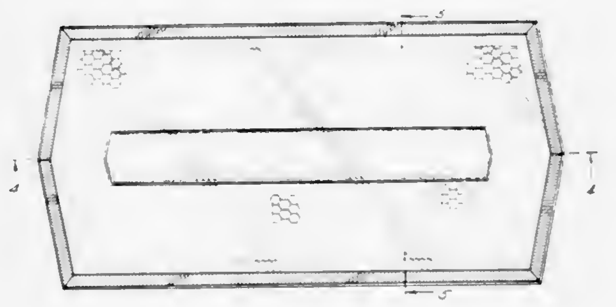
Filed Feb. 4, 1972, Ser. No. 223,813

Claims priority, application Canada Aug. 13, 1971

Term of patent 14 years

Int. Cl. D26—*06*

U.S. Cl. D48—32 A



230,308

ELECTRONIC CASH REGISTER

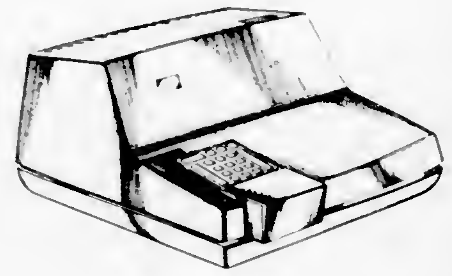
Lynton Randolph Knapp, Orange, and Ralph Waldo Province, Westminster, Calif., assignors to MSI Data Corporation, Costa Mesa, Calif.

Filed Feb. 10, 1972, Ser. No. 225,365

Term of patent 14 years

Int. Cl. D18—*01;* D14—*02*

U.S. Cl. D52—4 A



230,309

ROTARY SLIDE RULE CALCULATOR

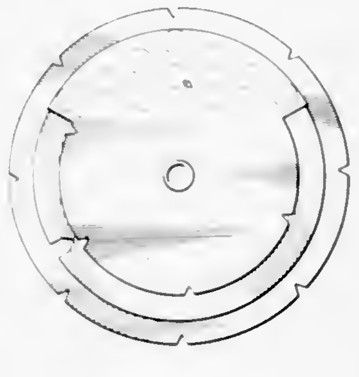
Allen R. Herron, Los Angeles, Calif.
(17656 Orna Drive, Granada Hills, Calif. 91344)

Filed June 21, 1972, Ser. No. 264,806

Term of patent 14 years

Int. Cl. D19—*99*

U.S. Cl. D52—6 B



230,310

SHOULDER REST FOR A STRINGED MUSICAL INSTRUMENT

Walter James Stewart, 45 Kenilworth Gardens, Westcliff, Southend, Essex, England

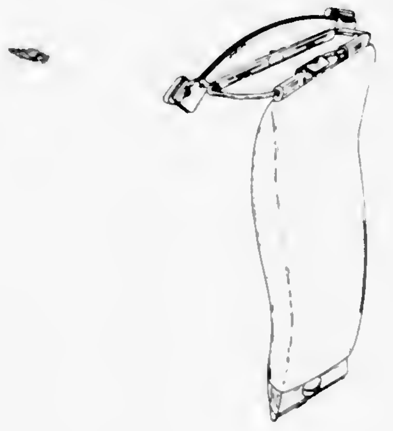
Filed Aug. 16, 1971, Ser. No. 172,355

Claims priority, application Great Britain Apr. 8, 1971

Term of patent 3½ years

Int. Cl. D17—*99*

U.S. Cl. D56—1



230,311

EMBOSSED PAPER TOWEL

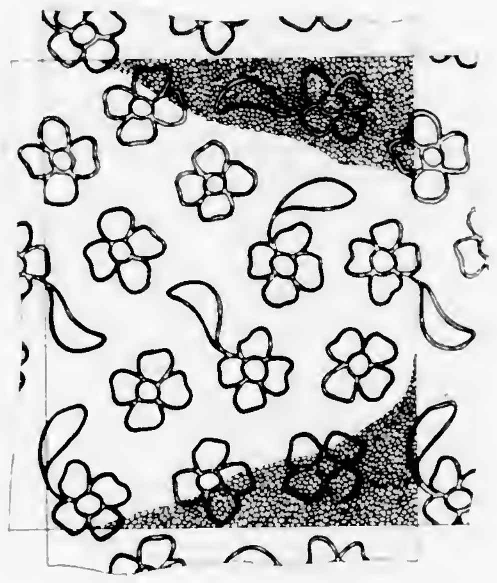
Robert Y. Kimura, Dobbs Ferry, N.Y., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed June 9, 1972, Ser. No. 261,579

Term of patent 14 years

Int. Cl. D5—*06*

U.S. Cl. D59—2 B



230,312

ELECTROSTATIC COPIER

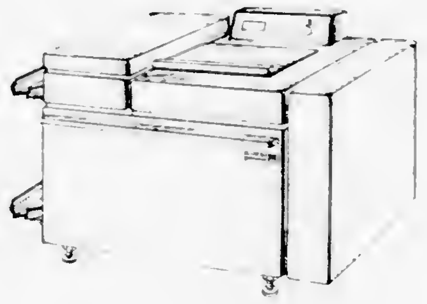
Richard H. Penny, New York, N.Y., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Sept. 25, 1972, Ser. No. 291,662

Term of patent 14 years

Int. Cl. D16—*03*

U.S. Cl. D61—1 Q



230,313

REAR PROJECTION VIEWER

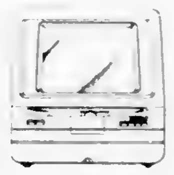
Mikio Sakata and Masao Kobayashi, Nagoya, Japan, assignors to Elmo Company Limited, Nagoya, Japan

Filed July 3, 1972, Ser. No. 268,871

Term of patent 14 years

Int. Cl. D16—*02*

U.S. Cl. D61—1 N



230,314

MICROFICHE READER

Hideto Furuoka, Tokyo, Japan, assignor to Gakken Co., Ltd., Tokyo, Japan

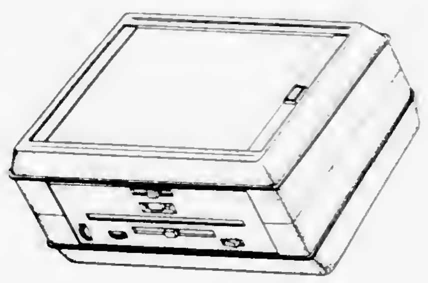
Filed Nov. 6, 1972, Ser. No. 304,233

Claims priority, application Japan May 6, 1972

Term of patent 14 years

Int. Cl. D16—*03*

U.S. Cl. D61—1 N



230,315

REFRIGERATOR

Abraham Hoffbrand Bank, 2 Greenacres Drive, Birdhaven, Johannesburg, Transvaal, Republic of South Africa

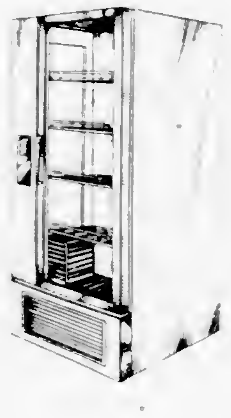
Filed Oct. 12, 1972, Ser. No. 296,315

Claims priority, application Republic of South Africa Apr. 18, 1972

Term of patent 7 years

Int. Cl. D15—*07*

U.S. Cl. D67—3 R



230,316

230,319

REFLECTIVE ROADWAY MARKER

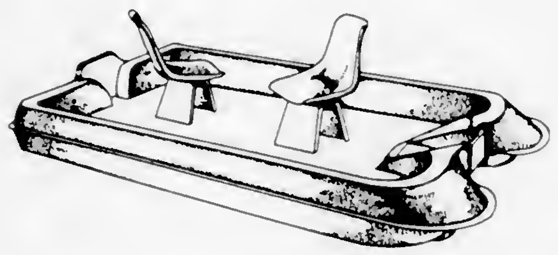
230,322

PAPERWEIGHT OR SIMILAR ARTICLE

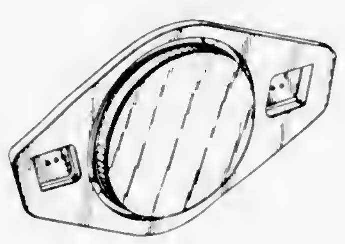
230,324

RADIOISOTOPE GENERATOR

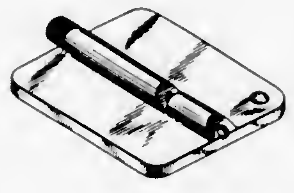
230,316
TWIN HULL BOAT
Richard B. Hull, % Midland Fiberglass Co.,
Box 5714, Midland, Tex. 79701
Filed Feb. 28, 1972, Ser. No. 230,209
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D71—1 Q



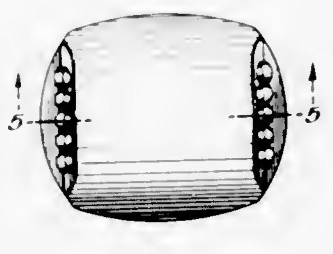
230,317
REFLECTOR FOR SPOKED WHEELS
Henry Lindner, Wood Dale, Ill., assignor to
Beatrice Foods Co., Chicago, Ill.
Filed Feb. 22, 1972, Ser. No. 228,476
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D72—1 F



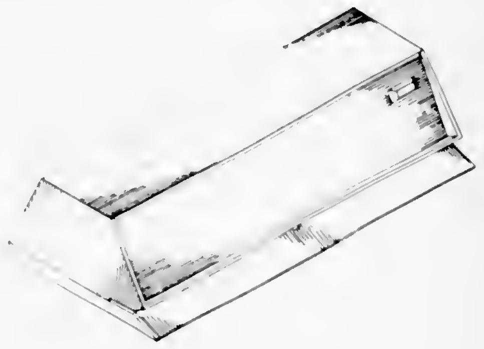
230,318
DOG WHISTLE
Claud W. Kissin, Fort Lee, N.J., assignor to The Hartz
Mountain Corporation, Harrison, N.J.
Filed June 23, 1972, Ser. No. 265,819
Term of patent 14 years
Int. Cl. D29—*99*
U.S. Cl. D72—1 A



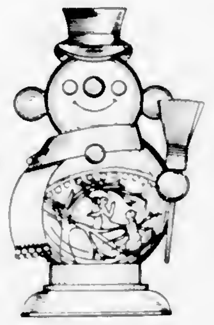
230,319
REFLECTIVE ROADWAY MARKER
Howard A. Schaefer, Lancaster, Ohio, assignor to Anchor
Hocking Corporation, Lancaster, Ohio
Filed Sept. 21, 1972, Ser. No. 290,820
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D72—1 J



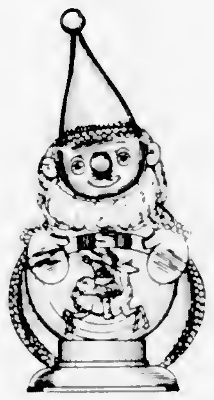
230,320
RECEIVING AND SIGNALING DEVICE FOR WRITTEN MESSAGES
Dennis J. Lowery and Robert E. Merchant, Grand Junction, Colo., assignors to Dixson, Inc., Grand Junction, Colo.
Filed May 2, 1972, Ser. No. 249,757
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D74—1 R



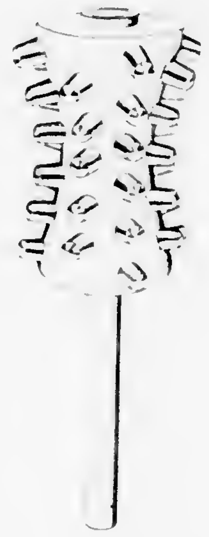
230,321
PAPERWEIGHT OR SIMILAR ARTICLE
Milton Laser, 1 Overlook Ave., Great Neck, N.Y. 11021
Filed July 7, 1972, Ser. No. 269,844
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—12



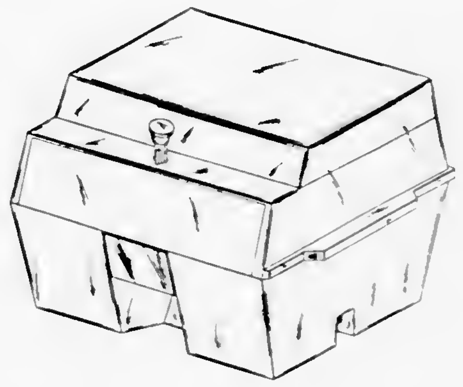
230,322
PAPERWEIGHT OR SIMILAR ARTICLE
Milton Laser, Great Neck, N.Y., assignor to Kurt S.
Adler, Inc., New York, N.Y.
Filed July 7, 1972, Ser. No. 269,843
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—12



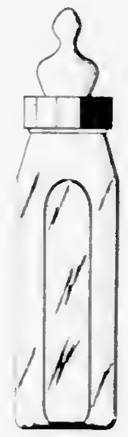
230,323
MUSCLE EXERCISE DEVICE
Saul Possick, 14 Boylston St., Randolph, Mass. 02368
Filed Apr. 6, 1973, Ser. No. 348,468
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D83—1 T



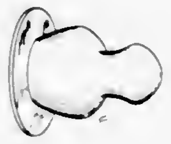
230,324
RADIOISOTOPE GENERATOR
John D. Wark, Freeport, and Henry A. Holzwarth, Bayside, N.Y., assignors to Mallinckrodt Chemical Works, St. Louis, Mo.
Filed Aug. 26, 1971, Ser. No. 175,416
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 H



230,325
NURSING BOTTLE AND NIPPLE
Stephen B. Sofro, Providence, R.I., assignor to Reliance
Products Corporation, Woonsocket, R.I.
Filed Sept. 28, 1971, Ser. No. 184,645
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—8 A



230,326
NIPPLE
Stephen B. Sofro, Providence, R.I., assignor to Reliance
Products Corporation, Woonsocket, R.I.
Filed Sept. 28, 1971, Ser. No. 184,646
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—8 B



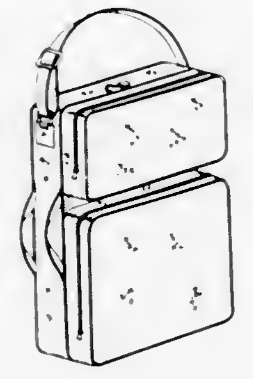
230,327

230,329

230,327
LUGGAGE BAG

Claire Cooperstein, 30 E. Hickory St.,
Spring Valley, N.Y. 10977
Filed Jan. 28, 1972, Ser. No. 221,849
Term of patent 14 years
Int. Cl. D3—*01*

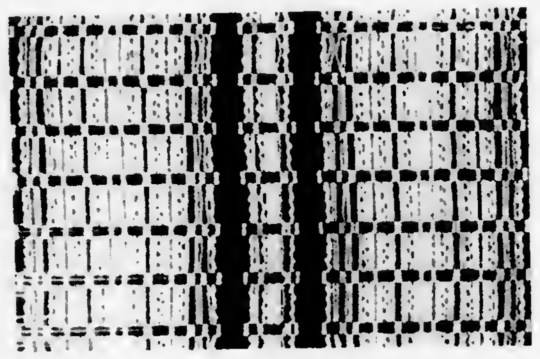
U.S. Cl. D87—5 G



230,328
WOVEN TEXTILE AND ALUMINUM FABRIC

Maurice Schaller, Clifton, N.J., assignor to Levolor
Lorentzen, Inc., Hoboken, N.J.
Filed Oct. 22, 1971, Ser. No. 191,950
Term of patent 14 years
Int. Cl. D5—*05*

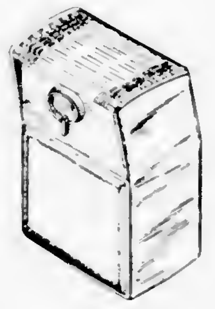
U.S. Cl. D92—1 Y



230,329
SHAVER

Robert A. Mockovak, Newtown, Conn., assignor to Sperry
Rand Corporation, New York, N.Y.
Filed May 30, 1972, Ser. No. 258,233
Term of patent 14 years
Int. Cl. D28—*03*

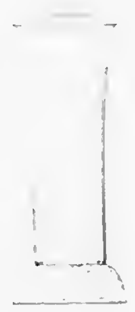
U.S. Cl. D95—3 A



230,330
COLLAPSIBLE DISPENSING TUBE

John V. Massey, Chicago, and Robert J. Hutchcroft, Glen
Ellyn, Ill., assignors to The Gillette Company, Boston,
Mass.
Filed Nov. 16, 1971, Ser. No. 199,399
Term of patent 14 years
Int. Cl. D9—*99*

U.S. Cl. D9—194



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF FEBRUARY, 1974

Note.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A P Engineering Kabushiki Kaisha *See—*
  - Inuzuka, Keizo, 3,789,621
- Aaltonen, Lasse; Salminen, Teuvo, and Vaisanen, Voitto, to Upo Osakeyhtio. Fountain well 3,789,924, Cl. 166-105.100.
- Aaltonen, Olavi A *See—*
  - Bryk, Petri B.; Honkasalo, Jorma B, Malmstron, Rolf E., Makipirtti, Simo A I.; Toivanen, Toivo A.; and Aaltonen, Olavi A, 3,790,366.
- Abbott Laboratories *See—*
  - Flouret, George Rogelio, 3,790,554
  - Flouret, George Rogelio; and Cole, John Wayne, 3,790,555.
  - Hirata, Arthur Atsunobu; and Boley, William Franklin, 3,790,447.
  - Theriault, Robert John, Karwowski, James Paul; and Wideburg, Norman Earl, 3,790,578
- Abex Corporation. *See—*
  - Swain, James C., and Adams, Cecil B., 3,790,314
- Abramson, Carl N; and Agusto, Nicholas A, III, to Adoptive Technology, Inc Telephone communications system with distributed control 3,790,717, Cl 179-15.0al
- Absler, Howard K *See—*
  - Schnitzer, David H., and Absler, Howard K., 3,790,070.
- ACE Glass Co.. *See—*
  - Tausheck, Russell W, 3,790,003
- Acoustic Fiber Sound Systems, Inc. *See—*
  - Everitt, Scott F, 3,789,953.
- Adachi, Takeshi, to Nippon Gakki Seizo Kabushiki Kaisha Tune keying and synthesizing system for electronic musical instrument 3,790,693, Cl 84-1 010
- Adahan, Carmeli. Brake pressure modulator 3,790,228, Cl 303-21 00f
- Adams, Cecil B *See—*
  - Swain, James C, and Adams, Cecil B., 3,790,314
- Adams, John Walker Stand for motorcycle wheels 3,789,894, Cl 144-288 00a
- Adams, Phillip. *See—*
  - Merianos, John J., Shay, Edward Griffin, Adams, Phillip, and Petrocci, Alfonso N., 3,790,678
- Adams, Stanley B *See—*
  - Jorgensen, Stanley A, and Adams, Stanley B, 3,789,946
- Adamson, Gerald P., to Dresser Industries, Inc Circuit for suppression of spurious pulses resulting from relay operation 3,790,821, Cl 307-247.00a
- Adoptive Technology, Inc *See—*
  - Abramson, Carl N, and Agusto, Nicholas A, III, 3,790,717.
- Advanced Memory Systems, Inc. *See—*
  - Palfi, Thomas L., Brooks, Charles, and Miller, George J., 3,790,961
- Afanasiev, Alexandr Dmitrievich, Lykov, Alexei Gavrilovich; Mogilevsky, Alexandr Moiseevich, Sokolov, Leonid Pavlovich, and Fridman, Evl Gershkovich Apparatus for transferring the blanks of knitting needles in the process of manufacture of such needles. 3789,974, Cl 198-20 000.
- AGA Aktiebolag *See—*
  - Bostrom, Bertil Ingemar, Ljungsahl, Soren Folkl Samuel, and Knoos, Stellan, 3,789,494
- Agfa-Gevaert Aktiengesellschaft *See—*
  - Werz, Siegfried, and Zanner, Johann, Jr., 3,790,263
- Agfa-Gevaert N V *See—*
  - Smets, George Joseph, and Vandensavel, Jean Marie, 3,790,377.
- Agladze, Ilich *See—*
  - Demuria, Nazi Vladimirovna, and Agladze, Ilich, 3,790,458
- Agon Uhrenfabrik Robert Friebold AG. *See—*
  - Hurt, Zeno, 3,789,604
- Aguet, Emilt, to Sulzer Brothers Limited Steam power plant with a flame-heated steam generator and a group of gas turbines. 3,789,804, Cl. 122-1 00r
- Agusto, Nicholas A, III *See—*
  - Abramson, Carl N., and Agusto, Nicholas A., III, 3,790,717.
- Ahrens, Erhard, to Electroacustic GmbH Echo-sounding apparatus having a digital intermediate store. 3,790,925, Cl. 340-3.00r.
- Aichenegg, Paul C., and Emerson, Carl D, to Baychem Corporation, mesne. Unsaturated sulfur-containing nematocides and fungicides 3,790,683, Cl 424-337.000.
- Aileo, Jackson Anthony Headgear structure. 3,789,427, Cl. 2-3.00r.
- Air Products and Chemicals, Inc.: *See—*
  - Weintraub, Lester, 3,790,460.
- Ajax Magnethermic Corporation: *See—*
  - Duca, William J., 3,790,338
- Akamatsu, Mitsuhiro. *See—*
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- Akima, Shinobu *See—*
  - Mishimura, Shojiro; Ishizaki, Masao; Seo, Yoshiro, and Akima, Shinobu, 3,789,930.
- Akiyama, Hideaki, to Kabushiki Kaisha Ricoh. Cleaning liquid purification device for use in wet-type electrostatic photography 3,790,466, Cl. 204-300.000.
- Aktiengesellschaft Brown, Boveri & Cie: *See—*
  - Endres, Wilhelm, 3,790,303.
- Aktieselskabet Brodrene Hartmann *See—*
  - Moller, Bent, 3,790,063.
- Akustikobyran AB *See—*
  - Egerbork, Bo Malte S., Gadefelt, Goran R., Hagbjer, Gunnar Ingemar, and Spang, Kjett Knut I, 3,790,078.
- Albrecht, Harry Allen, and Plati, John Thomas, to Hoffmann-La Roche Inc Intermediate 4-methoxy isoxazoles 3,790,591, Cl 260-307.00h
- Aldea, Alexandru. *See—*
  - Radu, Gheorghe, and Aldea, Alexandru, 3,790,187.
- Aldinger, Ulrich, to Bosch, Robert, G.m.b.H. Flow control arrangement for a piston pump. 3,790,307, Cl 417-270.000.
- Alexander, Arthur Duane Pulse analyzing tester. 3,790,767, Cl 235-151.310.
- Alexander, Delbert S, Jr., to Small Business Administration, mesne Automatic electric baseball game. 3,790,170, Cl. 273-88 000.
- Alexander, Edward M., to United States of America, Navy Lattice softening variable delay line. 3,790,907, Cl 333-30.00r
- Alexoff, Peter, to Mitchell, George A, Company. Method for forming reduced diameter ends on elongated workpieces 3,789,650, Cl 72-360 000.
- Allemang, Arnold A, and Bachtel, Howard J, to Dow Chemical Company, The. Removal of phosgene from an essentially anhydrous gas stream. 3,789,580, Cl 55-71.000.
- Allenspach, Heinz. *See—*
  - Strobel, Felix, and Allenspach, Heinz, 3,789,937
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  - Beller, Herbert R., 3,790,099.
  - Bruen, Charles Patrick, Wamser, Christian Albert, and Morgan, Thomas Richard, 3 790,456.
  - Lichstein, Bernard Murray, 3,790,607
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  - Haupt, Robert C., 3,789,694
  - Leveraus, James E., 3,790,931.
- Allis-Chalmers Manufacturing Company *See—*
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- Allmanna Svendka Elektriska Aktiebolaget *See—*
  - Isaksson, Sven-Erik, Larker, Hans; and Lindberg, Mats, 3,790,340.
- Allmanna Svenska Elektriska Aktiebolaget *See—*
  - Larker, Hans, Isaksson, Sven-Erik, Lindberg, Mats, and Granberg, Gunnar, 3,790,339
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- Alvarez, Vicente. Handle connection 3,790,232, Cl. 403-192 000
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- AMBAC Industries, Incorporated. *See—*
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- Amdahl Corporation. *See—*
  - Amdahl, Gene M., Clements, Michael R., and Topham, Lyle C., 3,790,960.
- Amdahl, Gene M., Clements, Michael R, and Topham, Lyle C., to Amdahl Corporation. Right and left shifter and method in a data processing system. 3,790,960, Cl 340-172.500.
- Amerace Esna Corporation. *See—*
  - Heenan, Sidney A.; and Majewski, Norbert, 3,790,293
- American Can Company. *See—*
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- American Cyanamid Company: *See—*
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  - Economou, Peter, 3,790,514
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  Stein, Jay A., and Polucci, Gerald, 3,790,799.
American Standard, Inc.: *See*—
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  Rae, Jerry W.; and White, Dean S., 3,789,567.
Ames, Ward A., to Tridan Tool & Machine, Inc. Portable tube expander. 3,789,648, Cl. 72-316.000.
Ametek, Inc : *See*—
  Gilliland, Michael L., 3,790,300.
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  Brugnoli, Angelo, 3,789,433.
AMP Incorporated. *See*—
  Coller, James Ray, 3,789,481.
Anderson, Clarence. Left and right trip dogs for carrier tracks. 3,789,695, Cl. 74-568.00r.
Anderson, Dennis. Combination roof and side wall extensions for vehicular hauling beds. 3,790,207, Cl. 296-23.00g
Anderson, Donald J., to Chevron Research Company. Hexahydro-o-xylylene compounds and process for their production. 3,790,643, Cl. 260-648.00r.
Anderson, Leonard R Tether ball apparatus including roller bearing and vertical barrier. 3,790,171, Cl. 273-95.00a
Anderson, Matthew E., and Means, James E., to United States of America, Navy Optical accelerometer. 3,789,674, Cl. 73-517.00r.
Anderson, Norman Richard, to Bunker Ramo Corporation. Optoelectronic cable assembly 3,790,791, Cl. 250-227.000.
Anderson, Richard W.; Weiss, Bernard J.; and Hulley, Hubert E., to Cygned, Inc. Moving target indicator system and apparatus. 3,790,938, Cl 343-7.700.
Anderson, William A.; and Franz, Edmund C., to Aluminum Company of America. Silicon-manganese aluminum base architectural alloy 3,790,452, Cl. 204-29.000.
Andreassen, Victor Paul, to Smidth, F. L., & Co. Lined coolers for rotary kilns. 3,790,335, Cl. 432-80.000.
Andreichev, Pavel Petrovich. Reactor for catalyst preparation. 3,790,349, Cl. 23-284.000.
Andrews, Robert R.. *See*—
  Lighthipe, Charles H., Jr ; and Andrews, Robert R., 3,790,204
Andrews, Theodore E.: *See*—
  Snelling, Charles D.; Andrews, Theodore E.; and Weller, John J., 3,790,320.
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  Lipshits, Viktor Senderovich; Andrianov, Vladimir Rubenovich, Rykalin, Nikolai Nikolaevich; Krasnev, Tibor Ferentsevich, Podola, Nikolai Vasilievich, and Krivonos, Vadim Petrovich, 3,790,739.
Andries, Francis M., to Computer Medical Science Corporation Electronic stethoscope system. 3,790,712, Cl. 179-1.0st
Annal, James M., to Fahralloy Company, The. Hangers for porcelain enamelling furnaces 3,789,995, Cl 211-113.000.
Anthony, Michael *See*—
  Kurtin, Stephen, Anthony, Michael, and Watrous, Willis, 3,790,886.
Antoshkiw, William T., to Becton, Dickinson & Company Disposable guide wire. 3,789,841, Cl 128-2.050.
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Aratani, Norio; and Nakano, Masaki, to Honda Giken Kogyo Kabushiki Kaisha Helmet chin strap. 3,789,467, Cl 24-230.0at
Arbman Development AB. *See*—
  Ericsson, Konrad E., 3,790,161
Arctic Enterprises, Inc.: *See*—
  Hetteen, Edgar E., 3,789,938
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  Hempelmann, Wilhelm; Waldenmeier, Gunter; and Kienhofer, Manfred, 3,790,128.
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Arita, Masujiro: *See*—
  Sato, Hiroshi; Okumura, Munehiro; and Arita, Masujiro, 3,790,497.
Ariyan, Zaven S., and Ma, Shih-Yu, to Uniroyal, Inc. 2-(-Benzo[b]thenyl)-2-thiopseudorea and its pharmaceutically acceptable salts. 3,790,600, Cl. 260-330.500.
ARK-Environmental Research Inc.: *See*—
  De Chicchis, Antoni; Fennell, Harry C., Jr.; and Schwartz, David M., 3,789,562.
Armstrong Cork Company: *See*—
  Boylan, Joseph W.; and Shenk, John W., 3,789,566.
  Graham, Andrew E., Jr.; and Sitler, Rickie L., 3,790,436.
Armstrong Cork Company, mesne: *See*—
  Snelling, Charles D.; Andrews, Theodore E.; and Weller, John J., 3,790,320.
Armstrong, Dan F.; and Armstrong, George F., to Chem Valley Machine, Inc Porous metal flow control spool. 3,789,880, Cl. 137-625.300
Armstrong, George F.: *See*—
  Armstrong, Dan F.; and Armstrong, George F., 3,789,880.
Armstrong, John C.; and Lyman, George F., to Armstrong-Kropp Development Corporation. Breath-actuated aerosol dispenser 3,789,843, Cl 128-173.000.
Armstrong-Kropp Development Corporation: *See*—
  Armstrong, John C.; and Lyman, George F., 3,789,843.
Arnegard, Bo Olof Roland. *See*—
  Emanuelsson, Kaj Bengt Ingemar; and Arnegard, Bo Olof Roland, 3,790,315.
Arnold, Orlan M.; and Vancini, Carlo A., to Peabody Engineering Corporation. Apparatus for cleaning gases. 3,789,585, Cl. 55-222.000.
Arnold, Orlan M., and Vancini, Carlo A., to Peabody Engineering Corporation. Apparatus for removing surface films from liquids. 3,789,586, Cl 55-228.000.
Arnold, Robert J.: *See*—
  Gattuso, Marion J.; and Arnold, Robert J., 3,790,534.
Arthur, Jett C., Jr.; and Bains, Malkiat S., to United States of America, Agriculture. Methy cellulose-boron alkoxide compounds. 3,790,562, Cl. 260-231.00r.
Artos Engineering Company: *See*—
  Gudmestad, Ragnar, 3,789,485.
Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
  Kominami, Naoya; Tamura, Nobuhiro, Mikami, Hiroshi, and Yamamoto, Etsuo, 3,790,642.
  Nakano, Hiroshi; Takai, Hideo, and Nakajima, Fumio, 3,789,461
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Asato, Goro, Berkelhammer, Gerald, and Gastrock, William Henry, to American Cyanamid Company. Substituted 5-nitroimidazoles and method of preparing the same. 3,790,589, Cl. 260-306.80d
Asbery, John Harrison, and Fenne, Ivor, to C.A.V. Limited Fuel injection systems. 3,789,818, Cl. 123-139.0am.
Ashall, Ronald James, to Fibreglass Limited Binders for glass fiber insulation. 3,790,441, Cl 161-198.000.
Ashall, Ronald James, to Fibreglass Limited Binders for glass fiber insulation. 3,790,442, Cl 161-198.000
Askew, Anthony A., to Ecodyne Corporation. Hot process unit. 3,789,578, Cl. 55-39.000.
Astafiev, Georgy Vasilievich *See*—
  Razgulov, Mikhail Mikhailovich, Astafiev, Georgy Vasilievich, and Korolkov, Ivan Alexandrovich, 3,790,057.
Ateliers G.S.P. (Guillemin, Sergot, Pegard): *See*—
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  Schoeps, Knut Christian, and Karden, Karl Gosta, 3,789,934
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Attix, Frank H.: *See*—
  Murray, Kenneth M., and Attix, Frank H., 3,790,794
Atwell, William J., and Cranston, Lawrence, to Uniroyal Inc. Method of making textile-reinforced all-polymeric hose. 3,790,419, Cl. 156-149.000.
Auer, Rupert, to Messer Griesheim G.m.b.H. Nozzle. 3,790,742, Cl. 219-121.00p.
Aumuller, Walter. *See*—
  Weyer, Rudi, Aumuller, Walter; Weber, Helmut, Muth, Karl, and Schmidt, Felix Helmut, 3,790,630.
Aupy, Roland Rolland, to Etat Francois represente Pai le Ministre d'Etat Sharge de la, Defense Nationale Delegation. Apparatus and method for the storage and launching of a missile. 3,789,729, Cl. 89-1.800.
Autoflow Engineering, Limited: *See*—
  Craxton, Robert Trevor, 3,790,875.
Automation Gages, Incorporated: *See*—
  Polidor, Edward C., 3,790,233.
Automobiles Peugeot: *See*—
  Tixier, Michel, 3,790,771.
Avco Corporation: *See*—
  Hohenberg, Rudolph, 3,789,665.
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AVM Corporation. *See*—
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  Suvorov, Nikolai Nikolaevich, Avramenko, Vladimir Grigorievich; Shkilkova, Valentina Nikolaevna; and Zamyshlyaeva, Lidia Ionovna, 3,790,596.
Ayer, Lloyd M., to High Precision Incorporated. Safety nozzle for air blow-guns. 3,790,085, Cl. 239-291.000.
Azadian, Genevieve: *See*—
  Pierdet, Andre, and Azadian, Genevieve, 3,790,564
B/J Manufacturing Co. Inc.: *See*—
  Neier, Benjamin R., 3,790,138.
Babington, Robert S. Method of spraying. 3,790,080, Cl. 239-8.000.
Bachner, Ernst, to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft. Process for continuous casting of hot liquid metals. 3,789,911, Cl 164-82.000.
Bachtel, Howard J.: *See*—
  Allemang, Arnold A.; and Bachtel, Howard J., 3,789,580.
Backer, Martin A Extruding flower designs 3,790,331, Cl 425-464.000.
Backowski, Henry J Vehicle stabilizing means and method. 3,790,206, Cl. 296-15.000.
Bacon, Patrick Albert Henry: *See*—
  Collomosse, Herbert, and Bacon, Patrick Albert Henry, 3,790,704
Bader, Horst, to Eckardt, J. C., AG. Pneumatic pressure position adjusting controller. 3,789,884, Cl 137-832.000
Bader, Jorg; and Gatzi, Karl, to Ciba-Geigy Corporation Control of phytopathogenic fungi with 3-arylimino-1,2 dithiols 3,790,677, Cl. 424-277.000.
Badische Anilin- & Soda-Fabrik Aktiengesellschaft *See*—
  Graser, Fritz, and Bock, Gustav, 3,790,603.
  Trieschmann, Hans-Georg, Pfanmueller, Helmut; and Zeitler, Gerhard, 3,790,548.
Baglai, Vitaly Mikhailovich: *See*—
  Paton, Boris Evgenievich, Lebedev, Vladimir Konstantinovich, Medovar, Boris Izrailevich, Pentegov, Igor Vladimirovich, Latash, Jury Vadimovich, Bondarenko, Oleg Petrovich; Baglai, Vitaly Mikhailovich, Podola, Nikolai Vasilievich, and Emelyanenko, July Georievich, 3,790,691
Bagley, Rodney D., to Corning Glass Works Extrusion method for forming thin-walled honeycomb structures 3,790,654, Cl 264-177.000.
Bahr, Siegmund, and Saur, Walter, to Fr Hesser Maschinenfabrik AG Worm metering device with shut-off mechanism 3,790,040, Cl 222-413.000.
Baier, Webasto-Werk W., KG *See*—
  Schmid, Alfred, 3,789,645
Bailey, Isabel W Plastic container with disposable inner container 3,790,021, Cl. 220-63.00r
Bailey, Keith A., and Marlow, Jerry R., to General Motors Corporation Transmission control system. 3,789,963, Cl 192-3.570.
Bailey, Ronald B., to General Electric Company Power delivery system for a tank load characterized by series-connected inverter bridges and a high voltage source 3,790,877, Cl. 321-27.00r
Bains, Malkiat S.. *See*—
  Arthur, Jett C., Jr., and Bains, Malkiat S., 3,790,562
Baker, John R., and Fox, George, to Ford Motor Company Resiliently biased control linkage 3,789,693, Cl 74-513.000.
Baker, Joseph W *See*—
  Schumacher, Ignatius, and Baker, Joseph W., 3,790,649
Baldwin, D. H., Company. *See*—
  Bunger, David A., 3,789,718
Baldwin, Richard R., to Hewlett-Packard Company. Interferometer system for measuring straightness and roll 3,790,284, Cl. 356-106.000.
Ball Corporation *See*—
  Lind, Archie L., 3,790,022
  Mahoney, William P., 3,789,628.
Ballou, Richard P., to General Motors Corporation Garnish button assembly. 3,790,199, Cl 292-336.300
Baltz, Albert L., and Voeke, Elmer E., to Eagle Range and Manufacturing Company Runner construction for oven rack. 3,789,826, Cl. 126-33.900.
Bandrowski, James F Ski construction. 3,790,184, Cl 280-11.13j.
Bannister, Brian, to Upjohn Company, The. Derivatives of lincomycin and its analogs and process 3,790,560, Cl 260-210.00r.
Banyas, John D.; and Ross, Edward A., to Owens-Illinois, Inc. Burner apparatus for forming a finish on a glass container 3,790,087, Cl. 239-418.000.
Barabas, Andrew, to Castro Convertible Corporation Dutton assembling device and method. 3,789,496, Cl 29-453.000.
Barbarin, Jean Francois: *See*—
  Mesnet, Jean Dominique Francois; Remon-Beauvais, Philippe Marie Antoine Jacques; Barbarin, Jean Francois; Le Guennec, Raymond Louis; and Daddon, Georges Edouard Louis Leon, 3,790,111.
Barbecue Ovens, Inc. *See*—
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Barenyi, Bela, to Daimler-Benz Aktiengesellschaft. Motor vehicle front end construction 3,789,944, Cl 180-68.00p.
Baring, John A., to Honeywell Inc. Electron beam tube with moving display or memory. 3,790,851, Cl 315-22.000.
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Barkey, Kenneth T.; Gandy, Gerald C.; and May, Douglas C., to Eastman Kodak Company. Polyester film base having uniform high optical density. 3,790,653, Cl. 264-171.000.
Barnhart, Carlton L. Apparatus for dispensing flat articles. 3,790,027, Cl. 221-274.000.
Baron, Heinz. Multilaminar sheet structure. 3,790,433, Cl. 161-113.000.
Barrera, Roberto Gonzalez: *See*—
  Rubio, Manuel Jesus; and Leal, Victor Mario, 3,789,660.
Barrett, Donald Dean; Whalen, Kenneth R.; Nichols, Charles; Knapp, Robert G.; Wickum, Jay A.; and Moust, Daniel A., to Marsan Manufacturing Co., Inc. Fastening apparatus for ostomy appliances. 3,789,846, Cl. 128-283.000.
Barron, Mark B.; and Butler, Walter J., to General Electric Company Gate-diffusion isolation for JFET depletion-mode bucket brigade circuit. 3,790,825, Cl. 307-304.000.
Bartoo, Charles O.: *See*—
  Spengler, Duane E.; and Bartoo, Charles O., 3,789,538.
Barwell, Ian John, to Raleigh Industries, Limited. Method of and apparatus for truing spoked wheel. 3,789,475, Cl. 29-159.200.
BASF Wyandotte Corporation. *See*—
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Bates, Robert W.: *See*—
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Baudin, Pol *See*—
  Van Laethem, Robert, Baudin, Pol; and Hoyois, Jean-Claude, 3,790,748.
Bauer, Fritz F. Energy storing device, particularly a blockable pneumatic spring. 3,790,119, Cl. 248-400.000.
Baum, Charles L., to Machlett Laboratories, Incorporated, The. X-ray tube target. 3,790,838, Cl. 313-60.000.
Baychem Corporation, mesne: *See*—
  Aichenegg, Paul C.; and Emerson, Carl D., 3,790,683.
Bayer Aktiengesellschaft. *See*—
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  Christoph, Geert, Radlmann, Eduard, and Nischk, Gunther, 3,790,531.
  Diehr, Hans-Joachim, 3,790,509.
  Lehnert, Gunther; Maertens, Dieter; and Witte, Josef, 3,790,543
  Maertens, Dieter, Lehnert, Gunther, and Pampus, Gottfried, 3,790,544.
  Meiser, Werner, Metzger, Carl, Buchel, Karl Heinz, and Plempel, Manfred, 3,790,594.
  Podschus, Ernst, 3,790,495
  Rosenbaum, Heinz Jorg, and Rudolph, Hans, 3,790,515
  Rosenbaum, Heinz Jorg; Rudolph, Hans; Dhein, Rolf, and Reinking, Klaus, 3,790,516.
  Schon, Nikolaus, 3,790,538.
  Schon, Nikolaus, Pampus, Gottfried, and Witte, Josef, 3,790,546
  Senning, Alexander, Buchholt, Hans Christian, Bierling, Robert, Steinhoff, Dieter, and Trossmann, Gerhard, 3,790,616
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  Bortfeld, Manfred, and Wintershoff, Werner, 3,789,949
Beam, William S., III Pedal extenders for bicycle. 3,789,696, Cl. 74-594.100.
Becavin, Henri, and Ronsin, Michel, to Thomson-CSF Radio beacon with a rotating cardioid radiation pattern in particular for use in landing grounds of secondary importance 3,790,942, Cl. 343-106.00r.
Beck, Roderick, Harman, James F.; Shatila, Mounir A., Richins, David A., and Lack, John. Apparatus for reconstituting dry potato agglomerates into potato dough. 3,789,750, Cl 99-536.000
Becker, Harold D., to Cornell Aeronautical Laboratory, Inc Communication apparatus having a ranging capability. 3,790,940, Cl 343-12.00r.
Becker, James H. *See*—
  Wysocki, Joseph J., Becker, James H., and Dir, Gary A., 3,790,251
Beckman Instruments, Inc.. *See*—
  Way, Allan S., and Hayman, William J., 3,790,283
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  Cowland, Frederick Claud; and Appleby, Harry, 3,790,393.
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  Antoshkiw, William T., 3,789,841
B.E.L. - Tronics Limited *See*—
  Sagl, Rudolph J. C., 3,790,808.
Belknap, James R Two speed wrench. 3,789,707, Cl. 81-57.390.
Bell Canada: *See*—
  Montague, Bernard R., Leyburn, Derek; Barker, John; Hannley, Ray John; Leblanc, Vincent G.; and Tam, Leslie K., 3,790,719
Bell Canada-Northern Electric Research Limited. *See*—
  Luff, Peter Purnell, 3,790,935.
Bell Telephone Laboratories, Incorporated: *See*—
  Briley, Bruce Edwin, 3,790,823
  Corwin, Walter Leo, 3,790,893
  Cuthbert, John David, McMahon, Richard George, and Munro, David Farnham (said Cuthbert and said Munro assors to), 3,790,287.
  De Gregory, Donald Lee, 3,789,883
  Inose, Hiroshi; Masuko, Yutaka, and Saito, Tadao, 3,790,715.
  Levinstein, Hyman Joseph, 3,790,405.
  Miller, Stewart Edward, 3,790,902
  Moline, Robert Alan, 3,790,412.
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Simms, Douglas Leon, Tolk, Norman Henry, and White, Clark Woody, 3,790,411.
Beller, Herbert R., to Allied Chemical Corporation. Energy absorbing retractor. 3,790,099, Cl. 242-107.400.
Bellina, Russell F., to Du Pont de Nemours, E. I., and Company Carbamate esters of 2-oxyimino-3-keto-1,4-diheterocyclics 3,790,566, Cl 260-243.00r.
Bellmer, Thomas J., to Fedders Corporation. Tension ring for compressor vane. 3,790,148, Cl 267-73.000.
Benasutti, Louis D.; and Sucro, Jost S , to General Motors Corporation. Ice door mechanism. 3,789,620, Cl. 62-344 000.
Bendix Corporation, The. *See—*
Burnett, Richard T., 3,789,737.
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Fulmer, Keith H., 3,790,221.
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Korsch, Dietrich, 3,790,247.
Miller, Donald L., 3,789,966.
Normann, Richard W., 3,790,922
Passeri, David P., 3,789,655.
Ritsema, Irving R., 3,790,224
Rossigno, Louis P , 3,790,807.
Tam, George M , Gardner, Delbert J , Grabe, Frederick G , Putt, James B.; Owens, Carl D., and Sisco, William C., 3,789,735.
Taplin, Lael B.; Spitz, William R., and Leung, Chun Keung, 3,789,816.
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Berg, Donald P , and Groth, Hugh P., to Cross River Products, Inc. Foldable and adjustable crib. 3,789,439, Cl. 5-99 00c.
Berg Manufacturing Company, The: *See—*
Brown, Curtis L., 3,790,229.
Bergegere, Pierre, to Coulter Electronics, Inc. Particle study apparatus having improved particle resolution means 3,790,883, Cl 324-71 0cp
Berger, Abe, to General Electric Company. Organosilicon compound with isothiocyanate substituent bonded through divalent bridge. 3,790,613, Cl 260-448 80r
Berger, Rene. Articulated, unit cast case system for ungluing documents 3,790,429, Cl 156-584 000.
Bergey, John M , to Time Computer, Inc., mesne. Solid state watch with magnetic setting 3,789,601, Cl 58-50.00r
Berglund, Richard N.; and Liu, Benjamin Y H., to RNB Associates, Inc Method and apparatus for generating monodisperse aerosol 3,790,079, Cl 239-3.000.
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Berman, Baruch, to TRW Inc Energy storage and transfer power processor with self-contained parametric regulating loop. 3,790,816, Cl 307-149 000.
Bernard, Christian, to Dollfus-Mieg & Cie. Prefabricated trouser Fly 3,789,430, Cl 2-234 000.
Bernstein, Barry E., Erbstein, Robert S , and Pazis, Thomas, to Leesona Corporation. Automatic control system for correcting textile machinery malfunctions from senses and stored malfunction data 3,789,595, Cl 57-34 00r
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Bert, Alain; Enjalbert, Roger, and Kern, Pierre, to Thomson-CSF Electrostatic focussing devices especially for microwave tubes. 3,790,843, Cl 315-5.340.
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Best, Albert M.; and Alverson, Robert M , to Sperry Rand Corporation. Hay rolling machine with pickup means. 3,789,593, Cl 56-341.000.
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Bissell, Robert D , to Dresser Industries, Inc. Overload protected bourdon tube. 3,789,668, Cl. 73-418.000.
Bjelvert, Sven William. Receiver for a frequency-modulated electroacoustical signal having squelch means for suppressing noise when no signal is coming through the receiver 3,790,891, Cl 325-348.000.
Black, Robert, Provan, David, and Rainey, Christopher, to Burroughs Machines Limited Security access medium. 3,790,754, Cl. 235-61.70b.
Blackburn, Dale W.; Devenney, Robert F , and Jen, Timothy Yu-Wen, to Smithkline Corporation. Imidazo and pyrimido (2,1-b) quinazolines. 3,790,573, Cl 260-256.40f
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Bloch, Berman S., and Bouvar, James J., to Universal Oil Products Company Organic coating process. 3,790,450, Cl. 204-14 00n
Block, Herman S.: *See—*
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Bohanec, August. Adjustable carrying strap. 3,790,049, Cl. 224-45.00p.
Boley, William Franklin. *See—*
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Bolin, Larry R.; Hopper, Claude, Jr.; and Jolly, Shelby A., to General Electric Company. Microwave-excited light emitting device 3,790,852, Cl. 315-267.000.
Bolleter, Hans Ulrich; and Schulthess, Hansruedi, to Salvis AG. Apparatus for steam pressure cooking of food 3,790,391, Cl. 99-330.000.
Bomba, Zdenka. Shield for use in applying eyelash makeup. 3,789,856, Cl. 132-88.500.
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Paton, Boris Evgenievich, Lebedev, Vladimir Konstantinovich, Medovar, Boris Izrailevich, Pentegov, Igor Vladimirovich, Latash, Jury Vadimovich; Bondarenko, Oleg Petrovich; Baglai, Vitaly Mikhailovich, Podola, Nikolai Vasilievich, and Emelyanenko, July Georievich, 3,790,691
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Bondie, Dale J.; Sutton, Robert W.; and Lewelling, James L., to Ex-Cell-O Corporation. Machine tool with automatic tool changing means. 3,789,500, Cl. 29-568.000.
Bonfiglio, Charles P., to General Motors Corporation. Magnet mounting clip for a dynamoelectric machine. 3,790,830, Cl. 310-42.000.
Bor, Maria, nee Szabo: *See—*
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Bortfeld, Manfred, and Winiershoff, Werner, to Bayerische Motoren Werke A G. Certain new and useful improvements in or relating to control means for the release of safety appliances in vehicles, more particularly passenger carrying automobiles. 3,789,949, I 180-91 000.
Bosch, James D B-B gun funnel device. 3,789,891, Cl 141-331.000.
Bosch, Robert, G.m.b.H.: *See—*
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Boston, Denis R., to Olin Corporation Adjustable scarfing tool 3,789,734, Cl. 90-24 00b.
Bostrom, Bertil Ingemar; Ljungsahl, Soren Folkl Samuel, and Knoos, Stellan, to AGA Aktiebolag Method of spirally winding strip to produce finned units. 3,789,494, Cl. 29-423 000
Bottoms, Harry Simister Pumps for liquids 3,790,312, Cl 417-424 000.
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Bowen, William Edmund, to American Can Company Method of forming a line of weakness in a multilayer laminate 3,790,744, Cl 219-121.01m
Bowerfind, Albert L , and Avilzer, Zvi, to Daggeem, Inc Fishing line threading means for telescopic rods. 3,789,533, Cl 43-18.00r
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Boyd, David C.; and Williams, Joseph M , to Corning Glass Works. High strength ophthalmic lens 3,790,260, Cl. 351-159 000.
Boyd, James W., to Packaging Corporation of America Carton construction 3,790,062, Cl 229-2.500.
Boyer, Jean-Jacques. Rotary device with adjustable axial bearing 3,789,740, Cl. 91-486 000.
Boylan, Joseph W , and Shenk, John W., to Armstrong Cork Company Joint structure for suspended ceiling system member. 3,789,566, Cl 52-573 000.
Bozek, John W Fluid flow range indicating apparatus 3,789,664, Cl. 73-209 000
Bradbury, Douglas W , and Huey, Cecil O , Jr , to Singer Company, The. Tracking mechanism for belt sanders 3,789,552, Cl 51-135 0bt
Bradshaw, Geoffrey Lionel Guy Electric switch assemblies with spring biased rotatable knob actuator for gear shift lever or the like. 3,790,729, Cl 200-61 880.
Brancaleone, Salvatore T., and Oliver, Leland W , to International Telephone and Telegraph Corporation Electrical connector with component grounding plate. 3,790,858, Cl 317-99.000.
Brand, Charles S , to Oberly & Newell, Inc Modular display stand 3,789,778, Cl. 108-94.000
Brandenburg, Helmut, to Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m b.H Glue-applying apparatus for corrugated paperboard machine. 3,789,795, Cl. 118-262.000
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Braun, Martin Cooling means for electrodes 3,790,836, Cl 313-13 000.
Brede, Alexander, III, Talmage, Charles Robert; and Tuttle, Elvin E. Method and apparatus for sintering annular compacts. 3,790,336, Cl 432-163 000.
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Brejaud, Hubert P., to Office National d'Etudes et de Recherches Aerospatiales. System for measuring time differences between remote clocks and for synchronizing the same. 3,789,653, Cl. 73-6.000.
Brems, John Henry Reciprocating drive mechanism. 3,789,676, Cl. 74-27.000.
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Briley, Bruce Edwin, to Bell Telephone Laboratories, Incorporated. High-speed transistor digital gating. 3,790,823, Cl. 307-255.000.
Brindell, Gordon D , and Macander, Rudy F., to Quaker Oats Company, The. Polyolefin stabilized with 3,5-disubstituted-4-hydroxybenzyl alcohol or amine. 3,790,526, Cl. 260-45.85s.
Brinks, Floyd J.: *See—*
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British Oxygen Company Limited, The: *See—*
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Brock-White Co.: *See—*
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Brodbeck, Helmut, to Efka-Werke Fritz Kiehn GmbH. Apparatus for packaging tubular articies. 3,790,025, Cl. 221-200.000.
Brokaw, Adrina Paul, to Keithley Instruments, Inc. Switching regulator having improved control circuitry utilizing direct sensing of energy applied to and released from a storage inductor 3,790,878, Cl. 323-17 000.
Broling, Keith W , and Tatina, Richard A , to Portec, Inc. Adjustable pedestal assembly. 3,789,775, Cl. 105-367.000
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Bross, Charles Frederick, to Pennwalt Corporation Article packaging machine 3,789,575, Cl 53-160.000.
Brossi, Arnold, Focella, Antonino; and Teitel, Sidney, to Hoffmann-La Roche Inc Process for the preparation of alkyl substituted resorcinols 3,790,636, Cl 260-586.00r
Brouwer, Gerardus Johannes, to Brouwer Turf Equipment Limited. Device for starting a turn in the end of a sod strip. 3,790,096, Cl. 242-55.000
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Brown, Cicero C. Anchoring assembly for anchoring well equipment within a tubular well conduit 3,789,925, Cl 166-125.000
Brown, Curtis L., to Berg Manufacturing Company, The. Emergency application brake valve assembly and system 3,790,229, Cl 303-52.000
Brown, Kenneth J Hog skinning II 3,789,458, Cl 17-21 000.
Brown, Kenneth Robson, to Ferranti Limited Inertial navigation systems. 3,790,766, Cl 235-150.250.
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Brown, Richard L. Apparatus for simulating crossroads vehicular traffic. 3,790,169, Cl. 273-86.00r.
Brown, Roland Clough. Security steer-gear cyclelock 3,789,634, Cl 70-186.000.
Brown, William Ray, to Mallory, P. R., and Co., Inc. Cam operated electrical time assembly with improved contact and associated peripheral rib cam. 3,790,726, Cl 200-38.00b.
Broz, Jerry J., to Twinn-K, Inc., mesne. Slot car track cleaning device 3,789,768, Cl 104-279.000.
Bruckner, Ronald L., to National Cash Register Company, The. Supply voltage and clock signal monitor. 3,790,818, Cl. 307-235.00r
Bruen, Charles Patrick, Wamser, Christian Albert; and Morgan, Thomas Richard, to Allied Chemical Corporation. Method of extracting and recovering chromium values from chromite ore 3,790,456, Cl. 204-61.000
Brugnoli, Angelo, to Amici, Francesco and Brugnoli, Maria Siphon with pneumatic priming and suction. 3,789,433, Cl. 4-44.000.
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Brunskill, Robert Thompson; and Langmead, Walter Alfred, to United Kingdom Atomic Energy Authority. Radiation dosemeters of the thermoluminescent type. 3,790,783, Cl. 250-362.000.
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Fick, Bernard E.; and Yamasaki, Kim, 3,789,821.
Brunton, Donald C.; and Soltesz, Carl R., to Infra Systems, Inc. Method and apparatus for measurement of sheet opacity. 3,790,796, Cl. 250-339.000.
Brusakov, Jury Ivanovich; Sirotkin, Nikolai Nikolaevich; Kiselev, Vasily Pavlovich; Ilinkov, Dmitry Vladimirovich; Pavlovichavdely, Mikhail; Marin, Semen Panteleevich; Shkarupa, Alexandr Ivanovich, Veisman, Boris Ottovich; Lebedev, Vladimir Nikolaevich; an Gavrilenko, Nikolai Pavlovich. Three-phase electric furnace for manufacturing aluminium-silicon alloys. 3,790,692, Cl. 13-9.000.
Bryan, Carney J.: *See—*
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Bryk, Petri B.; Honkasalo, Jorma B.; Malmstron, Rolf E.; Makipirtti, Simo A. I.; Toivanen, Toivo A.; and Aaltonen, Olavi A., to Outokumpu ly. Method of flash smelting sulphide ores. 3,790,366, Cl 75-23.000.
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Buczek, Carl J., Skolnick, Michael L.; and Gurski, Gary F., to United Aircraft Corporation. Peaked power coherent pulsed laser transmitter/receiver. 3,790,278, Cl. 356-28.000.
Bugg, Francis V.: *See—*
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Bugg, Kenly C., to Kendick Manufacturing Co. Electro-mechanical display device. 3,789,525, Cl. 40-28 00c.
Bugg, Vernon M., Sr.; and Bugg, Francis V., to Telectrotype Corporation of America. Communication method and apparatus. 3,790,708, Cl. 178-17.00c.
Bullard, Haran W. Hopper door operating and locking mechanism. 3,789,772, Cl. 105-240.000.
Bulteau, Gerard C., to Societe d'Etudes Scientifiques et Industrielles de l'Ile-de-France. Methods of treating cholesterolemia. 3,790,681, Cl 424-311.000.
Bum, Nicolaas, to Medische Faculteit Rotterdam. Heart examination by means of ultrasound waves. 3,789,833, Cl 128-2.00v.
Bunger, David A., to Baldwin, D. H., Company Voltage controlled chord organ 3,789,718, Cl. 84-1.010.
Bunger, Richard E. Portable self-aligning wall forming apparatus 3,790,321, Cl 425-63.000.
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Anderson, Norman Richard, 3,790,791.
Mathe, Istvan, 3,790,923.
Burford, Charles E. Bale tying device. 3,789,751, Cl. 100-19.00r.
Burges, Albert. Foil sealed syringe, 3,789,844, Cl. 128-235.000.
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Burnett, Richard T., to Bendix Corporation, The. Self-purging brake actuator. 3,789,737, Cl. 91-41 600
Burns, Richard W., to Hughes Aircraft Company High power diode phase shifter. 3,790,908, Cl. 333-31.00a.
Burroughs Corporation *See—*
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Burrous, Merwyn L., to Chevron Research Company Erosion-inhibited functional fluids. 3,790,487, Cl. 252-78.000.
Burton, Robert V., to Honeywell Inc. Synchronized steering control system. 3,789,940, Cl. 180-6.480.
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Bussart, Clayton J.; and Puli, Albert A., to Mine Safety Appliances Company. Apparatus for determining the carbon monoxide, methane and total hydrocarbons content in air. 3,790,348, Cl 23-254.0ef.
Butler, Kenneth, to Pfizer Inc. Aryl esters of phenyl ketene carboxylic acids. 3,790,620, Cl. 260-471.00r.
Butler, Walter J.: *See—*
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Butts, Mervin R.; and Robbins, Joseph J., to General Motors Corporation. Four vane elliptical rotary air conditioning compressor 3,790,311, Cl 417-410.000.
Byford; Derek Clark; and Blanchard, Peter Michael, to British Petroleum Company Limited, The. Synthetic lubricants for aero gas turbines. 3,790,481, Cl. 252-49.900.
Bylund, Don M., to Deering Milliken Research Corporation. Yarn separator. 3,790,426, Cl. 156-435.000.
Cagen, George, to Ideal Toy Corporation. Doll tearing mechanism 3,789,539, Cl. 46-135.00a
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Caldwell, Robert J., to Mohasco Industries, Inc. Footrest mechanism. 3,790,211, Cl. 297-75.000.
Callais, Richard T.; Eisenberg, Herbert, Forbes, F. Douglas; Kosco, Thomas J.; Taxin, Harry M.; and Frost, John B., to Hughes Aircraft Company. CATV program control system. 3,790,700, Cl. 178-5.100.
Callaway, James W Coin operated dart game. 3,790,173, Cl. 273-102.20r.
Callins, Harold I., and Doster, William H., to Whitehall Electronics Corporation. Fused cathode electrolytic capacitors and method of making the same. 3,789,502, Cl. 29-570.000.
Cameron, Robert W., to Timken Company, The. Bearing seal 3,790,178, Cl. 277-95.000.
Camosso, Domenico, to Riv-Skf Officine Di Villar Perosa S.p.A Homokinetic joints. 3,789,624, Cl. 64-21.000.
Campbell, Curtis M., McConnell, Walter J.; and Skutecki, Edmund R., to Sperry Rand Corporation. Method and means for increasing the resolution of analog-to-digital converter systems. 3,790,947, Cl. 340-347.0ad.
Campbell, Francis Joseph, to RCA Corporation. Focus-grill cathode-ray tube image reproducer modulation with grill voltage. 3,790,845, Cl. 315-31.00r.
Campbell, John B.; Cluff, Edward Fuller; and Sarafidis, Christos, to Du Pont de Nemours, E. I., and Company. Mineral oil composition. 3,790,480, Cl. 252-59.000.
Campisano, Fred M. Window arrangement. 3,789,548, Cl. 49-162.000.
Canon Kabushiki Kaisha *See—*
Knechiel, Wilhelm; Petersdorf, Gerhard, and Sandner, Winfried, 3,790,272.
Ogiso, Mitsutoshi; Shikawa, Kazuo, and Shigeta, Yoshihiro, 3,790,265.
Canter, Richard S. Lock with security counter. 3,789,639, Cl. 70-437.000.
Capdebosco, Andre: *See—*
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Carley, Adam Loran. Method and apparatus for thermal viscosity modulating a fluid stream. 3,790,703, Cl. 178-6.60r
Carlson, Arthur, Jr.: *See—*
Glass, Max E.; Donahue, Stephen F.; and Carlson, Arthur, Jr., 3,790,665.
Carlson, John A., Hoff, Dale R., and Rooney, Clarence S 1-Substituted-5-nitroimidazol-2-ylalkyl-(N-substituted)-carbamates. 3,790,592, Cl. 260-309.000.
Carlson, John A.; Hoff, Dale R.; and Rooney, Clarence S. 1-Substituted-5-nitroimidazol-2-ylalkyl-(N-substituted)-carbamates. 3,790,593, Cl. 260-309.000.
Carlstedt, Paul A.: *See—*
Tall, Leonard H.; Carlstedt, Paul A., and Erickson, Arlen J., 3,789,571.
Carlton, Gordon: *See—*
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Carney, James E.: *See—*
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Carpenter, John L., to Container Corporation of America. Cushioned folder. 3,790,065, Cl. 229-40.000.
Carr, Norman L.; and Stahlfeld, Donald L., to Gulf Research & Development Company. Process for initial removal of sulfur compounds from gaseous hydrocarbon feedstocks before removal of arsenic therefrom. 3,789,581, Cl. 55-73.000.
Carrier Corporation: *See—*
Italiano, Frank; Tobin, Curtis L.; Martin, William C., Jr., and Honnold, Fred V., Jr., 3,790,114.
Kincaid, James F.; and MacLeod, David E., 3,789,619.
Rifkin, Ernest; and Dreibelbis, Richard C., 3,790,075.
Carrotte, Frederick Henry; and Ellis, John Ernest, to Kirkland, A., & Company Limited. Pattern device for knitting machines. 3,789,629, Cl. 66-50.00r.
Carson, Charles F.; Bryan, Carney J.; and Birdsong, Fred, to Blue Bell, Inc. Sewing system. 3,789,781, Cl. 112-121.290.
Carson, Don B., to Universal Oil Products Company. Flow distribution apparatus. 3,789,989, Cl. 210-284.000.
Carson, Loren A.; Tremewan, R. S.; and Yanke, Ronald C. Delimber-debarker. 3,789,893, Cl. 144-208.00e.
Carter, Charles M.: *See—*
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Carter, James R.: *See—*
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Casby, Thomas D.; and Chapman, George M., to Catalysts and Chemicals, Inc. Low temperature methanol synthesis catalyst. 3,790,505, Cl 252-463.000
Case Western Reserve University: *See—*
Pao, Yoh-Han, 3,790,252.

Casio Computer Co., Ltd.: *See—*
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Castro Convertible Corporation: *See—*
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Jorgensen, Stanley A.; and Adams, Stanley B., 3,789,946.
Catherin, Jean-Michel. *See—*
Dessus, Benjamin, Migne, Jacques, and Catherin, Jean-Michel, 3,790,899.
C.A.V. Limited: *See—*
Asbery, John Harrison; and Fenne, Ivor, 3,789,818.
Caverly, Brian Leonard; Meertens, Gerard Joseph Hendrik; and Rossell, John Barry, to Lever Brothers Company. Process for preparing edible fats by hydrogenation and fractionation of triglyceride fatty oils containing C_{20} and C_{22} fatty acids. 3,790,608, Cl. 260-409.000.
Centronics Data Computer Corporation: *See—*
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Novak, Jiri, 3,790,449.
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Krehbiel, Robert D.; and Graber, Homer R., 3,789,739.
Pauls, Charles W., 3,790,129
Chambers, Ondas S. Dental floss holder. 3,789,859, Cl. 132-92.00r.
Champan, Paul Leonard, to RCA Corporation. Electronic time measurement. 3,789,600, Cl. 58-39.500.
Champeau, Andre, to Creusot-Loire. Apparatus for producing a flow in a liquid mixture. 3,790,141, Cl. 261-77.000.
Champion Spark Plug Company: *See—*
Westenkirshner, Frank A., and Rempes, Paul E., Jr., 3,790,842
Chamran, Morteza, to Perkin-Elmer Corporation, The. Log amplifier apparatus. 3,790,819, Cl. 307-229.000.
Chance, A B., Company *See—*
Engert, Fred O., 3,790,698
Chandler Evans Inc.: *See—*
Morrison, Terry, 3,790,765.
Chao, Gene, to United States of America, Navy. Electroacoustic surface acoustic wave beam deflector 3,790,828, Cl 310-9 700.
Chapman, George M *See—*
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Charamel, Pierre; and Bresson, Raymond, to Merlingerin Societe Anonyme. Linearly extending electrical distribution system having extruded shape conductor rails. 3,790,725, Cl 191-29.000
Chase, Myron C., to Weatherby/Nasco, Inc Simulated human limb 3,789,518, Cl 35-17 000
Chaturvedi, Mahesh C Co-Ni-Cr base austentic alloys precipitation strengthened by intermetallic compounds and carbides 3,790,372, Cl. 75-134 00f
Cheetham, Ian; Dunkerley, Kenneth, Greenhalgh, Colin William, and Phillips, Duncan Adrian Sidney, to Imperial Chemical Industries Limited Anthraquinone compounds 3,790,604, Cl. 260-383 000.
Chem Valley Machine, Inc.: *See—*
Armstrong, Dan F; and Armstrong, George F., 3,789,880.
Chemarin, Maurice Roger Francois. Manufacturing process for dolls, puppets, plush animals, consisting in the use of two fabrics adherent on to the other 3,789,547, Cl 46-158 000.
Chemical Construction Corporation: *See—*
Shah, Indravadan S., and Rinckhoff, John B., 3,789,902
Chevalier, Gabriel. *See—*
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White, Robert J., 3,790,472
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Ching, Larry K W., Jr; and Shafter, Carl E., to United States of America, Army Grid for strain measurements. 3,789,657, Cl 73-88.00r
Chivers, Malcolm, Dawson, William Grant, Masterman, Paul Henry, and Weston, Martin Andrew, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for State for Defense in Her Britannic Majesty's Government of the. Antenna tracking systms. 3,790,941, Cl 343-100.0pe
Christianson, Lee H Cattle guard 3,790,135, Cl 256-17 000.
Christoph, Geert, Radlmann, Eduard; and Nischk, Gunther, to Bayer Aktiengesellschaft. High molecular weight linear copolyamides containing oxamide groups. 3,790,531, Cl. 260-78.00r
Chwastyk, Adolph M., to United States of America, Navy. Underwater sound signal discriminating system 3,790,927, Cl. 340-5 00r.
Ciaffone, John T., to Warner-Lambert Company. Hot cream dispenser 3,790,033, Cl 222-146.0ha
Ciba-Geigy Corporation: *See—*
Bader, Jorg; and Gatzi, Karl, 3,790,677.
Dexter, Martin; Knell, Martin; and Peterli, Hans Jakob, 3,790,597.
di Giovanoel, Gaudenz Girell; and Zweidler, Reinhard, 3,790,491
Gallay, Jean-Jacques, 3,790,601.
Schmidt, Andreas; Brunetti, Heimo; and Schwarzenbach, Kurt, 3,790,648.
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Ciener, Paul J.: *See—*
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Civilforsvarsstyrelsen: *See—*
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Clark Equipment Company: *See—*
Jones, Cecil E., 3,790,133.
Clark, John R.. *See—*
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Clark, Robert Clement; Clark, Pauline Cecilia; and Clark, Robert Bevan. Highly compact stable awning for travel trailers, motor homes and/or campers 3,789,903, Cl. 160-75.000
Clayton Manufacturing Company: *See—*
Olsen, Dick Merlin, 3,789,658.
Cleary, James M. Hydrofoil sailing craft. 3,789,789, Cl 114-60.50h.
Clements, Michael R.: *See—*
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Close, James Garth Check out system. 3,789,957, Cl 186-1.0ac
Clowes, Ernest J., to Aluminum Company of America Draw ring for cans. 3,789,649, Cl. 72-350.000.
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Campbell, John B; Cluff, Edward Fuller, and Sarafidis, Christos, 3,790,480.
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Cohn, Reuben J. *See—*
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Colchester, John Edward, and Blundell, Thomas, to Imperial Chemical Industries, Limited. Manufacture of bipyridylium salts. 3,790,585, Cl. 260-295.0am.
Cole, Frederic W., to AMBAC Industries, Incorporated Method of diffusion bonding 3,789,498, Cl. 29-470 900
Cole, John Wayne: *See—*
Flouret, George Rogelio; and Cole, John Wayne, 3,790,555
Coleman, George E., to PPG Industries, Inc. Apparatus for ultraviolet light treatment in a controlled atmosphere 3,790,801, Cl 250-453.000.
Coleman, Richard L.; *See—*
Mead, Theodore C., Cummins, Billy H.; and Coleman, Richard I., 3,790,470.
Colijn, Johannes Jacobus Vincent; and Tesch, Gunter Horst, to Breveteam SA Method for producing a thermoplastic net by slitting and shrinkage operations 3,790,652, Cl 264-146.000.
Collanus, Heikki, to Oy Tampella Ab Coupling releasable under tension. 3,789,464, Cl. 24-68.0ct.
Coller, James Ray, to AMP Incorporated. Mechanical analogue computer and wiring machine 3,789,481, Cl. 29-203 00p.
Collier, Everett J.. *See—*
Jones, Jack D., and Collier, Everett J., 3,790,482
Colloids, Inc.. *See—*
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Collomosse, Herbert, and Bacon, Patrick Albert Henry, to Newmark, Louis, Limited. Pattern control system for controlling textile machinery. 3,790,704, Cl 178-6.800
Colspan Environmental Systems, Inc.: *See—*
Berry, James M., and Womack, William C., 3,789,812
Columbia Gas System Service Corporation. *See—*
Debaets, Michael P., 3,790,952
Groom, Jack J; and Kinzel, Gary L., 3,789,511.
Combes, Robert P., to Societe pour le Developpement de la Recherche Applique. Pressurized fluid valves. 3,789,866, Cl. 137-219.000
Commercial Solvents Corporation *See—*
Griffith, George L., 3,789,760.
Commissariat a l'Energie Atomique: *See—*
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Germond, Jean-Claude, Glachet, Charles, and Guilbaud, Jean-Pierre, 3,790,002.
Prquignot, Michel, 3,789,499.
Communications Satellite Corporation *See—*
Free, Bernard A., 3,789,608.
Compagnie des Ateliers et Forges de la Loire Saint Chamond, Firminy; Saint Etienne; Jacob Holtzer, C.A E.L.. *See—*
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Compagnie Generale d'Electricite: *See—*
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Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie. *See*—
Verdier, Henri, 3,789,900.
Computer Devices Corporation: *See*—
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Computer Medical Science Corporation: *See*—
Andries, Francis M., 3,790,712.
Coniagas Research, Inc.: *See*—
Sharpe, Edgar John, 3,790,882.
Conley, John L. Automatic poultry egg collector. 3,789,802, Cl. 119-48 000.
Conn, Jack Samuel; and Fabien, Lionel Ralph, to Surrey Steel Components, Limited. Device for clearing blocked pipes. 3,789,861, Cl 134-166.00c.
Connell, John G. Self-cleaning air flow bar for apparatus for making aggregate. 3,790,337, Cl. 432-239.000.
Constant, James Nickolas. Real time synthetic radar 3,790,939, Cl. 343-10.000.
Container Corporation of America *See*—
Carpenter, John L., 3,790,065.
Murray, Lowell C.; and Hose, John M., 3,790,019
Control Data Corporation. *See*—
Mayer, William N.; Strom, Richard A.; and Ulstad, Meredith S., 3,790,849
Controls Company of America. *See*—
Ditzig, Albert F., 3,789,701.
Converse, Gordon L.; and Mihulka, Merle C., to Twin Bay Industries, Inc. Template for use in the routing of workpieces. 3,789,892, Cl 144-144.500.
Convertine, Frank J.; and Ganance, Charles G., to General Mills Fun Group, Inc. Compressed air propelled toy vehicle and launching system. 3,789,540, Cl 46-202.000.
Conway, Robert W. Apparatus for aerating water 3,790,140, Cl. 261-62 000.
Conwed Corporation: *See*—
Larsen, Ronald L., 3,790,326.
Cook, Albert N., Goetz, Lawrence R, Manley, Paul A.; and Yelpo, Joseph P Sewing machine and motor speed regulating system therefor 3,789,783, Cl 112-220.000.
Cook, George W.; and Milne, David T., to United States of America, Navy Direct measurement of ship body distortion using a laser beam. 3,790,276, Cl. 356-5.000
Cook, Thomas A *See*—
United States of America, National Aeronautics and Space Administration, 3,790,037.
Cooke-Yarborough, Bustace Screwdrivers and like tools 3,789,896, Cl. 145-54 000.
Cooper, Jerry W.: *See*—
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Cooper, Phillip V.; and Brendel, Albert E., to Lebow Associates, Inc Ground reference network 3,790,811, Cl 307-94.000.
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Cornell Aeronautical Laboratory, Inc. *See*—
Becker, Harold D., 3,790,940.
Stiller, Paul F., 3,790,760.
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Boyd, David C; and Williams, Joseph M, 3,790,260.
Eaton, David L., 3,790,475.
Mochel, Ellen L., 3,790,430.
Corroyer, Pierre R P.: *See*—
Brunet, Louis C. C.; and Corroyer, Pierre R P, 3,790,827.
Cort, Arthur H. Vehicle security system. 3,790,933, Cl. 340-63.000.
Corwin, Walter Leo, to Bell Telephone Laboratories, Incorporated Sample and hold circuit for digital signals 3,790,893, Cl. 328-151.000.
Costa, Georges, to Paillard S.A. Striking device for a typewriter. 3,789,970, Cl. 197-17.000.
Cotreau, Alex P, and Jacobs, John F., to USM Corporation. Positive drive roller planetary wave generator. 3,789,700, Cl. 74-801.000
Coulter Electronics, Inc.: *See*—
Bergegere, Pierre, 3,790,883.
Cowan, Larry C.; and Rubel, Edward A, to Leesona Corporation. Fluid operated system. 3,789,864, Cl 137-119.000.
Cowen, John F. Honeycomb decapping and honey extracting apparatus. 3,789,443, Cl. 6-12.00a
Cowland, Frederick Claud, and Appleby, Harry, to Beckwith Carbon Corporation. Carbonaceous bodies. 3,790,393, Cl 106-56.000.
Crabb, Jasper R., to Lobee Pump and Manufacturing Co. Automatic bagging machine. 3,789,573, Cl. 53-55.000.
Crabtree, Charles R. Machine feed and output monitoring apparatus 3,790,761, Cl. 235-92.0pd
Crall, Donald H System for reefing and furling sails. 3,789,790, Cl 114-106.000.
Cramton, Frank Richard, to Whiting, E.B & A C., Company. Method for commingling and orienting colored sets of thermoplastic filaments. 3,790,655, Cl. 264-210.00f.
Cranor, Dennis A., to Esco Corporation. Integral cast pin type chain. 3,789,607, Cl. 59-84.000.
Cranston, Lawrence: *See*—
Atwell, William J.; and Cranston, Lawrence, 3,790,419.
Crawford, Donald C.; and Besserdich, Orrin H, to FMC Corporation. Folding machine. 3,790,157, Cl. 270-62.000.
Craxton, Robert Trevor, to Autoflow Engineering, Limited. Digital to analogue converter. 3,790,875, Cl. 318-573.000.
Crepinsek, Alois, to Security Technology Corporation. Preassembled lock of the unit type. 3,789,633, Cl 70-110.000.
Creusot-Loire: *See*—
Champeau, Andre, 3,790,141.
Criss, William H., and Shackeleford, John R., to Stange Co. Method of applying liquid surface treating material to sausages. 3,790,685, Cl. 426-302.000.
Croft, W. Jack, to Wichita Engineering Co., Inc. Pecan harvesting machine. 3,789,592, Cl 56-328.00r.
Cromer, George P, to General Electric Company. Battery coil construction. 3,790,408, Cl. 136-13.000.
Crosby, Lawton H., to Morley Furniture Spring Corporation. Spring construction. 3,790,149, Cl. 267-110.000.
Cross, Laurence Allan, Jr., to Randomatic Data Systems, Inc. SCR control circuit. 3,790,863, Cl .
Cross River Products, Inc.: *See*—
Berg, Donald P.; and Groth, Hugh P., 3,789,439.
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Cummins, Billy H.: *See*—
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Curtis, Gerald J. Cleat cleaner. 3,789,453, Cl. 15-237.000.
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Norris, John F.; and Humphreys, Donald R., 3,789,551.
Cuthbert, John David, McMahon, Richard George; and Munro, David Farnham, said McMahon assor. to Western Electric Company and said Cuthbert and said Munro assors. to Bell Telephone Laboratories, Incorporated Surface inspection with scanned focused light bems. 3,790,287, Cl. 356-120.000
Cutter, Delbert M., to General Motors Corporation Sprocket assembly 3,789,687, Cl 74-243.0dr
CX Processing Laboratories, Inc.: *See*—
Tall, Leonard H.; Carlstedt, Paul A., and Erickson, Arlen J., 3,789,571.
Cygned, Inc. *See*—
Anderson, Richard W., Weiss, Bernard J.; and Hulley, Hubert E, 3,790,938
Da Silva, Herman, to De Staat der Nederlanden te Dezenvertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie. Simplex radiotelegraph system. 3,790,699, Cl 178-2.00a.
Dada, Abdul G., Dehollander, William R.; and Sloat, Robert J., to General Electric Company. Post oxidation process for uranium dioxide rich compositions 3,790,493, Cl. 252-301.10r.
Daddon, Georges Edouard Louis Leon: *See*—
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Dahlberg, John R., Oravitz, James L., Jr.; and Michalik, Edmund R., to PPG Industries, Inc. Directional control for thermal severing of glass. 3,790,054, Cl. 225-93.500.
Dahlberg, John R.; ; Oravitz, James L.; and Michalik, Edmund R., to PPG Industries, Inc. Directional control for thermal serving of glass. 3,790,362, Cl. 65-174.000.
Dahle, Norman A., to Gulf Research & Development Company. Method of manufacturing dialkylamino-1,3,4-oxadiazoles and 1,3,4-thiadiazoles. 3,790,588, Cl. 260-306.80d.
Dahlman, Keith E., to Minnesota Mining and Manufacturing Company. Fluorinated polyamide-diazo resin coating composition. 3,790,382, Cl. 96-75.000.
Daiechi Seiyaku Co., Ltd.: *See*—
Oga, Shunichiro; Sato, Kiyoshi; Imada, Katsumi; and Asano, Kazuo, 3,790,444.
Daigle, Donald J.; Drake, George L., Jr.; and Reeves, Wilson A., to United States of America, Agriculture. Process for producing a water soluble methylol phosphine-phenol adduct. 3,790,639, Cl. 260-606.50p.
Daimler-Benz Aktiengesellschaft: *See*—
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Marquardt, Friedbert, 3,789,611.
Damadian, Raymond V. Apparatus and method for detecting cancer in tissue. 3,789,832, Cl. 128-2.00r.
Damico, Ralph A.; and Laughlin, Robert G., to Procter & Gamble Company, The. Process for preparing α-amino acids. 3,790,598, Cl. 260-326.14t.
Danfoss A/S *See*—
Nielsen, Erik; and Pedersen, Hans Christian (said Pedersen assor to), 3,790,921.

Romer, Bendt Wegge; and Pedersen, Hans Kristian, 3,790,308.
Dao, Wolfram; Langer, Paul; and Gritzan, Hans, to Volkswagenwerk Aktiengesellschaft. Clutch assembly for a vehicle. 3,789,967, Cl. 192-111.00a.
Darenth Weighing Equipment, Limited: *See*—
Westwood, Herbert Wilfred, 3,789,873.
Date, Kazuo H, to McGraw-Edison Company. Spring changing switch operator with weld-breaking means. 3,790,731, Cl. 200-153.0sc.
Datta, Ranasit K.; and Luscher, Thomas W., to General Electric Company. Europium and manganese activated strontium chlorocilicate phosphor. 3,790,490, Cl. 252-301.40f.
Dauser, William C., to Heneveld, Lloyd A., trustee of Dauser Trust IV. Electrical connector. 3,790,918, Cl. 339-97 00r
Davidge, Harold, to British Oxygen Company Limited, The. Evaporation system. 3,789,616, Cl. 62-50.000.
Davies, James W., to Singer-General Precision Inc. Accelerometer. 3,789,672, Cl. 73-497.000.
Davis, Carlton John. King-pin actuated landing gear for road-haulage semi-trailers 3,790,190, Cl. 280-430.000.
Davis, Harry G.: *See*—
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Davis, Pauls: *See*—
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Davis, Steven J., and Domyan, Stephen L, to General Datacomm Industries. Inductor-less telephone line holding circuit giving high A C shunt impedances 3,789,803, Cl 179-81.00r
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De Chicchis, Antoni, Fennell, Harry C., Jr.; and Schwartz, David M, to ARK-Environmental Research Inc Building structure 3,789,562, Cl 52-648.000
De Gregory, Donald Lee, to Bell Telephone Laboratories, Incorporated Push-pull fluidic logic element and drive unit 3,789,883, Cl. 137-824 000.
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De Roissart, Henri *See*—
Duprat, Jacques, and De Roissart, Henri, 3,789,515
De Staat der Nederlanden te Dezenvertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie. *See*—
Da Silva, Herman, 3,790,699
De Vita, Raymond A, Romeo, Vincent P, and Carney, James E., to USM Corporation Apparatus for feeding printed circuit boards. 3,789,483, Cl 29-203.00b.
De Wald, Horace A, to Parke Davis & Company 9 Substituted 4 9 dihydro 1,3,4,4 tetralkyl 1H-pyrazolo-[3,4-b] quinolines 3,790,576, Cl 260-286.00r.
Debaets, Michael P., to Columbia Gas System Service Corporation. System for printing out the metered flow of a fluid daily or for other predetermined periods of time 3,790,952, Cl 346-33 00r
DeChassy, Christian, and Capdeboseo, Andre, to Entreprise de Recherches et d'Activites Petrolieres (ELF). Device for off-centering above-water articulated multiple-drilling structures. 3,789,921, Cl. 166-.500.
Dedek, Frank G, to Burroughs Corporation Method for forming articles from powdered metal 3,790,374, Cl 75-208.00r.
Deering Milliken Research Corporation. *See*—
Bylund, Don M., 3,790,426
Young, William O., Jr., and Quattlebaum, Walter J, 3,790,424
Dehm, Henry C., to Hercules, Incorporated Composite propellant including (U) polyfunctional amine 3,790,416, Cl 149-19 100
Dehollander, William R.. *See*—
Dada, Abdul G., Dehollander, William R., and Sloat, Robert J, 3,790,493.
Delany, John J.; and Liebmann, John M, to Research Products Corporation. High performance filter assembly 3,789,589, Cl 55-481 000.
Demny, Helmut, to Maschinenfabrik Alfred Schmermund. Web feeding and cutting arrangements 3,789,714, Cl. 83-272.000.
Demoute, Jean-Pierre. *See*—
Perronnet, Jacques, and Demoute, Jean-Pierre, 3,790,570
Demozay, Daniel, Pillon, Daniel, and Ducret, Jacques, to Pepro Societe pour le Development et la Vente de Specialites Chimiques Certain pyridylphosphates, thiophosphates, phosphonates and thiophosphonates. 3,790,582, Cl 260-294 80k.
Demuria, Nazi Vladimirovna, and Agladze, Ilich Method of electrochemical processing of manganese ores and their concentration wastes. 3,790,458, Cl. 204-96.000.
Denham, Frank M. *See*—
Goodman, Brian L., Higgins, Robert B., and Denham, Frank M., 3,790,142.
Deniega, Jose Castillo, to Stop-Motion Devices Corporation. Yarn tension control device. 3,789,631, Cl. 66-163 000.
Denki Onkyo Co., Ltd.: *See*—
Kawada, Takehiko, 3,790,826.
Deny, Janos: *See*—
Sims, Anson, Stastny, Edwin O, and Deny, Janos, 3,789,542
Der Estephanian, Estephan. Fabric cutter and method. 3,790,071, Cl. 234-1.000.
Deres Development Corporation: *See*—
Lipert, Donald Ernest, 3,790,150.
Dergling, Folke Gunnar, to SKF Industrial Trading and Development Company, B V. Device for mounting and dismounting a stern post bearing. 3,790,356, Cl 29-201.000.
Desma-Werke GmbH. *See*—
Koch, Friedrich, and Zeug, Hubert, 3,790,136.
Dessus, Benjamin, Migne, Jacques; and Catherin, Jean-Michel, to Compagnie Generale d'Electricite. Discharge tube 3,790,899, Cl 331-94 500.
Deutsch Relays, Inc. *See*—
Dugan; Alanson G, and Lockyer, John, 3,790,915
Devenney, Robert F.: *See*—
Blackburn, Dale W., Devenney, Robert F.; and Jen, Timothy Yu-Wen, 3,790,573
Devore, Ernest W.; and Irwin, John W., to International Business Machines Corporation. Skew controlled readback systems. 3,790,954, Cl 340-146.10f
Dexter Automatic Products Co., Inc.: *See*—
Tupper, Willis E., 3,789,871
Dexter, Martin, Knell, Martin, and Peterli, Hans Jakob, to Ciba-Geigy Corporation. Sulfur derivatives of alkylhydroxyphenyl maleimides and compositions thereof. 3,790,597, Cl 260-326.50s
Deyesso, Joseph P.; and Palombo, Gaston A., to Honeywell Information Systems, Inc Servo control system for a serial printer print head 3,789,971, Cl 197-18 000.
Dhein, Rolf. *See*—
Rosenbaum, Heinz Jorg; Rudolph, Hans, Dhein, Rolf, and Reinking, Klaus, 3,790,516.
di Giovanoel, Gaudenz Girell, and Zweidler, Reinhard, to Ciba-Geigy Corporation. Spinning solution comprising a polyamide, polyester or polyolefin and an optical brightener. 3,790,491, Cl 257-301.0zw
Diamond International Corporation *See*—
Kramer, Robert G., 3,790,064
Diamond Shamrock Corporation. *See*—
Sellet, Lucien, 3,790,606
Diana, Guy D, to Sterling Drug Inc Carbimidoyl ureas. 3,790,631, Cl 260-553 00a
Dickerson, James C Soft tube stretcher 3,789,651, Cl 72-367 000.
Dickson, Joseph F, to Reed Rolled Thread Die Company Double angle cutoff die and method for rolling screws 3,789,643, Cl 72-469 000
Didycz, William J, and Glassman, Donald, to United States Steel Corporation Method of purifying waste fluid. 3,790,448, Cl. 201-39 000
Diehr, Hans-Joachim, to Bayer Aktiengesellschaft Process for the production of synthetic resins which contain isocyanuarate groups 3,790,509, Cl. 260-2 5aw
Dietch, Leonard, to Zenith Radio Corporation Rectangular grade black surround screen 3,790,839, Cl 313-92 00r.
Dir, Gary A *See*—
Wysocki, Joseph J; Becker, James H., and Dir, Gary A, 3,790,251
Diskus, Alfred; Schonbeck, Rupert; Kloimstein, Engelbert, and Mayr, Hubert, to Osterreichische Stickstoffwerke Aktiengesellschaft Phenylpyridazines 3,790,571, Cl 260-250.00a
Ditzig, Albert F, to Controls Company of America Timer positioning mechanism 3,789,701, Cl 74-813.00r.
Dixon, R. G., & Company, Limited *See*—
Robbins, John Lyndon, and Bridge, Samuel Douglas, 3,789,554
Doane, John C., Holz, George E.; Ogle, James A, and Samlyody, Arpod, to Burroughs Corporation Apparatus for operating multiple position display tubes 3,790,850, Cl 315-169 0tv
Dobkin, Robert C., to National Semiconductor Corporation. Schottky clamped TTL circuit 3,790,817, Cl 307-214 000.
Doerfer Corporation: *See*—
Doerfer, Richard E.; Leymaster, Homer N; and Neebel, Richard R., 3,789,456.
Doerfer, Richard E, Leymaster, Homer N.; and Neebel, Richard R, to Doerfer Corporation Rib cutting apparatus 3,789,456, Cl 17-1.00r
Doggett, Towers, to Scott Paper Company Organic solvent soluble diazonium compounds formed from anionic sulfate or sulfonate surfactants 3,790,556, Cl 260-141 000.
Dohany, Julius Eugene, and Whiton, Alfred Case, to Pennwalt Corporation Elastomeric fluorinated terpolymer having good thermal stability. 3,790,540, Cl 260-80.770.
Doittau, Francois-Xavier, Ythier, Jean-Pierre, and Hebert, Marcel, to U S Philips Corporation Device for measuring a time interval 3,790,890, Cl. 324-189.000.
Dolby, William Berkeley, mesne. *See*—
Robertson, Roderick, 3,789,941
Dollfus-Mieg & Cie. *See*—
Bernard, Christian, 3,789,430.

Dome, Peter, to Societe Suisse pour l'Industrie Horlogere SA. Correction of errors occurring in electronic timepieces. 3,789,599, Cl. 58-23.00r.

Domyan, Stephen L.: *See*—
  Davis, Steven J.; and Domyan, Stephen L., 3,789,803.

Donahue, Stephen F.: *See*—
  Glass, Max E.; Donahue, Stephen F.; and Carlson, Arthur, Jr., 3,790,665.

Donner, Frederic Arno. Fin-stabilized projectile for launchers, mortars and the like. 3,789,763, Cl. 102-49.200.

Donohue, James M., to Xerox Corporation. Registration reset system. 3,790,270, Cl. 355-14.000.

Donohue, James M., to Xerox Corporation. Processing control system for printing machines. 3,790,271, Cl. 355-14.000.

Dorn, Conrad P., Jr.: *See*—
  Sarett, Lewis H.; Shen, Tsung-Ying; and Dorn, Conrad P., Jr., 3,790,676.

Dorval, Bertrand: *See*—
  Chevalier, Paul; Menard, Claude; and Dorval, Bertrand, 3,790,768.

Doskocil, Patricia A., 20% to Lee, Raymond, Organization, Inc., The. Stove protector. 3,789,823, Cl. 126-42.000.

Doster, William H.: *See*—
  Callins, Harold I.; and Doster, William H., 3,789,502.

Douglas, Lloyd A., and Garanelo, Kirk T., to Victor Equipment Company. Compressed gaseous fuel system. 3,789,820, Cl. 123-276.00e.

Douri, Hisashi, to Yoshida Kogyo Kabushiki Kaisha. End-stop applying apparatus for concealed zip fasteners. 3,789,486, Cl. 29-207.55t.

Dover Corporation: *See*—
  Getty, John A., Jr., 3,790,130.
  Ostand, Paul R.; and Guertin, Robert W., 3,790,126.

Dow Chemical Company, The: *See*—
  Allemang, Arnold A., and Bachtel, Howard J., 3,789,580.
  Edamura, Fred Y.; and Giacobbe, Thomas J., 3,790,619.
  Gurley, Derrel G., and Crowe, Curtis W., 3,789,927.
  McCann, Gordon D., and Dumitru, Earl T., 3,790,521.
  Routson, Willis G., 3,789,613.
  Shea, Philip J., 3,790,679.

Dowty Boulton Paul Limited: *See*—
  Hall, John, 3,789,736.

Dozier, Leonard C., to North America Rockwell Corporation. Brake control system. 3,790,227, Cl. 303-21.0he.

Drackett Company, The: *See*—
  Drappeu, Robert E., Gould, Hughjean Burton, and Maust, Daniel A., 3,789,454.

Drake, George L., Jr.: *See*—
  Daigle, Donald J., Drake, George L., Jr., and Reeves, Wilson A., 3,790,639.

Drappeu, Robert E., Gould, Hughjean Burton, and Maust, Daniel A., to Drackett Company, The. Carpet sweeper. 3,789,454, Cl. 15-41.00r.

Dreibelbis, Richard C.: *See*—
  Rifkin, Ernest, and Dreibelbis, Richard C., 3,790,075.

Dresser Industries, Inc.: *See*—
  Adamson, Gerald P., 3,790,821.
  Bissell, Robert D., 3,789,668.
  Smith, William Stephens, 3,789,706.

Drori, Mordeki. Strainer for liquid pipe lines. 3,789,990, Cl. 210-310.000.

Droske, Donald J., to Dura Corporation. Overload release device for a motor drive. 3,789,690, Cl. 74-411.000.

Dryczynski, Kurt, Kramer, Heinz, Messner, Dieter, and Seifried, Walter, to Kalle Aktiengesellschaft. Apparatus for removing static charge from webs of material. 3,790,854, Cl. 317-2.00f.

Du Pont de Nemours, E. I., and Company: *See*—
  Bellina, Russell F., 3,790,566.
  Campbell, John B., Cluff, Edward Fuller; and Sarafidis, Christos, 3,790,480.
  Iwasyk, John M.; and Rodeffer, David W., 3,789,584.
  Orvis, Gary W., 3,790,523.
  Ribbans, Robert Clark, III, 3,790,403.
  Tomio, Ernst A., 3,790,415.
  Victorius, Claus, 3,790,513.

Duca, William J., to Ajax Magnethermic Corporation. Rear slagging for induction furnace. 3,790,338, Cl. 432-247.000.

Ducret, Jacques: *See*—
  Demozay, Daniel; Pillon, Daniel, and Ducret, Jacques, 3,790,582.

Dugan, Alanson G.; and Lockyer, John, to Deutsch Relays, Inc. Mounting arrangement for electrical plug-in components. 3,790,915, Cl. 339-88.00r.

Duhaut, Pierre, Guillemat, Jean, and Miquel, Jean, to Institut Francais du Petrole des Carburants et Lubrifiants. Platinum-iridium-zinc catalyst for the conversion of hydrocarbons. 3,790,504, Cl. 252-466.0pt.

Dukes, Lee R.: *See*—
  Dukes, Lee R., and Witt, William W. (said Witt assor. to said), 3,790,957.

Dukes, Lee R.; and Witt, William W., said Witt assor. to said Dukes, Lee R. Key automated data collection, control and source information system. 3,790,957, Cl. 340-149.10r.

Dumitru, Earl T.: *See*—
  McCann, Gordon D.; and Dumitru, Earl T., 3,790,521.

Dunkerley, Kenneth: *See*—
  Cheetham, Ian; Dunkerley, Kenneth; Greenhalgh, Colin William; and Phillips, Duncan Adrian Sidney, 3,790,604.

Duprat, Jacques; and De Roissart, Henri, to L'Air Liquide Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Apparatus for conditioning lyophilised products. 3,789,515, Cl. 34-92.000.

Dura Corporation: *See*—
  Droske, Donald J., 3,789,690.
  Kalitta, Carl L., 3,790,200.

Duroux, Jean. Processes and apparatus for the investigation of internal physiological phenomena based on measurements of the impedance variation of the surface of the body. 3,789,834, Cl. 128-2.120.

Dusseau, Andress: *See*—
  Kim, Sung Soo; and Dusseau, Andress, 3,789,852.

Dy Tampella Ab: *See*—
  Collanus, Heikki, 3,789,464.

Dynachem Corporation: *See*—
  Gilano, Michael N., 3,790,392.

Dynamit Nobel Aktiengesellschaft: *See*—
  Kotzsch, Hans-Joachim, and Vahlensieck, Hans-Joachim, 3,790,459.
  Richter, Ulf, 3,790,354.
  Schultz, Neithart, Vahlensieck, Hans-Joachim; and Martens, Peter, 3,790,462.

Dyrud, James F.: *See*—
  La Perre, James D., Dyrud, James F.; and Zosel, Thomas W., 3,790,439.

E-Systems, Inc.: *See*—
  Pickles, Sidney, and Thornberg, Dean S., 3,790,943.

Eagle Range and Manufacturing Company: *See*—
  Baltz, Albert L.; and Voeke, Elmer E., 3,789,826.

Eakins, William S. Apparatus and method for continuous filtering. 3,789,985, Cl. 210-77.000.

Earl, Christopher B.; and Hughes, Fred, to Wellman-Lord, Inc. Process for recovering sulfur dioxide from gases. 3,790,660, Cl. 423-242.000.

Earl, T. Desmond, to Textron, Inc. Air cushion type undercarriage. 3,790,110, Cl. 244-110.00h.

Earle, Ernest L., Jr.: *See*—
  Pitchon, Esra; and Earle, Ernest L., Jr., 3,790,689.

Easterday, Ralph E.: *See*—
  Fox, Charles S., and Easterday, Ralph E., 3,790,115.

Eastes, Frank E., to Grace, W. R., & Co. Saran-aluminum silicate coating. 3,790,402, Cl. 117-68.000.

Eastman Kodak Company: *See*—
  Barkey, Kenneth T.; Gandy, Gerald C., and May, Douglas C., 3,790,653.
  Brown, Barry M., and Ray, Elbert L., 3,789,993.
  Hopfner, Clemens, and Ort, Wolfgang, 3,790,268.
  Huboi, Robert W., Palmer, Osmond F., and Waz, Edward M., 3,790,275.
  Muslimer, Walter J., 3,790,387.
  Pickering, Royce Dean, 3,790,246.
  Valenta, Harry L., Jr., 3,790,707.
  Weaver, Max A.; and Straley, James M., 3,790,557.

Eaton Corporation: *See*—
  Franz, Rudolph J., Freismuth, John S.; and Benedetti, Nello L. (said Franz and said Freismuth assors. to), 3,789,811.
  Moran, Thomas M., 3,789,724.
  Moran, Thomas M., 3,789,727.

Eaton, David L., to Corning Glass Works. Porous glass support material. 3,790,475, Cl. 210-31.00c.

Eckardt, J. C., AG: *See*—
  Bader, Horst, 3,789,884.

Ecodyne Corporation: *See*—
  Askew, Anthony A., 3,789,578.
  Goodman, Brian L.; Higgins, Robert B., and Denham, Frank M., 3,790,142.
  Huber, Ferdinand V., 3,789,919.

Economou, Peter, to American Cyanamid Company. Amphoteric strengthening agents for paper. 3,790,514, Cl. 260-17.4st.

Edamura, Fred Y.; and Giacobbe, Thomas J., to Dow Chemical Company, The. Fluoride substituted carbanilates. 3,790,619, Cl. 260-471.00c.

Eddy, Gaines W., Davis, Harry G.; Beroza, Morton, and McGovern, Terrence P., to United States of America, Agriculture. Cis-3-hexenyl butyrate as an attractant for yellow jackets. 3,790,666, Cl. 424-84.000.

Eddy Match Company, Limited: *See*—
  Stegeman, Berend, 3,790,024.

Edenhofer, Albrecht; and Spiegelberg, Hans, to Hoffmann-La Roche Inc. Certain [3-(4-phenyl)-1-(2H) 3,6-dihydropyridyl]-propyl(thio) halides, sulfonamido anilides, anilines and derivatives. 3,790,583, Cl. 260-294.80g.

Edmonson, Fay R., to United States Steel Corporation. Discharge collector for fluid cooled roll. 3,789,882, Cl. 137-802.000.

Edstrom, Carl M.: *See*—
  Snodgrass, Robert H., Carter, James R., and Edstrom, Carl M., 3,789,497.

Efka-Werke Fritz Kiehn GmbH: *See*—
  Brodbeck, Helmut, 3,790,025.

Egerbork, Bo Malte S.; Gadefelt, Goran R.; Hagbjer, Gunnar Ingemar; and Spang, Kjett Knut I., to Akustikobyran AB. Vibrator damping of vehicle path. 3,790,078, Cl. 238-2.000.

Egger, Hermann. Method and apparatus for the sterile packaging of substances. 3,789,569, Cl. 53-28.000.

Eickman, Karl. Hydraulically controlled fluid stream driven vehicle. 3,790,105, Cl. 244-12.00r.

Eisenberg, Herbert: *See*—
  Callais, Richard T.; Eisenberg, Herbert; Forbes, F. Douglas; Kosco, Thomas J.; Taxin, Harry M.; and Frost, John B., 3,790,700.

El-Hindi, Ahmad M., to Filter Tech, Inc. Removal of air and water from oil. 3,789,579, Cl. 55-50.000.

Eldert, Cornelius, to Burroughs Corporation. Capacitive read only memory. 3,790,959, Cl. 340-172.500.

Electroacustic GmbH: *See*—
  Ahrens, Erhard, 3,790,925.

Ellett, James R. Toggle linkage valve actuator. 3,790,124, Cl. 251-58.000.

Elliott, Robert L. Hydraulic control means for check valves. 3,789,872, Cl. 137-514.000.

Ellis, George R.: *See*—
  Hruschak, Joseph P., and Ellis, George R., 3,790,958.

Ellis, John Ernest: *See*—
  Carrotte, Frederick Henry; and Ellis, John Ernest, 3,789,629.

Elwood, Michael J.: *See*—
  Summers, James F.; and Elwood, Michael J., 3,790,158.

Emanuelsson, Kaj Bengt Ingemar; and Arnegard, Bo Olof Roland, to Atlas Copco Aktiebolag. Rotary piston compressors with liquid injection. 3,790,315, Cl. 418-97.000.

Emelyanenko, July Georgievich: *See*—
  Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich, Medovar, Boris Izrailevich, Pentegov, Igor Vladimirovich; Latash, Jury Vadimovich, Bondarenko, Oleg Petrovich, Baglai, Vitaly Mikhailovich; Podola, Nikolai Vasilievich; and Emelyanenko, July Georievich, 3,790,691.

Emerson, Carl D.: *See*—
  Aichenegg, Paul C.; and Emerson, Carl D., 3,790,683.

Emerson Electric Co.: *See*—
  Frank, Heinrich H., 3,789,640.

Emery, Norman B. Power lawnmower with auxiliary flexible drive shaft for edger head. 3,789,591, Cl. 56-16.900.

Empire Plating Company, The: *See*—
  Palisin, Stephen P., Jr., 3,790,355.

Enders, George E., to NRM Corporation. Apparatus for severing tire ply stock and the like. 3,789,712, Cl. 83-171.000.

Endo Laboratories, Inc., mesne: *See*—
  Blumberg, Harold, 3,790,675.

Endres, Wilhelm, to Aktiengesellschaft Brown, Boveri & Cie. Gas turbine bucket. 3,790,303, Cl. 416-241.000.

Enercon Corporation International: *See*—
  Stephenson, Robert A.; and Zoch, Robert M., Jr., 3,790,139.

Engert, Fred O., to Chance, A. B., Company. Detachable bushing. 3,790,698, Cl. 174-152.00r.

Enjalbert, Roger: *See*—
  Bert, Alain, Enjalbert, Roger, and Kern, Pierre, 3,790,843.

Ennis, Thomas F., to GTE Automatic Electric Laboratories, Incorporated. Film switching system for mutually isolated circuits. 3,790,813, Cl. 307-115.000.

Enomoto, Koji, Ohtsuka, Kunio, and Ishimaru, Wataru, to Nissan Motor Company, Limited. Fluid pressure governor valve. 3,789,863, Cl. 137-54.000.

Entreprise de Recherches et d'Activites Petrolieres (ELF): *See*—
  DeChassy, Christian, and Capdebosco, Andre, 3,789,921.

Environment/One Corporation: *See*—
  Peters, Philip H., Jr., 3,790,735.
  Rich, Theodore A., 3,790,887.
  Skala, George Frank, 3,790,279.

Erbstein, Robert S.: *See*—
  Bernstein, Barry E.; Erbstein, Robert S., and Pazis, Thomas, 3,789,595.

Erickson, Arlen J.: *See*—
  Tall, Leonard H.; Carlstedt, Paul A., and Erickson, Arlen J., 3,789,571.

Ericsson, Konrad E., to Arbman Development AB. Apparatus for individually feeding sheets, cards, banknotes and the like. 3,790,161, Cl. 271-117.000.

Eron, Robert E. Foamed cover composition. 3,790,395, Cl. 106-122.000.

Erwin Sick Optik-Elektronik: *See*—
  Muller, Joachim M.; and Triller, Adolf J., 3,790,290.

Esco Corporation: *See*—
  Cranor, Dennis A., 3,789,607.

Esplin, William E. Fishing pole and reel assembly. 3,789,535, Cl. 43-22.000.

Esso Research and Engineering Company: *See*—
  Feldman, Nicholas, 3,790,359.
  Fiocco, Robert J.; and Wilson, Edward L., 3,790,467.
  Langer, Arthur W., Jr., 3,790,541.
  Rossi, Albert, Jacobson, Norman; and Miller, Harold N., 3,790,358.
  Song, W. R.; and Jacobson, Norman, 3,790,483.

Etablissements Carpano & Pons S.A.: *See*—
  Pochard, Michel Adrien, 3,790,082.

Etat Francais: *See*—
  Mesnet, Jean Dominique Francois, Remon-Beauvais, Philippe Marie Antoine Jacques, Barbarin, Jean Francois, Le Guennec, Raymond Louis, and Daddon, Georges Edouard Louis Leon, 3,790,111.

Etat Francois represente Pai le Ministre d'Etat Sharge de la, Defense Nationale Delegation: *See*—
  Aupy, Roland Rolland, 3,789,729.

Ethyl Corporation: *See*—
  Niebylski, Leonard M.; and Jarema, Chester P., 3,790,365.
  Niebylski, Leonard M., 3,790,367.

Ets J.J. Carnaud & Forges de Basse-Indre: *See*—
  Petit, Maurice; and Thomas, Georges, 3,789,785.

Everitt, Scott F., to Acoustic Fiber Sound Systems, Inc. Sound reproduction system. 3,789,953, Cl. 181-31.00b.

Ex-Cell-O Corporation: *See*—
  Bondie, Dale J.; Sutton, Robert W.; and Lewelling, James L., 3,789,500.

Fa Tukiem Trust: *See*—
  Magerle, Otto, 3,790,313.

Fabien, Lionel Ralph: *See*—
  Conn, Jack Samuel, and Fabien, Lionel Ralph, 3,789,861.

Fabralloy Company, The: *See*—
  Annal, James M., 3,789,995.

Fancher, Llewellyn W., to Stauffer Chemical Company. Cinnamyl carbamates and their utility as herbicides. 3,790,363, Cl. 71-106.000.

Fane, William J.: *See*—
  Sanders, Vernard W.; and Fane, William J., 3,790,196.

Fangel, Henning. Recovery of ores and minerals while using ice as means of support in mined rooms. 3,790,215, Cl. 299-11.000.

Fannin, Richard C., to Bendix Corporation, The. Emergency release system for fluid pressure brakes. 3,790,222, Cl. 303-9.000.

Far-Mar-Co., Inc.: *See*—
  Rao, Ganta V.; and Gerrish, Oliver B., Sr., 3,790,553.

Farbenfabriken Bayer Aktiengesellschaft: *See*—
  Frickenhaus, Gerrit; Meister, Martin, Pantke, Hellmuth, and Schuffenhauer, Erhard, 3,790,344.

Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See*—
  Kleiner, Hans-Jerg, 3,790,638.
  Konig, Wolfgang, and Geiger, Rolf, 3,790,618.
  Quietzsch, Gerhard, Greiner, Bernd, Hund, Helmut, Nottebohm, Harald, and Pelz, Lothar, 3,790,457.
  Weyer, Rudi; Aumuller, Walter, Weber, Helmut, Muth, Karl; and Schmidt, Felix Helmut, 3,790,630.

Farhat, Nabil H., and Kopeika, Norman S., to University of Pennsylvania. Glow discharge millimeter wave detector and method of biasing same. 3,790,895, Cl. 329-157.000.

Farkas, Eugene: *See*—
  Kraay, Russell J., and Farkas, Eugene, 3,790,605.

Farkas, Paul, to Thomas & Betts Corporation. Container. 3,790,018, Cl. 220-4.00c.

Farr, Alton F., and Wood, Dorin A., to McDonnell Douglas Corporation. Spoiler controlling mixer. 3,789,692, Cl. 74-480.00r.

Farrar, Edward A.: *See*—
  Wasserman, Seymour; Cirulli, Albert, and Farrar, Edward A., 3,789,747.

Farris, Charles D.: *See*—
  United States of America, National Aeronautics and Space Administration, 3,790,409.

Fathauer, Jack E., and Gottlieb, Carl R., to Midland-Ross Corporation. Hoisting equipment including spreader with longitudinal and transverse tilting mechanism. 3,789,998, Cl. 212-125.000.

Faust, Silwart W., and Kuhn, L. Dean, to Maytag Company, The. Bulkhead filter assembly. 3,789,514, Cl. 34-82.000.

Favre, Robert. Gas-pressure sensor. 3,789,666, Cl. 73-398.00r.

Faye, Andre. Magnetic tape cartridge dialer. 3,790,722, Cl. 179-90.0bb.

Fearon, Edward R., to Stoplifter International, Inc., mesne. Open-strip ferromagnetic marker and method and system for using same. 3,790,945, Cl. 340-280.000.

Fedders Corporation: *See*—
  Bellmer, Thomas J., 3,790,148.

Federichi, George J.: *See*—
  Noren, Tore H., and Federichi, George J., 3,789,877.

Feinman, Harvey: *See*—
  Laserson, Gregory L., Feinman, Harvey, Stand, Mille, Glatzer, Stephen G.; and Scappatura, Rocco, 3,790,727.

Feiss, Rene T., to Sulzer Brothers Ltd. Apparatus for mounting a pipe in a perforated plate. 3,790,060, Cl. 228-3.000.

Feit, Peter Werner; and Nielsen, Ole Bent Tvaermose, to Lovens Kemiske Fabrik Produktionsaktieselskab. Sulfamylbenzoic acids. 3,790,584, Cl. 260-294.80f.

Feldman, Nicholas, to Esso Research and Engineering Company. Middle distillate fuel having increased low temperature flowability. 3,790,359, Cl. 44-62.000.

Feliz, Jack M. Auxiliary drive for engine driven air conditioner. 3,789,618, Cl. 62-236.000.

Feniak, George, to Polymer Corporation Limited. Terminally reactive polymers. 3,790,549, Cl. 260-94.800.

Fenne, Ivor: *See*—
  Ashery, John Harrison; and Fenne, Ivor, 3,789,818.

Fennell, Harry C., Jr.: *See*—
  De Chicchis, Antoni; Fennell, Harry C., Jr.; and Schwartz, David M., 3,789,562.

Ferguson, Emery J. Purse seine cable ring. 3,789,532, Cl. 43-14.000.

Fernseh G.m.b.H.: *See*—

  - Kamin, Gerhard Robert, 3,790,705.
- Ferranti Limited.: *See*—
  - Brown, Kenneth Robson, 3,790,766.
- Fibreglass Limited: *See*—
  - Ashall, Ronald James, 3,790,441.
  - Ashall, Ronald James, 3,790,442.
- Fick, Bernard E.; and Yamasaki, Kim, to Brunswick Corporation. Model 2600 camping stove design. 3,789,821, Cl. 126-38.000.
- Fielding, George H., to United States of America, Navy. Flame-in-engine photometer detector and alarm for phosphorus and other elements. 3,790,282, Cl. 356-86.000.
- Fikutani, Hideo, Tokizawa, Makoto; and Okada, Hiroyoshi, to Mitsubishi Chemical Industries, Ltd. Novel cured epoxy resin composition. 3,790,532, Cl. 260-78.4ep.
- Filipowicz, Edwin A., to Griffith-Hope Company. Cup dispenser with radially adjustable cup supporting tabs. 3,790,023, Cl. 221-304.000.
- Filkorn, Robert L., to General Electric Company. Apparatus for shearing weld flash. 3,790,058, Cl. 228-2.000.
- Filter Tech, Inc.: *See*—
  - El-Hindi, Ahmad M., 3,789,579.
- Fine, Harry H. Drum seal gasket. 3,790,020, Cl. 220-46.00r.
- Fiocco, Robert J.; and Wilson, Edward L., to Esso Research and Engineering Company. Coal liquefaction solids removal. 3,790,467, Cl. 208-8.000.
- Firth, Francis G.: *See*—
  - Lent, Robert R., and Firth, Francis G., 3,789,791.
- Fisch, Richard S.; and Newman, Norman, to Minnesota Mining & Manufacturing Company. Alkaline photographic developer concentrate. 3,790,381, Cl. 96-66.100.
- Fischer, C. Fink. Amphibious undercarriage for aircraft. 3,790,109, Cl. 244-105.000.
- Fisons Limited: *See*—
  - Johnson, Peter Bennett, and Lee, Thomas Brian, 3,790,580.
- Fitton, Robert C., to Huber, J. M., Corporation. Method for stabilizing pigment slurries. 3,790,396, Cl. 106-288.00b.
- Fitzpatrick, William F., and Cubitt, Robert D., to International Playtex Corporation. Nursing unit. 3,790,017, Cl. 215-11.00e.
- Fives Lille-Cail: *See*—
  - Rateli, Roger, 3,789,623.
- Flanigan, Charles Dennis, to Overly Manufacturing Company. Therapeutic exercise device. 3,790,164, Cl. 272-57.00r.
- Flannigan, William Tait, to Imperial Chemical Industries Limited. Foamable plastisol composition containing a foam stabilizer and foamed composition obtained therefrom. 3,790,510, Cl. 260-2.50p.
- Flexicore Co., Inc., The: *See*—
  - Wise, Mark J., 3,790,120.
- Flinchbaugh, Donald F.: *See*—
  - Zifferer, Morton F.; and Flinchbaugh, Donald F., 3,789,479.
- Floessel, Dieter, and Mauthe, Gerhard, to Brown, Boveri & Company, Limited. Electrical insulator of porous expanded plastics material. 3,790,695, Cl. 174-28.000.
- Flouret, George Rogelio, to Abbott Laboratories. Heptapeptide intermediate to gonadotropen-releasing hormone. 3,790,554, Cl. 260-112.500.
- Flouret, George Rogelio, and Cole, John Wayne, to Abbott Laboratories. Octapeptide derivatives of gonadotropin-releasing hormone. 3,790,555, Cl. 260-112.500.
- Fluid Controls, Inc.: *See*—
  - Swatty, Eugene E., 3,790,125.
- FMC Corporation: *See*—
  - Crawford, Donald C.; and Besserdich, Orrin H., 3,790,157.
  - Graves, Kenneth E., Madsen, Kay, and Schmidt, Warren J., 3,790,756.
  - Hallberg, Daniel P., 3,789,741.
- Focella, Antonino: *See*—
  - Brossi, Arnold, Focella, Antonino, and Teitel, Sidney, 3,790,636.
- Foderaro, Anthony J., to Picker Corporation. Mobile X-ray unit. 3,790,805, Cl. 250-522.000.
- Fontaine, John G. Control system for brakes. 3,790,223, Cl. 303-19.000.
- Forbes, F. Douglas: *See*—
  - Callais, Richard T., Eisenberg, Herbert, Forbes, F. Douglas; Kosco, Thomas J.; Taxin, Harry M., and Frost, John B., 3,790,700.
- Ford, James A., to Olin Corporation. Process for improving heat transfer efficiency and improved heat transfer system. 3,789,915, Cl. 165-1.000.
- Ford, James W. Implement for piercing ear-lobes. 3,789,850, Cl. 128-329.000.
- Ford Motor Company: *See*—
  - Baker, John R., and Fox, George, 3,789,693.
  - Boaz, Premakaran T., and Surowiex, Roman, 3,790,752.
- Forkardt, Paul, Kommanditgesellschaft: *See*—
  - Scharfen, Hans, 3,790,181.
- Foster Grant Co., Inc.: *See*—
  - Leblanc, Conrad L., 3,790,259.
- Foster Wheeler Corporation: *See*—
  - Gorzegno, Walter P., 3,789,806.
- Fourneau, Jean-Pierre, to Laboratories Houde. Condensation products of glyoxylic acid esters with aminothiols. 3,790,623, Cl. 260-481.00r.
- Fournier, Erick-Pierre; and Lomeo, Alberto. Force transmitting intrauterine device. 3,789,838, Cl. 128-130.000.
- Fox, Charles S.; and Easterday, Ralph E., said Fox assor. to said Easterday, Ralph E. Base for air conditioning condenser apparatus. 3,790,115, Cl. 248-19.000.
- Fox, George: *See*—
  - Baker, John R.; and Fox, George, 3,789,693.
- Fox, Gerald B.: *See*—
  - Katterheinrich, Fred H., and Fox, Gerald B., 3,789,860.
- Fox, Joseph S.; and Koetting, Jerome D., to Union Carbide Corporation. Purification process for recovering uranium from an acidic aqueous solution by pH control. 3,790,658, Cl. 423-15.000.
- Fr. Hesser Maschinenfabrik AG: *See*—
  - Bahr, Siegmund, and Saur, Walter, 3,790,040.
- Frakowski, John F., to Methods, Inc. Method and apparatus for increasing portion yield from industry standard frozen fish blocks. 3,789,459, Cl. 17-52.000.
- Frangiudakis, Emmanuel, 1/2 to Frangos, John W. Hydraulic actuator for dual braking system. 3,789,962, Cl. 188-345.000.
- Frangos, John. Aerosol valve construction. 3,790,089, Cl. 239-573.000.
- Frangos, John W.: *See*—
  - Frangiudakis, Emmanuel, 3,789,962.
- Frank, Heinrich H., to Emerson Electric Co. Hand held tube bender. 3,789,640, Cl. 72-36.000.
- Franz, Edmund C.: *See*—
  - Anderson, William A.; and Franz, Edmund C., 3,790,452.
- Franz, Rudolph J., Freismuth, John S., and Benedetti, Nello L., deceased (by Benedetti, Lena, executor), said Franz and said Freismuth assors. to Eaton Corporation. Emissions reduction vacuum control valve. 3,789,811, Cl. 123-117.00a.
- Frattarola, Joseph Ralph: *See*—
  - Hannan, William James, and Frattarola, Joseph Ralph, 3,790,245.
- Frazier, Larry Vane W., to United States of America, Navy. Buoy construction. 3,789,445, Cl. 9-8.00r.
- Free, Bernard A., to Communications Satellite Corporation. Type of colloid propulsion. 3,789,608, Cl. 60-202.000.
- Freeman Supply Company, The: *See*—
  - Rusk, Gerald R., and Koch, Robert E., 3,789,912.
- Freier, Edward, Jr., to Simplicity Manufacturing Company. Air cooled shuttle clutch transmission. 3,789,684, Cl. 74-230.17d.
- Freismuth, John S.: *See*—
  - Franz, Rudolph J., Freismuth, John S., and Benedetti, Nello L., 3,789,811.
- Frickenhaus, Gerrit, Meister, Martin, Paintke, Hellmuth, and Schuffenhauer, Erhard, to Farbenfabriken Bayer Aktiengesellschaft. Agents for improving the fastness to wet processing. 3,790,344, Cl. 8-165.000.
- Fridman, Evl Gershkovich: *See*—
  - Afanasiev, Alexandr Dmitrievich, Lykov, Alexei Gavrilovich, Mogilevsky, Alexandr Moiseevich, Sokolov, Leonid Pavlovich, and Fridman, Evl Gershkovich, 3,789,974.
- Friel, Hanns-Immo, Prag, Rudolf, and Schlichting, Heidi, to Siemens Aktiengesellschaft. Process and device for determining radioactive isotope. 3,790,786, Cl. 250-71.50s.
- Friesen, Wilmer J., and Hulet, Frank A., to Hartman, M. W., Manufacturing Company, Inc. Foundry mold jacket and weight shifter. 3,789,914, Cl. 164-339.000.
- Fritze, Hans-Joachim F. G. Process for the production of corticated oat kernels and oat flakes. 3,790,690, Cl. 426-457.000.
- Froimson, Avrum I. Therapeutic support device. 3,789,842, Cl. 128-165.000.
- Frost, C. L., & Son Inc.: *See*—
  - Frost, Charles C., and Weis, Siegfried K., 3,789,683.
- Frost, Charles C., and Weis, Siegfried K., to Frost, C. L., & Son Inc. Rotatable member assembly and method for making same. 3,789,683, Cl. 74-230.800.
- Frost, John B.: *See*—
  - Callais, Richard T.; Eisenberg, Herbert, Forbes, F. Douglas, Kosco, Thomas J., Taxin, Harry M.; and Frost, John B., 3,790,700.
- Fry, Peter William, to Integrated Photomatrix Limited. Device for generating a high voltage supply. 3,790,812, Cl. 307-110.000.
- Fuelling, Wolfgang; and Osenberger, Werner, to Bremshey AG. Rail guiding device for vehicle seats. 3,790,234, Cl. 308-6.00r.
- Fuji Photo Film Co., Ltd.: *See*—
  - Bashiue, Masakazu; Yamashita, Hiroshi, and Sekikawa, Nobuyoshi, 3,790,376.
- Fuji Photo Film Company, Ltd.: *See*—
  - Hayakawa, Yoshihide; and Satomura, Masato, 3,790,378.
  - Oishi, Yashushi; Yoshida, Yoshinobu; and Sano, Kazuya, 3,790,384.
  - Oishi, Yasushi; Sano, Kazuya; and Yoshida, Yoshinobu, 3,790,379.
  - Shiba, Keisoke; Hinata, Masanao; Yamasue, Koutarou; Sato, Akira; and Ikeda, Tadashi, 3,790,390.
  - Shiba, Keisuke; Sano, Kazuya; Okumura, Akio, and Kubodera, Seiiti, 3,790,388.
  - Shimamura, Isao; Okusut, Eiichi, Iijima, Yoo; and Iwano, Haruhiko, 3,790,383.
- Fuji Shashin Film Kabushiki Kaisha: *See*—
  - Ueda, Hiroyuki; and Sawano, Yukio, 3,790,266.
- Fuji Spinning Co., Ltd.: *See*—
  - Kodama, Mikio, 3,789,469.
- Fujie, Shin: *See*—
  - Ichikawa, Katsumi; and Fujie, Shin, 3,790,956.

- Fujimura, Kiiji, and Tanaka, Katsutoshi, to Kabushiki Kaisha Kyoritsu. Process for producing cationic water soluble polymer by reacting formaldehyde, amine, a polymer of acrylamide or methacrylamide and precipitating said polymer with a water soluble salt f a polybasic acid. 3,790,529, Cl. 260-72.00r.
- Fujitsu Limited: *See*—
  - Iizuka, Yoshio; and Morita, Tetsuro, 3,790,894.
  - Owaki, Kenichi; Kiyozumi, Kentaro; and Nakayama, Northiko, 3,789,470.
- Fujiwara Manufacturing Company, Ltd.: *See*—
  - Uefuji, Zenichiro, 3,790,306.
- Fukuda, Hide: *See*—
  - Saito, Yoshiomi; Sasaki, Hiroshi; Yamaguchi, Mamoru; Fukuda, Hide; Yamada, Humio; and Kimura, Koji, 3,790,524.
- Fukuda, Hideo: *See*—
  - Ohishi, Tetsu; Fukushima, Hiroshi, and Fukuda, Hideo, 3,790,646.
- Fukuda, Makoto: *See*—
  - Murayama, Naohiro; and Fukuda, Makoto, 3,790,645.
- Fukui, Norihiro: *See*—
  - Kimura, Shinji, Fukui, Norihiro, and Nagai, Yasuhiro, 3,790,743.
- Fukushima, Hiroshi: *See*—
  - Ohishi, Tetsu; Fukushima, Hiroshi, and Fukuda, Hideo, 3,790,646.
- Fuller Company: *See*—
  - Cohen, Sidney M., 3,790,334.
  - Nix, Thomas B., 3,790,143.
- Fulmer, Keith H., to Bendix Corporation, The. Brake proportioning valve with blend back. 3,790,221, Cl. 303-6.00c.
- Fulwyler, Mack J., to United States of America, Atomic Energy Commission. Method for production of uniform microspheres. 3,790,492, Cl. 252-301.10r.
- Funforms Inc.: *See*—
  - Ragnow, Richard W., 3,790,175.
- Funkey, Donald J., to General Tire & Rubber Company, The. Hopper car hatch cover and lock assembly. 3,789,776, Cl. 105-377.000.
- G & H Technology, Inc.: *See*—
  - Morgan, Thomas, 3,789,484.
- Gadefelt, Goran R.: *See*—
  - Egerbork, Bo Malte S., Gadefelt, Goran R., Hagbjer, Gunnar Ingemar, and Spang, Kjett Knut I., 3,790,078.
- GAF Corporation: *See*—
  - Kiss, Kornel D., Mills, George S., and Smolin, Edwin M., 3,790,647.
- Gaffney, Arthur J. Impulse engine. 3,790,872, Cl. 318-139.000.
- Gale, Charles, to Lilly, Eli, and Company. Synergistic tylosin and furazolidone medication for calf pneumoenteritis complex. 3,790,669, Cl. 424-120.000.
- Galindo, Rudolph D.: *See*—
  - Miller, Jack V., and Galindo, Rudolph D., 3,790,774.
- Gallain, Norman W. Trapezoidal trailer hitch. 3,790,191, Cl. 280-456.000.
- Gallay, Jean-Jacques, to Ciba-Geigy Corporation. 1,3-Benzodioxol-2-thiones, process of manufacture and method of use. 3,790,601, Cl. 260-340.500.
- Gampe, Egon, to Rheinmetall G.m.b.H. Apparatus for gripping and separating respectively of a hose emerging from an extruder and for its feeding into a divisible blowing from by means of a blowing device for hollow bodies. 3,790,329, Cl. 425-387.00b.
- Ganance, Charles G.: *See*—
  - Convertine, Frank J., and Ganance, Charles G., 3,789,540.
- Gandy, Gerald C.: *See*—
  - Barkey, Kenneth T., Gandy, Gerald C., and May, Douglas C., 3,790,653.
- Gann, Donald S.: *See*—
  - Kopaniky, Dennis R., and Gann, Donald S., 3,789,831.
- Garanelo, Kirk T.: *See*—
  - Douglas, Lloyd A.; and Garanelo, Kirk T., 3,789,820.
- Garceau, Harry A., to Webster Spring Co., Inc. Spring assembly. 3,789,440, Cl. 5-256.000.
- Garcia, Joe N., to Yoakum, Marshall. Jump suit with adjustable trunk. 3,789,429, Cl. 2-79.000.
- Gardner, David Stanley John, and Morrell, John Anthony, to White Tomkins, Limited. Bitter substances and their preparation. 3,790,686, Cl. 426-349.000.
- Gardner, Delbert J.: *See*—
  - Tam, George M., Gardner, Delbert J., Grabe, Frederick G., Putt, James B., Owens, Carl D., and Sisco, William C., 3,789,735.
- Gardner, John A., Jr.; and Brown, Merle S., to Jet Spray Cooler, Inc. Hot liquid dispenser. 3,790,028, Cl. 222-129.400.
- Garnache, Richard R., Grataha, Ashwin K., and Michaud, Ronald A., to International Business Machines Corporation. Continuous vapor processing apparatus and method. 3,790,404, Cl. 117-106.00r.
- Garrett Corporation, The: *See*—
  - McCormack, William H., 3,790,910.
- Garrett, Henry U., to Brown Oil Tools, Inc. Method and apparatus for modifying a well to provide gas lift production. 3,789,923, Cl. 166-55.100.
- Garrison, Mary M., and Bates, Robert W., to United States of America, Health, Education, and Welfare. Dry antiserum coated solid-phase for preparation of radioimmunoassay of antigens. 3,790,663, Cl. 424-12.000.
- Garte, Gilbert M. Folding hospital bed. 3,789,437, Cl. 5-62.000.
- Gartner, Robert. Screw drive means using auxiliary meshing rollers. 3,789,678, Cl. 74-89.000.
- Gastrock, William Henry: *See*—
  - Asato, Goro; Berkelhammer, Gerald; and Gastrock, William Henry, 3,790,589.
- Gattuso, Marion J.; and Arnold, Robert J., to Universal Oil Products Company. Inhibiting PR evulcanization of rubber formulations. 3,790,534, Cl. 260-79.50b.
- Gatzi, Karl: *See*—
  - Bader, Jorg; and Gatzi, Karl, 3,790,677.
- Gaucheron, Jean Marie, to Thomson-CSF. Synchronizing device for a television scanning equipment. 3,790,710, Cl. 178-69.5dc.
- Gavrilenko, Nikolai Pavlovich: *See*—
  - Brusakov, Jury Ivanovich; Sirotkin, Nikolai Nikolaevich; Kiselev, Vasily Pavlovich; Ilinkov, Dmitry Vladimirovich; Pavlovichavdely, Mikhail; Marin, Semen Panteleevich, Shkarupa, Alexandr Ivanovich; Veisman, Boris Ottovich; Lebedev, Vladimir Nikolaevich, an Gavrilenko, Nikolai Pavlovich, 3,790,692.
- Gaylord, Eber W., to Gulf Research & Development Company. Centrifugal cleaner. 3,789,984, Cl. 209-505.000.
- Gealt, Arthur E., to Honeywell Inc. PH reference electrode. 3,790,463, Cl. 204-195.00f.
- Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H.: *See*—
  - Brandenburg, Helmut, 3,789,795.
- Gehrle, Robert Charles: *See*—
  - Heinz, Robert Alfred, and Gehrle, Robert Charles, 3,790,280.
- Geiger, Rolf: *See*—
  - Konig, Wolfgang; and Geiger, Rolf, 3,790,618.
- Geislinger, Eric L. Apparatus for programming movement of a cart. 3,789,939, Cl. 180-6.500.
- Geller, Richard, to Commissariat a l'Energie Atomique. Method and device for producing by charge-transfer a beam of neutral particles or of ions having multiple charges. 3,790,787, Cl. 250-251.000.
- General Datacomm Industries: *See*—
  - Davis, Steven J.; and Domyan, Stephen L., 3,789,803.
- General Electric Company: *See*—
  - Bailey, Ronald B., 3,790,877.
  - Barron, Mark B., and Butler, Walter J., 3,790,825.
  - Berger, Abe, 3,790,613.
  - Bolin, Larry R.; Hopper, Claude, Jr., and Jolly, Shelby A., 3,790,852.
  - Cromer, George P., 3,790,408.
  - Dada, Abdul G., Dehollander, William R., and Sloat, Robert J., 3,790,493.
  - Datta, Ranasit K.; and Luscher, Thomas W., 3,790,490.
  - Filkorn, Robert L., 3,790,058.
  - Hendrickson, Robert L., and Scheper, George W., Jr., 3,790,298.
  - Merrill, Duane F., 3,790,527.
  - Morong, William H., Jr., 3,790,888.
  - Oster, Lloyd Robert, 3,790,778.
  - Parker, Rollin James, 3,790,197.
  - Raleigh, William J., 3,790,612.
  - Ripley, Charles C., 3,789,476.
  - Smith, Russell M., 3,790,871.
  - Wilk, Stanley H., 3,789,774.
  - Wyland, Alvin D., 3,790,730.
- General Foods Corporation: *See*—
  - Pitchon, Esra, and Earle, Ernest L., Jr., 3,790,689.
  - Tole, Ingvar L.; Herzing, Vernon J., Miller, Everett L., and Lightfoot, George L., 3,790,004.
- General Kinematics Corporation: *See*—
  - Musschoot, Albert, 3,789,977.
- General Mills Fun Group, Inc.: *See*—
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- General Motors Corporation: *See*—
  - Bailey, Keith A., and Marlow, Jerry R., 3,789,963.
  - Ballou, Richard P., 3,790,199.
  - Benasutti, Louis D.; and Sucro, Jost S., 3,789,620.
  - Bonfiglio, Charles P., 3,790,830.
  - Borman, August H., 3,789,865.
  - Butts, Mervin R., and Robbins, Joseph J., 3,790,311.
  - Cutter, Delbert M., 3,789,687.
  - Gillham, Ronald F.; and Wiers, Ward W., 3,789,814.
  - Heidorn, John H., 3,789,965.
  - Hyde, A. P. Stanley; and La Framboise, Leo F., 3,790,317.
  - Jenei, Joseph, 3,790,420.
  - Matier, Robert C.; and Paul, Leon F., 3,789,910.
  - Meyer, Carl L., and Sayers, Eugene H., 3,790,866.
  - Moulds, John W., 3,789,819.
  - Owen, Robert E., 3,790,147.
  - Price, Robert T., 3,789,702.
  - Sattler, Walter J., 3,789,810.
  - Shellman, Carl E.; and Week, Nils P., 3,789,703.
  - Sihon, Tanas M., 3,789,743.
  - Smith, Oscar H., 3,789,909.
  - Warwick, Edward H., 3,789,961.
  - Whelan, James E., 3,790,310.
  - Williams, Richard H., 3,789,698.
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- General Steel Industries, Inc.: *See*—
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- General Tire & Rubber Company, The: *See*—
  - Funkey, Donald J., 3,789,776.
- Georg, Werner, to Gewerkschaft Eisenhutte Westfalia. Mining installation. 3,790,210, Cl. 299-43.000.
- George, Darell L., to Henry, J. W. Party keg beer dispenser apparatus. 3,790,032, Cl. 222-146.000.

Georgia-Pacific Corporation: *See—*
Malinowski, Edward Stephen, 3,790,066.

Gerber Garment Technology: *See—*
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Gerber, Heinz Joseph; and Pearl, David R., to Gerber Garment Technology. Apparatus for holding sheet material and other objects during working. 3,790,154, Cl. 269-22.000.

Gerber, Wesley Duane: *See—*
White, Matthew B., and Gerber, Wesley Duane, 3,790,901.

Gerdes, Paul E.: *See—*
Vollrath, Walter J., Jr.; Vollrath, Richard J.; Virnoche, Paul R., Turk, Joseph, Gerdes, Paul E.; and Singer, Roy W., 3,789,434

Gering, Kuido, to Granges-Essem AB. Device in a melting or holding furnace for facilitating the charging thereof. 3,790,145, Cl. 266-33.00r

Germond, Jean-Claude, Glachet, Charles; and Guilbaud, Jean-Pierre, to Commissariat a l'Energie Atomique. Manipulator with drive motors. 3,790,002, Cl. 214-1.0cm.

Gerrish, Oliver B., Sr.: *See—*
Rao, Ganta V.; and Gerrish, Oliver B., Sr., 3,790,553.

Gerzon, Koert, Ryan, Charles W.; and De Long, Donald C., to Lilly, Eli, and Company. Method of virus suppression by hydantoins. 3,790,673, Cl. 424-273.000.

Gesellschaft fur Kernforschung mbH: *See—*
Hagen, Armin Theodoro, 3,790,198.

Getty, John A., Jr., to Dover Corporation. Seat for butterfly valves. 3,790,130, Cl. 251-306.000.

Getz, Gary R., to McNeil Corporation. Method for loading a tire shaping and curing press employing a center mechanism. 3,790,656, Cl. 264-315.000.

Gewerkschaft Eisenhutte Westfalia: *See—*
Georg, Werner, 3,790,210.

Giacobbe, Thomas J.: *See—*
Edamura, Fred Y.; and Giacobbe, Thomas J., 3,790,619

Giacopelli, Umberto, to Solvay & Cie. Electrolytic cell including vertical hollow anodes with deflector panels diverging upwardly from each anode. 3,790,465, Cl. 204-266.000.

Giannini, Anthony J. Kitchen range with folding heater units. 3,790,750, Cl. 219-444.000.

Gibiani, Heinz, Kiesluch, Klaus, Koch, Hans-Joachim, Kosmol, Horst, Rufer, Clemens, Schroder, Eberhard, and Walsh, Rosemarie, nee Vossing, to Schering Aktiengesellschaft. Production of optically active antipodes. 3,790,445, Cl. 195-51.00r.

Gibs, Gabriel Joseph: *See—*
Remers, William Alan, Gibs, Gabriel Joseph, and Weiss, Martin Joseph, 3,790,590.

Giebler, Fritz, to Siemens Aktiengesellschaft. Circuit arrangement for the interruption-free switch-over from an operating current supply apparatus to a standby current supply apparatus. 3,790,822, Cl. 307-254.000.

Giesse, Roland: *See—*
Steppan, Hartmut, Uhlig, Fritz, and Giesse, Roland, 3,790,385

Gilano, Michael N., to Dynachem Corporation. Electroless copper plating. 3,790,392, Cl. 106-1.000.

Giles, William H., to Van Buren Industries, Inc. Wrapping apparatus with rotary horizontal lift. 3,789,576, Cl. 53-234.000.

Gill, Peter John, and O'Donnell, Dennis Joseph, to GKN Screws & Fasteners Limited. Load-indicating means for a nut and bolt assembly. 3,789,726, Cl. 85-62.000.

Gilles, Horst: *See—*
Riedel, Rudolf, Zelder, Felix, and Gilles, Horst, 3,789,889.

Gillette Company, The: *See—*
Krochock, David Arthur, and Laiderman, Donald David, 3,790,664.

Gillette, Robert Paul. Pulverizer with satellite spacer assembly. 3,790,095, Cl. 241-103.000.

Gillham, Ronald F., and Wiers, Ward W., to General Motors Corporation. Ambient temperature regulated choke. 3,789,814, Cl. 123-119.00f.

Gilliland, Michael L., to Ametek, Inc. Multi-function centrifugal blower unit. 3,790,300, Cl. 415-219.000.

Giotti, Alberto; and Sicuteri, Federigo. Method for activating blood fibrinolysis by administration of a salt of 2-amino-ethanesulphonic acid. 3,790,672, Cl. 424-248.000.

Girguis, Subhy Labib, to Uni-Cardan AG. Constant velocity universal joint. 3,789,626, Cl. 64-21.000.

Giroux, Davis W. Vibro hammer positioner. 3,789,932, Cl. 173-43.000.

Girten, William, to Scott, Joseph W. and Scott, Zephyr. Apparatus for the stimulation of blood circulation in feet and legs. 3,789,836, Cl. 128-25.00b.

GKN Screws & Fasteners Limited: *See—*
Gill, Peter John; and O'Donnell, Dennis Joseph, 3,789,726.

Glachet, Charles: *See—*
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Glass, Max E.; Donahue, Stephen F.; and Carlson, Arthur, Jr., to Haver-Lockhart Laboratories, Inc. Injectable adjuvant, method of preparing same and compositions including such adjuvant. 3,790,665, Cl. 424-81.000.

Glassman, Donald: *See—*
Didycz, William J.; and Glassman, Donald, 3,790,448.

Glatzer, Stephen G.: *See—*
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Glaxo Laboratories, Limited: *See—*
Kennedy, James; Long, Alan Gibson, and Underwood, William George Elphinstone, 3,790,567.

Globe-Union Inc.: *See—*
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Glory Kogyo Kabushiki Kaisha: *See—*
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Gobapur S.A.: *See—*
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Goetz, Lawrence R.: *See—*
Cook, Albert N.; Goetz, Lawrence R., Manley, Paul A., and Yelpo, Joseph P., 3,789,783.

Gold, Stephen J. Apparatus for measuring the flow velocity of fluid within a conduit. 3,789,663, Cl. 73-194.00c.

Goldstein, Irving, and Rambauske, Werner R., to Raytheon Company. Conductively cooled catoptric lens arrangement. 3,790,257, Cl. 350-294.000.

Golser, Hans, to Siemens Aktiengesellschaft. Gas laser mirror assembly. 3,790,900, Cl. 331-94.500.

Good, Thomas W.; and Zbikowski, Theodore H., to Tonka Corporation. Toy vehicle pumper. 3,789,541, Cl. 46-215.000.

Goodman, Brian L.; Higgins, Robert B., and Denham, Frank M., to Ecodyne Corporation. Gas diffuser. 3,790,142, Cl. 261-124.000.

Goodrich, B. F., Company, The: *See—*
Ludwig, Robert, 3,790,520.
Minchak, Robert J., 3,790,545.
Shackelford, James R., 3,789,728.

Gorog, Istvan, to RCA Corporation. System for recording and playing back color encoded holograms. 3,790,701, Cl. 178-5.4cd.

Gorzegno, Walter P., to Foster Wheeler Corporation. Furnace circuit for variable pressure once-through generator. 3,789,806, Cl. 122-406.00p.

Gottlieb, Carl R.: *See—*
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Gould, Charles W.: *See—*
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Grabe, Frederick G.: *See—*
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Grable, Donovan B., 99% to Wastland Reclamation Corporation, 0.5% to Laney, Bill C. and 0.5% to Haefliger, William W. Sub-surface particle recovery. 3,790,213, Cl. 299-8.000.

Grace, W. R., & Co.: *See—*
Eastes, Frank E., 3,790,402.

Graco Inc.: *See—*
Raleigh, Walter J., 3,789,954.

Graham, Andrew E., Jr.; and Sitler, Rickie L., to Armstrong Cork Company. Extruded cellular slab of varying densities. 3,790,436, Cl. 161-161.000.

Gramer, Gottfried; and Korn, Roland, to Siemens Aktiengesellschaft. Thermal degassing of the primary coolant of nuclear reactors. 3,789,577, Cl. 55-42.000.

Granberg, Gunnar: *See—*
Larker, Hans; Isaksson, Sven-Erik; Lindberg, Mats, and Granberg, Gunnar, 3,790,339.

Granges-Essem AB: *See—*
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Graser, Fritz, and Bock, Gustav, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. 0,14-Dichloropyranthrone. 3,790,603, Cl. 260-360.000.

Grassmann, Peter H.: *See—*
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Gratalia, Ashwin K.: *See—*
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Graves, Kenneth E.; Madsen, Kay; and Schmidt, Warren J., to FMC Corporation. Bar code reading circuitry. 3,790,756, Cl. 235-61.11e.

Gray Tool Company: *See—*
McGee, John K., 3,789,875.

Graybill, Paul J. Air rectifier apparatus with process. 3,789,582, Cl. 55-92.000.

Greaves, Bruce Bousfield, to Cumberland Engineering Company Limited, The. Electrolyzer including rotatable bipolar electrodes. 3,790,464, Cl. 204-212.000.

Green, Edgar F. Trailer hitch safety device. 3,790,192, Cl. 280-507.000.

Greenhalgh, Colin William: *See—*
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Greiner, Bernd: *See—*
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Griffith, George L., to Commercial Solvents Corporation. Enclosure for explosive material. 3,789,760, Cl. 102-24.0hc

Griffith-Hope Company: *See—*
Filipowicz, Edwin A., 3,790,023

Griffiths, Derek Jenkins: *See—*
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Gritzan, Hans: *See—*
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Groom, Jack J., and Kinzel, Gary L., to Columbia Gas System Service Corporation. Apparatus for sensing a curvature in a conduit. 3,789,511, Cl. 33-312.000

Gros, Wilfred T. Plumb bob device with spool means for tethering lines. 3,789,512, Cl. 33-393.000

Gross Cash Registers Limited: *See—*
Gross, Henry, 3,789,755

Gross, Henry, to Gross Cash Registers Limited. Printing devices for calculating apparatus. 3,789,755, Cl. 101-95.000

Groth, Hugh P.: *See—*
Berg, Donald P., and Groth, Hugh P., 3,789,439

Grove, Marvin H., and Waters, Rodney A., to M & J Valve Company and M & J Development Company. Valve apparatus and method. 3,790,123, Cl. 251-31.000

Grunert, Hellmuth, to Prameta Prazisionsmetall und Kunststofferzungnisse G. Baumann & Co. Boring device for securing hinges and the like. 3,790,295, Cl. 408-103.000

GTE Automatic Electric Laboratories, Incorporated: *See—*
Ennis, Thomas E., 3,790,813
Hutchinson, Homer E., 3,790,856
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GTE Sylvania, Incorporated: *See—*
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Urbas, Ernest J., 3,790,203

Gubala, Thomas J., and Kraft, Wayne O., to Boeing Company, The. Automatic video contrast control circuit. 3,790,706, Cl. 178-7.100

Gudmestad, Ragnar, to Artos Engineering Company. Method and apparatus for producing flexible fiber optical light conductors. 3,789,485, Cl. 29-203.00d

Gudmundsen, Richard A., and Rau, James E., to North American Rockwell Corporation. Selectively tunable gaseous laser. 3,790,898, Cl. 331-94.500

Guertin, Robert W.: *See—*
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Guest, Jack B., and Guest, Kathleen F. J. Document sorting apparatus. 3,789,779, Cl. 108-101.000

Guest, Kathleen F. J.: *See—*
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Guichard, Louis. Infinitely variable-speed friction transmission. 3,789,699, Cl. 74-796.000

Guilbaud, Jean-Pierre: *See—*
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Guillemat, Jean: *See—*
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Gunja-Smith, Zeenat, to Research Corporation. Cytophaga isoamylase. 3,790,446, Cl. 195-66.00r

Gurley, Derrel G., and Crowe, Curtis W., to Dow Chemical Company, The. Treatment of gravel packed formations. 3,789,927, Cl. 166-282.000

Gurski, Gary F.: *See—*
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Gutman, Arnold D., to Stauffer Chemical Company. Oximinophosphonodithioates as insecticides and acaricides. 3,790,670, Cl. 424-210.000

Haberle, Wilhelm. Apparatus for producing a thermoplastically deformable plastic foil. 3,790,327, Cl. 425-376.000

Habgood, Robert P., Jr., to Plexowood, Inc. Composite articles and methods of making the same. 3,790,421, Cl. 156-242.000

Haddock, Ernest: *See—*
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Hadley, Henry C., Jr.: *See—*
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Haefliger, William W.: *See—*
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Haensel, Vladimir, to Universal Oil Products Company. Apparatus for catalytic conversion of fluids. 3,790,350, Cl. 23-288.00f.

Hafele, Frederick J.; and Smith, Hugh M., to Sun Chemical Corporation. Quinacridone pigments. 3,790,575, Cl. 260-279.00r.

Hagar, Donald K., to Mosser Industries, Incorporated. Butterfly valve. 3,790,131, Cl. 251-306.000

Haghjer, Gunnar Ingemar: *See—*
Egerbork, Bo Malte S., Gadefelt, Goran R., Haghjer, Gunnar Ingemar, and Spang, Kjell Knut I., 3,790,078

Hagen, Armin Theodoro, to Gesellschaft fur Kernforschung mbH. Self-locking safety seal and method of identifying tampering therewith. 3,790,198, Cl. 292-317.000

Hagen, Elmer Ray. Method and apparatus for removing wrinkles from slacks, or the like. 3,790,043, Cl. 223-61.000

Halbert, Silas Ray. Picking and transporting apparatus and method. 3,790,162, Cl. 271-118.000

Haldeman, Charles W., to Meguteeh Corporation. Electromechanical dynamometer system. 3,789,659, Cl. 73-134.000.

Hale, Elden A., to Koppers Company, Inc. Self-adjusting sealing apparatus. 3,789,879, Cl. 137-614.110

Haley, John S., Cooper, Jerry W., and Logan, Arthur D., to Dayco Corporation. Polyvinyl alcohol fiber reinforced polyurethane compositions and products therefrom. 3,790,437, Cl. 161-170.000

Hall, John, to Dowty Boulton Paul Limited. Multiple hydraulic actuator. 3,789,736, Cl. 91-3.000.

Hallberg, Daniel P., to FMC Corporation. Hydrostatic bearing for radial piston pump. 3,789,741, Cl. 91-488.000

Hambock, Heinz: *See—*
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Hamilton, Georges Edmond, and Hamilton, William Horace. Golf ball ejector and flag post for putting cups. 3,790,166, Cl. 273-34.00a

Hamilton, Jack E.; Jenks, John W., and Milberger, John F., to United States Steel Corporation. Method of surface-conditioning heat-treating-furnace hearth rolls having sleeves of rebonded fused silica thereon by processing silicon steel strip. 3,789,647, Cl. 72-236.000.

Hamilton, William Horace: *See—*
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Hanes, Roger A. Foot operated piano playing device. 3,789,722, Cl. 84-426.000

Haneshige Tenter Clip Co., Ltd.: *See—*
Takasaki, Shigeaki, 3,789,468

Hanna, Elias G.: *See—*
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Hannan, William James, and Frattarola, Joseph Ralph, to RCA Corporation. Double-sided holographic replicas. 3,790,245, Cl. 350-3.500

Hannley, Ray John: *See—*
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Hansen, Kenneth N., to Allis-Chalmers Corporation. Vehicle control module support. 3,789,945, Cl. 180-69.00r

Hanyo, Susomo, and Kasuga, Noboru. Sewing machine. 3,789,784, Cl. 112-246.000

Harkness, Leslie, to Warner Swasey Asquith Limited. Method and apparatus for setting cutting tools in machine tools. 3,789,509, Cl. 38-185.00r

Harman, James L.: *See—*
Beck, Roderick, Harman, James L., Shatila, Mounir A., Richins, David A., and Lack, John, 3,789,750

Hartman, Elmer C., III, to Hartman Metal Fabricators, Inc. Position control system for warehouse apparatus. 3,790,006, Cl. 214-16.40a

Hartman, M. W., Manufacturing Company, Inc.: *See—*
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Harvey, Ronald William S. Raised flooring. 3,789,557, Cl. 52-126.000

Hasada, Yoshiyasu, and Yasue, Teruo, to Kurashiki Rayon Co., Ltd. Process for preparation of organic dinitriles. 3,790,617, Cl. 260-465.80d

Hasebe, Sukehiro, to Kabushiki Kaisha Kapau. Synchronous motor. 3,790,833, Cl. 310-162.000

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Hashimoto, Yoshio. Bowler's wrist support. 3,790,168, Cl. 273-54.00b

Hashiue, Masakazu, Yamashita, Hiroshi, and Sekikawa, Nobuyoshi, to Fuji Photo Film Co., Ltd. Electron beam recording material. 3,790,376, Cl. 96-27.000.

Hashizume, Taeko: *See—*
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Hasson, Harrith M. Vaginal radium applicator. 3,789,829, Cl. 128-1.200

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- Hatzmann, John F.; and Miller, Donald P., to Xerox Corporation. Automatic document handling device. 3,790,159, Cl. 271-4 000.
- Hauber, Ferdinand R., to Brown & Rost, Inc. Method for handling a barge for transferring large heavy cargo modules. 3,790,009, Cl. 214-152 000
- Hauni-Werke Korber & Co., KG. *See*—
  - Wahle, Gunter, 3,789,744
- Haupt, Robert C., to Allis-Chalmers Corporation. Friction block for lever. 3,789,694, Cl. 74-531 000
- Hausler, Rudolf H., to Universal Oil Products Company. Alkylene polyamine and polymeric reaction product corrosion inhibitor. 3,790,496, Cl. 252-392 000
- Haver-Lockhart Laboratories, Inc. *See*—
  - Glass, Max E., Donahue, Stephen F., and Carlson, Arthur, Jr., 3,790,665
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- Hayakawa, Yoshihide, and Satomura, Masato, to Fuji Photo Film Company, Ltd. Process for the formation of polymer images. 3,790,378, Cl. 96-48 00r
- Hayakawa, Yoshihiro. *See*—
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- Heenan, Sidney A., and Majewski, Norbert, to Amerace Esna Corporation. Pavement marker reflector member and assembly. 3,790,293, Cl. 404-15 000
- Heian, Glenn A., to Allis-Chalmers Manufacturing Company. Rotatable material handling drum. 3,790,323, Cl. 425-222 000
- Heidorn, John H., to General Motors Corporation. Vacuum clutch actuator. 3,789,965, Cl. 192-85 00v
- Heier, Wilbur C., to United States of America, National Aeronautics and Space Administration. Method for compression molding of thermosetting plastics utilizing a temperature gradient across the plastic to cure the article. 3,790,650, Cl. 264-102 000
- Heimann, Arnold. *See*—
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- Heimsch, Robert A., and Reaville, Eric T., to Monsanto Company. Photoxidizable compositions. 3,790,389, Cl. 96-115 00r
- Heinrich, Frank-Armin, to Bosch, Robert, Photokins GmbH. Movie camera release control circuit with voltage stabilization. 3,790,264, Cl. 352-174 000
- Heinz, Robert Alfred, and Gehrle, Robert Charles, to Western Electric Company, Incorporated. Spatial filtering system utilizing compensating elements. 3,790,280, Cl. 356-71 000
- Heisner, Mark. Prefabricated swimming pool. 3,789,435, Cl. 4-172 190
- Helm, Herbert W., to Smithe, F. L., Machine Company, Inc. Device for maintaining uninterrupted feeding of blanks from the bottom of a stack. 3,790,163, Cl. 271-165 000
- Helmcke, Conrad D., and Wendt, Hans J., to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Method and means for varying the speeds of vehicles moving along a track. 3,790,780, Cl. 246-187 00c
- Helmes, Alfred, to Rheinmetall G.m.b.H. Automatic weapon with self locking bolt breech block. 3,789,730, Cl. 89-183 000
- Hempelmann, Wilhelm, Waldenmeier, Gunter, and Kienhofer, Manfred, to Argus Gesellschaft mbH. Device for transferring fluids. 3,790,128, Cl. 251-148 000
- Henderson, Ian H. S., and Ladan, Stephan George, to Minister of National Defence, Her Majesty the queen in right of Canada as represented by the. Electrodeposition of sponge nickel. 3,790,454, Cl. 204-49 000
- Hendricks, John F., to Industrial Electronics Engineers, Inc. Bar segment readout unit. 3,790,946, Cl. 340-336 000
- Hendrickson, Robert L., and Scheper, George W., Jr., to General Electric Company. Flexible contour turbine nozzle for tight closure. 3,790,298, Cl. 415-152 000.
- Heneveld, Lloyd A., trustee of Dauser Trust IV. *See*—
  - Dauser, William C., 3,790,918
- Henley, Ronald W., and Taliaferro, William D. Two stage cementing collar. 3,789,926, Cl. 166-224 00r
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- Herbenar, Edward J., to TRW Inc. Socket joint. 3,790,195, Cl. 403-124 000
- Herbert, Michael B., to American Standard, Inc. Knockdown framing. 3,789,561, Cl. 52-456 000
- Hercules, Incorporated. *See*—
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  - Tillson, Henry C., 3,790,506
- Hermes Company. *See*—
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- Herry, Michel Jean, and Lejay, Augustin, said Lejay assor. to International Standard Electric Corporation. Synchronization circuit for a pcm-tdm exchange. 3,790,716, Cl. 179-15.0bs.
- Herschler, Robert J., and Jacob, Stanley W., to Crown Zellerbach Corporation, mesne. Ataratic use of dimethyl sulfoxide. 3,790,682, Cl. 424-337 000.
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- Hershman, Gordon L., and Schwerdtfeger, Wilbur F., to International Harvester Company. Hydraulic cylinder latch. 3,789,742, Cl. 92-26 000.
- Hery, Jean-Francois. Protective mattress. 3,789,438, Cl. 5-91 000
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  - Soshea, Richard W., 3,790,868
- Heyer-Schulte Corporation. *See*—
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- Heyn, William O., and Peisker, Glenn W., to Chicago Rawhide Manufacturing Company. Fluid seal with pumping action. 3,790,180, Cl. 277-134 000
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  - Wasel-Nielen, Horst Dieter, and Heyner, Gero, 3,790,661
- Heynick, Louis N. *See*—
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- Heywang, Walter, to Siemens Aktiengesellschaft. Device for registering the instantaneous contact pressure of a probe and for the electronic recording of the instantaneous location of a probe on the surface of a plate. 3,790,709, Cl. 178-18.000.
- Higgins, Robert B. *See*—
  - Goodman, Brian L.; Higgins, Robert B., and Denham, Frank M., 3,790,142
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  - Ayer, Lloyd M., 3,790,085
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- Hill, William E., to United States of America, Army, mesne. Propulsion method using 1-isopropenyl-2-ferrocenoyl-carborane burning rate catalyst. 3,789,609, Cl. 60-219 000
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  - Stenger, Donald R., 3,789,478
- Hillman, Allen E., Jr., to GTE Laboratories, Incorporated. Electronic control module for anti-skid braking systems. 3,790,855, Cl. 317-5 000
- Hillman, Allen E., Jr., to GTE Laboratories, Incorporated. Transistor multivibrator switchable between two ratios of off on pulse times. 3,790,903, Cl. 331-113.00r
- Hills, David A., to Hersey Products, Inc. Changing bias check valve. 3,789,874, Cl. 137-527 000
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  - Shiba, Keisoke, Hinata, Masanao, Yamasue, Koutarou, Sato, Akira, and Ikeda, Tadashi, 3,790,390
- Hintz, Harald, to U.S. Philips Corporation. Arrangement provided with an electronic flash bulb. 3,790,847, Cl. 315-151 000
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  - Tesaki, Kiyoshi, and Hiraoka, Michio, 3,790,528
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- Horner, Richard P., to Bendix Corporation, The. Extensible piston. 3,789,738, Cl. 91-168 000
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- Huvey, Michel, and Le Meur, Germain, to Institut Francais du Petrole, des Carburants et Lubrifiants and Societe Anonyme pour Tous Apparcielages Mecaniques S.A. Process for making a tight coating around a pipe for conveying hydrocarbons and the resulting hyrocarbon conveying pipe line. 3,790,418, Cl. 156-79 000
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  - Zifferer, Morton F., and Flinchbaugh, Donald E., 3,789,479.
- Morel, Jacques, to Rhone-Poulenc S.A. Process for the preparation of canthazanthine. 3,790,635, Cl. 260-586.00h
- Morel, Marcel, and Lepareur, Lucien. Anti-pollution supply device for internal combustion engines. 3,789,817, Cl. 123-133.000
- Moreng, Joseph H., to Moreng, Joseph, Iron Works, Inc. Portable, collapsible steeplechase hurdle or fence. 3,789,801, Cl. 119-29.000.
- Moreng, Joseph, Iron Works, Inc., *See*—
  - Moreng, Joseph H., 3,789,801
- Morgan, Thomas, to G & H Technology, Inc. Electrical contact terminal hand tool. 3,789,484, Cl. 29-203.00h.
- Morgan, Thomas Richard. *See*—
  - Bruen, Charles Patrick, Wamser, Christian Albert, and Morgan, Thomas Richard, 3,790,456.
- Mori, Eiko. *See*—
  - Murayama, Keisuke, Toda, Toshimasa, Mori, Eiko, Matsui, Katsuaki, Kurumada, Tomoyuki, Ohta, Noriyuki, and Watanabe, Ichiro, 3,790,525.
- Morilli, Frank Peter. Hawk. 3,790,201, Cl. 294-3.500
- Morita, Tetsuro. *See*—
  - Iizuka, Yoshio, and Morita, Tetsuro, 3,790,894
- Morley Furniture Spring Corporation. *See*—
  - Crosby, Lawton H., 3,790,149.
- Morong, William H., Jr., to General Electric Company. Lag adjustment means for a watthour meter. 3,790,888, Cl. 324-138.000.
- Morreale, Anthony P., to Computer Devices Corporation. Apparatus for damping oscillations in a stepping motor. 3,790,831, Cl. 310-94.000.
- Morrell, John Anthony. *See*—
  - Gardner, David Stanley John, and Morrell, John Anthony, 3,790,686
- Morris, Carrol V., to Snorkel Tire Equipment Company. Fire-fighting apparatus and elongate cantilever boom assembly therefor. 3,789,869, Cl. 137-351.000
- Morris, James J.: *See*—
  - Sweeney, Thomas E., Schweizer, William S., and Morris, James J., 3,790,106.
- Morris, Marion H. Automatic load monitoring and transfer circuit. 3,790,846, Cl. 315-91.000.
- Morrison, Howard J., to Glass, Marvin & Associates. Pillow with hand puppet receivable in a pocket thereof and manipulable while therein. 3,789,546, Cl. 46-116.000.
- Morrison, Terry, to Chandler Evans Inc. Governor with integrator reset. 3,790,765, Cl. 235-150.100.
- Morse Manufacturing Co., Inc.: *See*—
  - Lighthipe, Charles H., Jr., and Andrews, Robert R., 3,790,204.
- Mortmoro, Rokuya. *See*—
  - Sakai, Michihiko, Sato, Yasuo, Mortmoro, Rokuya, Konishi, Kazuo; and Maki, Katsuyuki, 3,790,621.
- Mosler Safe Company, The: *See*—
  - Tearne, David; and Weissmuller, Adam, 3,790,102.
  - Weissmuller, Adam, 3,790,101.
- Mosser Industries, Incorporated. *See*—
  - Hagar, Donald K., 3,790,131
- Motani, Kensuke; Kiyotoshi, Tadahiro; and Nakahara, Akihiko, to Tokuyama Soda Kabushiki Kaisha. Method of regenerating chelate resins having mercury adsorbed thereto. 3,790,535, Cl. 260-79.000.
- Motter, John C.; Motter, John C., Jr., and Swagert, Dean R., to Motter, John C., Printing Press Co. Printing press having automatic printing cylinder loading and unloading apparatus. 3,789,757, Cl. 101-153.000.
- Motter, John C., Jr.: *See*—
  - Motter, John C.; Motter, John C., Jr.; and Swagert, Dean R., 3,789,757.
- Motter, John C., Printing Press Co.: *See*—
  - Motter, John C.; Motter, John C., Jr.; and Swagert, Dean R., 3,789,757.
- Mottu, Andre; and Heimann, Arnold, to Societe Genevoise d'Instruments de Physique. Device for the driving of a tool by means of the spindle of a machine-tool. 3,790,296, Cl. 408-239.000.
- Moulds, John W., to General Motors Corporation. Fuel rail vapor bleed. 3,789,819, Cl. 123-140.0mp.
- Moust, Daniel A., *See*—
  - Barrett, Donald Dean, Whalen, Kenneth R., Nichols, Charles, Knapp, Robert G., Wickum, Jay A.; and Moust, Daniel A., 3,789,846.
- Mozdenski, Bernard, and Mozdenski, Bernard T., 20% to Lee, Raymond, Organization, Inc., The. Painter's pal. 3,789,450, Cl. 15-105.000.
- Mozdenski, Bernard T. *See*—
  - Mozdenski, Bernard, and Mozdenski, Bernard T., 3,789,450.
- M S C Inc., mesne: *See*—
  - Paul, Dwight D., Jr., 3,789,976.
- MTS Systems Corporation: *See*—
  - Meline, Harry R., 3,789,508.
- Muchnick, Paul: *See*—
  - Lee, Sung Chuel; and Muchnick, Paul, 3,790,857.
- Mucsi, Michael. Safety closure and container. 3,790,014, Cl. 215-9.000.
- Mugschl, Eduard. *See*—
  - Horl, Erwin; Scholze, Peter; and Mugschl, Eduard, 3,790,781
- Muller, Daniel, to Nationale des Petroles d'Aquitaine. Process for the anionic polymerization of styrene. 3,790,547, Cl. 260-93.50r
- Muller, Hans. *See*—
  - Sommer, Reinhold, 3,790,185.
- Muller, Herbert: *See*—
  - Posse, Rolf-Fred, Saleck, Wilhelm; Muller, Herbert, Randolph, August, and Moll, Franz, 3,790,386
- Muller, Joachim M., and Triller, Adolf J., to Erwin Sick Optik-Elektronik. Single modulated light beam photometer. 3,790,290, Cl. 356-195.000
- Mullins, James N., Jr. Bagging apparatus and method. 3,789,570, Cl. 53-29.000.
- Multi-Pro, Inc., *See*—
  - Rudelick, John, 3,789,446
- Mund, Konrad; Richter, Gerhard; and Wenzel, Magdalena, to Siemens Aktiengesellschaft. Method for the manufacture of powdered tungsten carbide containing electrode material. 3,790,410, Cl. 136-122.000.
- Munekata, Keniti. *See*—
  - Kurimoto, Mikishi; Munekata, Keniti, and Kamiya, Yoji, 3,789,501.
- Munro, David Farnham: *See*—
  - Cuthbert, John David, McMahon, Richard George; and Munro, David Farnham, 3,790,287.
- Munroe, Donald M., to Krawczyk, Charles C. Signal light. 3,790,937, Cl. 340-378.00r
- Muraca, Raffaele F., to Western Applied Research and Development Inc. Alkaline electrolytes for cells which provide efficient coulombic storage and transfer functions. 3,790,864, Cl. 317-231.000
- Murata Manufacturing Co., Ltd., *See*—
  - Toyoda, Minoru, 3,790,840.
- Murayama, Keisuke, Toda, Toshimasa; Mori, Eiko; Matsui, Katsuaki; Kurumada, Tomoyuki, Ohta, Noriyuki, and Watanabe, Ichiro, to Sankyo Company, Limited. 4-Piperidone ketal derivatives, their preparation and their use as stabilizers. 3,790,525, Cl. 260-45.8n.
- Murayama, Naohiro; and Fukuda, Makoto, to Kureha Kagaku Kogyo Kabushiki Kaisha. Method for producing polyvinylidene fluoride polymethylmethacrylate compositions. 3,790,645, Cl. 260-884.000.
- Murphy, John D. Flashlight and switch assembly. 3,790,912, Cl. 335-205.000.
- Murray, David B.: *See*—
  - Porter, John H.; and Murray, David B., 3,789,667.
- Murray, Kenneth M.; and Attix, Frank H., to United States of America, Navy. Absolute calorimetric dosimeter. 3,790,794, Cl. 250-352.000.
- Murray, Lowell C.; and Hose, John M., to Container Corporation of America. Stackable package and method of making same. 3,790,019, Cl. 220-16.00r.
- Murray, Malcolm G., Jr. Machine element alignment system. 3,789,507, Cl. 33-1.0sd.
- Muslimer, Walter J., to Eastman Kodak Company. Precipitation of metal salts. 3,790,387, Cl. 96-94.000.
- Musschoot, Albert, to General Kinematics Corporation. Vibratory vertical lift conveyor. 3,789,977, Cl. 198-220.0bc.
- Muth, Karl: *See*—
  - Weyer, Rudi; Aumuller, Walter; Weber, Helmut; Muth, Karl, and Schmidt, Felix Helmut, 3,790,630.
- Myers, Howard B.: *See*—

Jackson, Hewy E.; and Myers, Howard B., 3,790,353

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Nagai, Yasuhiro: *See—*
Kimura, Shinji; Fukui, Norihiro; and Nagai, Yasuhiro, 3,790,743

Nagel, C. Rudolph. Pecan retriever. 3,790,202, Cl. 294-19.00a

Nagoya, Itaru Niimi; Hashimoto, Kametaro, Ushitani, Kenzi, Serino, Yoichi, Mitani, Seishu, and Imanishi, Kunizo, to Toyota Jidosha Kogyo Kabushiki Kaisha Sintered alloy having wear resistance at high temperature. 3,790,352, Cl. 29-182.100.

Nagt, Elmer Andrew. Accumulator apparatus for lumber sorters 3,789,980, Cl. 209-74.00r

Nakahara, Akihiko: *See—*
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Nakajima, Fumio: *See—*
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Nakajima, Masa. *See—*
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Nakamura, Masaya, to Kabushiki Kaisha Nakamura Seisakujo Simulated bombing apparatus. 3,790,172, Cl. 273-101.200.

Nakanishi, Michio, Arimura, Katsuo, and Ao, Hideki, to Yoshitomi Pharmaceutical Industries, Ltd. 1-Oxa-2,4,8-triazaspiro (4,5) dec-2-enes. 3,790,579, Cl. 260-293.580

Nakano, Hiroshi, Takai, Hideo, and Nakajima, Fumio, to Asahi Kasei Kogyo Kabushiki Kaisha Apparatus for preparing spun yarn 3,789,461, Cl. 19-.350.

Nakano, Masaki: *See—*
Aratani, Norio, and Nakano, Masaki, 3,789,467.

Nakashima, Yoshikatsu, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Device in an automobile for preventing an accidental locking of a steering shaft 3,789,636, Cl. 70-252.000.

Nakata, Kunii, and Kubo, Yoshimasa, to Kabushiki Kaisha Akita and Kunii Nakata Molding method with shielding member drawn against particulate material 3,789,907, Cl. 164-7.000

Nakayama, Northiko *See—*
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Nalco Chemical Company *See—*
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Spoerle, F Steven, and Palmer, Elmer W., 3,790,476.

Naslund, Bengt Roland Tool for mounting and dismounting a bolted union 3,789,705, Cl. 81-13.000.

National Cash Register Company, The *See—*
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Janning, John L., 3,790.253

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Law, Edward, and Moore, James H., 3,790,091

National Semiconductor Corporation *See—*
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Neebel, Richard R.: *See—*
Doerfer, Richard E., Leymaster, Homer N., and Neebel, Richard R., 3,789,456.

Negrevergne, Georges, to Purdue Frederick, Company, The. Pyrazolidone derivatives substituted on the 4-position with pectin or algin 3,790,558, Cl. 260-209.500.

Neier, Benjamin R., to B/J Manufacturing Co. Inc Feed mixer 3,790,138, Cl. 259-41.000.

Nemec, Joseph W., and Schlaefer, Francis W., to Rohm & Haas Company. Catalyst and method of manufacture 3,790,502, Cl. 252-439.000.

Nemoto, Tsuneo, to Sony Corporation. Tape and cassette for cleaning magnetic recording heads 3,789,452, Cl. 15-210.00r

Nemotoi, Isao, to Kabushiki Kaisha Suwa Seikosha and Day-date advancing structure for a timepiece. 3,789,602, Cl. 58-58.000.

Nestor, Leonard R., to Minnesota Mining and Manufacturing Company. Self-tightening coupler. 3,790,292, Cl. 403-351.000.

Neufang, Karlheinz, to Siemens Aktiengesellschaft. Four-wire switching of junctions in tdm pcm switching centers under stored program control. 3,790,713, Cl. 179-15.0at.

Neugebauer, Heinz, to Werkzeugmaschinenfabrik Adolf Waldrich Coburg Hydrostatic lubricating device for the meshes of cylinder worms and a worm rack 3,789,956, Cl. 184-6.120.

Neumeister, Roger Corn planter 3,790,026, Cl. 221-211.000.

Nevin, C Scott, to International Telephone and Telegraph Corporation Image comparison tube and method of comparing radiation images. 3,790,844, Cl. 315-11.000.

New England Research Associates, Inc.. *See—*
Sims, John C., Jr., 3,790,055

Newman, Jack *See—*
Johnson, Alan J; and Newman, Jack, 3,790,552.

Newman, Norman: *See—*
Fisch, Richard S.; and Newman, Norman, 3,790,381.

Newman, Peter M.; and Rowan, Daniel P. Light box assembly. 3,790,772, Cl. 240-10.00r.

Newmark, Louis, Limited. *See—*
Collomosse, Herbert, and Bacon, Patrick Albert Henry, 3,790,704

Niagara Plastics, Inc.: *See—*
Rooney, James L., 3,790,046.

Nichi-Ber Blind Kogyo Kabushiki Kaisha *See—*
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Nichols, Charles *See—*
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Nicholson, Denzel Allan, to Procter & Gamble Company, The. Process for the production of halogenated malonates. 3,790,622, Cl. 260-485.00h.

Niebylski, Leonard M., and Jarema, Chester P., to Ethyl Corporation Method of making metal foams by sequential expansion 3,790,365, Cl. 75-20.00f

Niebylski, Leonard M., to Ethyl Corporation Aluminum-lead metal foams. 3,790,367, Cl. 75-20.00f.

Nielsen, Erik, and Pedersen, Hans Christian, said Pedersen assor to Danfoss A/S Electric connecting device for an encased refrigerating machine 3,790,921, Cl. 339-125.00r

Nielsen, Lawrence E.. *See—*
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Nielsen, Ole Bent Tvaermose. *See—*
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Nielsen, Ralph R., and Busler, William R., to Nalco Chemical Company. Latices for sewage coagulation 3,790,477, Cl. 210-47.000.

Nihon Denshi Kabushiki Kaisha *See—*
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Niimi, Itaru, Hashimoto, Kametaro, Ushitani, Kenzi; Serino, Yoichi, Ishihara, Ko, Mitani, Seishu, and Imanishi, Kunizo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Sintered alloy having wear resistance at high temperature. 3,790,351, Cl. 29-182.000

Nilsson, Jan, to Allmanna Svenska Elektriska Aktiebolaget Method for hydrostatic extrusion of tubes. 3,789,642, Cl. 72-60.000.

Nimylowycz, Osyp, and Lorenz, George, to United States of America, Army Parachute arrangement 3,790,113, Cl. 244-149.000

Nippon Electric Company, Limited *See—*
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Nippon Gakki Seizo Kabushiki Kaisha. *See—*
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Nippon Soda Co., Ltd *See—*
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Nippon Zoki Pharmaceutical Co., Ltd *See—*
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Nischk, Gunther. *See—*
Christoph, Geert, Radlmann, Eduard, and Nischk, Gunther, 3,790,531.

Nishida, Sumio, and Kosa, Yasunobu, to Hitachi, Ltd. Insulated gate type field effect device and method of making the same 3,789,503, Cl. 29-571.000

Nissan Motor Company, Limited *See—*
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Nix, Thomas B., to Fuller Company Removal of fluorides from gases. 3,790,143, Cl. 266-16.00o.

Nja, Olav, to Kvernelands Fabrikk A/S Plough beam with spring mechanism. 3,789,928, Cl. 172-709.000.

Noestheden, Andy B Ressotint rocker 3,789,704, Cl. 81-9.200.

Nordisk Ventilator Co A/S *See—*
Pedersen, Henry Valdemar, and Bredsted, Ole Jakobsen, 3,790,301

Noren, Tore H., and Federichi, George J. Visual automatic liquid feeder. 3,789,877, Cl. 137-590.000.

Norman Enterprises, Inc.: *See—*
Norman, William L., 3,790,790.

Norman, Vello, to Liggett & Myers, Incorporated. High flavor impact, low smoke yield cigarette mouthpiece. 3,789,855, Cl. 131-9.000

Norman, William L., to Norman Enterprises, Inc. Polarity sensitive electronic switch and polarity indicator. 3,790,790, Cl. 250-211.00j.

Normann, Richard W., to Bendix Corporation, The Coupling for an electrical connector. 3,790,922, Cl. 339-126.00r.

Norris Industries, Inc.: *See—*
Sanders, Vernard W.; and Fane, William J., 3,790,196.

Norris, John F.; and Humphreys, Donald R., to Custom Radius Corporation Skate sharpening devices. 3,789,551, Cl. 51-92.00r

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North American Rockwell Corporation. *See—*
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Northern Electric Company Limited. *See—*
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Northrop, Richard Alfred, Jr.: *See—*
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Nottebohm, Harald: *See—*
Quietzsch, Gerhard; Greiner, Bernd; Hund, Helmut, Nottebohm, Harald; and Pelz, Lothar, 3,790,457.

Novak, Jiri, to Ceskoslovenska Akademie ved. Method of and apparatus for continuous electrochemical metering of substance concentrations in gaseous media, with electrolyte recirculation 3,790,449, Cl. 204-1.00t

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Oberly & Newell, Inc.: *See—*
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Obsomer, Marc, to Solvay & Cie. Plastic compositions based on poly(vinyl chloride) and containers manufactured therefrom 3,790,644, Cl. 260-876.00r

Odaka, Munehiko: *See—*
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Oesterreichische Studiengesellschaft fur Atomenergie Gesellschaft m.b.H.: *See—*
Horl, Erwin; Scholze, Peter, and Mugschl, Eduard, 3,790,781

Oetiker, Hans. Bridging member for hose clamps. 3,789,463, Cl. 24-20.0cw.

Office National d'Etudes et de Recherches Aerospatiales *See—*
Brejaud, Hubert P., 3,789,653.

Oga, Shunichiro, Sato, Kiyoshi; Imada, Katsumi; and Asano, Kazuo, to Daiechi Seiyaku Co., Ltd. Process for preparing diketogluconic acid 3,790,444, Cl. 195-47.000.

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Ogiso, Mitsutoshi; Shikawa, Kazuo, and Shigeta, Yoshihiro, to Canon Kabushiki Kaisha. Audio-visual apparatus 3,790,265, Cl. 353-19.000

Ogle, James A *See—*
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Ohashi, Hiroaki *See—*
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Ohishi, Tetsu, Fukushima, Hiroshi, and Fukuda, Hideo. Oil-resistant polymer composition 3,790,646, Cl. 260-894.000.

Ohsawa, Mitsuo, to Sony Corporation FM stereophonic receiver 3,790,714, Cl. 179-15.0bt

Ohta, Noriyuki *See—*
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Oishi, Yashushi; Yoshida, Yoshinobu, and Sano, Kazuya, to Fuji Photo Film Company, Ltd Light-sensitive color photographic elements with improved image quality 3,790,384, Cl. 96-74.000.

Oishi, Yasushi, Sano, Kazuya, and Yoshida, Yoshinobu, to Fuji Photo Film Company, Ltd Color photographic light-sensitive elements with both colored and colorless color couplers. 3,790,379, Cl. 96-55.000.

Ojima, Shin; and Sano, Hiroshi, to Hoshi Denki Seizo Kabushiki Kaisha Sterophony-simulating earphone 3,790,711, Cl. 179-1.0gp.

Okada, Hiroyoshi *See—*
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Okazaki, Mitsutoshi *See—*
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Ollearo, Georgio: *See—*
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Olsen, Dick Merlin, to Clayton Manufacturing Company. Engine performance analyzer. 3,789,658, Cl. 73-117.300

Olsson, Robert G.; and Turkdogan, Ethem T., to United States Steel Corporation Method for enhancing the removal of volatile species from liquids. 3,790,368, Cl. 75-49.000.

Olsson, Robert G.; and Turkdogan, Ethem T., to United States Steel Corporation. Method for enhancing the reaction of a species of a liquid with a fluid substance 3,790,369, Cl. 75-49.000

Omark Industries, Inc. *See—*
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Omron Tatesis Electronics Co *See—*
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O'Neill, Richard J., Blaker, Gene M., Manthei, Edward C.; and Ronk, Elmer L., to Impact Registers, Inc. Apparatus for measuring and recording acceleration forces. 3,790,951, Cl. 346-7.000

Onishi, Akira, Irako, Koichi, Hayakawa, Yoshihiro; Shimomura, Takeshi, Kawagoi, Takahiro, and Miyamoto, Shoji, to Bridgestone Tire Company, Limited. Method of producing of alternating copolymers of conjugated dienes and conjugated polar vinyl monomers 3,70,539, Cl. 260-80.700

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Orfei, John B., to American Science & Engineering, Inc. Educational observatory 3,789,799, Cl. 119-15.000.

Orlando, Daniel, to Globe-Union Inc Method for fabricating a threaded stud in a battery post 3,790,741, Cl. 219-102.000

Orlomoski, Roger W., to Litton Industrial Products, Inc Dies for making self-locking threads 3,789,644, Cl. 72-469.000.

Ort, Wolfgang: *See—*
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- Palfi, Thomas L., Brooks, Charles, and Miller, George J., to Advanced Memory Systems, Inc. Random access dynamic semiconductor memory system. 3,790,961, Cl 340-173 0dr
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Raleigh, William J., to General Electric Company Organopolysiloxane copolymer useful as surfactant 3,790,612, Cl 260-448.20b

Rambauske, Werner R *See—*
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Rand, Robert B Clothing having adjustable belt loops 3,789,431, Cl 2-236.000

Randolph, August *See—*
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Rao, Ganta V., and Gerrish, Oliver B., Sr., to Far-Mar-Co., Inc. Extraction process for preparation of vital wheat gluten from whole wheat kernels. 3,790,553, Cl 260-112.00g.

Rappoport, Seymour, and Rakocy, William J., to Ronson Corporation. Multi-purpose rotisserie-broiler combination. 3,789,748, Cl 2-24-72

Rateh, Roger, to Fives Lille-Cail Centrifuge machine 3,789,623, Cl 64-17.000.

Ratkovich, John M Radio transmitting hunting arrow with finding means 3,790,948, Cl 343-113.00r

Rau, James E *See—*
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Raun, Arthur P., to Lilly, Eli, and Company Ruminant feed utilization improvement 3,790,668, Cl 424-117.000

Rausch, Richard E., to Universal Oil Products Company Tetrametallic hydrocarbon conversion catalyst and uses thereof 3,790,473, Cl 208-139.000.

Rawlins, Wendell G Track signal responsive to variable frequency 3,790,776, Cl. 246-40.000

Ray, Elbert L.: *See—*
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Ray, Jimmy C Machine for splicing communication cables 3,789,482, Cl 29-203.00d

Ray, Jimmy C. Strip method 3,790,917, Cl. 339-95.00r

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  Rambauske, Werner R., 3,790,258.

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RCA Corporation *See—*
  Campbell, Francis Joseph, 3,790,845.
  Champan, Paul Leonard, 3,789,600.
  Gorog, Istvan, 3,790,701.
  Hannan, William James, and Frattarola, Joseph Ralph, 3,790,245
  Pankove, Jacques Isaac, 3,790,853.
  Wheatley, Carl Franklin, Jr., 3,790,897

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  Scraeder, Charles R., Rea, Samuel N.; Tao, Yung, and Hanna, Elias G., 3,790,859

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Redman, James C., and Trent, Lynn F., to GTE Sylvania Incorporated Apparatus and method for counting repetitive patterns in strips of moving apertured material. 3,790,762, Cl 235-92.00v

Reed Rolled Thread Die Company *See—*
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Reif, William M., and Lauder, Robert B Hydroxymethylamino nitrile salts for quenching the fluorescence of optical brightening agents 3,790,443, Cl 162-158.000

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Reinhall, Rolf Bertil Grinding apparatus 3,790,092, Cl 241-38.000

Reinhard, Clyde. Radiant energy heating system for temperature control of living subjects 3,789,853, Cl 128-399.000

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Remers, William Alan, Gibs, Gabriel Joseph, and Weiss, Martin Joseph, to American Cyanamid Company 2-Amino-1,3,4-thiadiazole-5-carboxaldehyde oxime and 2-acetamido-1,3,4-thiadiazole-carbonitrile 3,790,590, Cl 260-306.80d

Remon-Beauvais, Philippe Marie Antoine Jacques *See—*
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Repco Research Pty., Ltd *See—*
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  Kampf, Julian C.; and Retzer, Kenneth W., 3,790,862.

Rey, Andre Rene. Bisecting plane rotary motion transmission device 3,789,625, Cl 64-21.000.

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  Gampe, Egon, 3,790,329.
  Helmes, Alfred, 3,789,730

Rhone-Poulenc S.A.: *See—*
  Morel, Jacques, 3,790,635.

Ribbans, Robert Clark, III, to Du Pont de Nemours, E. I., and Company. Glass fabric coated with crack-free fluorocarbon resin 3,790,403, Cl 117-76.00t

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Rich, Theodore A., to Environment/One Corporation. Amplifying and holding measurement circuit. 3,790,887, Cl. 324-111.000.

Richard, Eugene D.: *See—*
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Richard, George E.; and Richard, Eugene D. Method of surf generation. 3,789,612, Cl. 61-1.000.

Richards Manufacturing Company, Inc.: *See—*
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Richardson Chemical Company, The. *See—*
  Weisenberger, Lavern M., and Biora, Julio L., 3,790,451

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Richley, Joseph L., to Bethlehem Steel Corporation. Adjustable quill and quill head mounting therefor 3,789,596, Cl 57-55.000.

Richter, Albert P., Jr., and McEvers, William R., Jr., to Texaco Inc Borehole deviation measurement while drilling. 3,789,510, Cl. 33-306.000

Richter, Antonin, to Ustav pro vyzkum Motorovych vozidel 3,789,808, Cl 123-71.00r

Richter Gedeon Vegyeszeti Gyar R.T *See—*
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Riedel, Rudolf; Zelder, Felix, and Gilles, Horst, to Seitz-Werke G.m.b.H Control arrangement for a vessel filling machine 3,789,889, Cl 141-140.000.

Riedel, Rudolf, and Zelder, Felix, to Seitz-Werke G.m.b.H Rotating vessel processing machine, especially vessel filling machine 3,789,890, Cl 141-144.000.

Rietz, Adelbert F Golf swing grooving device 3,790,176, Cl 273-186.00r

Rifkin, Ernest, and Dreibelbis, Richard C., to Carrier Corporation Thermostat assembly 3,790,075, Cl 236-49.000

Rigel, Yehoshua, and Singer, Eduard Tie holder 3,790,045, Cl 223-87.000

Rinckhoff, John B. *See—*
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Ripley, Charles C., to General Electric Company Method of manufacturing a nuclear fuel assembly spacer 3,789,476, Cl 29-163.50r

Rishovd, Sigurd, to Royal Industries, Inc Method and apparatus for inflating tubeless tires and the like. 3,789,901, Cl 157-1.100.

Ritsema, Irving R., to Bendix Corporation, The Modulator for adaptive braking system. 3,790,224, Cl 303-21.00f

Riv-Skf Officine Di Villar Perosa S.p.A *See—*
  Camosso, Domenico, 3,789,624

Rizzi, Luigi, & Co., S.p.A *See—*
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RNB Associates, Inc. *See—*
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Robbins, John Lyndon, and Bridge, Samuel Douglas, to Dixon, R. G., & Company, Limited Rotary guard for surface treating machines. 3,789,554, Cl 51-274.000

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Robinson, Graham Ernest, to Imperial Chemical Industries, Limited. Bicycloheptene-7-syn-carbaldehyes 3,790,632, Cl. 260-557.00h.

Robinson, Leroy E.: *See—*
  Shofner, Don L.; Robinson, Leroy E.; and Martinovich, Robert J., 3,789,754

Robinson, Prentice I.: *See—*
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  Iwasyk, John M.; and Rodeffer, David W., 3,789,584

Rodman Industries, Inc.: *See—*
  Yip, James K., 3,789,549.

Rodriguez, Rodolfo, to Miles Laboratories, Inc. 1-(2-pyridyl) piperazine and levodopa composition. 3,790,674, Cl. 424-250.000.

Rogalski, Frank Water heating and cooling system with humidity control means. 3,789,918, Cl 165-19.000.

Rogers, Fred A.; and Berend, David, to Wiss, J., & Sons Co. Direct current power supply for electrical appliances. 3,790,810, Cl 307-66.000.

Rogers, Thelmer A. Complete pipelayer 3,789,614, Cl. 61-72.600.

Rohm & Haas Company: *See—*
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Roland, Charles H., to Phillips Petroleum Company Compact press and pellet plunger. 3,790,330, Cl. 425-412.000.

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Romstad, Catherine J Educational flash cards. 3,789,517, Cl. 35-9.00e.

Ronk, Elmer L.: *See—*
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  Carlson, John A., Hoff, Dale R., and Rooney, Clarence S., 3,790,593

Rooney, James L., to Niagara Plastics, Inc. Coat hanger with collapsible hook. 3,790,046, Cl 223-92.000.

Rose, Edgar, to Outboard Marine Corporation. Snowmobile track 3,790,231, Cl. 305-35.0eb.

Rose, Edward. *See—*
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Roseberry, Donald E. *See—*
  Kendall, George A., and Roseberry, Donald E., 3,789,709

Rosenbaum, Heinz Jorg, and Rudolph, Hans, to Bayer Aktiengesellschaft. Pourable, storable polymerizable lactam-catalyst-activator mixtures. 3,790,515, Cl. 260-18.00n

Rosenbaum, Heinz Jorg, Rudolph, Hans, Dhein, Rolf, and Reinking, Klaus, to Bayer Aktiengesellschaft. Pourable, storable, polymerizable lactam-catalyst-activator composition 3,790,516, Cl. 260-18.00n

Rosenblatt, Richard D. Device for assisting cigarette smokers to discontinue smoking. 3,789,840, Cl 128-260.000.

Rosenblatt, Richard D Body ornament with electroluminescent portion. 3,790,775, Cl. 240-2.250

Rosenblatt, William. *See—*
  Bluestein, Claire, Rosenblatt, William, and Clark, John R., 3,790,602.

Rosenwald, Gary W., to Cities Service Oil Company Cell for collecting and mixing fluids. 3,789,670, Cl. 73-421.00r

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  Banyas, John D., and Ross, Edward A., 3,790,087.

Rossell, John Barry *See—*
  Caverly, Brian Leonard, Meertens, Gerard Joseph Hendrik, and Rossell, John Barry, 3,790,608.

Rossi, Albert, Jacobson, Norman, and Miller, Harold N., to Esso Research and Engineering Company Residual fuels improved in its flow characteristics by a copolymer of C_{22} to C_{40} linear alpha-olefin and styrene or a C_4 to C_8 alpha-olefin. 3,790,358, Cl 44-62.000.

Rossigno, Louis P., to Bendix Corporation, The Tow vehicle trailer braking system 3,790,807, Cl. 303-7.000

Rossio, John H., to La Ros Equipment Company, Inc. Parts separator 3,789,981, Cl 209-78.000.

Rotaque (Proprietary) Limited. *See—*
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Roth, Gregory L. Thermoelectromagnetic energy conversion system 3,790,829, Cl 310-4.000.

Roth, Robert A.: *See—*
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  Pierdet, Andre; and Azadian, Genevieve, 3,790,564

Routson, Willis G., to Dow Chemical Company, The. Composition and method for diminishing the flow of water into permeable strata 3,789,613, Cl. 61-1.00r.

Rouxel, Roland; and Chevalier, Gabriel, to Societe Generale de Constructions Electriques et Mecaniques. Time delay compensation in a closed loop process control system. 3,790,764, Cl. 235-150.100.

Rowan, Daniel P.: *See—*
  Newman, Peter M.; and Rowan, Daniel P., 3,790,772.

Rowe, Donald R.: *See—*
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Rowell, Byron G., to I.R.A., Incorporated Dead EED protective sleeve for use in processing taconite. 3,789,878, Cl. 137-590.000.

Royal Industries, Inc.: *See—*

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- Rubel, Edward A *See—*
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- Rubel, Peter Adrian: *See—*
  - Rule, Clinton; and Rubel, Peter Adrian, 3,789,537
- Rubin, Robert M. Gulf shoe. 3,789,523, Cl. 36-2.51h.
- Rubio, Manuel Jesus; and Leal, Victor Mario, to Barrera, Roberto Gonzalez. Process, machine and chart for tensile testing. 3,789,660, Cl 73-169.000.
- Rudelick, John, to Multi-Pro, Inc. Unsinkable raft. 3,789,446, Cl 9-11 00r
- Rudolph, Hans. *See—*
  - Rosenbaum, Heinz Jorg, and Rudolph, Hans, 3,790,515.
  - Rosenbaum, Heinz Jorg, Rudolph, Hans, Dhein, Rolf, and Reinking, Klaus, 3,790,516.
- Rudston, Stanley George, Hyford, Derek Clark, and Blanchard, Peter Michael, to British Petroleum Company Limited, The. Synthetic lubricant for aero gas turbines 3,790,478, Cl. 252-34 000.
- Rufer, Clemens: *See—*
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- Ruget, Gabriel, to Compagnie des Ateliers et Forges de la Loire Saint Chamond, Firminy; Saint Etienne, Jacob Holtzer, C.A F I. Manufacture of hollow cylindrical bodies 3,789,908, Cl 164-52 000.
- Rule, Clinton, and Rubel, Peter Adrian, to Rule Industries, Inc Multiple rod electrodes 3,789,537, Cl 43-112.000
- Rule Industries, Inc : *See—*
  - Rule, Clinton, and Rubel, Peter Adrian, 3,789,537.
- Rupp, Hans-Dieter *See—*
  - Magerlein, Helmut, Meyer, Gerhard, and Rupp, Hans-Dieter, 3,790,627
- Rusk, Gerald R.; and Koch, Robert E , to Freeman Supply Company, The. Matching pattern plates 3,789,912, Cl 164-243.000
- Ruske, Ervin Level tie-down 3,789,652, Cl 72-457.000.
- Russell, Walter, 1/3 to Tolash, Carol Ann, 1/3 to Tolash, Victoria L and 1/3 to Tolash, Julianna Random access card filing and retrieval apparatus 3,789,982, Cl. 209-80 500
- Rutherford, Sherman I , to Varian Associates Apparatus for printing of charge images 3,789,753, Cl 101-1.000
- Ruti Machinery Works, Ltd , formerly Caspar Honegger, Ruti Zurich *See—*
  - Peter, Arnold, 3,789,887
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- Rybicki, Edward B ; Sussman, Milton H , and Tackaberry, Robert B , to American Optical Corporation Microscope condenser series 3,790,254, Cl. 350-183 000.
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- Sagl, Rudolph J. C., to B E.L. - Tronics Limited Power take-off switch 3,790,808, Cl 307-10.00r
- Saito, Akio, to Shinwa Kagaku Kogyo Kabushiki Kaisha. Packing containers. 3,789,897, Cl 150-11 000.
- Saito, Tadao *See—*
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- Saito, Yasoji, to Nichi-Ber Blind Kogyo Kabushiki Kaisha. Vertical type venetian blind 3,789,905, Cl 160-168.000.
- Saito, Yoshiomi; Sasaki, Hiroshi; Yamaguchi, Mamoru, Fukuda, Hide; Yamada, Humio; and Kimura, Koji, to Japanese Geon Company, Ltd., The Process for preparing vulcanized epihalohydrin polymers 3,790,524, Cl 260-45.80n.
- Sakai, Hiroshi; Igarashi, Kazuo, Yamamoto, Takuji; and Matsuo, Normichi Method of treating nonconducting and poorly conducting film. 3,790,406, Cl. 117-227.000.
- Sakai, Michihiko; Sato, Yasuo, Mortmoro, Rokuya; Konishi, Kazuo, and Maki, Katsuyuki, to Takeda Chemical Industries, Ltd. Dialkylphenyl-N-methyl-N-haloacetyl carbamates. 3,790,621, Cl 260-479.00c.
- Sakai, Toshihiko. *See—*
  - Komatsu, Noboru; Nozaki, Choji; Kurauchi, Toshio; and Sakai, Toshihiko, 3,790,208
- Sakats, Gerald, to S & C Electric Company. Switchgear with fuses individually mounted on fuse carriers and switches therefor for interlocks. 3,790,861, Cl. 317-114.000.
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  - Smoot, Charles W.; and Saldenais, Arvids, 3,790,274
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- Saltzman, Alvin R , and Plizak, Bruno T , to United States of America, Navy. Thermal catalytic chemical reaction of non-newtonian fluids. 3,790,486, Cl 252-77 000
- Salvis AG *See—*
  - Bolleter, Hans Ulrich, and Schulthess, Hansruedi, 3,790,391.
- Samlyody, Arpod. *See—*
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- Samour, Carlos M Pressure sensitive adhesive copolymers and tapes therefrom. 3,790,533, Cl 260-78.50r
- Sanders, Vernard W ; and Fane, William J , to Norris Industries, Inc Dead bolt latch 3,790,196, Cl 292-140.000.
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  - Oishi, Yasushi, Sano, Kazuya; and Yoshida, Yoshinobu, 3,790,379
  - Shiba, Keisuke, Sano, Kazuya, Okumura, Akio, and Kubodera, Seiiti, 3,790,388
- Sapper, Richard. Lamp with an articulated support 3,790,773, Cl 240-81 0bd
- Sarafidis, Christos *See—*
  - Campbell, John H , Cluff, Edward Fuller, and Sarafidis, Christos, 3,790,480.
- Sarett, Lewis H , Shen, Tsung-Ying, and Dorn, Conrad P , Jr , to Merck & Co., Inc Preventing pain, fever and inflammation with cyclic hydroxy sulfoxides 3,790,676, Cl 424-275 000.
- Sasaki, Hiroshi *See—*
  - Saito, Yoshiomi, Sasaki, Hiroshi, Yamaguchi, Mamoru, Fukuda, Hide, Yamada, Humio, and Kimura, Koji, 3,790,524
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- Sato, Hiroshi *See—*
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- Sato, Hiroshi, Okumura, Munehiro, and Arita, Masujiro, to Mitsubishi Rayon Company, Ltd. Method for producing water containing microcapsules 3,790,497, Cl 252-316.000.
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- Sato, Masamichi, and Tamai, Yasuo, to Xerox Corporation Process for producing electrophotographic liquid developer 3,790,485, Cl 252-62 100.
- Sato, Yasuo *See—*
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- Sattler, Walter J., to General Motors Corporation Internal combustion engine speed limiting circuit 3,789,810, Cl 123-102.000.
- Sauer, Hans, to Matsushita Electric Works, Ltd. Relay-plug-in contact spring 3,790,924, Cl. 339-258 00r
- Sauer, Reinhold. *See—*
  - Laux, Raymond Wilhelm, and Sauer, Reinhold, 3,790,239
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- Savin Business Machines Corporation: *See—*
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  - Schantz, John S., 3,789,822.
- Scharfen, Hans, to Forkardt, Paul, Kommanditgesellschaft. Swivel chuck for machining workpieces with a plurality of axes crossing each other. 3,790,181, Cl. 279-4.000.
- Schartmann, Knut Roger, to Northern Electric Company, Limited. Digital decoder for multiple frequency telephone signalling. 3,790,720, Cl. 179-84.0vf.
- Scheibe, Hans. *See—*
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- Scheier, Stanley C Container 3,790,067, Cl. 229-55.000.
- Schenkel, Gerrit, to U.S. Philips Corporation. Electromagnetic microphone including at least one acoustic resistance. 3,790,724, Cl. 179-180.000.
- Scheper, George W , Jr.. *See—*
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- Schild, A., S.A.. *See—*
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- Schmidt, Andreas, Brunetti, Heimo, and Schwarzenbach, Kurt, to Ciba-Geigy Corporation Process for the manufacture of benzylphosphonates. 3,790,648, Cl 260-970.000
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- Schmidt, Robert P., and Menke, Richard S Apparatus for a thumb wrestling game 3,790,165, Cl 273-1.00r
- Schmidt, Ulrich, to Bosch, Robert, G m.b.H Gas turbidity measuring apparatus 3,790,289, Cl 356-205.000.
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- Schmitt, Emil S Valve. 3,790,132, Cl 251-312.000.
- Schnell, Gerhard, to Bosch, Robert, G m.b H Conveying arrangement. 3,790,001, Cl. 214-1 0bd
- Schnitzer, David H , and Absler, Howard K., to Uarco Incorporated Combination record and envelope assembly with severable receipt. 3,790,070, Cl 229-92.800.
- Schoen, Oscar W., Jr , to United States of America, Navy Transducer pressure release system 3,790,928, Cl 340-8 00r.
- Schoeps, Knut Christian; and Karden, Karl Gosta, to Atlas Capco Aktiebolag Rotary impact motor 3,789,934, Cl 173-93.500.
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- Schreiner, Louis W., 50% to Carter, Charles M Temperature responsive control device. 3,789,815, Cl 123-119.00f
- Schroder, Eberhard. *See—*
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- Schroder, Hohann, to U.S Philips Corporation Method of producing calorific energy. 3,790,357, Cl 44-3.00r.
- Schubert, Emil Georg Rotary internal combustion engine. 3,789,809, Cl. 123-8.050.
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- Schultz, Arthur P. Switching system. 3,789,765, Cl 104-96.000.
- Schultz, Neithart, Vahlensieck, Hans-Joachim; and Martens, Peter, to Dynamit Nobel Aktiengesellschaft. Process for the preparation of 1,1,1-trifluoro-2-chloro-2-bromoethane. 3,790,462, Cl. 204-163.00r.
- Schumacher, Ignatius; and Baker, Joseph W. Preparation of esters of phosphorus acids. 3,790,649, Cl 260-973.000.
- Schuman, Ralph Henry, to Warner & Swasey Company, The. Toolholder. 3,790,182, Cl. 279-43.000.
- Schuttloffel, Erich, to Licentia Patent Verwaltungs-G.m b.H. Waveguide for simultaneously transmitting two electromagnetic waves. 3,790,905, Cl. 333-95.00a
- Schwaller, Bernard L. Compressor valve assembly. 3,790,151, Cl 267-151.000.
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- Schwarzbach, Peter H.; and Perrin, Robert L., 15% to McCoy, Ernest H Thread cutting device. 3,789,708, Cl 82-5.500.
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- Scraeder, Charles R., Rea, Samuel N., Tao, Yung; and Hanna, Elias G., to Texas Instruments, Incorporated Electronic package header system having omni-directional heat dissipation characteristic. 3,790,859, Cl. 317-100.000.
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- Sellet, Lucien, to Diamond Shamrock Corporation. Alkoxylated mannich compositions and derivatives thereof 3,790,606, Cl 260-401.000.
- Sels, Wally O.; and Paul, Alfred L., to Brock-White Co. Column form and clamp assembly. 3,790,121, Cl 249-219.00r

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Shimizu, Kunio, Tamaki, Isao, and Yamashita, Noriyuki, to Sony Corporation. Automatic gain control circuit. 3,790,896, Cl 330-29.000.

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Silverman, Daniel. High density information system using multiple strips. 3,790,755, Cl 235-61.11e

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SKF Kugellagerfabriken GmbH: *See—*
Schon, Rudolf, 3,789,597

Skil Corporation *See—*
Jarecki, John S , 3,789,933

Skillern, John A Concentric target assembly having side storage compartments 3,790,174, Cl 273-105.00a.

Skinner, Jerald Paul Interlocking structural units 3,789,556, Cl 52-93.000

Skold, Mats Folke. Method for joining crosswisely extending reinforcing bars 3,789,474, Cl 29-155.00r.

Skold, Mats Folke Apparatus for joining and supporting crosswisely extending reinforcing bars 3,789,491, Cl 29-212.00r

Skolnick, Michael L. *See—*
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Skutecki, Edmund R *See—*
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Smets, George Joseph, and Vandensavel, Jean Marie, to Agfa-Gevaert N V. Process for insolubilizing polymers with masked isocynates 3,790,377, Cl 96-35.100

Smidth, F L , & Co . *See—*
Andreassen, Victor Paul, 3,790,335

Smith, David K , to United States of America, Army Pulse width selector 3,790,881, Cl 328-112.000

Smith, David P Motorized swimming aid 3,789,792, Cl 115-6.100.

Smith, George Frederick Fork-lift wheeled vehicle 3,790,013, Cl 214-674.000

Smith, Harry F , to Hartman Metal Fabricators, Inc Null track for automatic stacker 3,790,005, Cl 214-16.40a

Smith, Hugh M *See—*
Hafele, Frederick J.; and Smith, Hugh M., 3,790,575.

Smith, Ian Edward, Hastwell, Peter John, and Vermeulen, Marinus Cornelius, to Savin Business Machines Corporation Apparatus for developing electrostatic images 3,789,794, Cl. 118-7.000

Smith, James B Well fluid separation method and apparatus 3,789,583, Cl 55-171.000

Smith, John Cambridge, to Hydro-Mite Limited. Rotary couplings. 3,789,627, Cl 64-31.000.

Smith, Oscar H , to General Motors Corporation Dip casting method using transpirationally cooled mold having relieved impervious outer layer 3,789,909, Cl. 164-87.000

Smith, Russell M , to General Electric Company Individual axle wheel slip control system. 3,790,871, Cl 318-52.000

Smith, Thomas D., and Weston, Jasper B , Jr , to Scientific-Atlanta, Inc. Antenna array for minimizing co-channel interference. 3,790,950, Cl 343-792.500.

Smith, William Stephens, to Dresser Industries, Inc Nut collecting and retaining socket for power tools 3,789,706, Cl 81-57.290

Smithe, F. L., Machine Company, Inc.: *See—*
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Smoot, Charles W.; and Saldenais, Arvids, to Apeco Corporation Carriage adjusting mechanism for camera 3,790,274, Cl. 355-55.000.

Snelling, Charles D.; Andrews, Theodore E.; and Weller, John J , to Armstrong Cork Company, mesne. Rotary casting machine. 3,790,320, Cl. 425-4.00r

Snelson, Jimmy W.. *See—*
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Snodgrass, Robert H.; Carter, James R., and Edstrom, Carl M., to Aluminum Company of America. Method of producing composite metal article. 3,789,497, Cl 29-453.000

Snorkel Tire Equipment Company *See—*
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Snow, Harold F. Method and apparatus for eviscerating clams 3,789,457, Cl. 17-48.000.

Soceite Anonyme pour Tous Apparcielages Mecaniques S.A *See—*
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Bulteau, Gerard C., 3,790,681

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Societe Grenobloise d'Etudes et d'Applications Hydrauliques (SOGREAH): *See—*
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Societe Internationale de Mecanique Industrielle S A.: *See—*
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Societe pour l'Application des Hautes Temperatures (Quartex): *See—*
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Societe pour le Developpement de la Recherche Applique: *See—*
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Solomon, Peter R , to United Aircraft Corporation Variable coupling DC superconducting transformer. 3,790,880, Cl 323-44.00f

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Obsomer, Marc, 3,790,644

Sommer, Reinhold, 50% to Muller, Hans Ski safety binding 3,790,185, Cl. 280-11.35t

Sone, Maso, Okazaki, Mitsutoshi, and Ueyama, Yasuomi, to Japan Exlan Company, Limited. Synthetic fibers for artificial hair and production thereof. 3,790,434, Cl 161-181.000

Song, W R , and Jacobson, Norman, to Esso Research and Engineering Company Lubricating oils containing a vinyl aromatic C_2 to C_8 olefin and C_{12} to C_{20} olefin terpolymer. 3,790,483, Cl 252-59.000

Sony Corporation *See—*
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Soshea Richard W , to Hewlett-Packard Company Efficient red emitting electroluminescent semiconductor 3,790,868, Cl 317-235.00r

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Egerbork, Bo Malte S , Gadefelt, Goran R , Hagbjer, Gunnar Ingemar, and Spang, Kjett Knut I , 3,790,078

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Mohan, William L ; and Willits, Samuel P , 3,790,759

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Speer, Billy L., to Spear Systems, Inc Sewing machine cutter 3,789,782, Cl 112-130.000.

Spencer, Herbert E., and Mitchell, Tommy S Trailer home jack and method of operating the same. 3,789,558, Cl. 52-143.000.

Spengler, Duane E ; and Bartoo, Charles O., to Quaker Oats Company, The. Elevator for toy parking garage 3,789,538, Cl 46-12.000

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Best, Albert M.; and Alverson, Robert M , 3,789,593
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Strenglein, Harry F., 3,789,950.

Spicer, John J. Mobile leaf pulverizer 3,790,094, Cl 241-101.100

Spiegelberg, Hans. *See—*
Edenhofer, Albrecht, and Spiegelberg, Hans, 3,790,583.

Spindt, Charles A.; Shoulders, Kenneth R , and Heynick, Louis N , to Stanford Research Institute. Field emission cathode structures, devices utilizing such structures, and methods of producing such structures. 3,789,471, Cl. 29-25.170.

Spitz, William R *See—*
Taplin, Lael B , Spitz, William R , and Leung, Chun Keung, 3,789,816.

Spoerle, F. Steven, and Palmer, Elmer W , to Nalco Chemical Company. Latices for industrial waste coagulation 3,790,476, Cl 210-47.000.

Sprague, Brinton Abrasive recovery system 3,790,007, Cl 214-17.00d.

Square D Company. *See—*
Kampf, Julian C.; and Retzer, Kenneth W , 3,790,862

Squire, William D *See—*
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Sta-Rite Industries, Inc : *See—*

Reisgies, Rolf W., and Jones, Franklin D., 3,789,798.
Stackhouse, Wells F., to American Locker Company, Inc. Mail box unit 3,790,244, Cl 312-215 000.
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Stand, Mille. *See—*
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Lee, Hwalin, 3,790,680
Leon, Albert M., and Whittington, Robert C., 3,790,628.
Mettinger, Sylvester Martin, 3,790,651
Teach, Eugene G., 3,790,364
Uhing, Eugene Henry; and Toy, Arthur Dock Fon, 3,790,629.
Stegeman, Berend, to Eddy Match Company, Limited Vending machine having lever actuated converter panel 3,790,024, Cl 221-77.000.
Stein, Jay A., and Polucci, Gerald, to American Science & Engineering Inc Radiant energy imaging with rocking scanning 3,790,799, Cl 250-363.000.
Steinhoff, Dieter *See—*
Senning, Alexander, Buchholt, Hans Christian; Bierling, Robert, Steinhoff, Dieter, and Trossmann, Gerhard, 3,790,616
Stellmacher, Wilhelm, to Mannesmann Aktiengesellschaft Steam flow control in continuous casting machines with direct spray water cooling 3,789,913, Cl 164-283 000
Stenger, Donald R., to Hill-Rockford Co Needle bearing assembling machine. 3,789,478, Cl 29-201 000
Stephenson, Robert A., and Zoch, Robert M., Jr., to Enercon Corporation International. Injector apparatus. 3,790,139, Cl 261-18.00a.
Steppan, Hartmut, Uhlig, Fritz; and Giesse, Roland, to Kalle Aktiengesellschaft Light-sensitive diazo copying composition and copying material produced therewith. 3,790,385, Cl 96-75.000
Sterling Drug Inc.: *See—*
Diana, Guy D., 3,790,631
Stern, Eric P Illuminated book support. 3,790,770, Cl. 240-2.00p
Sternberg, Stanley R, Young, James E., and Lennington, John W Method and system for the infrared analysis of gases 3,790,797, Cl 250-345.000.
Sternberg, Stanley R., Young, James F., and Lennington, John W., to Metro Hydraulics, Inc. Method and system for the infrared analysis of gases. 3,790,798, Cl 250-345.000.
Steudler, Frederick W., Jr, to Vallorbs Jewel Company, The Water fountain system 3,789,800, Cl 119-18.000
Stewart, Allstair Templeton. *See—*
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Stewart, Edward F., to International Telephone and Telegraph Corporation Test arrangement for a two-wire telephone channel 3,790,723, Cl 179-175.300.
Stiller, Paul F., to Cornell Aeronautical Laboratory, Inc. Apparatus for counting, differentiating and sorting particles according to their microstructure variations 3,790,760, Cl 235-92 0pc.
Stirling, James Alexander, and Carlton, Gordon Mechanical handling of goods 3,790,010, Cl 214-152.000
Stolzer, Paul, to Keuro Maschinenbau Gesellschaft mit beschrankter Haftung & Co., K G. Bandsaw machine. 3,789,717, Cl 83-796.000
Stone, William C., to United States of America, Army, mesne Tandem solid-hybrid rocket motor 3,789,610, Cl 60-245.000.
Stoneberger, James L., and Sylvester, Charles B., to Utec Constructors, Inc Preparing cable for splicing. 3,790,737, Cl 219-76.000.
Stop-Motion Devices Corporation *See—*
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Storp, Klaus, and Hohne, Reinhard, to Metallgesellschaft Aktiengesellschaft Activated carbon catalyst impregnated with SiO_2 3,790,659, Cl. 423-224.000.
Straceamore, Armand E Unique prewrapped box structure and unique method of making same 3,790,069, Cl 229-87.00r
Straley, James M.. *See—*
Weaver, Max A., and Straley, James M., 3,790,557.
Streckert, Thomas. Veneer handling apparatus 3,789,979, Cl. 209-73.000.
Strenglein, Harry F., to Sperry Rand Corporation Vehicle protective apparatus. 3,789,950, Cl 180-98.000.
Stresau, Richard; and Bonde, Robert, to United States of America, Navy Explosive lead plug. 3,789,764, Cl 102-70.00r.
Stripling, William W., to United States of America, Army Polarized air bearing assembly. 3,789,677, Cl 74-5.700.
Strobel, Felix, and Allenspach, Heinz, to Mettler Instrumente AG Electrical balance including monitoring means. 3,789,937, Cl 177-210.000
Stroh, Alvin L., to McMillin Wire and Plating, Inc. Shelf fixture including an attachment device therefor. 3,789,996, Cl. 211-119.000.
Strohmer, Alfred; and Raj, Joachim, to Knorr-Bremse GmbH. Car stablizing control system. 3,789,769, Cl. 105-164.000.
Strom, Richard A: *See—*
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Stumpf, Walter, to Simmons Company. Method for manufacturing box springs 3,789,495, Cl. 29-429.000.
Stutz, William, to United States Envelope Company. Continuous form envelope assembly. 3,790,068, Cl 229-69 000
Subotta, Reinhard, to Rollei-Werke Franke & Heidecki. Slide projector for ring magazines. 3,790,269, Cl. 353-117.000.
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Sugiya, Yuji, to Casio Computer Co., Ltd Deflection electrode assembly for an ink jet type printing device and a method for manufacturing the same 3,790,953, Cl. 346-75 000.
Sullivan, John L., to Mead Corporation, The. Adjustable binder handle 3,790,050, Cl 224-45 00p
Sullivan, John L., to Mead Corporation, The. Binder carrier and support structure 3,790,242, Cl 312-184 000.
Sulzer Brothers Limited. *See—*
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Suvorov, Nikolai Nikolaevich, Avramenko, Vladimir Grigorievich, Shkilkova, Valentina Nikolaevna, and Zamyshlyaeva, Lidia Ionovna Method of producing indoll and substitution products of the same 3,790,596, Cl 260-319 100.
Suyetani, Shigemitsu Foot support for wheelchairs 3,790,212, Cl. 297-429 000.
Swagert, Dean R. *See—*
Motter, John C., Motter, John C., Jr., and Swagert, Dean R., 3,789,757.
Swain, James C., and Adams, Cecil B., to Abex Corporation. Vane pump having extended undervane suction ports. 3,790,314, Cl 418-1.000
Swatty, Eugene E., to Fluid Controls, Inc. Control valve with power accumulating, snap action, spool drive. 3,790,125, Cl 251-75 000.
Swedish Hospital Supply SHS AB *See—*
Malmstrom, Sven-Erik, 3,789,830
Sweeney, Thomas E., Schweizer, William S., and Morris, James J Flap system. 3,790,106, Cl. 244-42.0eb
Swinson, Weldon F., to White, Harmon, & Associates, Inc Scattered light polariscope 3,790,285, Cl 356-115 000.
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Takasaki, Shigeaki, to Haneshige Tenter Clip Co., Ltd. Tenter clip. 3,789,468, Cl. 26-62.000.
Takazawa, Ietsogu. Double curtain device. 3,789,904, Cl 160-120.000
Takeda Chemical Industries, Ltd.: *See—*
Sakai, Michihiko, Sato, Yasuo, Mortmoro, Rokuya, Konishi, Kazuo; and Maki, Katsuyuki, 3,790,621.

Takeda, Naozi, to Matsushita Electric Industrial Co., Ltd. Disc armature. 3,790,835, Cl. 310-258.000.
Talbot, Richard C.; Rose, Edward; and Roth, Robert A., to Peters Machinery Company. Apparatus for supplying slugs of cookies in preselected side-by-side groups for bagging. 3,789,964, Cl. 192-29 000.
Taliaferro, William D.. *See—*
Henley, Ronald W., and Taliaferro, William D., 3,789,926.
Tall, Leonard H., Carlstedt, Paul A., and Erickson, Arlen J., to CX Processing Laboratories, Inc. Processor S photographic print sorting and packaging machine and method 3,789,571, Cl 53-54 000.
Talmage, Charles Robert. *See—*
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Tam, George M., Gardner, Delbert J., Grabe, Frederick G.; Putt, James B.; Owens, Carl D., and Sisco, William C., to Bendix Corporation, The Diverter valve means for pressure differentially operated servomotor. 3,789,735, Cl 91-1 000.
Tam, Leslie K.: *See—*
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Kominami, Naoya, Tamura, Nobuhiro, Mikami, Hiroshi, and Yamamoto, Etsuo, 3,790,642.
Tan, Yoichi; and Ryo, Toshihiko, to Nippon Electric Company, Limited. Clock pulse regenerating circuit for demodulating input pulse signal having uneven time pulse distribution. 3,790,892, Cl 328-120.000
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Tanaka, Tetsuro Lower speed synchronous motor 3,790,834, Cl 310-162 000.
Tanba, Shigeru, Yoshiyasu, Mitsuo, and Miyabe, Yoshio, to Mitsubishi Petrochemical Company, Limited Synthetic papers and method of making 3,790,435, Cl 161-160.000
Tanigawa, Shizuhiko, Ishikawa, Shinzaburo, and Ono, Natsumi, to Matsushita Electric Industrial Co., Ltd. Card reader. 3,790,758, Cl 235-61 11r
Tanimura, Shigeru, Miura, Nobuaki, Asano, Usamu, and Yamamura, Nobuyuki, to Omron Tatesis Electronics Co Humidity sensitive semiconductor device. 3,790,869, Cl 317-235 00t
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Tawara, Yoshio, and Senno, Harufumi, to Matsushita Electric Industrial Co., Ltd As-cast, rare-earth-Co-Cu permanent magnet material 3,790,414, Cl 148-31.570
Taxin, Harry M.: *See—*
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Tearne, David, and Weissmuller, Adam, to Mosler Safe Company, The Pneumatic tube transmit and receive terminal 3,790,102, Cl. 243-19.000.
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Thom, Robert A. Picture framing mat and edge molding 3,789,529, Cl 40-158.00r.
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- Zundel, Jean Louis Preparation of α-aminoacids from hydantoins. 3,790,599, Cl. 260-326.14t.
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Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

- Bond, Gary L. Process for preparing a flame resistant, heat transfer printed fabric. T919,004, 2–5–74, Cl. 117—36.2.
- Heckendorn, Frank M., II. Automatic control for tow dryers. T913,003, 2–5–74, Cl. 34—55
- Imperial Chemical Industries Ltd. : *See—*
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- Person, Lucien. Mixed acetals and process for their preparation. T919,001, 2–5–74, Cl. 260—615.
- Rose, John B., and I. C. Taylor, to Imperial Chemical Industries Ltd. Aromatic sulphones produced by oxidation of aromatic polymers. T919,002, 2–5–74, Cl. 260—49.
- Taylor, Ian C. : *See—*
  - Rose, John B., and Taylor. T919,002.

LIST OF REISSUE PATENTEES

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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Biomedical Engineering Associates, Inc. : *See—*
  - Birtwell, William C. Re. 27,910.
- Birtwell, William C., to Biomedical Engineering Associates, Inc. Catheter. Re. 27,910, 2–5–74, Cl. 128—349.
- Concrete Formwork Engineers Pty., Ltd. : *See—*
  - King, John C. Re. 27,914.
- Dreyer, John F., to Polacoat Inc. Means for rotating the polarization plane of light and for converting polarized light to non-polarized light. Re. 2,711, 2–5–74, Cl. 350—159.
- Eastman Kodak Co. : *See—*
  - Miller, Howard A. Re. 27,912.
- Huber, Robert, to Societe des Procedes Modernes d'Injection Sopromi. Fuel injection system for internal combustion engines. Re. 27,909, 2–5–74, Cl. 123—32.
- Hutcheson, James L., to Reynolds Metals Co. Easy open pouch construction. Re. 27,913, 2–5–74, Cl. 229—66.
- King, John C., to Concrete Formwork Engineers Pty., Ltd. Scissors-type linkage. Re. 27,914, 2–5–74, Cl. 182—16.
- Kohl, Gerald C., to Medics Research and Development Inc. Cervical biopsy sampling instrument. Re. 27,915, 2–5–74, Cl. 128—2.
- Medics Research and Development Inc. : *See—*
  - Kohl, Gerald C. Re. 27,915.
- Miller, Howard A., to Eastman Kodak Co. Scum-retardant carrier particles and compositions thereof. Re. 27,912, 2–5–74, Cl. 252—62.100.
- Polacoat Inc. : *See—*
  - Dreyer, John F. Re. 2,711.
- Reynolds Metals Co. : *See—*
  - Hutcheson, James L. Re. 27,913.
- Societe des Procedes Modernes d'Injection Sopromi : *See—*
  - Huber, Robert. Re. 27,909.

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- Byrum, Roy L., to Joseph H. Hill Co. Pink rose plant. 3,464, 2–5–74, Cl. 18.
- Byrum, Roy L., to Joseph H. Hill Co. Rose plant. 3,466, 2–5–74, Cl. 26.
- Byrum, Roy L., to Joseph H. Hill Co. Rose plant. 3,468, 2–5–74, Cl. 26.
- Carrion, Alfonzo R. Almond tree. 3,467, 2–5–74, Cl. 30.
- Hayler, Dieter, to Mikkelsens, Inc. Begonia plant. 3,469, 2–5–74, Cl. 68.
- Hill, Joseph H., Co. : *See—*
  - Byrum, Roy L. 3,464.
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  - Byrum, Roy L. 3,468.
- Mikkelsens, Inc. : *See—*
  - Hayler, Dieter. 3,469.
- Pan-American Plant Co. : *See—*
  - Shoesmith, Leonard H. 3,463.
- Shoesmith, Leonard H., to Pan-American Plant Co. Chrysanthemum plant (magician). 3,463, 2–5–74, Cl. 79.
- Poirier, Mary H. Ivy plant. 3,470, 2–5–74, Cl. 67.
- Shammarello, Anthony M. Azalea plant. 3,465, 2–5–74, Cl. 57.

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- AB Gustavsbergs Fabriker. *See—*
  - Johlin, Sven-Eric. 230,234.
- ABC Record & Tape Sales Corp. : *See—*
  - Dolgoff, Welden L. 230,229.
- Adler, Kurt S., Inc. : *See—*
  - Laser, Milton. 230,322.
- Alexander, George F. : *See—*
  - Oestmann, Eldon D., Krolak, Alexander, and Duke. 230,300.
- Allison, Paul. Boat. 230,258, 2–5–74, Cl. D12—62.
- Anchor Hocking Corp. : *See—*
  - Schaefer, Howard A. 230,319.
- Arvin Industries, Inc. : *See—*
  - Miles, John K. 230,249.
- Bank, Abraham H. Refrigerator. 230,315, 2–5–74, Cl. D67—3.
- Beach, Daryl R., and T. Oshida, to Kabushiki Kaisha Morita Seisakusho. Dental operating chair seat. 230,237, 2–5–74, Cl. D6—197.
- Beatrice Foods Co. : *See—*
  - Lindner, Henry. 230,317.
- Bentley, Maxwell. Wine rack. 230,242, 2–5–74, Cl. D7—71.
- Blumcraft of Pittsburgh : *See—*
  - Horgan, William J., Jr. 230,250.
- Bocade, Emil J., to Keeler Brass Co. Backing plate for pulls. 230,245, 2–5–74, Cl. D8—179.
- Bueckle, George F. Three-way dental syringe. 230,272, 2–5–74, Cl. D24—1.
- Caterpillar Tractor Co. : *See—*
  - Oestmann, Eldon D., Krolak, Alexander, and Duke. 230,300.
- Charter Industries, Inc. : *See—*
  - Howard, Thomas C. 230,264.
- Ckola, John L. Beverage bottle. 230,256, 2–5–74, Cl. D9—102.
- C-O, Inc. : *See—*
  - Ollman, Malvin L. 230,265.
- Coda, Alfred. Picture frame. 230,238, 2–5–74, Cl. D6—241.
- Coffin, Stewart T. Symmetrical polyhedral interlocking puzzle. 230,288, 2–5–74, Cl. D34—15.
- Colgate-Palmolive Co. : *See—*
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  - Purcell, William F. H., Conner, Diffrient, and Pelly. 230,299.
- Cooperstein, Claire. Luggage bag. 230,327, 2–5–74, Cl. D87—5.
- Corini, Louis J., to Melbro Corp. Mobile cart. 230,257, 2–5–74, Cl. D12—27.
- Cox, Michael D. : *See—*
  - Shenton, Christopher S., and Cox. 230,284.
- Crowe, Robert W. Display for cut flowers and potted plants. 230,230, 2–5–74, Cl. D6—148.
- Dayton Progress Corp. : *See—*
  - Smith, Robert E. 230,254.

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DeGraw, Robert E. Toy logging truck. 230,287, 2–5–74, Cl. D34—15.
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Leinhauser, Joe P., J. L. Vogt, J. M. Conner, and C. W. Pelly, to Deere & Co. Combined hood and grille for a self-propelled forage harvester or the like. 230,296, 2–5–74, Cl. D40—1.
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Oestmann, Eldon D., R. L. Krolak, G. F. Alexander, and J. T. Duke, to Caterpillar Tractor Co. Track assembly. 230,300, 2–5–74, Cl. D40—5.
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Wilkes, Lance A., and E. Vescuso, Jr., to Systems Metals, Inc. Handle for an instrument case. 230,252, 2–5–74, Cl. D8—154.
Woodward, Frederick W., to Donald and B. Bernice Thornber. Tent for rear-doored vehicle. 230,261, 2–5–74, Cl. D12—156.

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205.14A	3,789,466
230AL	3,789,492
230AT	3,789,467
CLASS 26	
62	3,789,468
CLASS 28	
72 6	3,789,469
CLASS 29	
25 13	3,789,470
25 17	3,789,471
155R	3,789,474
159.02	3,789,475
163 5R	3,789,476
182	3,790,351
182.1	3,790,352
182 7	3,790,353
191	3,790,354
195	3,790,355
200P	3,789,477
201	3,789,478
	3,790,356
202R	3,789,479
203B	3,789,483
203C	3,789,480
203D	3,789,482
	3,789,485
203H	3,789,484
203P	3,789,481
207 5SL	3,789,487
207.5ST	3,789,486
208C	3,789,489
208D	3,789,488
211R	3,789,490
212R	3,789,491
282	3,789,493
423	3,789,494
429	3,789,495
453	3,789,496
	3,789,497
470 9	3,789,498
472 9	3,789,499
568	3,789,472
	3,789,473
	3,789,500
	3,789,501
570	3,789,502
571	3,789,503
	3,789,504
603	3,789,505
CLASS 32	
27	3,789,506
59	3,789,462
CLASS 33	
1SD	3,789,507
148D	3,789,508
185R	3,789,509
306	3,789,510
312	3,789,511
393	3,789,512
CLASS 34	
10	3,789,513
82	3,789,514
92	3,789,515
216	3,789,516
CLASS 35	
9F	3,789,517
17	3,789,518
19R	3,789,519
43	3,789,521
48A	3,789,520
60	3,789,522
CLASS 36	
2 5AH	3,789,523
CLASS 37	
118R	3,789,524
CLASS 40	
28C	3,789,525
124	3,789,526
	3,789,530
152	3,789,527
	3,789,528
158R	3,789,529
CLASS 42	
87	3,789,531
CLASS 43	
14	3,789,532
18R	3,789,533
19 2	3,789,534
22	3,789,535
42 5	3,789,536
112	3,789,537
CLASS 44	
3R	3,790,357
62	3,790,358
	3,790,359
CLASS 46	
1K	3,789,542
1R	3,789,543
12	3,789,538
41	3,789,544
62	3,789,545
116	3,789,546
135A	3,789,539
158	3,789,547
202	3,789,540
215	3,789,541
CLASS 49	
162	3,789,548
181	3,789,549
503	3,789,550
CLASS 51	
92R	3,789,551
135BT	3,789,552
237T	3,789,553
274	3,789,554
391	3,789,555
CLASS 52	
93	3,789,556
126	3,789,557
127	3,789,564
143	3,789,558
169	3,789,559
236	3,789,560
282	3,789,567
456	3,789,561
573	3,789,566
648	3,789,562
731	3,789,563
747	3,789,565
	3,789,568
CLASS 53	
28	3,789,569
29	3,789,570
54	3,789,571
55	3,789,573
63	3,789,574
160	3,789,575
234	3,789,576
381A	3,789,572
CLASS 55	
39	3,789,578
42	3,789,577
50	3,789,579
71	3,789,580
73	3,789,581
92	3,789,582
171	3,789,583
201	3,789,584
222	3,789,585
228	3,789,586
290	3,789,587
419	3,789,588
481	3,789,589
CLASS 56	
14 7	3,789,590
16 9	3,789,591
328R	3,789,592
341	3,789,593
CLASS 57	
10	3,789,594
34R	3,789,595
55	3,789,596
58 89	3,789,597
71	3,789,598
CLASS 58	
23R	3,789,599
39 5	3,789,600
50R	3,789,601
58	3,789,602
	3,789,603
59	3,789,604
88R	3,789,605
90R	3,789,606
CLASS 59	
84	3,789,607
CLASS 60	
202	3,789,608
219	3,789,609
245	3,789,610
566	3,789,611
CLASS 61	
1R	3,789,613
1	3,789,612
11	3,789,615
72 6	3,789,614
CLASS 62	
50	3,789,616
115	3,789,617
236	3,789,618
262	3,789,619
324	3,789,621
344	3,789,620
396	3,789,622
CLASS 64	
17	3,789,623
21	3,789,624
	3,789,625
	3,789,626
31	3,789,627
CLASS 65	
27	3,789,628
32	3,790,360
99A	3,790,361
174	3,790,362
CLASS 66	
50R	3,789,629
78	3,789,630
163	3,789,631
CLASS 69	
42	3,789,632
CLASS 70	
110	3,789,633
186	3,789,634
232	3,789,635
252	3,789,636
299	3,789,637
366	3,789,638
437	3,789,639
CLASS 71	
106	3,790,363
120	3,790,364
CLASS 72	
36	3,789,640
45	3,789,641
60	3,789,642
190	3,789,646
236	3,789,647
316	3,789,648
350	3,789,649
360	3,789,650
367	3,789,651
407	3,789,689
457	3,789,652
469	3,789,643
	3,789,644
CLASS 73	
6	3,789,653
15R	3,789,654
24	3,789,655
71.5U	3,789,656
88R	3,789,657
117 3	3,789,658
134	3,789,659
169	3,789,660
178T	3,789,661
190R	3,789,662
194C	3,789,663
209	3,789,664
343R	3,789,665
398R	3,789,666
406	3,789,667
418	3,789,668
419	3,789,669
421R	3,789,670
423R	3,789,671
491	3,789,672
505	3,789,673
517R	3,789,674
CLASS 74	
5 7	3,789,677
18 2	3,789,675
27	3,789,676
41	3,789,679
89	3,789,678
102	3,789,680
143	3,789,681
230 17D	3,789,684
230 7	3,789,682
230 8	3,789,683
242 13A	3,789,686
242 3	3,789,685
243DR	3,789,687
365	3,789,688
411	3,789,690
432	3,789,691
480R	3,789,692
491	3,789,645
513	3,789,693
531	3,789,694
568R	3,789,695
594 1	3,789,696
677	3,789,697
752C	3,789,698
796	3,789,699
801	3,789,700
813R	3,789,701
859	3,789,702
860	3,789,703
CLASS 75	
20F	3,790,365
	3,790,367
23	3,790,366
49	3,790,368
	3,790,369
108	3,790,370
134F	3,790,372
146	3,790,373
170	3,790,371
208R	3,790,374
CLASS 81	
9 2	3,789,704
13	3,789,705
57.29	3,789,706
57 39	3,789,707
CLASS 82	
5 5	3,789,708
9	3,789,709
CLASS 83	
16	3,789,710
61	3,789,711
171	3,789,712
184	3,789,713
272	3,789,714
663	3,789,715
747	3,789,716
796	3,789,717
CLASS 84	
1.01	3,789,718
	3,790,693
115	3,789,719
322	3,789,720
380A	3,789,721
426	3,789,722
470	3,789,723
CLASS 85	
32V	3,789,724
47	3,789,725
62	3,789,726
71	3,789,727
	3,789,728
CLASS 89	
1 8	3,789,729
183	3,789,730
CLASS 90	
11R	3,789,731
13 6	3,789,732
14	3,789,733
24B	3,789,734
CLASS 91	
1	3,789,735
3	3,789,736
168	3,789,738
358A	3,789,739
416	3,789,737
486	3,789,740
488	3,789,741
CLASS 92	
26	3,789,742
187	3,789,743
CLASS 93	
1C	3,789,744
8R	3,789,745
39 2	3,789,746
125	3,790,390
CLASS 96	
1R	3,790,375
27	3,790,376
35 1	3,790,377
48PD	3,790,380
48R	3,790,378
55	3,790,379
66 1	3,790,381
66 4	3,790,383
74	3,790,384
75	3,790,382
	3,790,385
94R	3,790,386
94	3,790,387
100	3,790,388
115R	3,790,389
CLASS 98	
33	3,789,747
CLASS 99	
171LP	3,790,684
330	3,790,391
340	3,789,748
391	3,789,749
536	3,789,750
CLASS 100	
19R	3,789,751
98R	3,789,752
CLASS 101	
1	3,789,753
37	3,789,754
95	3,789,755
128 2	3,789,756
153	3,789,757
CLASS 102	
13	3,789,758
23	3,789,759
24HC	3,789,760
27R	3,789,761
28R	3,789,762
49 2	3,789,763
70R	3,789,764
CLASS 104	
96	3,789,765
172BT	3,789,767
172B	3,789,766
279	3,789,768
CLASS 105	
164	3,789,769
168	3,789,770
199C	3,789,771
240	3,789,772
248	3,789,773
367	3,789,774
	3,789,775
377	3,789,776
CLASS 106	
1	3,790,392
56	3,790,393
97	3,790,394
122	3,790,395
288B	3,790,396
CLASS 108	
4	3,789,777
94	3,789,778
101	3,789,779
CLASS 110	
1A	3,789,780
CLASS 112	
121 29	3,789,781
130	3,789,782
220	3,789,783
246	3,789,784
CLASS 113	
1C	3,789,786
1G	3,789,785
116R	3,789,787
CLASS 114	
16A	3,789,788
66 5H	3,789,789
106	3,789,790
227	3,789,791
CLASS 115	
6.1	3,789,792
CLASS 116	
114R	3,789,793
CLASS 117	
17 5	3,790,397
37R	3,790,398
44	3,790,399
47A	3,790,400
59	3,790,401
68	3,790,402
76T	3,790,403
106R	3,790,404
201	3,790,405

227	3,790,406
240	3,790,407
CLASS 118	
7	3,789,794
262	3,789,795
612	3,789,796
CLASS 119	
1	3,789,797
14 08	3,789,798
15	3,789,799
18	3,789,800
29	3,789,801
48	3,789,802
CLASS 122	
1R	3,789,804
235R	3,789,805
406B	3,789,806
CLASS 123	
1R	3,789,807
8 05	3,789,809
27GE	3,789,820
32EA	Re 27,909
71R	3,789,808
102	3,789,810
117A	3,789,811
	3,789,812
119F	3,789,813
	3,789,814
	3,789,815
119R	3,789,816
133	3,789,817
139AM	3,789,818
140MP	3,789,819
CLASS 126	
33 9	3,789,826
38	3,789,821
41R	3,789,822
42	3,789,823
59 5	3,789,824
140	3,789,825
344	3,789,827
CLASS 128	
1R	3,789,828
2B	Re 27,915
2F	3,789,830
2R	3,789,832
2V	3,789,833
2 05F	3,789,831
2 05	3,789,841
2 1Z	3,789,834
18	3,789,835
25B	3,789,836
102	3,789,829
130	3,789,838
142 7	3,789,839
145 8	3,789,837
165	3,789,842
173	3,789,843
235	3,789,844
260	3,789,840
264	3,789,845
283	3,789,846
303R	3,789,847
305	3,789,848
323	3,789,849
329	3,789,850
335	3,789,851
347	3,789,852
349B	Re 27,910
399	3,789,853
419P	3,789,854
CLASS 131	
9	3,789,855
CLASS 132	
92R	3,789,859
880 007	3,789,857
880 5	3,789,856
890	3,789,858
CLASS 134	
104	3,789,860
166C	3,789,861
CLASS 136	
13	3,790,408
20	3,790,409
122	3,790,410
CLASS 137	
54	3,789,863
119	3,789,864
122	3,789,865
150	3,789,862
219	3,789,866
227	3,789,867
317	3,789,868
351	3,789,869
454.5	3,789,870
493.002	3,789,871
514	3,789,872
514 003	3,789,873
527	3,789,874
553	3,789,875
554	3,789,876
590	3,789,877
	3,789,878
614 11	3,789,879
625 3	3,789,880
625 48	3,789,881
802	3,789,882
824	3,789,883
832	3,789,884
CLASS 138	
103	3,789,885
146	3,789,886
CLASS 139	
123	3,789,887
CLASS 141	
4	3,789,888
140	3,789,889
144	3,789,890
331	3,789,891
CLASS 144	
144 5	3,789,892
208E	3,789,893
288A	3,789,894
CLASS 145	
46	3,789,895
54	3,789,896
CLASS 148	
1 5	3,790,411
	3,790,412
16 5	3,790,413
31 57	3,790,414
CLASS 149	
2	3,790,415
19	3,790,416
CLASS 150	
11	3,789,897
CLASS 152	
209	3,789,898
356	3,789,899
	3,789,900
CLASS 156	
62 8	3,790,417
79	3,790,418
149	3,790,419
242	3,790,421
251	3,790,420
306	3,790,422
331	3,790,423
379	3,790,424
416	3,790,425
435	3,790,426
544	3,790,427
559	3,790,428
584	3,790,429
CLASS 157	
1 1	3,789,901
CLASS 159	
49	3,789,902
CLASS 160	
75	3,789,903
120	3,789,904
168	3,789,905
199	3,789,906
CLASS 161	
1	3,790,430
3 5	3,790,431
93	3,790,432
113	3,790,433
160	3,790,435
161	3,790,436
167	3,790,439
170	3,790,437
172	3,790,438
181	3,790,434
198	3,790,441
	3,790,442
CLASS 162	
158	3,790,443
CLASS 164	
7	3,789,907
52	3,789,908
82	3,789,911
87	3,789,909
121	3,789,910
243	3,789,912
283	3,789,913
339	3,789,914
CLASS 165	
1	3,789,915
8	3,789,916
	3,789,917
19	3,789,918
101	3,789,919
105	3,789,920
CLASS 166	
55.1	3,789,923
105.1	3,789,924
125	3,789,925
224R	3,789,926
282	3,789,927
500	3,789,921
	3,789,922
CLASS 172	
709	3,789,928
798	3,789,929
CLASS 173	
1	3,789,930
22	3,789,931
43	3,789,932
48	3,789,933
93 5	3,789,934
CLASS 174	
23R	3,790,694
28	3,790,695
35MS	3,790,696
102	3,790,697
152R	3,790,698
CLASS 175	
40	3,789,935
50	3,789,936
CLASS 177	
210	3,789,937
CLASS 178	
2A	3,790,699
5 1	3,790,700
5 4CD	3,790,701
5 4R	3,790,702
6 6R	3,790,703
6 8	3,790,704
7 1	3,790,705
	3,790,706
7 2	3,790,707
17C	3,790,708
18	3,790,709
69 5DC	3,790,710
CLASS 179	
1GP	3,790,711
1ST	3,790,712
15AL	3,790,717
15AT	3,790,713
15BS	3,790,716
15BT	3,790,714
15BV	3,790,715
17D	3,790,718
18AD	3,790,719
81R	3,789,803
84UF	3,790,720
90BB	3,790,722
90B	3,790,721
175 3	3,790,723
180	3,790,724
CLASS 180	
5R	3,789,938
6 48	3,789,940
6 5	3,789,939
9 22	3,789,941
9 44	3,789,942
66R	3,789,943
68P	3,789,944
69R	3,789,945
79 2B	3,789,946
79 3	3,789,947
91	3,789,948
	3,789,949
98	3,789,950
CLASS 181	
5VM	3,789,951
31B	3,789,953
33K	3,789,954
500AP	3,789,952
CLASS 182	
16	Re 27,914
78	3,789,955
CLASS 184	
6 12	3,789,956
CLASS 186	
1AC	3,789,957
CLASS 187	
8 49	3,789,958
CLASS 188	
71 9	3,789,959
74	3,789,960
345	3,789,961
	3,789,962
CLASS 191	
29	3,790,725
CLASS 192	
3 57	3,789,963
29	3,789,964
85V	3,789,965
111A	3,789,966
	3,789,967
CLASS 194	
1N	3,789,968
CLASS 195	
47	3,790,444
51R	3,790,445
66R	3,790,446
103 5R	3,790,447
CLASS 197	
17	3,789,970
18	3,789,971
CLASS 198	
16R	3,789,972
19	3,789,973
20	3,789,974
180	3,789,975
219	3,789,976
220BC	3,789,977
CLASS 200	
38B	3,790,726
61 18	3,790,728
61 49	3,790,727
61 88	3,790,729
153SC	3,790,731
153V	3,790,730
166BB	3,790,732
166J	3,790,733
168G	3,790,734
CLASS 201	
39	3,790,448
CLASS 204	
1T	3,790,449
14N	3,790,450
15	3,790,451
29	3,790,452
35N	3,790,453
49	3,790,454
51	3,790,455
61	3,790,456
96	3,790,458
99	3,790,457
157 1	3,790,459
159 23	3,790,460
163R	3,790,462
180R	3,790,461
195F	3,790,463
212	3,790,464
266	3,790,465
300	3,790,466
CLASS 208	
8	3,790,467
10	3,790,468
	3,790,469
58	3,790,470
111	3,790,471
	3,790,472
139	3,790,473
181	3,790,474
CLASS 209	
10	3,789,978
73	3,789,979
74R	3,789,980
78	3,789,981
80 5	3,789,982
111 6	3,789,983
505	3,789,984
CLASS 210	
31C	3,790,475
47	3,790,476
	3,790,477
77	3,789,985
121	3,789,986
232	3,789,987
242	3,789,988
284	3,789,989
310	3,789,990
317	3,789,991
405	3,789,992
500	3,789,993
CLASS 211	
86	3,789,994
113	3,789,995
119	3,789,996
CLASS 212	
11	3,789,997
125	3,789,998
CLASS 213	
8	3,789,999
CLASS 214	
1BD	3,790,001
1CM	3,790,002
1S	3,790,003
6H	3,790,004
16 4A	3,790,005
	3,790,006
17D	3,790,007
63	3,790,008
152	3,790,009
	3,790,010
302	3,790,011
454	3,790,012
674	3,790,013
CLASS 215	
9	3,790,014
	3,790,015
11E	3,790,017
112	3,790,016
CLASS 219	
10 49	3,790,735
	3,790,736
76	3,790,737
85	3,790,738
97	3,790,739
98	3,790,740
102	3,790,741
121LM	3,790,744
121P	3,790,742
130	3,790,743
203	3,790,745
213	3,790,746
216	3,790,747
219	3,790,748
424	3,790,749
444	3,790,750
522	3,790,752
525	3,790,751
528	3,790,753
CLASS 220	
4C	3,790,018
16R	3,790,019
46R	3,790,020
63R	3,790,021
CLASS 221	
2	3,790,022
77	3,790,024
200	3,790,025
211	3,790,026
274	3,790,027
304	3,790,023
CLASS 222	
52	3,790,042
122 4	3,790,028
129 4	3,790,029
135	3,790,030
136	3,790,031
146HA	3,790,033
146	3,790,032
153	3,790,034
178	3,790,035
194	3,790,036
324	3,790,037
386	3,790,038
390	3,790,048
394	3,790,039
413	3,790,040
CLASS 223	
46	3,790,041
61	3,790,043
86	3,790,044
87	3,790,045
92	3,790,046
112	3,790,047
CLASS 224	
45P	3,790,049
	3,790,050
CLASS 225	
1	3,790,051
2	3,790,052
48	3,790,053
93 5	3,790,054
CLASS 226	
174	3,790,055
195	3,790,056
CLASS 227	
19	3,790,057
CLASS 228	
1	3,790,059
2	3,790,058
3	3,790,060
CLASS 229	
2 5	3,790,061
	3,790,062
29M	3,790,063
39R	3,790,064
40	3,790,065
52B	3,790,066
55	3,790,067
66	Re 27,913
69	3,790,068
87R	3,790,069
92 8	3,790,070
CLASS 234	
1	3,790,071
CLASS 235	
54F	3,790,073
54R	3,790,072
61 11E	3,790,755
	3,790,756
61 11R	3,790,758
61 12R	3,790,757
61 7B	3,790,754
89R	3,790,074
92PC	3,790,760
92PD	3,790,761
92SB	3,790,759
92V	3,790,762
150.1	3,790,763
	3,790,764
	3,790,765
150 25	3,790,766
151.3	3,790,910
151 31	3,790,767
152	3,790,768
153AK	3,790,769
CLASS 236	
49	3,790,075
54	3,790,076
101	3,790,077
CLASS 238	
2	3,790,078
CLASS 239	
3	3,790,079
8	3,790,080
55	3,790,081
240	3,790,082
284	3,790,083
291	3,790,084
	3,790,085
406	3,790,086
418	3,790,087
432	3,790,088
573	3,790,089
666	3,790,090
CLASS 240	
2P	3,790,770
2 25	3,790,775
7 1LJ	3,790,771
10R	3,790,772
81BD	3,790,773
147	3,790,774
CLASS 241	
24	3,790,091
38	3,790,092
73	3,790,093
101 1	3,790,094
103	3,790,095
CLASS 242	
55	3,790,096
55 53	3,790,097
107 4	3,790,098
	3,790,099
118 32	3,790,100
CLASS 243	
19	3,790,101
	3,790,102
CLASS 244	
3 23	3,790,103
3 27	3,790,104
12R	3,790,105
42CB	3,790,106
42CC	3,790,107
83D	3,790,108
105	3,790,109
110H	3,790,110
116	3,790,111
149	3,790,113
153R	3,790,112
CLASS 246	
40	3,790,776
169A	3,790,777
182C	3,790,778
	3,790,779
187C	3,790,780
CLASS 248	
13	3,790,114
19	3,790,115
124	3,790,116
241	3,790,117
311	3,790,118
400	3,790,119
CLASS 249	
50	3,790,120
219R	3,790,121
CLASS 250	
71R	3,790,783
202	3,790,788
209	3,790,789
211J	3,790,790
227	3,790,791
251	3,790,787
	3,790,793
278	3,790,792
310	3,790,781
338	3,790,795
339	3,790,796
345	3,790,797
	3,790,798
352	3,790,794
361	3,790,782
362	3,790,784
	3,790,786
363	3,790,785
	3,790,799
372	3,790,800
453	3,790,801
476	3,790,802
490	3,790,803
506	3,790,804
522	3,790,805
CLASS 251	
11	3,790,122
31	3,790,123
58	3,790,124
75	3,790,125
89 5	3,790,126
129	3,790,127

148	3,790,128
297	3,790,129
306	3,790,130
	3,790,131
312	3,790,132
CLASS 252	
34	3,790,478
41	3,790,479
49 9	3,790,481
59	3,790,480
	3,790,483
62 1	Re 27,912
	3,790,485
77	3,790,486
78	3,790,487
89	3,790,484
	3,790,488
103	3,790,489
301 1R	3,790,440
	3,790,492
	3,790,493
301 4F	3,790,490
301 5	3,790,494
313R	3,790,495
316	3,790,497
392	3,790,496
408	3,790,498
431R	3,790,499
437	3,790,500
	3,790,501
439	3,790,502
442	3,790,503
463	3,790,505
466PT	3,790,504
525	3,790,482
CLASS 254	
50 2	3,790,134
86R	3,790,133
CLASS 256	
17	3,790,135
CLASS 257	
301 2W	3,790,491
CLASS 259	
1R	3,790,137
41	3,790,138
192	3,790,136
CLASS 260	
2A	3,790,506
2 5AT	3,790,508
2 5AW	3,790,509
2 5P	3,790,510
2 5R	3,790,507
5	3,790,511
14	3,790,512
15	3,790,513
17 4S1	3,790,514
18N	3,790,515
	3,790,516
23H	3,790,517
25	3,790,518
28 5AS	3,790,519
29 6F	3,790,520
29 6H	3,790,538
29 6N	3,790,521
30 4FP	3,790,522
30 6R	3,790,523
45 8NZ	3,790,525
45 8N	3,790,524
45 85S	3,790,526
46 5R	3,790,527
47C	3,790,528
72R	3,790,529
77 5R	3,790,530
78R	3,790,531
78 4LP	3,790,532
78 5R	3,790,533
79	3,790,535
79 1	3,790,536
79 5B	3,790,534
80 3N	3,790,537
80 7	3,790,539
80 77	3,790,540
88 2C	3,790,541
92 8R	3,790,542
93 1	3,790,543
	3,790,544
	3,790,545
	3,790,546
93 5R	3,790,547
94 3	3,790,551
94 8	3,790,549
94 9B	3,790,548
94 9P	3,790,550
112B	3,790,552
112G	3,790,553
112 5	3,790,554
	3,790,555
141	3,790,556
158	3,790,557
209 5	3,790,558
210E	3,790,559
210R	3,790,560
212	3,790,561
231R	3,790,562
239 3R	3,790,563
239 55C	3,790,564
243C	3,790,565
	3,790,567
243R	3,790,566
247 1	3,790,568
247 2B	3,790,569
249 8	3,790,570
250A	3,790,571
	3,790,572
256 4F	3,790,573
268PC	3,790,574
279R	3,790,575
286R	3,790,576
287R	3,790,577
	3,790,578
293 58	3,790,579
	3,790,580
293 71	3,790,581
294 8F	3,790,584
294 8G	3,790,583
294 8K	3,790,582
295AM	3,790,585
296H	3,790,586
304	3,790,587
306 8D	3,790,588
	3,790,589
	3,790,590
307H	3,790,591
309	3,790,592
	3,790,593
	3,790,594
309 2	3,790,595
319 1	3,790,596
326 14T	3,790,598
	3,790,599
326 5S	3,790,597
330 5	3,790,600
340 5	3,790,601
348 6	3,790,602
360	3,790,603
383	3,790,604
397 5	3,790,605
401	3,790,606
408	3,790,607
409	3,790,608
413	3,790,609
429J	3,790,610
429 7	3,790,611
448 2B	3,790,612
448 8R	3,790,613
453R	3,790,614
455A	3,790,615
456A	3,790,616
465 8D	3,790,617
471A	3,790,618
471C	3,790,619
471R	3,790,620
479C	3,790,621
481R	3,790,623
485H	3,790,622
524R	3,790,624
535P	3,790,625
537P	3,790,626
543H	3,790,627
	3,790,628
543P	3,790,629
553DA	3,790,630
553A	3,790,631
557B	3,790,632
561B	3,790,633
583N	3,790,634
586B	3,790,635
586R	3,790,636
600	3,790,637
606 5P	3,790,638
	3,790,639
615R	3,790,640
621D	3,790,642
621R	3,790,641
648R	3,790,643
876R	3,790,644
884	3,790,645
894	3,790,646
897R	3,790,647
970	3,790,648
973	3,790,649
CLASS 261	
18A	3,790,139
62	3,790,140
77	3,790,141
124	3,790,142
CLASS 264	
102	3,790,650
135	3,790,651
146	3,790,652
171	3,790,653
177	3,790,654
210F	3,790,655
228	3,790,657
315	3,790,656
CLASS 266	
16	3,790,143
23E	3,790,144
33R	3,790,145
CLASS 267	
64R	3,790,146
65B	3,790,147
73	3,790,148
110	3,790,149
151	3,790,150
	3,790,151
CLASS 269	
7	3,790,152
21	3,790,153
22	3,790,154
60	3,790,155
CLASS 270	
30	3,790,156
62	3,790,157
CLASS 271	
4	3,790,158
	3,790,159
18R	3,790,160
117	3,790,161
118	3,790,162
165	3,790,163
CLASS 272	
57R	3,790,164
CLASS 273	
1R	3,790,165
34A	3,790,166
43R	3,790,167
54B	3,790,168
86R	3,790,169
88	3,790,170
95A	3,790,171
101 2	3,790,172
102 2R	3,790,173
105A	3,790,174
160	3,790,175
186R	3,790,176
CLASS 274	
1A	3,790,177
CLASS 277	
95	3,790,178
124	3,790,179
134	3,790,180
CLASS 279	
4	3,790,181
43	3,790,182
CLASS 280	
5A	3,790,183
11 13J	3,790,184
11 2	3,790,187
11 35C	3,790,186
11 35T	3,790,185
423R	3,790,189
423	3,790,188
430	3,790,190
456	3,790,191
507	3,790,192
CLASS 283	
57	3,790,193
CLASS 285	
373	3,790,194
CLASS 290	
37	3,790,806
CLASS 292	
140	3,790,196
251 5	3,790,197
317	3,790,198
336 3	3,790,199
CLASS 293	
98	3,790,200
CLASS 294	
3 5	3,790,201
19A	3,790,202
31R	3,790,203
110R	3,790,204
115	3,790,205
CLASS 296	
1S	3,790,206
23G	3,790,207
CLASS 297	
75	3,790,211
386	3,790,208
389	3,790,209
429	3,790,212
CLASS 299	
8	3,790,213
	3,790,214
11	3,790,215
43	3,790,210
CLASS 301	
1	3,790,216
12R	3,790,217
36R	3,790,218
63DD	3,790,219
63D	3,790,220
CLASS 303	
6C	3,790,221
7	3,790,807
9	3,790,222
19	3,790,223
21AF	3,790,226
21BE	3,790,227
21F	3,790,224
	3,790,225
	3,790,228
52	3,790,229
CLASS 305	
22	3,790,230
35EB	3,790,231
CLASS 307	
10R	3,790,808
41	3,790,809
66	3,790,810
94	3,790,811
110	3,790,812
115	3,790,813
119	3,790,814
141	3,790,815
149	3,790,816
214	3,790,817
229	3,790,819
235R	3,790,818
237	3,790,820
247A	3,790,821
254	3,790,822
255	3,790,823
256	3,790,824
304	3,790,825
CLASS 308	
6R	3,790,233
	3,790,234
10	3,790,235
23	3,790,236
159	3,790,237
187 1	3,790,238
206	3,790,239
207	3,790,240
CLASS 310	
4	3,790,829
8 1	3,790,826
9 1	3,790,827
9 7	3,790,828
42	3,790,830
74	3,790,831
113	3,790,832
162	3,790,833
	3,790,834
258	3,790,835
CLASS 312	
111	3,790,241
184	3,790,242
214	3,790,243
215	3,790,244
CLASS 313	
13	3,790,836
44	3,790,837
60	3,790,838
92R	3,790,839
105	3,790,840
108B	3,790,841
118	3,790,842
299	3,790,000
CLASS 315	
5 34	3,790,843
11	3,790,844
22	3,790,851
31R	3,790,845
91	3,790,846
151	3,790,847
155	3,790,848
169TV	3,790,849
	3,790,850
267	3,790,852
CLASS 317	
2F	3,790,854
5	3,790,855
16	3,790,856
18D	3,790,857
99	3,790,858
100	3,790,859
	3,790,860
114	3,790,861
148 5B	3,790,863
148 5R	3,790,862
231	3,790,864
234R	3,790,865
	3,790,866
	3,790,867
235R	3,790,853
	3,790,868
235T	3,790,869
238	3,790,870
CLASS 318	
52	3,790,871
139	3,790,872
227	3,790,873
327	3,790,874
573	3,790,875
603	3,790,876
CLASS 321	
27R	3,790,877
CLASS 323	
17	3,790,878
22T	3,790,879
44F	3,790,880
CLASS 324	
48	3,790,882
71CP	3,790,883
72	3,790,884
73R	3,790,885
99D	3,790,886
111	3,790,887
138	3,790,888
167	3,790,889
189	3,790,890
CLASS 325	
348	3,790,891
CLASS 328	
112	3,790,881
120	3,790,892
151	3,790,893
164	3,790,894
CLASS 329	
157	3,790,895
CLASS 330	
29	3,790,896
30D	3,790,897
CLASS 331	
94 5C	3,790,902
94 5	3,790,898
	3,790,899
	3,790,900
	3,790,901
113R	3,790,903
CLASS 333	
16	3,790,906
22R	3,790,904
30R	3,790,907
31A	3,790,908
95A	3,790,905
CLASS 334	
14	3,790,909
CLASS 335	
201	3,790,911
205	3,790,912
CLASS 338	
308	3,790,913
CLASS 339	
14P	3,790,914
88R	3,790,915
95R	3,790,916
	3,790,917
97P	3,790,919
97R	3,790,918
116C	3,790,920
125R	3,790,921
126R	3,790,922
128	3,790,923
258R	3,790,924
CLASS 340	
3R	3,790,925
	3,790,926
5R	3,790,927
8R	3,790,928
15 5MC	3,790,929
18NC	3,790,930
60	3,790,931
62	3,790,932
63	3,790,933
81R	3,790,934
146 1F	3,790,954
146 3MA	3,790,955
148	3,790,956
149R	3,790,957
172 5	3,790,958
	3,790,959
	3,790,960
173DR	3,790,961
174TF	3,790,935
244E	3,790,936
274	3,790,944
280	3,790,945
336	3,790,946
347AD	3,790,947
378R	3,790,937
CLASS 343	
7 7	3,790,938
10	3,790,939
12R	3,790,940
100PE	3,790,941
106R	3,790,942
	3,790,943
113R	3,790,948
719	3,790,949
792 5	3,790,950
CLASS 346	
7	3,790,951
33R	3,790,952
75	3,790,953
CLASS 350	
3.5	3,790,245
7	3,790,246
	3,790,247
10	3,790,248
91	3,790,249
159	Re 27,911
160LC	3,790,251
	3,790,253
160R	3,790,250
	3,790,252
183	3,790,254
184	3,790,255
287	3,790,256
294	3,790,257
	3,790,258
CLASS 351	
113	3,790,259
159	3,790,260
CLASS 352	
72	3,790,261
84	3,790,262
91	3,790,263
174	3,790,264
CLASS 353	
19	3,790,265
27	3,790,266
70	3,790,267
111	3,790,268
117	3,790,269
CLASS 355	
14	3,790,270
	3,790,271
16	3,790,273
51	3,790,272
55	3,790,274
68	3,790,275
CLASS 356	
5	3,790,276
28	3,790,278
70	3,790,279
71	3,790,280
72	3,790,281
86	3,790,282
89	3,790,283
106	3,790,284
115	3,790,285
118	3,790,286
120	3,790,287
152	3,790,277
195	3,790,290
205	3,790,289
226	3,790,288
CLASS 401	
57	3,790,291
CLASS 403	
124	3,790,195
192	3,790,232
351	3,790,292
CLASS 404	
15	3,790,293
68	3,790,294
CLASS 408	
103	3,790,295
239	3,790,296
240	3,790,297
CLASS 415	
152	3,790,298
199R	3,790,299
219	3,790,300
CLASS 416	
108	3,790,301
134	3,790,302
207	3,790,304
241	3,790,303
CLASS 417	
53	3,790,305
128	3,790,306
270	3,790,307
363	3,790,308
368	3,790,309
388	3,790,310
410	3,790,311
424	3,790,312
477	3,790,313
CLASS 418	
1	3,790,314
97	3,790,315
131	3,790,316
137	3,790,317
CLASS 423	
15	3,790,658
224	3,790,659
242	3,790,660
321	3,790,661
437	3,790,662
CLASS 424	
12	3,790,663
47	3,790,664
81	3,790,665
84	3,790,666
115	3,790,667
117	3,790,668
120	3,790,669
210	3,790,670
230	3,790,671

CLASSIFICATION OF PATENTS

248	3,790,672	326	3,790,679	63	3,790,321	381 2	3,790,328	349	3,790,686	CLASS 432	
250	3,790,674	327	3,790,687	77	3,790,322	387B	3,790,319	380	3,790,688	58	3,790,334
263	3,790,675	330	3,790,678	222	3,790,323		3,790,329	434	3,790,689	80	3,790,335
273	3,790,673	337	3,790,682	247	3,790,324	412	3,790,330	457	3,790,690	163	3,790,336
275	3,790,676		3,790,683	299	3,790,325	464	3,790,331			239	3,790,337
277	3,790,677			325	3,790,326			CLASS 431		247	3,790,338
278	3,790,680	CLASS 425		326B	3,790,318	CLASS 426		126	3,790,332	249	3,790,339
311	3,790,681	4R	3,790,320	376	3,790,327	302	3,790,685	266	3,790,333		3,790,340

CLASSIFICATION OF DESIGNS

D 2—	30	230,224	D 8—	1	230,246		156	230,261		L	230,277		M	230,288	D61—	1N	230,313
D 6—	38	230,226		6	230,247		181	230,262			230,278	D35—	3A	230,295			230,314
	86	230,227		32	230,248		187	230,263			230,279	D40—	1E	230,296		Q	230,312
	97	230,228		61	230,249	D13—	1A	230,266			230,277		5	230,297	D67—	3R	230,315
	146	230,229		138	230,250		H	230,264			230,280			230,298	D71—	1Q	230,316
	148	230,230		150	230,251			230,265			230,281			230,299	D72—	A	230,318
	177	230,231		154	230,252	D18—	2R	230,267	D29—	23A	230,283			230,300		F	230,317
	178	230,232		179	230,245			230,268		B	230,282	D42—	7R	230,301		J	230,319
	185	230,233		187	230,253			230,269	D30—	35	230,284			230,302	D74—	R	230,320
	188	230,234	D 9—	47	230,255	D22—	21	230,270		99	230,285	D46—	1	230,303		12	230,321
	191	230,235		102	230,256	D23—	55	230,271	D34—	5GC	230,292	D48—	20	230,304			230,322
	194	230,236	D02—	250	230,225	D24—	1D	230,272			230,293		27	230,305	D83—	1H	230,324
	197	230,237	D07—	9	230,239	D26—	8	230,273			230,294		32A	230,306		T	230,323
	241	230,238	D08—	274	230,254		13R	230,274		15AJ	230,286			230,307		8A	230,325
D 7—	45	230,240	D09—	194	230,330			230,275			230,287	D52—	4	230,308		B	230,326
	47	230,241	D12—	27	230,257		14B	230,281			230,289		6B	230,309	D87—	5G	230,327
	71	230,242		62	230,258		G	230,276		HB	230,290	D56—	1	230,310	D92—	1Y	230,328
	96	230,243		143	230,259		H	230,280		K	230,291	D59—	2B	230,311	D95—	3A	230,329
	154	230,244		145	230,260												

CLASSIFICATION OF PLANTS

P —	18	3,464	P —	26	3,468	P —	57	3,465	P —	67	3,470	P —	68	3,469	P	79	3,463
P		3,466	P —	30	3,467												

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

34—	55	T919,003	117—	36 2	T919,004	260—	49	T919,002		615B	T919,001						

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Alaska	2	Louisiana	22	Pennsylvania	42
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Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
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Guam	14	New Jersey	34	West Virginia	54
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1	3,789,559		3,789,793		3,790,484		3,789,646		3,790,446		3,790,127
	3,789,609		3,789,797		3,790,487		3,789,665		3,790,660		3,790,149
	3,789,610		3,789,802		3,790,493		3,789,668	13	3,789,792		3,790,170
	3,789,677		3,789,807		3,790,609		3,789,716		3,790,073		3,790,180
	3,789,745		3,789,809		3,790,643		3,789,803		3,790,107		3,790,216
	3,789,772		3,789,827		3,790,670		3,789,915		3,790,144		3,790,229
	3,789,882		3,789,828		3,790,680		3,790,033		3,790,173		3,790,231
	3,789,947		3,789,853		3,790,700		3,790,059		3,790,950		3,790,274
	3,789,955		3,789,859		3,790,738		3,790,077	15	3,790,848		3,790,281
	3,790,088		3,789,876		3,790,745		3,790,085	16	3,789,750		3,790,293
	3,790,285		3,789,877		3,790,756		3,790,154		3,789,893		3,790,324
2	3,790,639		3,789,886		3,790,774		3,790,236	17	3,789,454		3,790,350
	3,790,701		3,789,903		3,790,790		3,790,278		3,789,477		3,790,447
4	3,789,523		3,789,936		3,790,816		3,790,400		3,789,478		3,790,450
	3,789,558		3,789,960		3,790,817		3,790,537		3,789,489		3,790,473
	3,789,720		3,789,993		3,790,829		3,790,600		3,789,534		3,790,476
	3,790,214		3,789,994		3,790,831		3,790,620		3,789,546		3,790,477
	3,790,321		3,789,996		3,790,846		3,790,629		3,789,549		3,790,496
	3,790,858		3,790,003		3,790,864		3,790,753		3,789,575		3,790,503
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6	3,789,429		3,790,049		3,790,876		3,790,838		3,789,701		3,790,555
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	3,789,484		3,790,118		3,790,906		3,790,403		3,789,771		3,790,696
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41	3,789,939
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Defensive Publications Applications

[Notice of Dec. 16, 1969, 869 O.G. 6877]

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U. S. GOVERNMENT PRINTING OFFICE : O - 1974

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PATENT NOTICES

Certificates of Correction for the Week of Feb. 12, 1974

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Dedication

3,626,290.—*Edward E. Aslan*, Plainview, N.Y. HIGH-FREQUENCY POWER MEASURING CIRCUIT EMPLOYING TWO SELF-BALANCING BRIDGES. Patent dated Dec. 7, 1971. Dedication filed June 6, 1973, by the assignee, *Hewlett-Packard Company.*

Hereby dedicates the entire remaining term of said patent to the Public.

Disclaimers

3,545,194.—*Robert W. Fish*, South Russell Village, Ohio, and *Wallace F. Stack*, Middletown Township, Bucks County, and *Craig J. Welch*, Ross Township, Allegheny County, Pa. REELING PREASSEMBLED PARALLEL WIRE STRANDS FOR BRIDGES AND OTHER STRUCTURAL APPLICATIONS. Patent dated Dec. 8, 1970. Disclaimer filed Dec. 17, 1973, by the assignee, *United States Steel Corporation.*

Hereby enters this disclaimer to claims 3, 4, 5 and 8 of said patent.

3,682,840.—*Paul R. Van Loan*, Grand Island, N.Y. ELECTRICAL RESISTOR CONTAINING LEAD RUTHENATE. Patent dated Aug. 8, 1972. Disclaimer filed June 28, 1973, by the assignee, *E. I. du Pont de Nemours and Company.*

Hereby enters this disclaimer to all claims of said patent.

3,706,552.—*John D. Grier*, Temperance, and *Maclin S. Hall*, Okemos, Mich. ELECTRODE CONFIGURATION FOR AC PIP ELECTROPHOTOGRAPHY. Patent dated Dec. 19, 1972. Disclaimer filed Sept. 18, 1972, by the assignee, *Owens-Illinois, Inc.*

The portion of the term of the patent subsequent to Oct. 24, 1989, has been disclaimed.

National Technical Information Service

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DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C sts. NW.,
Washington, D.C. 20240

Patent application 386,792. Recovery of Rhenium. Filed Oct. 19, 1973. PC $3/MF $1.45.

Patent 3,634,199. Variable Orifice for Multistage Flash Evaporation or Distillation Units. Filed Apr. 20, 1970. Patented Jan. 11, 1972. Not available NTIS.

Patent 3,662,588. Determining Impurities in Helium. Filed Apr. 28, 1970. Patented May 16, 1972. Not available NTIS.

Patent 3,724,672. Asymmetric Hollow Fiber Membranes and Method of Fabrication. Filed July 27, 1970. Patented Apr. 3, 1973. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters, NASA—
Code GP–2, Washington, D.C. 20546

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Patent application 397,476. Structural Heat Pipe. Filed Sept. 14, 1973. PC $3/MF $1.45.

Patent application 397,478. Ophthalmic Liquefaction Pump. Filed Sept. 14, 1973. PC $3/MF $1.45.

Patent application 400,467. Dual Digital Video Switcher. Filed Sept. 25, 1973. PC $3.75/MF $1.45.

Patent application 402,866. Protection of Moisture Sensitive Optical Components. Filed Oct. 2, 1973. PC $3/MF $1.45.

Patent 3,262,025. Magnetic-Flux Pump. Patented July 19, 1966. Not available NTIS.

Patent 3,310,699. Ultrahigh Vacuum Gauge Having Two Collector Electrodes. Patented Mar. 21, 1967. Not available NTIS.

Patent 3,334,225. Quadrupole Mass Filter With Means To Generate a Noise Spectrum Exclusive of the Resonant Frequency of the Desired Ions to Deflect Stable Ions. Patented Aug. 1, 1967. Not available NTIS.

Patent 3,379,052. Soil Penetrometer. Patented Apr. 23, 1968. Not available NTIS.

Patent 3,748,722. Production of Hollow Components for Rolling Element Bearings by Diffusion Welding. Patented July 31, 1973. Not available NTIS.

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Patent 3,751,980. Low Power Electromagnetic Flowmeter Providing Accurate Zero Set. Patented Nov. 12, 1971. Not available NTIS.

Patent 3,754,976. Peen Plating. Patented Aug. 28, 1973. Not available NTIS.

Patent 3,755,283. Novel Polymers and Method of Preparing Same. Patented Aug. 28, 1973. Not available NTIS.

Patent 3,758,112. Foot Pedal Operated Fluid Type Exercising Device. Patented Sept. 11, 1973. Not available NTIS.

Patent 3,758,877. Power Supply for Carbon Dioxide Lasers. Patented Sept. 11, 1973. Not available NTIS.

Patent 3,759,249. Respiratory Analysis System and Method. Patented Sept. 18, 1973. Not available NTIS.

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Patent 3,759,746. Porous Electrode Comprising a Bonded Stack of Pieces of Corrugated Metal Foil. Patented Sept. 18, 1973. Not available NTIS.

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Patent 3,760,248. Induction Motor Control System With Voltage Controlled Oscillator Circuit. Patented Sept. 18, 1973. Not available NTIS.

Patent 3,760,268. Rocket Borne Instrument To Measure Electric Fields Inside Electrified Clouds. Patented Sept. 18, 1973. Not available NTIS.

Patent 3,763,552. Method of Fabricating a Twisted Composite Superconductor. Patented Oct. 9, 1973. Not available NTIS.

Patent 3,763,740. Collapsible Pistons. Patented Oct. 9, 1973. Not available NTIS.

Patent 3,764,220. Alignment Apparatus Using a Laser Having a Gravitationally Sensitive Cavity Reflector. Patented Oct. 9, 1973. Not available NTIS.

[FR Doc. 74–1806; Filed 1–22–74; 8:45 am]

National Technical Information Service

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DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
National Institutes of Health, Chief, Patent Branch,
Westwood Building, Bethesda, Md. 20014

Patent 3,755,825. Artificial Heart Consisting of a Biventricular Pump With Control Mechanisms for Total Replacement of Human Heart. Filed May 18, 1972. Patented Sept. 4, 1973. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Sts. NW.,
Washington, D.C. 20240

Patent 3,648,845. Thin Film Separation Membranes and Processes for Making Same. Filed Sept. 2, 1969. Patented Mar. 14, 1972. Not available NTIS.

DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research,
Code 302, Arlington, Va. 22217

Patent 3,668,684. Portable Morse Code Signaling Device. Filed Dec. 28, 1970. Patented June 6, 1972. Not available NTIS.

Patent 3,669,912. Method of Making Deep Ocean Buoyant Material. Filed May 24, 1968. Patented June 13, 1972. Not available NTIS.

Patent 3,670,396. Method of Making a Circuit Assembly. Filed Apr. 12, 1971. Patented June 20, 1972. Not available NTIS.

Patent 3,670,518. Garment Cooling System. Filed Dec. 21, 1970. Patented June 20, 1972. Not available NTIS.

Patent 3,670,574. Force Gaging Gloves. Filed Apr. 7, 1971. Patented June 20, 1972. Not available NTIS.

Patent 3,670,716. Self-Heated Protective Garment. Filed Dec. 21, 1970. Patented June 20, 1972. Not available NTIS.

Patent 3,671,431. New Lubricating Grease Compositions. Filed Sept. 22, 1970. Patented June 20, 1972. Not available NTIS.

Patent 3,671,609. New Polymeric Compositions. Filed July 27, 1970. Patented June 20, 1972. Not available NTIS.

Patent 3,671,796. Plasma Arc Flash Source. Filed Jan. 27, 1971. Patented June 20, 1972. Not available NTIS.

Patent 3,671,848. Frequency Conversion With Josephson Junctions. Filed Aug. 27, 1971. Patented June 20, 1972. Not available NTIS.

Patent 3,671,867. Noise Suppression Arrangement for Communication Receivers. Filed Apr. 15, 1970. Patented June 20, 1972. Not available NTIS.

Patent 3,671,904. Pick-Off. Filed Jan. 22, 1971. Patented June 20, 1972. Not available NTIS.

Patent 3,671,965. Rapid Deployment Corner Reflector. Filed Apr. 3, 1970. Patented June 20, 1972. Not available NTIS.

Patent 3,672,717. Claw Arms With Swivel Plate. Filed Jan. 25, 1971. Patented June 27, 1972. Not available NTIS.

Patent 3,673,474. Means for Generating (a Source of) Surface and Bulk Elastic Waves. Filed Sept. 25, 1970. Patented June 27, 1972. Not available NTIS.

Patent 3,673,501. Control Logic for Linear Sequence Generators and Ring Counters. Filed Aug. 18, 1971. Patented June 27, 1972. Not available NTIS.

Patent 3,673,609. Protective Helmet. Filed Jan. 27, 1971. Patented July 4, 1972. Not available NTIS.

Patent 3,673,613. Variable Friction Knee Unit With an Improved Swing Phase Control of Artificial Legs. Filed Apr. 8, 1971. Patented July 4, 1972. Not available NTIS.

Patent 3,674,407. Extrusion Press and Barrel. Filed Nov. 16, 1970. Patented July 4, 1972. Not available NTIS.

Patent 3,674,648. Bacterial Lamp. Filed Feb. 1, 1971. Patented July 4, 1972. Not available NTIS.

Patent 3,674,702. Hydrogen Gas Generating Composition and Method for the Same. Filed Feb. 25, 1970. Patented July 4, 1972. Not available NTIS.

Patent 3,675,012. Cinefluorographic Holography. Filed Oct. 15, 1970. Patented July 4, 1972. Not available NTIS.

Patent 3,675,052. Field-Delineated Acoustic Wave Device. Filed Aug. 7, 1970. Patented July 4, 1972. Not available NTIS.

Patent 3,675,342. Fire Fighting Trainer. Filed Mar. 9, 1971. Patented July 11, 1972. Not available NTIS.

Patent 3,675,343. Fire Fighting and Control Simulator. Filed Apr. 26, 1971. Patented July 11, 1972. Not available NTIS.

Patent 3,676,359. Chemical Sea Surface Marker. Filed Oct. 14, 1970. Patented July 11, 1972. Not available NTIS.

Patent 3,676,699. Asynchronous Pulse Width Filter. Filed Sept. 13, 1971. Patented July 11, 1972. Not available NTIS.

Patent 3,676,716. Fast Switch Utilizing Hybrid Electron Beam-Semiconductor Devices. Filed May 19, 1971. Patented July 11, 1972. Not available NTIS.

Patent 3,676,792. Frequency Multiplexing AGC Amplifier. Filed June 9, 1970. Patented July 11, 1972. Not available NTIS.

Patent 3,677,082. Knotmeter for Small Craft. Filed Nov. 30, 1970. Patented July 18, 1972. Not available NTIS.

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Patent 3,678,388. Ground Station System for Retransmitting Satellite Facsimile Signals Over Digital Data Links. Filed Dec. 14, 1970. Patented July 18, 1972. Not available NTIS.

Patent 3,678,468. Digital Data Storage System. Filed Dec. 15, 1970. Patented July 18, 1972. Not available NTIS.

Patent 3,678,853. Quick Disconnect Explosive Connector Assembly. Filed June 12, 1970. Patented July 25, 1972. Not available NTIS.

Patent 3,679,215. Tape Recorder. Filed Feb. 3, 1967. Patented July 25, 1972. Not available NTIS.

Patent 3,679,394. Method for Casting High Ti Content Alloys. Filed Nov. 24, 1969. Patented July 25, 1972. Not available NTIS.

Patent 3,680,036. Electrical Connector. Filed Sept. 17, 1970. Patented July 25, 1972. Not available NTIS.

Patent 3,680,046. Alerting System. Filed Dec. 18, 1970. Patented July 25, 1972. Not available NTIS.

Patent 3,680,050. Serial Digital Pulse Phase Interface Driver and Receiver. Filed July 10, 1970. Patented July 25, 1972. Not available NTIS.

Patent 3,680,087. Scan Conversion Through Electroluminescent Storage Panels. Filed Oct. 20, 1970. Patented July 25, 1972. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters, NASA—
Code GP–2, Washington, D.C. 20546

Patent 3,751,733. Tactile Sensing-Means for Prosthetic Limbs. Patented Aug. 14, 1973. Not available NTIS.

[FR Doc. 74–2310; filed 1–28–74; 8:45 am]

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JANUARY 19, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-02-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-25-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	10-11-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-04-73
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	9-01-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors, Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	6-13-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	9-18-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-02-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	8-16-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	2-02-73
DESIGNS, GROUP 290—R. L. CAMPBELL, Director Industrial Arts; Household, Personal and Fine Arts.	4-11-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	3-16-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	2-26-73
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	3-02-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-22-73
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-28-72

Expiration of patents: The patents within the range of numbers indicated below expire during January 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents........ Numbers 2,775,762 to 2,779,941, inclusive
Plant Patents........ Numbers 1,543 to 1,558, inclusive

REISSUES

FEBRUARY 12, 1974

Matter enclosed in heavy brackets **[ ]** appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

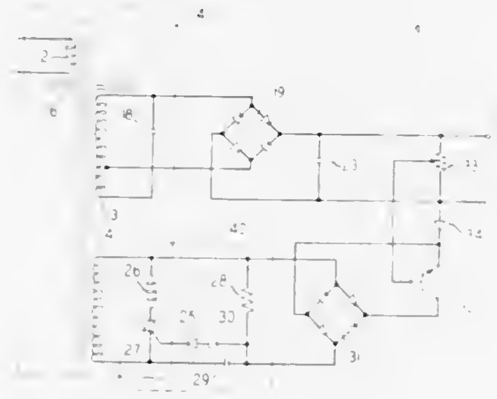
27,916

CLOSED LOOP FERRORESONANT VOLTAGE REGULATOR WHICH SIMULATES CORE SATURATION

Robert John Kakalec, Madison, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Original No. 3,525,035, dated Aug. 18, 1970, Ser. No. 763,881, Sept. 30, 1968. Application for reissue Dec. 6, 1971, Ser. No. 204,849

Int. Cl. G05f *1/38;* **H02m** *7/20*
U.S. Cl. 323—61 **10 Claims**



In a ferroresonant voltage regulator of either the two core or the one core type, the function of the saturating core is replaced by an integrating circuit, a switch, and and inductor. The integrating circuit is coupled to the normally saturating winding to develop an integrating capacitor voltage proportional to the volt-time integral of the ferrocapacitor voltage. The switch couples the inductor to the normally saturating winding in response to the voltage across the integrating capacitor to reverse the charge on the ferrocapacitor and provide ferroresonant type regulation without the disadvantages that accompany core saturation. A feedback network which varies the charging rate of the integrating capacitor in response to load voltage may be added to provide good closed loop regulation simply, inexpensively and efficiently.

27,917

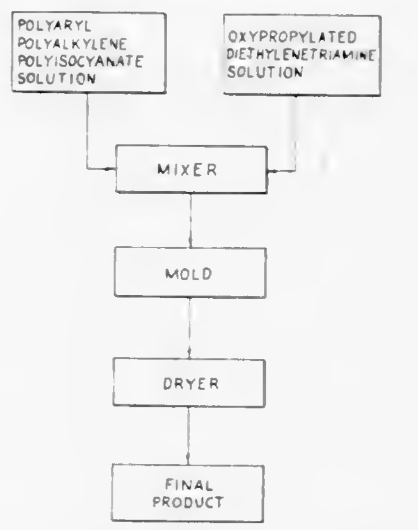
OPEN-PORE POLYURETHANE PRODUCT

Robert T. Jefferson, Columbus, Ind., and Ival O. Salyer, Dayton, Ohio, assignors to the United States of America as represented by the United States Atomic Energy Commission

Original No. 3,574,150, dated Apr. 6, 1971, Ser. No. 828,647, May 28, 1969, which is a continuation-in-part of abandoned application Ser. No. 586,923, Oct. 17, 1966. Application for reissue Oct. 1, 1971, Ser. No. 185,643

Int. Cl. C08g *22/12, 22/44*
U.S. Cl. 260—2.5 BD **7 Claims**

An open-pore polyurethane structure having a porosity of at least 50% and a density of 0.1–0.5 grams per cubic centimeter; and comprising coherent spherical particles of less than 10 microns diameter separated by interconnected interstices useful as a filter and oil-absorbent; and the method of producing said structure.


POLYARYL POLYALKYLENE POLYISOCYANATE SOLUTION
OXYPROPYLATED DIETHYLENETRIAMINE SOLUTION
MIXER
MOLD
DRYER
FINAL PRODUCT

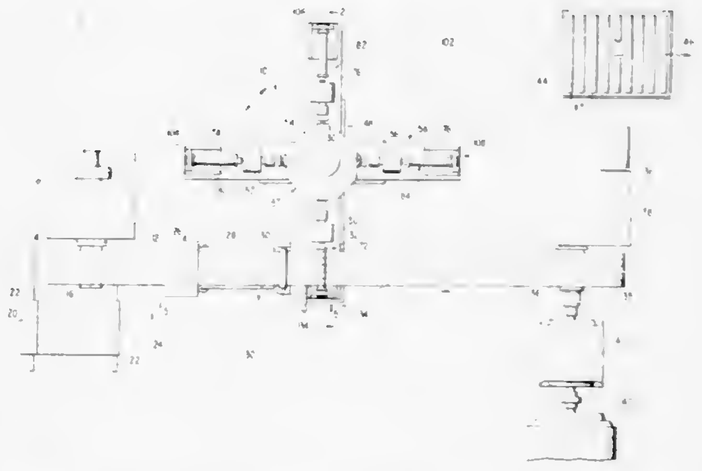
27,918

MULTIPLE-HEAD SLITTING APPARATUS

David M. Montguire, Elm Grove, Wis., assignor to National Steel Corporation

Original No. 3,513,743, dated May 26, 1970, Ser. No. 662,061, Aug. 21, 1967. Application for reissue May 23, 1972, Ser. No. 256,187

Int. Cl. B23d *19/06;* **B26d** *1/16*
U.S. Cl. 83—433 **22 Claims**



Slitting apparatus includes a plurality of slitter heads carried by a turntable. The turntable is mounted for rotation about a stationary column which carries a drive unit. While one slitter head is operated by the drive unit to slit material at a slitting station, the other slitter heads are at servicing stations. Rotation of the turntable positions any selected slitter head at the slitting station. A feed table and an entry pinch roll assembly are provided along a pass line to the slitting station. The feed table and pinch roll assembly are movable out of the path of rotation of the turntable and slitter heads to avoid interference with rotation of the turntable. An aligning mechanism assures accurate alignment of a slitter head at the slitting station.

27,919

CIRCUIT BREAKER FOR HIGH VOLTAGE DIRECT CURRENT

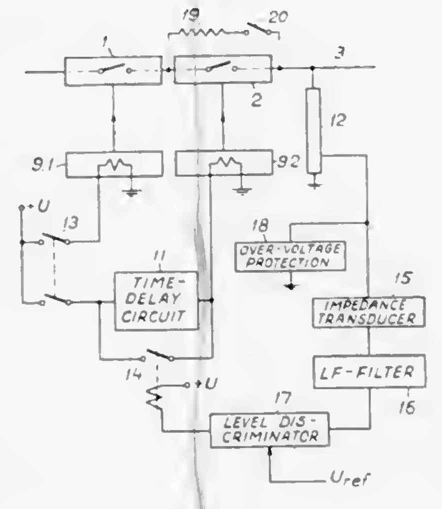
Walter Pucher, Vasteras, Sweden, by Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden, assignee

Original No. 3,678,335, dated July 18, 1972, Ser. No. 148,711, June 1, 1971. Application for reissue Apr. 19, 1973, Ser. No. 352,718

Claims priority, application Sweden, June 15, 1970, 8,258/70

Int. Cl. H02h *3/00, 7/10*

U.S. Cl. 317—11 A **4 Claims**



In a switching device for HVDC comprising two series-connected breaker units, the operating release of the device comprises a time delay means controlled by the voltage of the HVDC network. When breaking at voltages above a certain level, one of the breaker units opens a predetermined time before the other one, thus reducing the switching over-voltage. Below said level, however, the breaker units open simultaneously.

27,920

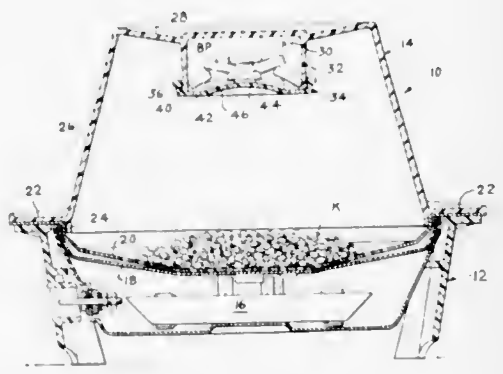
POPCORN POPPER HAVING AUTOMATIC BUTTERING MEANS

Joseph E. Cole, Wellesley, Mass., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Original No. 3,722,399, dated Mar. 27, 1973, Ser. No. 136,892, Apr. 23, 1971. Application for reissue Sept. 11, 1973, Ser. No. 394,281

Int. Cl. A23l *11/18*

U.S. Cl. 99—323.8 **4 Claims**



Popcorn popper has cover with butter-receiving support. Temperature at end of popping melts butter which passes through apertures in support to drip over popped corn.

PLANT PATENTS

GRANTED FEBRUARY 12, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,471

ALMOND TREE

John Andrew, 15760 W. 1st Ave., Delhi, Calif. 95315

Filed Oct. 20, 1971, Ser. No. 191,044

Int. Cl. A01h *5/03*

U.S. Cl. Plt.—30 **1 Claim**

An almond tree which is of medium size, dense, vigorous, medium in branching habit, abundant of foliage with medium size, lanceolate, acutely pointed leaves, heavy to very heavy in pink bloom approximately with Nonpareil (unpatented), and a regular and very heavy producer of small, completely closed nuts well distributed on the tree; the nuts hanging well on the tree, harvesting easily approximately with Nonpareil, and being easy to hull.

3,472

MINIATURE ROSE PLANT

Ralph S. Moore, 2519 E. Nobel Ave., Visalia, Calif. 93277

Filed Apr. 17, 1972, Ser. No. 244,968

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, much branched, bush type, as illustrated and described, characterized by buds and flowers resembling the Toy Clown miniature rose (U.S. Plant Pat. No. 2,909) in general form but with a contrasting red and yellow color, the general color effect of the freshly opened flower being a bright red with some yellow or orange showing on the reverse or outer petal surfaces; and further characterized by a plant which is vigorous and compact in growth, easy to propagate from cuttings; with small medium green foliage, an abundance of bloom borne almost continuously throughout the growing season with flowers borne usually singly or in small loose clusters.

3,473

STRAWBERRY PLANT

Harold A Johnson, Jr., Watsonville, Calif., assignor to Driscoll Strawberry Associates, Inc., Watsonville, Calif.

Filed June 7, 1972, Ser. No. 260,693

Int. Cl. A01h *5/03*

U.S. Cl. Plt.—49 **1 Claim**

1. The new and distinct variety of strawberry plant herein described and illustrated, and identified by the characteristics enumerated above.

3,474

BEGONIA PLANT

Bruno Bernstein, Bad Segeberg, Germany, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed June 12, 1972, Ser. No. 262,087

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A unique and distinct cultivar of *Begonia elatior* characterized particularly by its short, compact, and full growth; its soft light yellow flowers; its extreme ease of propagation from small leaf cuttings that develop a very high number of adventitious shoots, which phenomenon is of significant economic importance to the grower; its good resistance to powdery mildew and botrytus allowing the variety to be used in outdoor plantings; its capability of being produced for flowering crops on a year around basis by leaf propagation and controlled environmental conditions; and by its long lasting and long flowering qualities in the home when properly handled.

3,475

APPLE TREE

Bernard S. Jurale, 457 New Hanover Ave., South Meriden, Conn. 06450

Filed June 15, 1972, Ser. No. 263,274

Int. Cl. A01h *5/03*

U.S. Cl. Plt.—34 **1 Claim**

1. A new and distinct variety of apple tree, substantially as herein shown and described, characterized particularly as to novelty by the distinctive flavor of the fruit, which is enhanced by its high pH and tartness and by its high sugar content, as well as by the unusual flavor the cider made from said fruit which has been frozen, said fruit resembling the Red Astrachan in color, form and tenderness, but having the late maturing and keeping qualities, as well as spicy taste and aroma of the Baldwin.

3,476

PEACH TREE

Frederic W. Anderson, Merced, Calif., assignor to L. E. Cooke Co., Visalia, Calif.

Filed Oct. 6, 1972, Ser. No. 295,595

Int. Cl. A01h *5/03*

U.S. Cl. Plt.—43 **1 Claim**

A genetically dwarf peach tree which is vigorous, spreading, dense, foliated with large leaves having globose glands, and a regular and productive bearer of medium size, globose to slightly oblate, symmetrical, uniform, freestone fruit, having yellow skin partially overspread with red, yellow flesh, and a red pit cavity with the red streaked into the flesh.

3,477

NECTARINE TREE

Frederic W. Anderson, Merced, Calif., assignor to Stark Bro's Nurseries and Orchards Co., Louisiana, Mo.

Filed Oct. 6, 1972, Ser. No. 295,709

Int. Cl. A01h *5/03*

U.S. Cl. Plt.—41 **1 Claim**

A nectarine tree which is large, vigorous, spreading, open, foliated with large to medium size lanceolate leaves having reniform glands, medium in blooming period with large, pink flowers, and a regular and productive bearer of large, globose, symmetrical, uniform fruit having orange-yellow skin substantially overspread with red shading to a deeper purplish-red, yellow flesh, and a red pit cavity with the red streaked into the flesh.

3,478

NECTARINE TREE

Frederic W. Anderson, Merced, Calif., assignor to Reedley Nursery, Inc., Reedley, Calif.

Filed Oct. 13, 1972, Ser. No. 297,378

Int. Cl. A01h *5/03*

U.S. Cl. Plt.—41 **1 Claim**

A nectarine tree which is large, vigorous, upright to spreading, open, vase-formed, foliated with large lanceolate, acutely pointed leaves having a crenate margin and reniform glands, and a regular and productive bearer of large to medium size, uniform, symmetrical, globose, clingstone fruit having smooth, lemon-yellow skin substantially overspread with red shading to a deeper purple-red, yellow flesh, and a red pit cavity with the red streaked into the flesh.

3,479

PLUM TREE

Frederic W. Anderson, Merced, Calif., assignor to Reedley Nursery, Inc., Reedley, Calif.

Filed Oct. 13, 1972, Ser. No. 297,869

Int. Cl. A01h *5/03*

U.S. Cl. Plt.—38 **1 Claim**

A plum tree which is of medium size, vigorous, spreading, open, round-topped, foliated with large obovate leaves, and a regular and very productive bearer of large, freestone, uniform, symmetrical, globose fruit having deep purple-red skin with a silver-blue bloom, buff-yellow flesh, and a light tan stone.

3,480

POINSETTIA PLANT

Jack S. Sweet, St. Petersburg, Fla., assignor to Earl J. Small Growers, Inc., Pinellas Park, Fla.

Filed Oct. 16, 1972, Ser. No. 298,436

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—86 **1 Claim**

1. A new and distinct variety of poinsettia plant substantially as illustrated and described, produced by selective cross breeding for a compact plant with short internodes, a strong, stiff stem structure that branches freely from a single pinch to produce a compact multiple inflorescence with a massive display of bracts.

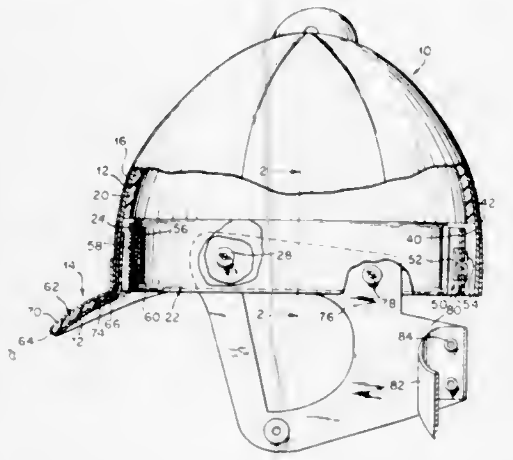
PATENTS

GRANTED FEBRUARY 12, 1974

GENERAL AND MECHANICAL

3,790,962
HEAD PROTECTING HEADWEAR

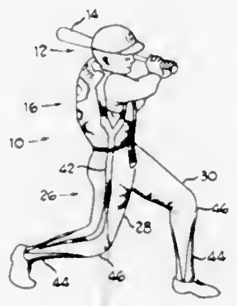
Mario Plastino, 120 Talley Ln., Wantagh, N.Y.
Filed Jan. 7, 1972, Ser. No. 216,118
Int. Cl. A42b *3/00*
U.S. Cl. 2—3 R **11 Claims**



A peaked helmet in which the rigid outer shell is provided with an energy absorbing peak. The peak includes a stiff, crescent-shaped core formed of a close-grained, synthetic plastic sponge material, whose concave marginal edge portion is of reduced thickness and is bonded to a forwardly directed ledge extending from the front edge of the shelf by its reduced marginal edge portion.

3,790,963
ONE PIECE GARMENT

Mary I. Ealy, Monee, Ill., assignor to Merry Jumpsuits
Filed Feb. 4, 1972, Ser. No. 223,675
Int. Cl. A41d *13/02*
U.S. Cl. 2—79 **1 Claim**

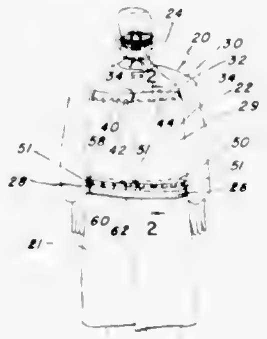


A play uniform comprising a one piece garment with enclosed feet characterized by the provision of visually distinct areas relating to the rules of activity of the game for which the garment is to be used.

3,790,964
VENTED OPERATING ROOM GOWN

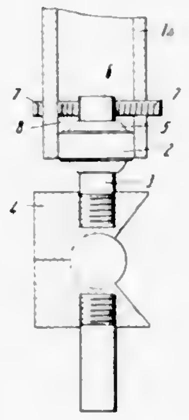
Edward G. Hartigan, Schaumburg, Ill., assignor to The Kendall Company, Walpole, Mass.
Filed Nov. 22, 1971, Ser. No. 200,961
Int. Cl. A41d *13/00*
U.S. Cl. 2—114 **7 Claims**

An improved operating room gown of the type which has a front and a back for covering the front and back portions of a user's body, and in which sterile fields are associated with the outside of the gown front and the outside of the gown back generally intermediate the shoulders and the waist of the gown. The gown has means for ventilating the inside of the gown with air, while preventing contamination of the sterile fields from the ventilating air.



3,790,965
ANGLE ADJUSTMENT UNIT FOR PROSTHESES AND ORTHOSES

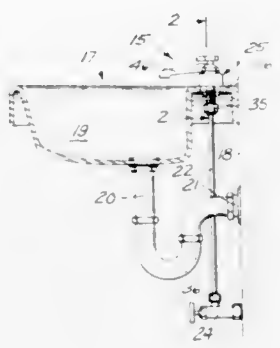
Franz Gelbenegger, Wulsdorfer weg 85, Hamburg-Volksdorf, Germany
Filed July 26, 1972, Ser. No. 275,434
Claims priority, application Germany, July 30, 1971, P 21 38 153.3
Int. Cl. A61f *1/08, 1/04*
U.S. Cl. 3—21 **3 Claims**



An angle adjustment unit for the angular positioning of a prosthesis or orthosis member with respect to a conventional prosthesis joint, comprising a commercial ball-and-socket joint coupled to the conventional prosthesis joint by means of a rod extending through the ball-and-socket joint and projecting at a free end portion into the prosthesis member. By means of screws threaded into the prosthesis member and engaging the free end portion of the rod the prosthesis member may be locked in any desired angular position with respect to the conventional prosthesis joint.

3,790,966
QUICK-CHANGE FAUCET

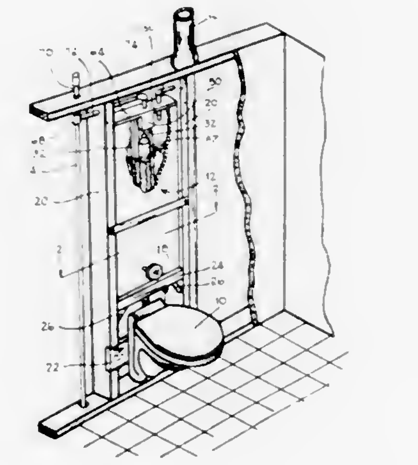
Joseph Keane, 6634 Villa Vista Dr., Riverside, Calif.
Filed Dec. 16, 1971, Ser. No. 208,749
Int. Cl. E03c *1/04, 1/042*
U.S. Cl. 4—192 **10 Claims**



A quick-change faucet that can be attached to a sink, working entirely from above, except for attaching the riser pipes to the shut-off valves. The riser pipes are first attached to the hot and cold water valves before mounting the faucet on the sink, and the riser pipes are passed down through holes in the sink ledge which are big enough in diameter to pass the fittings. The bottom ends of the riser pipes are then connected to the shut-off valves. The water-mixing manifold, or cast faucet housing, has provision for passing mounting bolts downwardly through bolt-holes, and these bolts are screwed down into threaded bushings which are secured in openings in the sink ledge. The mounting bolts are turned down into the bushings from above the sink, instead of reaching up under the sink into the almost inaccessible area behind the basin.

3,790,967
WATER CLOSET

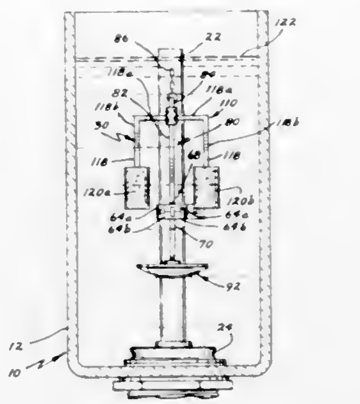
James M. Pignato, 5819 N. Artesian, Chicago, Ill.
Filed Nov. 1, 1971, Ser. No. 194,291
Int. Cl. E03d *3/00*
U.S. Cl. 4—28 **12 Claims**



An improved water closet that can be positioned within a wall to conserve floor space and including a double-float valve system for closing the inlet and discharge ends of the tank. Also included is a means for overcoming the hydrostatic pressure to permit a floatation of the discharge float valve and anti-syphon means for use with the tank.

3,790,968
FLUSH VALVE DEVICE FOR TOILETS

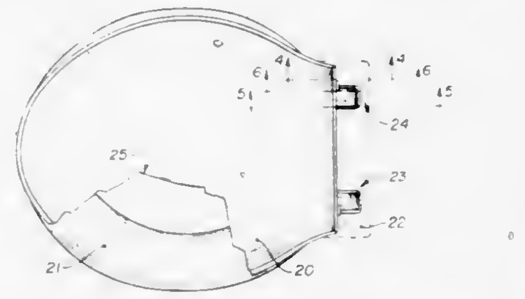
Pius Pfeifer, 1751 100th St., North Battleford, Saskatchewan, Canada
Filed May 3, 1972, Ser. No. 249,882
Int. Cl. E03d *1/22, 1/30*
U.S. Cl. 4—38 **13 Claims**



A pair of laterally spaced float members are supported on the lifting rod or valve stem at an adjusted or preferred elevation above a nonbuoyant and weighted valve member threadedly attached to the lower end of the rod or stem. The lower threaded end of the stem is angled at 7½° and the valve member has a threaded recess therein also angled at 7½°. Owing to the square cross section of the valve stem and a complementally configured guide affixed to the overflow pipe in the toilet tank, the valve member will operate in conjunction with either a flat or slanted valve seat. Smaller seats can also be accommodated by merely selecting an intermediate angular position of the valve member on the valve stem. An indicator pin on the stem and angularly disposed indicia in the form of small bumps enable the user to readily select the proper angular position of the valve member for the particular type of valve seat.

3,790,969
CONCEALED HINGE

Vernon L. Waldon, Crawfordsville, Ind., assignor to Ingress Manufacturing Co., Inc., Crawfordsville, Ind.
Filed Feb. 24, 1972, Ser. No. 229,012
Int. Cl. A47k *13/12*
U.S. Cl. 4—236 **11 Claims**



A concealed hinge for connecting a pair of members to a fixture. A pair of hinge posts are mounted to the fixture each having coaxially aligned and outwardly extending pins. One of the members is ring shaped and has a rear portion with an upwardly extending wall which cooperatively defines with a pair of flanges depending therefrom a recess for concealing the hinge posts. The pins of the hinge posts project freely through each flange of the member with the member being pivotable thereon. The other member is restable atop the one member and has a rear portion with a pair of socketed walls depending therefrom cooperatively defining a cavity into which the upwardly extending wall projects. The hinge posts are spaced inward of the flanges which are spaced inward of the pair of walls. The hinge pins project freely into the sockets provided in the pair of walls.

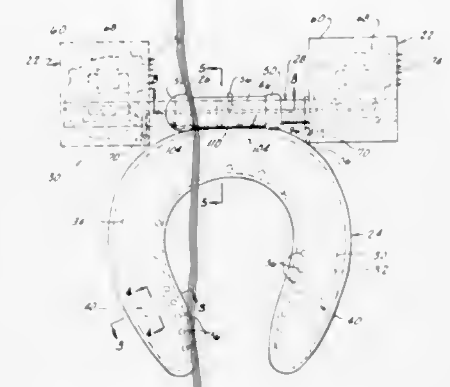
3,790,970
TOILET STOOL VENTILATING MEANS

David Bendersky, Overland Park, and Clarence E. Poister, Fairview, both of Kans., assignors to PK Products, Inc., Wichita, Kans.

Filed Nov. 15, 1971, Ser. No. 198,706

Int. Cl. E03d *9/04;* **A47k** *13/12*

U.S. Cl. 4—217 5 Claims



The seat of a toilet stool has an air chamber which receives odorized air. It is in communication with a passageway in the seat attaching hinge. The hinge passageway communicates with a filter wherein air is deodorized and passed into the atmosphere. Blower apparatus therein moves normally odorized air through filtering material. The seat hinge passageway and the filter are connected by a conduit. Pressure exerted on the seat activates the blower apparatus.

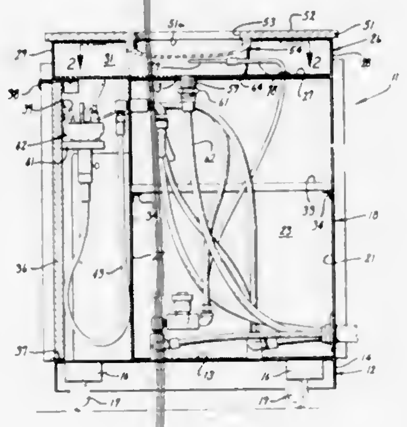
3,790,971
CUSPIDOR AND DENTAL CONSOLE FOR USE THEREWITH

Shirl S. Fox, Menlo Park, Calif., assignor to Dental Designs, Menlo Park and Palo Alto, Calif.

Filed Apr. 12, 1971, Ser. No. 132,980

Int. Cl. A61c *17/04*

U.S. Cl. 4—263 6 Claims



A cuspidor for use in a dental console in which the cuspidor is in the form of a bowl having an open top side in which the bowl has a bottom wall and an upwardly extending outwardly inclined annular side wall with a drain opening formed in the bottom wall to permit liquid to drain from the bowl and with an additional opening formed in the bowl which faces in a direction so that a liquid introduced through the additional opening will exit as a liquid stream striking the side wall in a generally tangential direction to cause the stream to swirl around the bowl before exiting through the drain opening.

3,790,972
SPRING CORE MATTRESS AND METHOD OF MAKING SAME

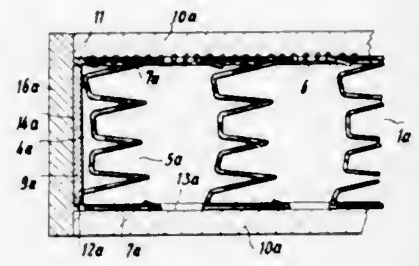
Walter Lehmann, Pleidelsheim, Germany, assignor to Mirabed AG, Zug, Switzerland

Division of Ser. No. 66,789, Aug. 25, 1970, abandoned. This application Feb. 29, 1972, Ser. No. 230,412

Claims priority, application Denmark, Mar. 18, 1970, 1349/70

Int. Cl. B68g *7/00;* **A47c** *27/22*

U.S. Cl. 5—351 26 Claims



A spring core mattress and method of making the same, according to which a spring core composed of a pluarity of coil springs has end portions of the end coils of said springs embedded at least partially in cover plates which are substantially parallel to each other while said coil springs are under a preload, cover means surrounding peripheral portions of said coil springs while said cover means and said cover plates are surrounded by foamed-out material and are held thereby in their respective relative positions.

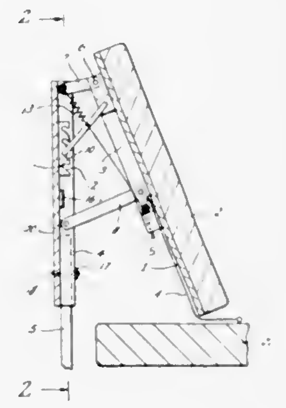
3,790,973
ADJUSTABLE PIVOTAL HEADBOARD

William J. Bradley, P.O. Box 20203, Houston, Tex.

Filed Dec. 22, 1971, Ser. No. 210,851

Int. Cl. A47c *17/00, 21/00*

U.S. Cl. 5—53 B 7 Claims



A headboard for use with beds consisting of a supporting means montable on a rigid medium, such as a bed frame, or a wall, or other suitable anchoring means, to permit tilting of the headboard and anchoring same at the desired position, with the headboard pivoting at one end and the other end traveling on a plane substantially parallel with the horizontal plane of the bed, the bar pivotally anchoring the headboard also acting as a stabilizing means, and the anchoring means being of novel structure to permit positive maintainance of the headboard at the desired position and novel means being provided to adjust the supporting means vertically.

3,790,974
LIFTING AND TRANSPORTING DEVICE FOR DISABLED PERSONS

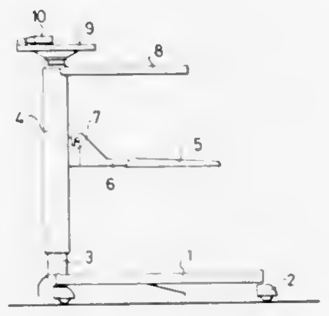
Hans Arne Valentin Johansson, Treharadsvagen 40, Esloy, Sweden

Filed June 30, 1972, Ser. No. 267,903

Claims priority, application Sweden, July 8, 1971, 8828/71; Oct. 7, 1971, 12687/71; Mar. 10, 1972, 3056/72

Int. Cl. A61g *7/10*

U.S. Cl. 5—86 14 Claims



A device for lifting and transporting disabled persons comprising a wheeled base rack on which a first upright support column is fixed while a second support column is movable on the first column. The second column carries arm rests and a seat which is mounted pivotably and releasably.

3,790,975
AIR MATTRESS

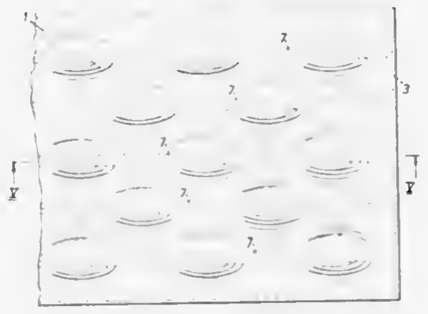
Werner Philipp, Bry-sur-Marne; Andre Thomas, Briant-Amilly, and Basile Fetissof, Pannes, all of France, assignors to Etablissements Hutchinson Compagnie Nationale, Loiret, France

Filed Mar. 15, 1971, Ser. No. 124,363

Claims priority, application France, Mar. 18, 1970, 7009644; Sept. 22, 1970, 7034285

Int. Cl. A47c *27/08*

U.S. Cl. 5—349 6 Claims



An air mattress includes two covers each with a series of longitudinally extending fabric strips secured to the respective inner faces. Opposite corresponding strips are interconnected by partitions which may be continuous with spaced apertures or may be discontinuous.

3,790,976
CARPET LAYING TOOL CONSTRUCTION

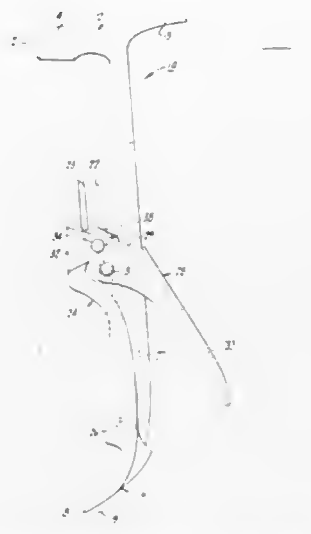
John Stencil, 1115 Eye St., Modesto, Calif.

Filed Mar. 10, 1972, Ser. No. 233,417

Int. Cl. B25f *1/00;* **B26b** *13/22*

U.S. Cl. 7—8.1 R 2 Claims

A carpet laying tool includes a tack strip cutter disposed intermediate the ends of an elongate handle while the opposite ends of the handle carry elements which serve to space the cutter from a support surface against which they both can be urged while pressing against the handle and clamping the cutter grip to the handle so as to permit application of substantial force against the grip of the cutter. Preferably, the spacing elements on each end of the handle include on one end a claw for removing baseboard from walls and, on the other hand, a hammer head of conventional construction.



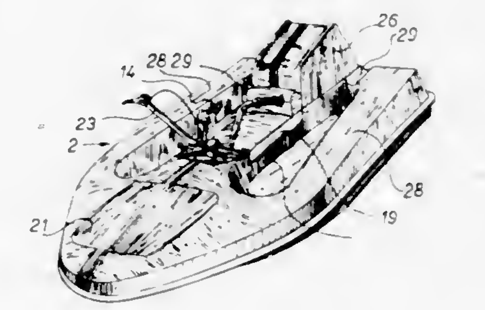
3,790,977
HULL CONSTRUCTION FOR WATERCRAFT

Alphonse R. Bombardier; Gerard Bombardier, both of Valcourt, and Germain Bombardier, St. Mathias, Rouville County, Quebec, all of Canada, assignors to Germain Bombardier, by said Alphonse Bombardier and Gerard Bombardier, St. Mathias, Quebec, Canada

Filed Jan. 24, 1972, Ser. No. 220,140

Int. Cl. B63b *5/00*

U.S. Cl. 9—6 4 Claims



A hull for a watercraft, and in particular for a sport boat, adapted to ally both stability and instability without sacrificing or opposing one to the other; this being achieved by forming a transverse bottom outline which combines typical rounded and substantially planar bottom portions transversely adjacent each other, with the planar outline portions extending on opposite sides of the rounded portion lengthwise of the hull, elevated relative to the rounded portion and forming inflections therewith and longitudinally thereof. The planar outline portions are arranged to provide dynamic sustentation upon impact thereon of waves produced by the suitably shaped bow portion. The hull further includes a top deck forming section defining longitudinally reinforcing wall portions, footrest depressions on opposite sides of a central longitudinal seat supporting boss, and a trench-like depression extending lengthwise of the hull to recess the control links therein.

3,790,978

METHOD AND APPARATUS FOR MAKING LASTS

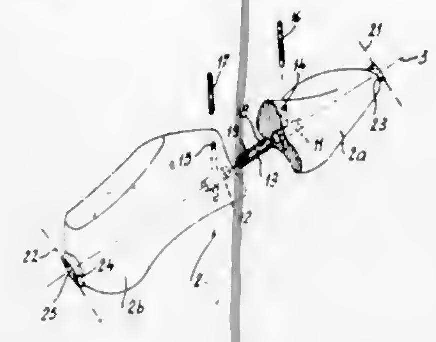
Armand Eloi Condamine, Sainte Foy Les Lyon, and Rene Jean Jacques Philippe Rigal, Lyon, both of France, assignors to Centre Technique Du Cuir, Lyon, France

Filed June 19, 1972, Ser. No. 264,283

Claims priority, application France, June 18, 1971, 71.23387

Int. Cl. A43b *00/00*

U.S. Cl. 12—146 L **20 Claims**



This method of manufacturing shoe lasts made of several detachable elements, i.e., a basic standardized element and at least one interchangeable element dependent upon fashion, consists in marking the trace of the turning axis on the ends and on each joint plane of the model elements and of the lasts deriving therefrom, and using said trace for laying out means for the relative connection and positioning of said interchangeable elements and of said standardized elements of the model and of said lasts.

3,790,979

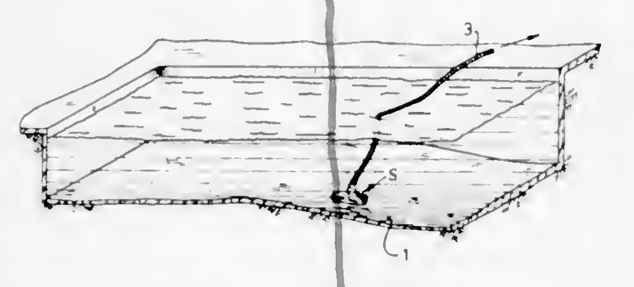
SUBMARINE TYPE, SELF-PROPELLED SUCTION SWEEPER

Douglas E. Foster, Racine, Wis., assignor to Wm. Didier Mfg. Co., Racine, Wis.

Filed Nov. 6, 1972, Ser. No. 304,018

Int. Cl. E04h *3/20*

U.S. Cl. 15—1.7 **14 Claims**



A suction type, fluid operated sweeper for sweeping and pumping the water out of a swimming pool or the like and to a water filtering and/or cleaning unit. The sweeper moves along the bottom of the pool and a suction hose extends upwardly therefrom to draw water through the sweeper for depositing it in the water cleaning unit outside of the pool. The water passing through the sweeper, due to the action of the suction, is utilized to drive the propelling means for the sweeper to cause the sweeper to ambulate along the bottom of the pool.

3,790,980

MOTOR DRIVEN BRUSH

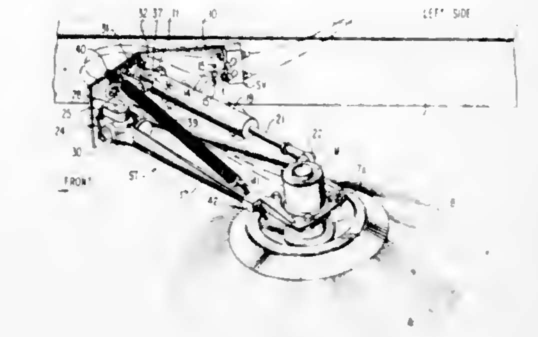
F. Arthur Sylvie, East Elmhurst, N.Y., assignor to Arthur J. Sylvie, Jamaica, N.Y.

Division of Ser. No. 192,125, Oct. 26, 1971, abandoned. This application June 22, 1972, Ser. No. 265,109

Int. Cl. A46b *13/02*

U.S. Cl. 15—23 **1 Claim**

A portable, hand-held, power-driven rotary brush having at least one rotary brush mounted thereon which is driven by an electrical motor coupled to the brush by a pulley-belt, or gearing system. The motor housing and the rotary brushes are detachable from a mounting member which supports the gearing and pulley system.



3,790,981

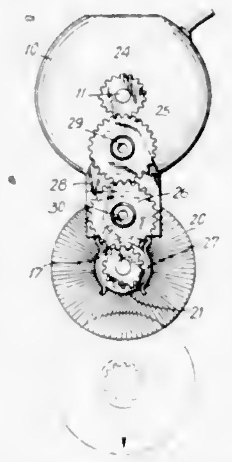
SURFACE SWEEPING MACHINE EQUIPPED WITH GUTTER BRUSH

Bernard W. Young, deceased, late of P.O. Box 2368, Waco, Tex. (by Sophie Young, executrix)

Filed Sept. 15, 1972, Ser. No. 289,453

Int. Cl. E01h *1/04*

U.S. Cl. 15—87 **29 Claims**



A mobile road or like surface sweeping machine has a gutter brush and a brush driving hydraulic motor carried on a supporting structure which is mounted on the machine frame for compound vertical and horizontal swinging movements from a stowed position, with the brush in close to the machine frame and elevated and out of contact with the ground surface, to an extended operating position relatively wide of the frame and in pressure engagement with the surface to be swept. The brush rotates about a generally vertical although slightly tilted axis. A single power operated means, a hydraulic ram, operates the supporting structure to produce the compound vertical and horizontal swinging of the latter. When the brush encounters increased resistance to rotation, for example due to built-up or heavy debris, the pressure of the hydraulic fluid at the motor inlet increases, and the ram responds to that condition by forcing the brush into greater pressure contact with the surface, thereby ensuring greater capability of sweeping the obstruction.

3,790,982

SCRAPING BLADE

Jack W. Whitsett, 936 Castile Ave., Coral Gables, Fla.

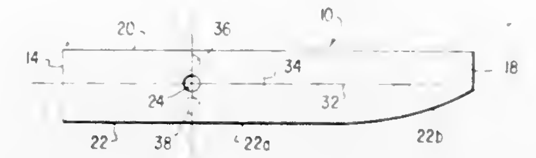
Filed May 4, 1972, Ser. No. 250,189

Int. Cl. A47l *13/02*

U.S. Cl. 15—236 NO **5 Claims**

A scraping blade for use in a power operated rotary scraping device wherein the blade is formed of a generally flat sheet

of material having a lower edge of finite thickness which provides the scraping edge. An aperture is formed through the blade with between 60 percent and about 80 percent of the length of the blade being disposed to one side of the center of the aperture.



3,790,983

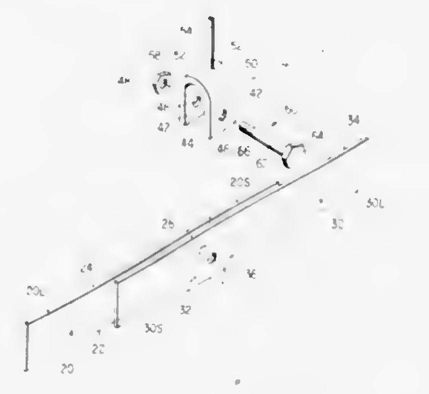
SCRAPING BLADE ASSEMBLY

Jack W. Whitsett, 936 Castile Ave., Coral Gables, Fla.

Filed May 4, 1972, Ser. No. 250, 188. The portion of the term of this patent subsequent to May 16, 1999, has been disclaimed.

Int. Cl. A47l *13/02*

U.S. Cl. 15—236 NO **7 Claims**



A scraping blade assembly includes a pair of elongated scraping blade members and a blade supporting and mounting means having a pair of walls with a space therebetween. The blades are mounted within the space and a transverse bar member extends through apertures in the walls and the blades to loosely mount the blades within the space. The apertures in the blades are offset from the midpoint thereof so that the blades will gravitationally tilt under their own weight, to assume a position wherein a dihedral angle is formed between the scraping edges of the adjacent blades.

3,790,984

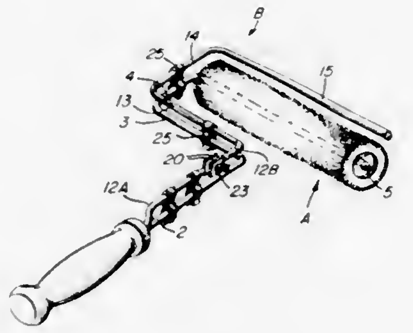
GUARD FOR PAINT APPLICATOR

Brower C. Spransy, 4516 Rynex Dr., Alexandria, Va.; Norman G. Harper, 2100 Shad Ct., Naples, Fla., and Joseph Clayton Steele, 3817 Bightview St., Silver Spring, Md.

Filed Sept. 22, 1972, Ser. No. 291,240

Int. Cl. A46b *17/00*

U.S. Cl. 15—248 A **1 Claim**



A quickly-detachable and rod-like guard is provided which simulates in size and shape the rod-like portions of the conventional paint-applying roller and is adapted to fully overlie the smae in spaced parallelism when in operative position and provide an elongated substantially straight guard member which extends in spaced parallelism with said roller; a hinged joint being provided whereby the aforementioned substantially straight and elongated guard member may be elevated into and out of operative position; the entire rod-like guard being supported in said overlying position by the use of a plurality of rod-embracing clips.

3,790,985

WIPER ARRANGEMENT FOR WINDSHIELDS AND THE LIKE

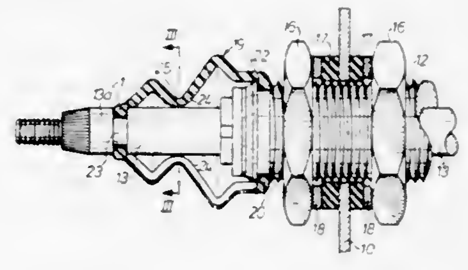
Peter-Jurgen Kessler, Buhlertal, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed June 12, 1972, Ser. No. 261,937

Claims priority, application Germany, July 2, 1971, 2133077

Int. Cl. B60s *1/18, 1/04*

U.S. Cl. 15—250.34 **11 Claims**



A bushing is to be mounted in a wall of the vehicle, and the wiper assembly is journalled in the bushing for oscillatory rotation. The assembly includes an arm which carries a wiper blade, and which is in turn mounted on a shaft journalled in the bushing. A sealing device is provided to prevent the entry of contaminants at the axial end of the bushing from which the shaft extends to the arm. The sealing device is in form of a sleeve of elastomeric or similar material with one end of the sleeve surrounding the axial end of the bushing and being connected therewith, and the other end surrounding the shaft and being connected with the latter in the region of the arm, or with the hub of the arm itself, in such a manner that the sleeve will tend to follow the rotation of the shaft and flex in response to such rotation.

3,790,986

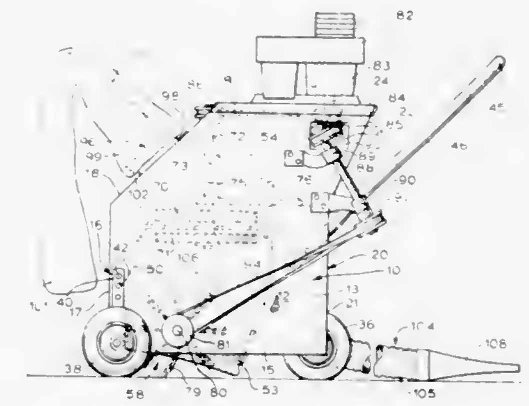
DEBRIS PICKUP AND COLLECTION APPARATUS

Edward Burger, 3535 Fawn Cove, Memphis, Tenn.

Filed Jan. 3, 1972, Ser. No. 214,832

Int. Cl. A47l *5/28*

U.S. Cl. 15—328 **11 Claims**



A mobile mechanical raking apparatus for gathering, shredding and loading into a receptacle scattered debris both on lawns and paved surfaces or selectively from less accessible places such as around bushes or roof gutters.

The apparatus normally sucks the debris upwardly from the ground through an upper opening into a receptacle. The apparatus may be converted into a stationary stacker by reversing the drive and feeding debris through the upper opening, the debris being shredded and sucked downwardly and discharged through the hose, which in normal operation is a suction hose, into a stack.

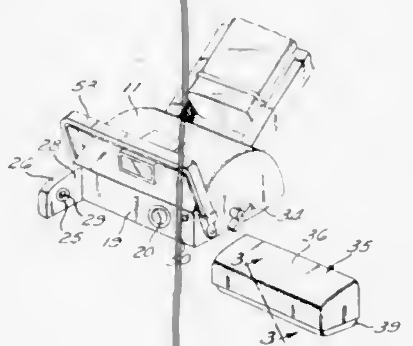
3,790,987
DRIVE MEANS FOR VACUUM CLEANER

Charles H. MacFarland, Rocky River, Ohio, assignor to The Scott & Fetzer Company, Cleveland, Ohio

Filed Oct. 20, 1972, Ser. No. 299,345

Int. Cl. A47l *5/30*

U.S. Cl. 15—392 **6 Claims**



A vacuum cleaner having a motor housing to which powered attachments may be directly mechanically coupled without the use of drive belts as the mechanical coupling between the motor housing and the powered attachment. The motor housing encloses a motor fan unit and a drive belt which couples the motor to a drive socket. The drive socket extends through a wall in the housing so that the socket may receive the drive shafts of powered attachments, such as vacuum cleaner brush nozzles, power polishers, rug scrubbers, and power-driven miscellaneous tools. A vacuum inlet extends through the wall in the motor housing and suction hoses may be attached to the inlet for off the-floor cleaning purposes.

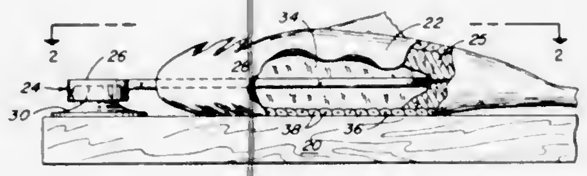
3,790,988
ANCHOR FOR HOLDING A FISH WHILE WORKING ON THE SAME

Neil J. Maxwell, 138 S. Gina Ave., El Cajon, Calif.

Continuation-in-part of Ser. No. 42,820, June 2, 1970, which is a continuation-in-part of Ser. No. 761,227, Sept. 20, 1968, abandoned. This application May 22, 1972, Ser. No. 255,724

Int. Cl. A22c *25/00*

U.S. Cl. 17—70 **11 Claims**



A fish retainer comprising a combination of a support for a fish such as a board or table top and an anchor for yieldingly holding the fish on the top surface of the support when it is desirable to skin, fillet or scale the fish. The anchor includes a stem which extends rearwardly through the mouth of the fish and the free end of the stem abuts the rear wall of the stomach cavity of the fish. The stem forces the fish against the support.

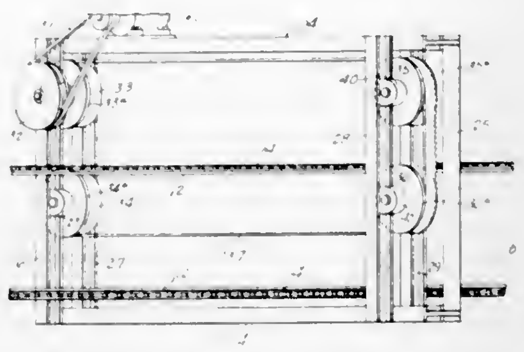
3,790,989
CARCASS SPLITTING MACHINE

Septime R. Hotard, 390 N.W. Bay St., Ponchatoula, La.

Filed June 27, 1972, Ser. No. 266,635

Int. Cl. A22b *5/20*

U.S. Cl. 17—23 **15 Claims**



A device is described for splitting an animal carcass vertically while the carcass moves along overhead rails. The splitting operation is performed by a band saw which is supported on a generally triangularly shaped frame and is disposed at a 45° angle to the direction of travel of the carcass along the rails. The band saw is driven by a motor which causes it to travel over four flanged guide wheels which are mounted between spaced transversely disposed I-beams on self-centering adjustable bearings

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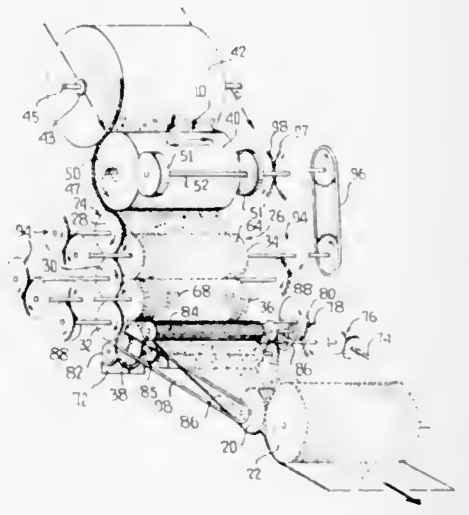
3,790,990
REFINING FEED UNIT FOR A CARDING MACHINE

Maurice A. Goldman, Newark, N.J., assignor to Synagex Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 879,886, Nov. 25, 1969, Pat. No. 3,657,772. This application Apr. 25, 1972, Ser. No. 247,467

Int. Cl. D01g *15/40*

U.S. Cl. 19—105 **1 Claim**



A horizontally disposed feed unit is provided for feeding a picker lap or batt to a carding machine, preferably a refining feed unit type carding machine The feed roll in its rotation about its axis leads the picker lap longitudinally to the carding machine and is provided with means to reciprocate the feed roll longitudinally along its axis so as to impart a herringbone pattern to the picker lap as it is fed to the carding machine, which herringbone pattern imparted to the fibers of the picker lap as they are fed to the carding machine slants every fiber across the teeth of the carding roll to which it is fed and, thus, assists in closing up any bores or holes or pin spots in the picker lap. Advantageously, the picker lap to which a herringbone pattern has been imparted to the fibers thereof, is fed to a card feed unit which is positioned at a carding machine in place of a standard lap stand to refiningly act on the picker lap so as to supply a light-weight blanket of aligned fibers to the carding machine and, thereby, greatly increase the production rate of the carding machine. Such a refining feed unit would comprise a two-column, plane-supported stack of horizontally disposed rolls of small diameter with the rolls of one column being in nested relationship with the rolls of the companion column in the rolls from the feed roller, which imparts a herringbone pattern to the fibers in the lap, to the blanket delivering bottom of the unit at an increased number of spirally arranged teeth and are driven at increased speeds so that each roll performs in two drafting stages. It drafts from the upper preceding roll and holds against the lower succeeding roll.

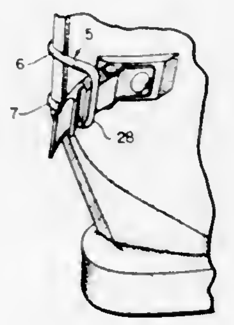
3,790,991
CABLE CLOSURE ASSEMBLY

Alden B. Hanson, and Chris A. Hanson, both of Boulder, Colo., assignors to Hanson Industries Inc., Boulder, Colo.

Filed July 10, 1972, Ser. No. 269,946

Int. Cl. A43c *11/14*

U.S. Cl. 24—70 SK **9 Claims**



A cable closure for a boot including two flexible members which are connected to each other by means of substantially rigid tubular end members into which the flexible members are inserted and retained.

3,790,992
PROFILED CLOSING MEMBERS WITH SLIDE

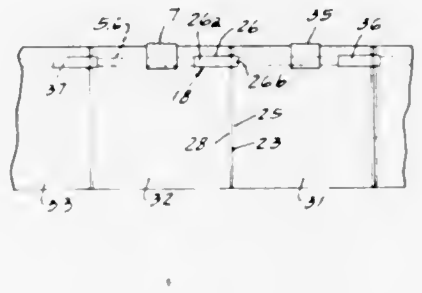
Andre Herz, Nesles la Vallee, France, assignor to Minigrip, Inc., Orangeburg, N.Y.

Filed June 19, 1972, Ser. No. 263,792

Claims priority, application France, June 30, 1971, 7123942

Int. Cl. A44b *19/24*, **B65d** *33/24*

U.S. Cl. 24—201 C **10 Claims**



A method of making bags and the bags resulting therefrom wherein the bags have a top edge and first and second side edges and interlocking rib and groove element at the top edge with a slider straddling the top edge and the slider having a back and downwardly projecting sides with the sides being closer together at a closing end of the slider which extends toward the first edge of the bag and being wider apart at the opening end of the slider which extends toward the second edge of the bag and with a finger between the sides at the opening end and the bag having heat seals joining the rib and groove elements and the heat seal being wider at the first edge than the second edge and being of a width at least equal to the length of the slider from its closing end to the finger so that the slider will remain fully on the bag at the end of its travel when opening the bag.

3,790,993
SLIDER-TYPE ASSEMBLY DEVICE

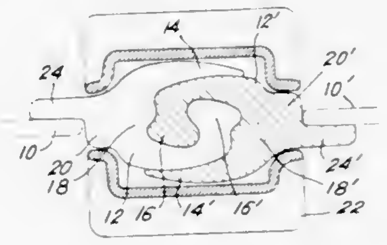
Roger Gilles, Lons, Pau, and Francis Nougarede, La Celle-Saint-Cloud, both of France, assignors to Entreprise De Recherches Et D'Activites Petrolieres (ELF), Paris, France

Filed May 25, 1971, Ser. No. 146,722

Claims priority, application France, May 28, 1970, 7019505

Int. Cl. A44b *19/10*

U.S. Cl. 24—201 C **6 Claims**



An assembly device comprising two identical forkshaped strips each having two arms and formed of elastically deformable materiel and a slider for opening and closing said device. The first arm is in the form of a tongue and the second arm has at least one terminal bead and one recess for receiving the terminal bead of the other strip. The second arm of each strip is clamped between the tongue and the second arm of the other strip in the interlocking position.

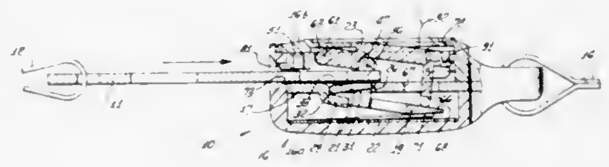
3,790,994
PUSH BUTTON BUCKLE

Hans Jakob, Sherman Oaks, Calif., assignor to American Safety Equipment Corporation, New York, N.Y.

Filed May 15, 1972, Ser. No. 253,168

Int. Cl. A44b *11/26*

U.S. Cl. 24—230 A **18 Claims**



A safety strap buckle of the type wherein a tongue plate attached to one strap section matingly engages a buckle attached to another strap section, where the buckle disclosed herein is provided by non-structural housing fixedly carrying a through-load member and including a push button operated latch assembly for selectively coupling tension loads between the through-load member and the tongue plate. The through-load member in addition to carrying the tension loads is provided with tongue plate guide and restraint means for bearing transverse loads on the buckle such that the housing itself serves merely as an encapsulating member. Assembly of the buckle is facilitated by a two part construction of the encapsulating housing, including a base part having a cavity therein for receiving a load member and the latch member including a push button actuator maybe carried by such load member in a unidirectional assembly operation which is completed by mounting a cover part of the housing to the base part.

3,790,995

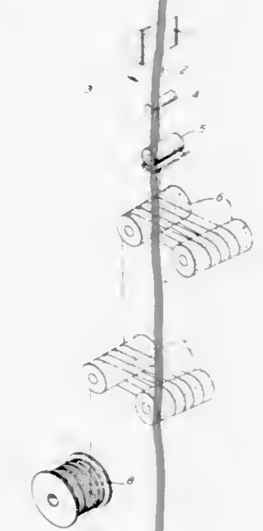
APPARATUS FOR THE PREPARATION OF POLYETHYLENE TEREPHTHALATE FILAMENTS

Horst G. Martin, Cham; Bernhard Glutz, Muenchenstein, and Hans Linz, Kriens, all of Switzerland, assignors to Societe de La Viscose Suisse, Emmenbruecke, Switzerland

Division of Ser. No. 28,821, April 15, 1970, Pat. No. 3,715,421. This application Apr. 11, 1972, Ser. No. 242,984

Int. Cl. D02j *1/22*

U.S. Cl. 28—59.5 **7 Claims**



A continuous spin-draw process is disclosed for preparing highly-drawn polyethylene terephthalate filaments drawn at speeds greater than 1,800 meters per minute using only one heated draw roll system without the use of any other heating device. Feed and draw rolls are provided with a surface roughness which allows a slipping of the filaments along a number of turns before they leave the feed rolls and after they arrive at the draw rolls. The filaments are partially drawn at the lower temperature of the feed rolls, drawing continues between the feed and draw rolls, and is completed at the higher temperature of the draw rolls with a total draw ratio between 5 and 8.

3,790,996

YARN GUIDING APPARATUS

Andre M. Marchand, Roanne, France, assignor to Ateliers Roannais De Constructions Textiles, Roanne (Loire), France

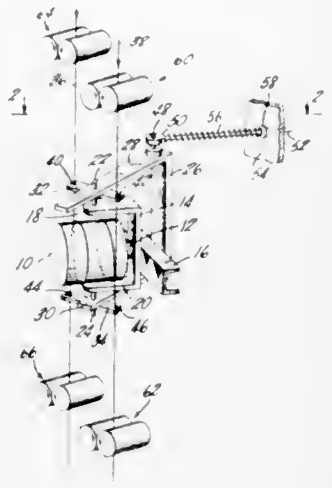
Filed Sept. 12, 1972, Ser. No. 288,417

Claims priority, application France, Sept. 23, 1971, 71.34349

Int. Cl. D02j *1/22*

U.S. Cl. 28—71.3 **19 Claims**

In the particular embodiments disclosed, apparatus for guiding two yarns over a curved surface is combined with a yarn drawing machine including feed rollers, take-up rollers and an intermediate cylindrical stretching element, thereby permitting two yarns to be drawn at the same drawing station. One or a pair of guide arms, each having a guide opening for a yarn at either end, are arranged relative to the cylindrical element to pass the yarns over the element in two spaced planes. The arms and the cylindrical element are pivotable one relative to the other to shift, e.g., interchange, the loci of the yarns on the element. In one embodiment, the guide arms are pivoted while the cylindrical element is held stationary, and in another the cylindrical element is pivoted while the arms remain fixed. Where a pair of guide arms are used, they may be placed on opposite sides of the cylindrical element to guide the yarns in their approach to and departure from the cylindrical element.



3,790,997

PROCESS OF PRODUCING RANDOM THREE-DIMENSIONAL CRIMPED ACRYLIC FIBERS

Ronald A. Hagell, Lugoff, S.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 761,160, Sept. 20, 1968, abandoned. This application July 15, 1971, Ser. No. 163,037

Int. Cl. D02g *1/20, 1/12*

U.S. Cl. 28—72.11 **3 Claims**

Acrylic homocomponent fiber having random three-dimensional crimp is prepared by stuffer-box crimping tow under hot-wet conditions, cooling the crimped tow and then crimping the tow again under hot-wet conditions. These fibers, in staple form are especially suited for use in preparing improved sliver knit pile fabrics.

3,790,998

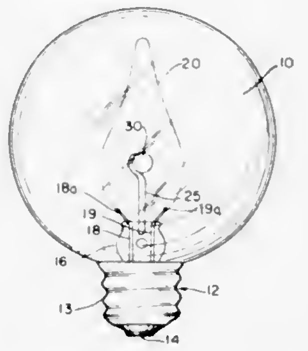
METHOD OF MAKING A LAMP WITH OSCILLATING FILAMENT

Rudolph Kaufman, Bronxville, N.Y., and Wolfgang E. Thouret, Verona, N.J., assignors to Duro-Test Corporation, North Bergen, N.J.

Filed Nov. 3, 1971, Ser. No. 195,350

Int. Cl. H01j *9/18, 9/42*

U.S. Cl. 29—25.13 **3 Claims**



A method is disclosed for selecting the proper filament length in an incandescent lamp designed for operation from a source of alternating current of a given frequency, the lamp having a magnet producing a magnetic field which reacts with the current through the filament to cause the filament to oscillate. The length of the filament is selected in accordance with the frequency of the operating current to enhance the probability of the filament oscillating.

3,790,999

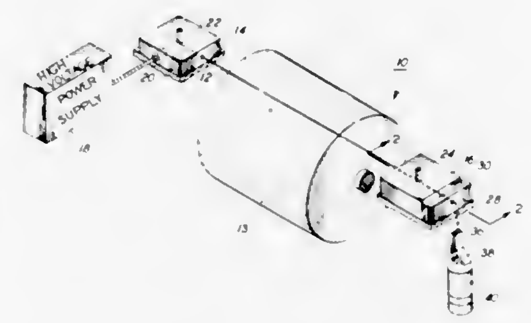
CORONA WIRE APPARATUS

Charles F. Gallo, Jr., Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 5, 1972, Ser. No. 295,414

Int. Cl. H01j *9/18*

U.S. Cl. 29—25.15 **13 Claims**



In electrophotographic apparatus wherein electrostatic charges are provided by corona wire apparatus, an improved corona wire end support block and terminating method in which a corona wire is secured and high voltage shielded internally in a plastic end block. The corona wire extends through a small internal linear bore through the block under a plastic set screw, and then through the lower end of a cut-off access notch, to outside tensioning means such as adjustable weights. The corona wire end is readily cut-off through the access notch so that both the terminated wire end and the fastening are fully inside the block. Thus, the potential for sparking or corona from exposed wire ends or other conductors is greatly reduced. Neither the securing or cut-off of the wire disturbes the desired tension on the wire. Further insulation may be placed in the notch after wire cut-off.

3,791,000

METHOD AND APPARATUS FOR SMOOTH-ROLLING OF CYLINDRICAL WORKPIECE SURFACES

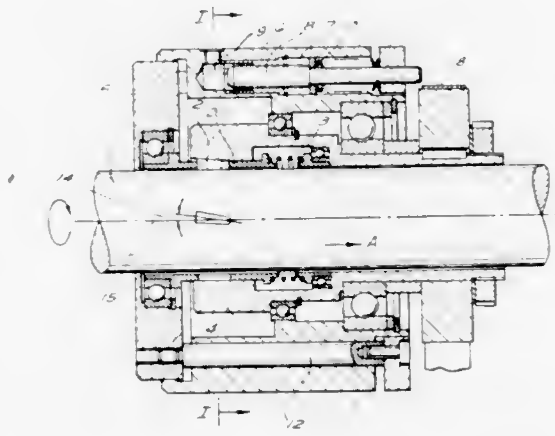
Bernhard Kunze, Erkelenz, Germany, assignor to Wilhelm Hegenscheidt Kommanditgesellschaft, Erkelenz, Germany

Filed Oct. 12, 1972, Ser. No. 296,893

Claims priority, application Germany, Oct. 13, 1971, 2150895

Int. Cl. B21c *37/30*

U.S. Cl. 29—90 R **7 Claims**



A tool is provided, having an annulus of rollers which are inclined to the axis of the annulus and which engage the cylindrical surface of a workpiece located cocentrically with respect to the annulus. The inclination of the rollers, which are rotated with reference to the workpiece and which engage the surface thereof over a drop-shaped area inclined to the axis of the annulus, tends to impart to the workpiece a thrust in one axial direction, and the workpiece is forcibly advanced in the opposite direction against this thrust.

3,791,001

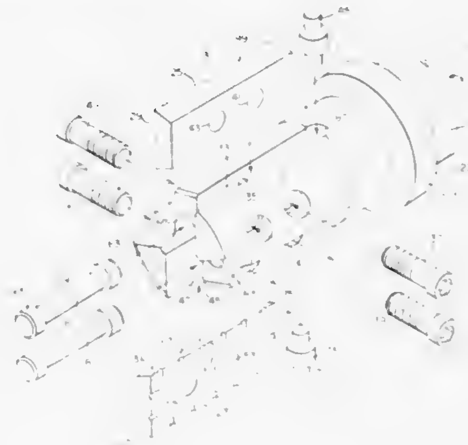
TOOL HOLDER WITH PROVISIONS FOR ACCURATELY POSITIONING CUTTING INSERTS AND AN IMPROVED CHIP BREAKING INDEXIBLE INSERT

John T. Bennett, 47 Paper Mill Ln., Newtown Square, Bucks, Pa.

Division of Ser. No. 19,023, March 12, 1970, Pat. No. 3,688,367. This application Aug. 31, 1972, Ser. No. 285,121

Int. Cl. B26d *1/00, 1/12*

U.S. Cl. 29—95 R **2 Claims**



A tool holder having at least one cutting insert (blade) receiving slot that is formed in part by a pair of spools at adjacent small side areas of the slot. The spools are held at a finite angle with each other which matches the angle between adjacent edges of a blade to be inserted in the slot. The spools provide a ridge to contact blade edge surfaces for only a small portion of their width. An application of this blade positioning technique is a multiple indexible blade rotary tool holder. Indexible blades for use in a wide variety of tool holders have improved chip breaking grooves adjacent to its cutting edges in surfaces thereof which lead into the work piece.

3,791,002

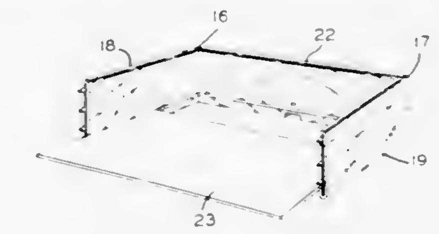
METHOD OF MAKING A THERMOPLASTIC DRAWER

John G. Lampe, High Point, and Willie E. Wall, Thomasville, both of N.C., assignors to Armstrong Cork Company, Lancaster, Pa.

Division of Ser. No. 127,258, March 23, 1971. This application July 31, 1972, Ser. No. 276,688

Int. Cl. B23p *17/00;* **B23q** *17/00;* **B23k** *31/02*

U.S. Cl. 29—155 R **1 Claim**



A drawer structure is made by the following described method steps. The rear and side panels of a drawer are formed from a single slab of foamed rigid poly(vinyl chloride) having a reinforcing densified core and a densified outer skin with a wood grain pattern thereon. A longitudinal groove is formed in one surface of the slab adjacent the bottom edge thereof, and two V-shaped grooves are cut across the width of the same surface at appropriate ultimate corner forming locations. Appropriate guide slots and drawer front fastening configurations are formed on the slab. The slab is heated and bent at the V-shaped groove locations to form the rear and side panels of the drawer. A drawer bottom panel is installed in the longitudinal groove adjacent the bottom edge of the rear and side panels and the drawer front is attached. The drawer looks, feels, sounds, and handles like wood, but is less expensive and has many desirable qualities not possessed by wood.

3,791,003

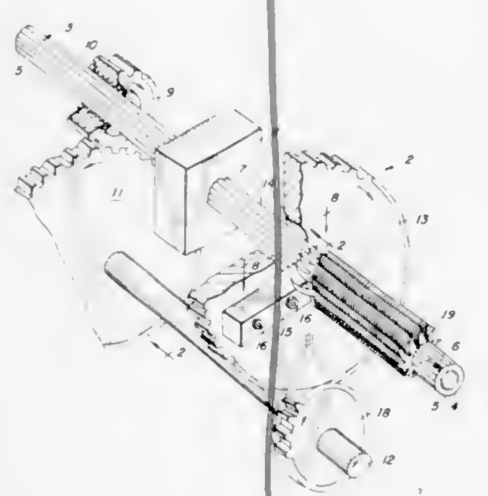
METHOD OF FRABRICATING A PLURAL FINNED HEAT EXCHANGER

Stephen F. Pasternak, Park Ridge, Ill., assignor to Peerless of America, Incorporated, Chicago, Ill.

Division of Ser. No. 13,297, Feb. 24, 1970, Pat. No. 3,727,682. This application Aug. 7, 1972, Ser. No. 278,401The portion of the term of this patent subsequent to Apr. 17, 1990, has been disclaimed.

Int. Cl. B21d *53/02*; **B23p** *15/26*

U.S. Cl. 29—157.3 B **9 Claims**



A tubular heat exchanger having spine-type fins formed integrally from the wall thereof and disposed therearound, with the fins cut from ribs extending longitudinally of the heat exchanger, and a method of manufacture which includes rotary movement between a tool and an elongated, ribbed tubular member relative to the longitudinal axis of the latter.

3,791,004

PIN EXTRACTING DEVICE

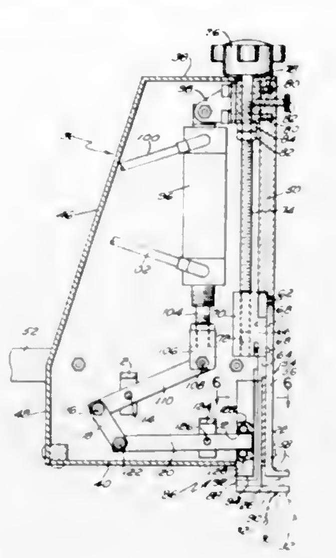
Thomas J. Crafford, East Providence, R.I., and John W. Crafford, Rehoboth, Mass., assignors to Crafford Tool & Die Co., Riverside, R.I.

Filed Sept. 25, 1972, Ser. No. 292,122

Int. Cl. B23p *19/00*

U.S. Cl. 29—200 D **8 Claims**

A device for extracting a headed pin from frictional engagement with a rod, wherein the rod is formed as part of an article holding rack. The device includes a holder member on which the rod is received and an extractor member that engages the head of the pin and that is movable in a linear direction by a power operated mechanism to extract the pin from the rod in a straight line direction.



3,791,005

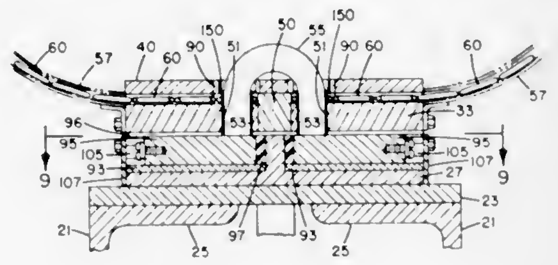
APPARATUS FOR ATTACHING SOLDER RINGS TO WORK PIECES

Ross Moyer, Tully, and Fred Karandy, East Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 166,792, July 28, 1971, Pat. No. 3,745,644. This application Apr. 23, 1973, Ser. No. 353,854

Int. Cl. B23p *19/00*

U.S. Cl. 29—200 B **7 Claims**



By the method and apparatus herein disclosed, solder rings, formed of solder material capable of taking a permanent set upon deformation, are fixed on work pieces for subsequent soldering to other work pieces. The perimeter of a solder ring, positioned at a predetermined location on a work piece, is engaged at two points spaced apart less than 180°. The solder ring is engaged by projections on forming blades or jaws moved toward a plane extending transversely of the ring. Sufficient force is applied at the points of engagement to bow a portion of the ring intermediate the points of engagement outwardly from the work piece and to draw the remainder of the ring in tight engagement about the work piece. Preferably the forming blades are each provided with a pair of projections for engaging opposite sides of the ring to bow the intermediate portions of the ring outwardly at each side thereof.

3,791,006

BALL JOINT PULLER

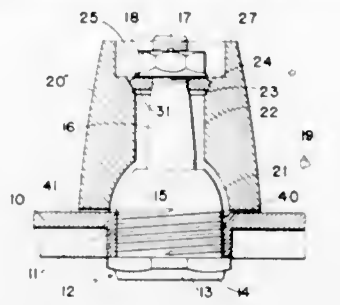
Paul E. Robinson, 107-1301 Rothesay St., Winnipeg, Manitoba, Canada

Filed Aug. 23, 1972, Ser. No. 283,157

Int. Cl. B23p *19/04*

U.S. Cl. 29—201 **9 Claims**

A cylindrical cone element is placed over the ball joint aperture and the ball joint assembly is offered up into the aperture from the underside. One or more of a variety of adaptors is then placed over the screw fitted shank of the ball joint assembly and rests upon the conical surface of the cylindrical cone element whereupon a nut can be engaged with the screw fitted shank and tightened down upon the adaptor thus pulling the ball joint assembly up into engagement within the walls of the aperture. The conical surface enables a straight-pull to be exerted even if the cylindrical element cannot be aligned exactly at right angles to the longitudinal axis of the ball joint assembly due to constructional characteristics of the arm carrying the ball joint assembly.



3,791,007

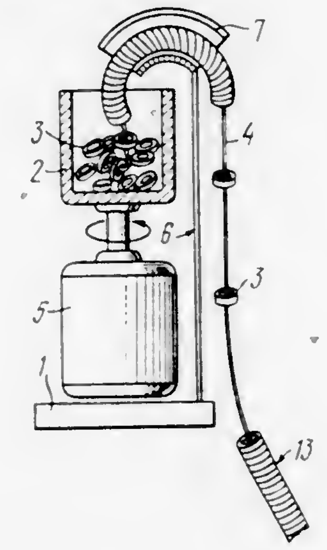
DEVICE FOR PUTTING TOROIDAL FERRITE CORE ON WIRE

Yury Emelyanovich Seleznev, Vesenney proezd, 4a, kv. 16, and Yury Alexandrovich Burkin, Tsvetnoi procezd, 29, kv. 24, both of Novosibirsk, U.S.S.R.

Filed Sept. 27, 1972, Ser. No. 292,838

Int. Cl. H05k *13/04*

U.S. Cl. 29—203 MM **5 Claims**



A device for putting toroidal ferrite cores on a wire, in which the end of the wire is made at least as a half-turn of a spiral and is lowered into a magazine containing ferrite cores charged therein in bulk and constituting a layer. The magazine is rotated in the direction opposite to that of the winding of the spiral, with the device being provided with a fixing means for preventing the spiral from turning about the base of the device. This fact provides an automatic process of putting ferrite cores of any size on a wire of any diameter.

3,791,008

WIRE PROCESSING APPARATUS

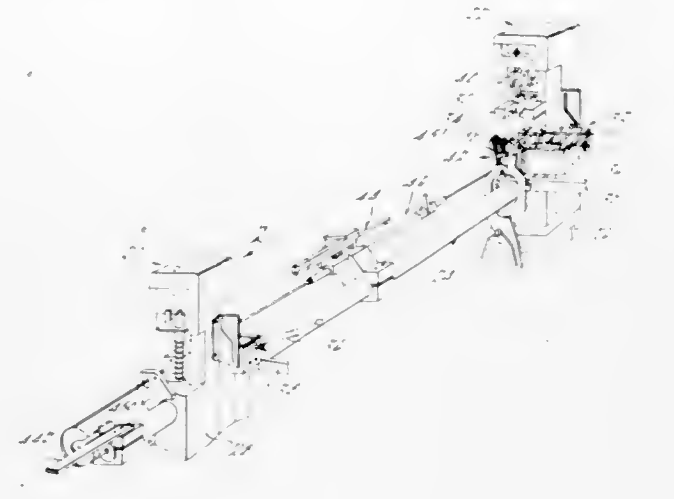
Robert M. Dyksterhouse, RR 3, Charlevoix, Mich.

Division of Ser. No. 195,165, Nov. 3, 1971, Pat. No. 3,742,564. This application Dec. 26, 1972, Ser. No. 318,102

Int. Cl. H01r *43/04*

U.S. Cl. 29—203 P **31 Claims**

The present invention relates to an improved wire processing apparatus for making electric wire leads and harnesses including the cutting of the wire or wires, the cutting and stripping of the insulation from the end portions thereof, and the assembly of the components including the connection of the terminals thereto. The apparatus includes spaced head mechanisms each including wire cutting and insulation cutting and stripping means, and terminal securing means, and which holds the wire throughout the operation of these means. Cooperating with the head mechanisms is one or more wire feed means each of which moves through one of the head mechanisms to position and end portion of a wire in another of the head mechanisms and then returns through said one of the head mechanisms to position another portion of the wire in said one of the head mechanisms.



3,791,009

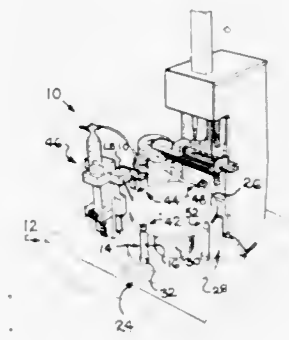
APPARATUS FOR FILLING, LABELING, AND CLOSING CONTAINERS, SUCH AS SYRINGES

Larry C. Gess, 1255 Fir Dr., Toledo, Ohio

Filed Feb. 24, 1972, Ser. No. 228,917

Int. Cl. 53 *341*, **B65h** *3/00*

U.S. Cl. 29—208 B **12 Claims**

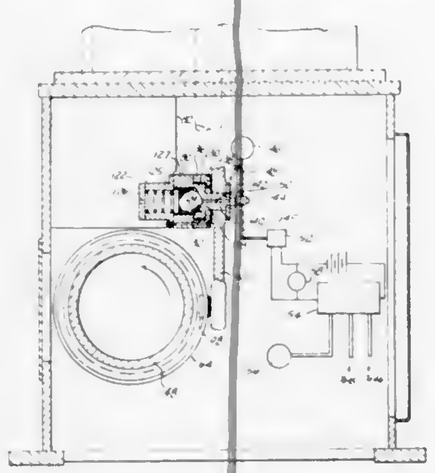


Apparatus for filling, labeling, and closing or applying needle assemblies to medicinal syringes is provided. The apparatus includes an adjustable pump for filling individual syringe barrel assemblies automatically with a predetermined amount of liquid. The barrels are then labeled with appropriate indicia showing the contents, with the labels printed immediately before to assure that the correct labels are applied to the proper syringes. Needle assemblies are crimped on the syringe barrels during labeling to complete the overall operation.

3,791,010
OVERLOAD MECHANISM FOR CAM OPERATED LINKAGES IN A MULTISTATION ASSEMBLY MACHINE

James T. Graham, Sterling Heights, and Fred W. Hackstock, Birmingham, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 204,755, Dec. 3, 1971, Pat. No. 3,724,052.
Filed Feb. 16, 1973, Ser. No. 333,436
Int. Cl. B23p *19/04*
U.S. Cl. 29—208 C **6 Claims**

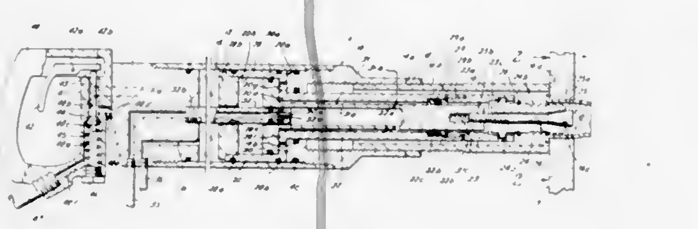


A station for an automatic nonsynchronous multistation assembly machine operated by a cam shaft extending transversely to the line of movement of the parts in the transport system, and featuring an individual overload mechanisms for each of the associated cam. The overload mechanism including a detent link pivot together with an associated drive disconnect and sensor system so that an overload condition causes displacement of the pivot link generating a sensor signal and a consequent disconnect of the drive system in response to the sensed signal.

3,791,011
TUBE PULLING DEVICE

Joe H. Keys, 315 N. Yupon St., Clute, Tex.

Continuation-in-part of Ser. No. 88,721, Nov. 20, 1970, abandoned. This application Apr. 24, 1972, Ser. No. 246,771
Int. Cl. B23p *19/04*
U.S. Cl. 29—252 **6 Claims**

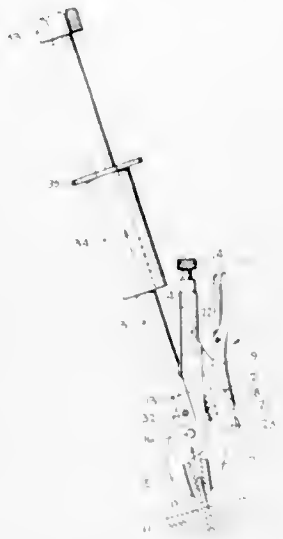


A tube pulling device for gripping and removing a tube, or tube end from a plate or tube sheet of a heat exchanger or the like, wherein a pair of pistons are arranged so as to coact with each other for movement in response to hydraulic fluid pressure for initially engaging a tube gripping means in the bore of the tube to be pulled and for thereafter exerting a pulling force on the tube relative to the plate or tube sheet in which the end of the tube is secured. The pistons are controlled without the use of one-way valves inside of the device and with the full hydraulic force applied to the pistons successively as required. The hydraulic fluid is supplied to the pistons from an external hydraulic system which is controlled by an air stream having a control at the device for manipulation by the operator.

3,791,012
TRACTION APPLYING TOOL

Arthur S. Jenkin, Peapack, N.J., assignor to Komline-Sanderson Engineering Corporation, Peapack, N.J.

Filed May 8, 1972, Ser. No. 251,425
Int. Cl. B23p *19/04*
U.S. Cl. 29—254 **1 Claim**



A workpiece to which traction is to be applied is firmly held by a gripping device to which is anchored one end of a rectilinear guide having a free end directed away from the workpiece. An impact member of high inertia is slidably disposed on the guide for rapid movement toward an impacting engagement with an abutment carried by the guide adjacent its free end, whereby the resulting tensional forces in the form of a sudden impulse are transmitted through the gripping device to the workpiece for use, for instance, in withdrawing the workpiece from a member in which it is firmly anchored or embedded.

The impulse applying means is combined with the gripping device in such a manner to avoid transmitting the impulses to the workpiece through the toggle linkage or other locking means which secures the jaws of the device in gripping engagement with the workpiece, whereby to avoid loosening of the jaws and/or damage to the said locking means.

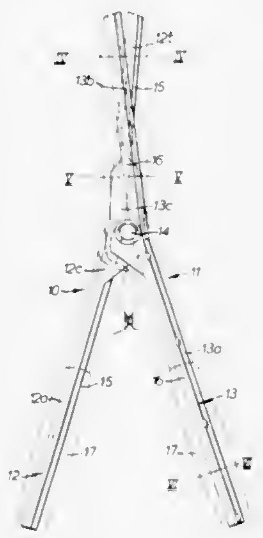
3,791,013
HAND TOOLS

Edward A. Rogers, Ashford Common, England, assignor to Wilkinson Sword Limited, London, England

Filed Nov. 3, 1972, Ser. No. 303,349

Claims priority, application Great Britain, Nov. 10, 1971, 52,127/71

Int. Cl. B26b *13/00*
U.S. Cl. 30—254 **4 Claims**

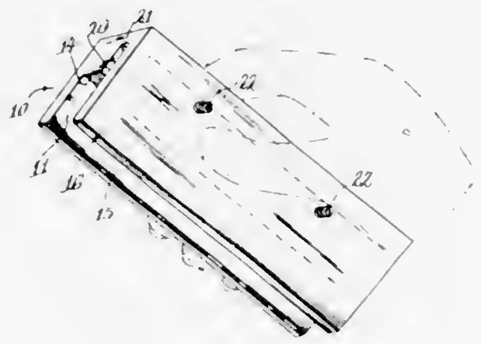


In each of the illustrated hand tools, each blade is secured to a tang in the form of a strip of carbon steel, the whole tank being sheathed in plastics material to form the shank and handle. In one embodiment each blade is formed by a strip of carbon steel integral with the tang, and on which a blade edge has been formed, the width of the strip in the blade being, in general, less than that of a conventional blade but having a backing of plastics material molded along the strip to make up its width.

3,791,014
HAND CUTTING TOOL FOR GYPSUM PLASTER BOARDS OR THE LIKE

Anthony Perna, 118-01 101st Ave., Richmond Hill, N.Y.

Filed May 22, 1972, Ser. No. 255,813
Int. Cl. B26b *27/00*
U.S. Cl. 30—294 **3 Claims**

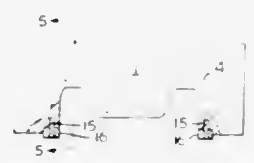


A hand cutting tool for recessing edges of gypsum plaster or wall boards and the like to facilitate attaching and minimizing beading and ridging at the butt joints therebetween when applied to a wall comprising an elongated body having an engaging groove for insertion of the edge of a board, a saw blade projecting from the base of the groove and running parallel with and spaced from one of the inner walls of the groove whereby a cut directly beneath the paper covering of the board may be made of preselected thickness and depth. The cutting tool effectively is a rabbet saw especially designed for rabbeting edges of plaster, gypsum or similar type boards.

3,791,015
METHOD OF REPAIRING A BEAM BLANK MOLD

Gary S. Lucenti, Sault Ste. Marie, Canada, assignor to The Algoma Steel Corporation, Limited, Sault Ste. Marie, Canada

Filed Oct. 17, 1972, Ser. No. 298,441
Int. Cl. B23p *7/00*
U.S. Cl. 29—401 **4 Claims**

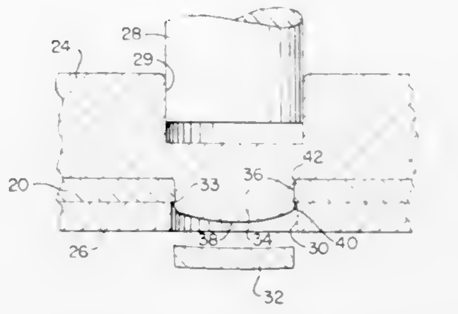


A method of repairing the worn joint in a mold particularly a beam blank mold formed of two halves by machining the worn joint to a recess of predetermined shape of selected dimensions and mechanically attaching preferably pinning a copper containing strip in said recess to have a precise fit therein and to form a substantially continuous surface in said mold.

3,791,016
METHOD OF CREATING MOTION-FREE CONNECTION

George J. Eberhardt, Dayton, Ohio, and Gilbert Kennedy, deceased, late of Dayton, Ohio (by Dorothy L. Kennedy, executrix), assignors to The National Cash Register Company, Dayton, Ohio

Continuation-in-part of Ser. No. 812,777, April 2, 1969, abandoned. This application Oct. 22, 1971, Ser. No. 191,593
Int. Cl. B23p *11/00*
U.S. Cl. 29—432 **13 Claims**

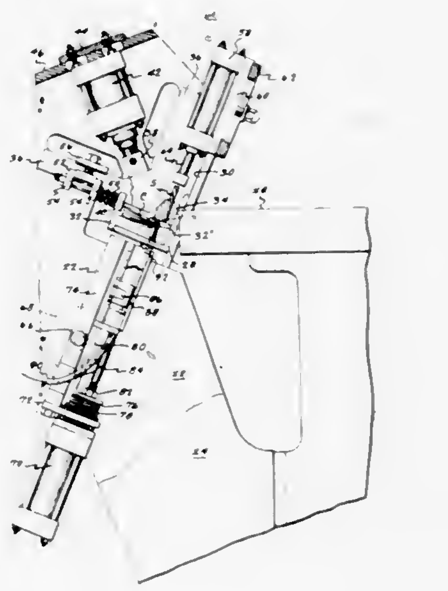


A single-step method of creating, and apparatus for so creating, a motion-free connection of two members by reason of partially piercing one member wherein material from the one member is forced into and through the second member. The material being displaced from the one member creates an opening in the second member by removing a slug therefrom, and the displaced material assumes a shape to fill the opening, a portion of the material forced into and through the second member being flared outwardly, by reason of spring action in clamping around the portion, and thus form a mechanical bond to secure the two members. The connection provides complete bonding, by shearless flow of material, to resist separation of one member from the other, as well as torsional resistance to rotation between the two members.

3,791,017
METHOD FOR SECURING DOOR FRAME COMPONENTS

Roy E. Smith, Atlanta, Ga., assignor to Textron Inc., Providence, R.I.

Division of Ser. No. 102,035, Dec. 28, 1970, Pat. No. 3,672,554. This application Feb. 1, 1972, Ser. No. 222,534
Int. Cl. B23p *11/00*
U.S. Cl. 29—432 **3 Claims**



Apparatus is provided for securing a door frame casing piece to a side jamb rapidly and effectively. The apparatus operates to hold the casing piece and side jamb in door frame relation while causing the side jamb to be toenailed to the casing piece and the casing piece to be square nailed to the side jamb. The nailing is done by respective fastener forming and inserting means, at least one of which is uniquely arranged to actuate feeding of a fastener length of wire stock, forming of a fastener from the fed length, and insertion of the formed fastener, from the working stroke of a reciprocating plunger.

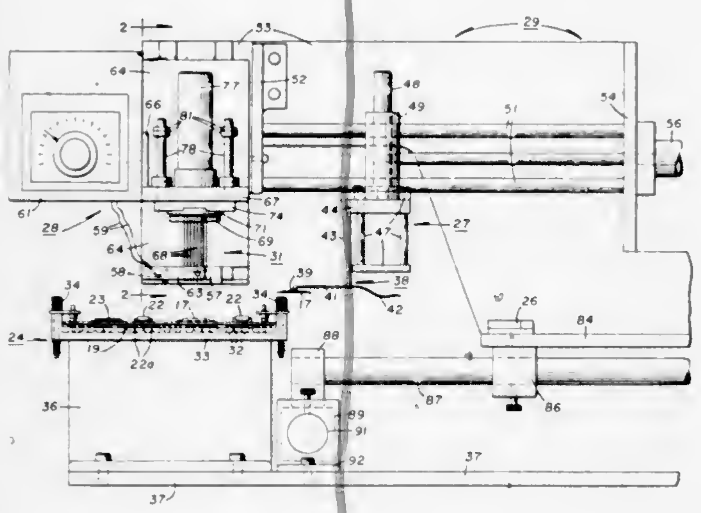
3,791,018
HEATING METHOD AND APPARATUS FOR SECURING A MEMBER TO AN ARTICLE

Walter K. Johnston, Denver, and Gary G. Seaman, Broomfield, both of Colo., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Nov. 16, 1971, Ser. No. 199,260

Int. Cl. B23k *31/02*

U.S. Cl. 29—471.1 **15 Claims**



Resilient leads of an integrated circuit module are reflow soldered to circuit paths on one side of a printed wiring board having component leads protruding from its opposite side. Apparatus for accomplishing the reflow soldering includes a plurality of vertically movable metal pins, one for each lead, and a heater block which is maintained at a constant temperature. When the pins are in upper positions, lower end portions thereof are disposed in apertures in the heater block, whereby discrete quantities of heat flow from the heater block into the lower end portions. The pins then are moved downward through the apertures in the heater block so that their lower ends engage their respective leads, whereby the heat in their lower end portions melts the solder on the leads momentarily. The pins, which are individually biased, then hold the leads in bonding position until the melted solder has cooled and solidified to bond the leads to the circuit paths. Uniform support of the side of the printed wiring board from which the component leads protrude is achieved by placing it on a bed of loosely constrained, spherical members. A modified from of the apparatus may be used to secure a member to an article by staking.

3,791,019
METHOD OF SOLDERING A CONDUCTOR TO A SEMICONDUCTOR

Gunther Schmidt, Ludwigsburg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

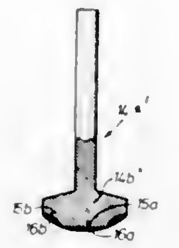
Filed Apr. 28, 1972, Ser. No. 248,520

Claims priority, application Germany, May 5, 1971, 2122104

Int. Cl. B23k *31/02*

U.S. Cl. 20—473.1 **2 Claims**

A semi-conductor element is to be connected with one or more conductor members by soft-soldering. The conductor member is formed with a nose-like projection having circumferential surface portions and a free end face which is planar and with which the circumferential surface portions define arcuate angles. Liquid solder is flow-deposited on the surface portions and on the end face to form a solder-coating on them, particularly on the surface portions, and thereupon the coated endface is abutted against the semi-conductor element and soldered thereto.



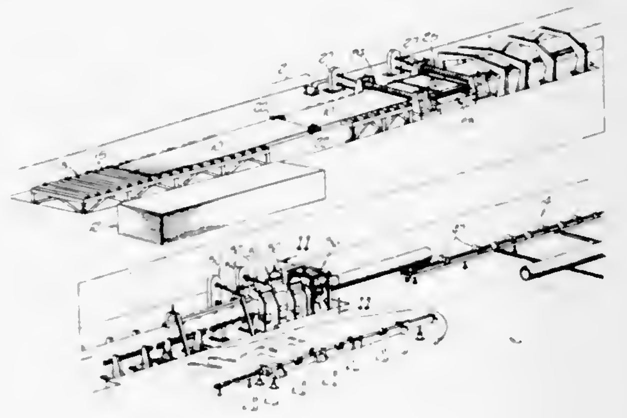
3,791,020
INVERTED TUBE MILL METHOD

Charles A. Babbitt, Palos Verdes Estates, Calif., assignor to Torrance Machinery & Engineering, Torrance and Babbitt Engineering & Machinery, Inc., Palos Verdes Estates, both of, Calif.

Continuation of Ser. No. 758,978, Sept. 11, 1968, abandoned. This application Sept. 7, 1971, Ser. No. 178,472

Int. Cl. B23k *31/02*

U.S. Cl. 29—477.7 **5 Claims**



A plurality of metal sheets disposed on a roller conveyor in end-to-end relation are tack welded to form a continuous sheet. The continuous sheet is passed through a series of forming rolls by which it is progressively formed into a tube with abutting side edges lying in a straight line along the underside of the tube. These side edges are seam welded on the inside of the tube, after which the individual sheets (now in tube form) are separated from one another and removed from the conveyor. Each tube is again seam welded, this time along the outside of the tube.

3,791,021
METHOD FOR INSTALLATION OF PLASTIC CLOSURE RECEIVER ON METAL CONTAINER

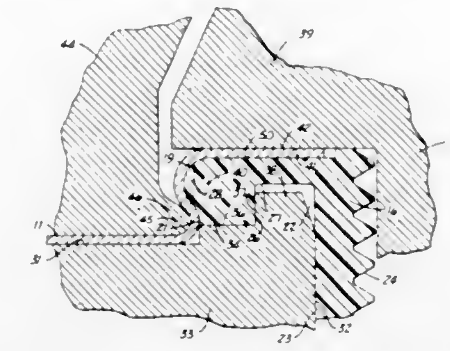
George F. Bauman, Auburn, Ind., assignor to Ricke Corporation, Auburn, Ind.

Division of Ser. No. 25,031, April 2, 1970, a andoned. This application Apr. 13, 1972, Ser. No. 243,703

Int. Cl. B21d *39/00;* **B23p** *11/00*

U.S. Cl. 29—510 **4 Claims**

A plastic receiver is internally threaded for reception of a plug. The receiver is provided with a radially extending flange with a downwardly opening channel on the underside thereof, an interior cylindrical wall of the channel serving as a back up face for a back up ring of an installation die, precluding collapse of the flange upon die forming of a retaining pocket of a metal container member upon flange installation. Circularly spaced irregularities provided on the upper outer surface of the flange effect matching deformations of the metal during installation, precluding subsequent rotation of the flange in the metal.



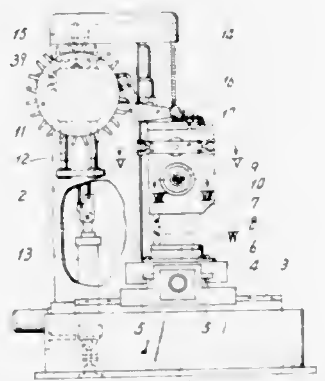
3,791,022
MACHINE TOOL WITH AUTOMATIC TOOL CHANGING APPARATUS

Mikishi Kurimoto, Nagoya; Syoji Inagaki, Kariya, and Noriyasu Oda, Gamagori, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Feb. 2, 1972, Ser. No. 222,915

Int. Cl. B23q *3/157*

U.S. Cl. 29—568 **9 Claims**



In a machine tool with an automatic tool changing apparatus, a spindle is provided which includes a projection at one end thereof and a drawing device therein for clamping the tool thereon. A tool magazine is provided for storing diverse tools, each of the diverse tools having a projection at the periphery thereof, and a tool transfer means is provided for transferring tools between the spindle and the tool magazine. Control means are provided for rotating the spindle through at least one revolution when a succeeding tool is inserted into the spindle by the tool transfer means, so as to abut the projection of the spindle on the projection of the tool, and for causing the drawing device to clamp the succeeding tool on the spindle after completing the rotation of the spindle through its one round.

3,791,023
METHOD OF MANUFACTURING A FIELD EFFECT TRANSISTOR

Werner Scherber, Heilbronn, Germany, assignor to Licentia Patent-Verwaltungs GmbH, Frankfurt am Main, Germany

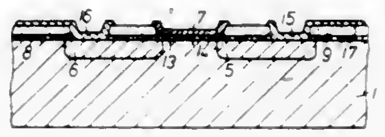
Filed Dec. 10, 1971, Ser. No. 206,635

Claims priority, application Germany, Dec. 21, 1970, 2061810

Int. Cl. B01j *17/00*

U.S. Cl. 29—571 **10 Claims**

A method of manufacturing a field effect transistor comprises forming a nitride layer on the surface of a semiconductor body of a first type of conductivity containing two spaced regions of a second type of conductivity; forming an oxide layer on the nitride layer; forming windows in the nitride and oxide layers extending to the surface of the semiconductor body above the two regions of the second type of conductivity and above the zone between the two regions; forming a thin oxide layer in the window above the zone between the two regions; forming a gate control electrode in the window above the zone between the two regions and forming contacts in the windows above the two regions.



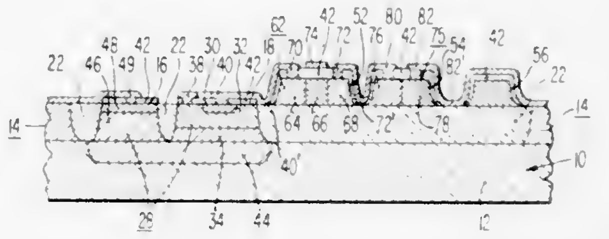
3,791,024
FABRICATION OF MONOLITHIC INTEGRATED CIRCUITS

Edward Joseph Boleky, III, Cranbury, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Oct. 21, 1971, Ser. No. 191,455

Int. Cl. B01j *17/00*

U.S. Cl. 29—577 **8 Claims**



A portion of a layer of monocrystalline silicon on a substrate is completely oxidized through to provide islands of silicon spaced apart by the portion of silicon dioxide. Spaced apart, thin layers of semiconductor material are provided on the silicon dioxide portion. Different semiconductor components are provided within the semiconductor islands and within the thin semiconductor layers. Preferably, the upper surfaces of the silicon islands and the silicon dioxide isolating portions are substantially coplanar, and connectors for the various components are disposed on these surfaces.

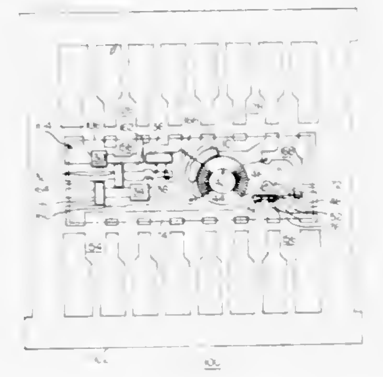
3,791,025
METHOD OF MANUFACTURING AN ELECTRONIC ASSEMBLY

Ciro Guarjado, Harbor City, Calif., assignor to Teledyne, Inc., Los Angeles, Calif.

Filed Apr. 6, 1972, Ser. No. 241,537

Int. Cl. B01j *17/00*

U.S. Cl. 29—577 **3 Claims**



A method of manufacturing and packaging an electrical circuit formed from discrete components is disclosed in which the final package is a dual in-line package. The components are mounted on a lead frame which includes an external support frame, a central portion including a plurality of discrete regions each corresponding to a respective one of the nodes in the circuit, and a plurality of leg members extending from the central portion to the support frame. Each of the discrete regions has no contact within the central portion with any of the other discrete regions. A respective one of the leg members corresponding to each external node in the circuit and is connected to the discrete region in the central portion corresponding to its external node. A body of insulative material is then formed around the central portion of the lead frame and the components, and the excess external portions of the lead frame are then removed.

3,791,026
METHOD OF JOINING A NIOBIUM TUBE TO A STAINLESS STEEL TUBE

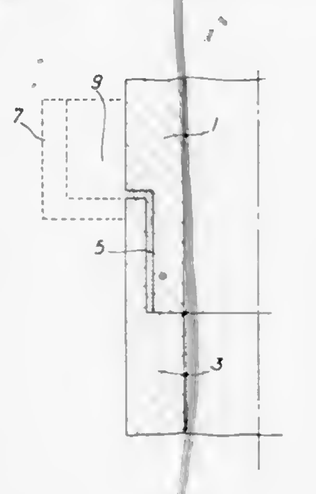
Jean-Louis Dufrene, Aix-en-Provence; Jean Lacoste, Palaiseau; Robert Schley, Orly, and Jean Tortel, Chatillon-sous-Bagneux, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Claims priority, application France, Mar. 19, 1971, 71.09823

Filed Mar. 15, 1972, Ser. No. 234,805

Int. Cl. B23k *31/02*

U.S. Cl. 29—479 **2 Claims**



The method consists in fitting the end portions of the tubes one inside the other with a predetermined clearance, the steel tube being placed on the outside and provided at its extremity with an external machined annular flange forming a reservoir, in filling the reservoir with a suitable brazing compound, in placing the assembly in a vacuum and heating it to a temperature of 1,020° to 1,030°C and in removing the reservoir after the brazing operation.

3,791,027
SOLDERING METHOD

Raymond William Angelo; Albert Lawrence Balan, both of Endwell; David Joseph Huettner, Apalachin; Richard Martin Poliak, Johnson City, and John Frank Shipley, Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1971, Ser. No. 158,580

Int. Cl. B23k *31/02, 35/36*

U.S. Cl. 29—495 **8 Claims**

There is disclosed the use of synthetic organic reactive polymer resins and other materials as soldering fluxes. These resins contain "chemical functionalities", i.e., radicals therein which provide active hydrogen for removing the oxides from the metal substrate during the soldering operation. There are essentially three types of applications as follows. The materials, distinct from known rosin fluxes, do not harden and may be easily removed with solvents. The chemical functionalities may be such that they result in resins which are thermoplastic and can remain on the solder joint to enable resoldering. Alternatively, the chemical functionalities can be chosen such that the resin fluxes chemically cross-link to form thermoset polymers which remains at the solder joint, the cross-linked polymers also functioning to reinforce the strength of the solder joint.

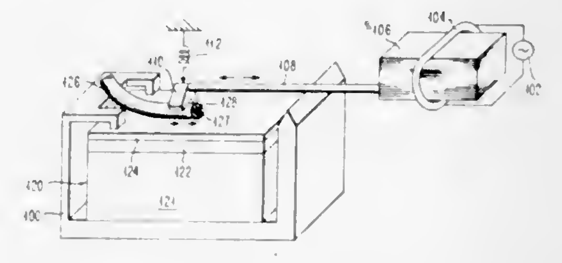
3,791,028
ULTRASONIC BONDING OF CUBIC CRYSTAL-STRUCTURE METALS

Leo Missel, Palo Alto, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 17, 1971, Ser. No. 181,502

Int. Cl. H01r *43/00;* **H05k**

U.S. Cl. 29—628 **6 Claims**



Improved corrosion resistant, high ductility ultrasonic bonds are formed between two cubic structure metallic members such as a copper wire and a copper clad printed circuit board. Each of the members is coated, preferably by plating with a smooth layer of dead soft gold prior to bonding. The coated members are then ultrasonically bonded together. The bond formed is preferably a gold-to-gold joint with no contact between the cubic structure metallic members. This bond is unexpectedly much stronger than the dead soft gold of which it is comprised. Preferred plating and bonding parameters are discussed and analyzed.

3,791,029
ELECTRICALLY POWERED CAN OPENER

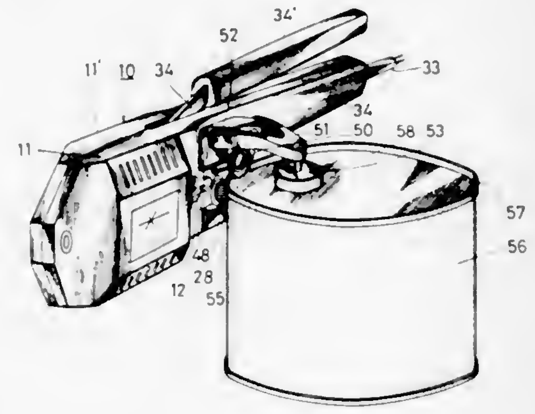
Osamu Yamamoto, 56, Koroku, ohata Moriyama-ku, Nagoya, Japan

Filed May 12, 1972, Ser. No. 252,907

Claims priority, application Japan, June 12, 1971, 46/42034

Int. Cl. B67b *7/38*

U.S. Cl. 30—4 R **2 Claims**



An electrically powered can opener has a driving wheel actuated by an electric motor to move the can opener itself around a can to be opened. By lowering a lever carrying a rotary cutter, an arm is actuated to close temporarily a switch of the electric motor circuit. On piercing of the rotary cutter into a can lid, the switch is closed by the reaction force of can opening operation and the lever is locked. When the reaction force disappears, the electric motor is deenergized automatically.

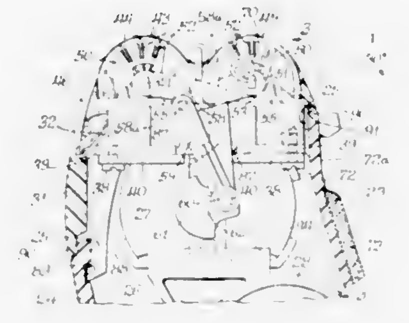
3,791,030
ELECTRIC DRY SHAVER WITH INCLINED SHAVING HEAD

Wilbur C. Jackson, Wheaton, and William P. Beck, Westchester, both of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Division of Ser. No. 831,179, June 6, 1969, Pat. No. 3,639,984. This application Oct. 6, 1971, Ser. No. 186,855

Int. Cl. B26b *19/12*

U.S. Cl. 30—43.9 **10 Claims**



Electric dry shaver having the driving connection between the cutting assemblies in the shaving head and the shaver motor include elongated lever arms which overlap each other. The motor and battery power supply for the shaver are interconnected and supported between the shaving head and the housing by apertured yoke members.

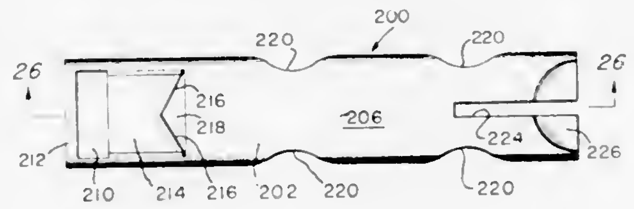
3,791,031
STRAPPING SEVERING TOOL

Jack Brothers, 34 St. Mary Dr., Succasunna, N.J., and Walter J. Puzia, 3 Richard Dr. West, Mount Arlington, N.J.

Continuation-in-part of Ser. No. 124,822, March 16, 1971, abandoned. This application May 23, 1972, Ser. No. 256,155

Int. Cl. B26h *11/00*

U.S. Cl. 30—124 **12 Claims**



A simple longitudinally-extending body defines the tool, the body having enveloping surfaces for engaging strapping banding and to accommodate the travel of the tool with a strapping banded item. One or more of the surfaces defines a severing edge for severingly parting the banding, i.e., the strapping, upon the terminal-end handle of the tool being raised or moved transverse to the strapping. In some embodiments, the tool further defines means for clasping and securing juxtaposed terminal ends of strapping, that the strapping might be secured about the item — shipping crate, or whatever.

ERRATUM

For Class 30—254 see:
Patent No. 3,791,013

3,791,032
HAND TOOLS

Edward A. Rogers, Ashford Common, England, assignor to Wilkinson Sword Limited, London, England

Filed June 30, 1972, Ser. No. 268,018

Claims priority, application Great Britain, July 15, 1971, 33,258/71

Int. Cl. B26b *13/00*

U.S. Cl. 30—271 **4 Claims**

In a hand tool of the kind comprising two co-operating members which are arranged to be moved towards and away from one another by handles which are connected to the respective co-operating members, there is provided two abutment members, each abutment member being secured to a respective handle, whereby movement together of said handles is limited by engagement of said abutment members one with the other.

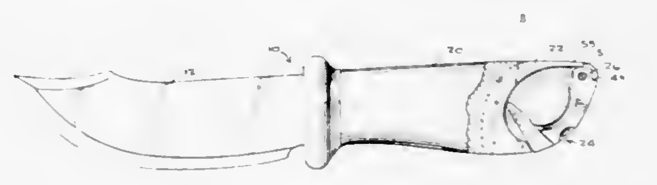
3,791,033
SKINNING KNIFE

James L. Regan, 409 Dunkel St., Fairbanks, Alaska

Filed Mar. 7, 1972, Ser. No. 232,426

Int. Cl. B26b *29/02*

U.S. Cl. 30—287 **4 Claims**



A skinning knife with a handle having a pivotal skinning blade is disclosed with the skinning blade comprising a main blade member and a tip blade member perpendicular to the main blade member. A tip sheath is movable to cover the tip for a gutting operation but leaves the cutting edge of the main blade clear for slicing the hide; another embodiment shows the tip being of conical shape.

3,791,034
HOLE PUNCHING TOOL

Charles M. Carver, 435-19th Ave., San Francisco, Calif.

Filed Mar. 23, 1972, Ser. No. 237,451

Int. Cl. B26f *1/24*

U.S. Cl. 30—367 **10 Claims**

A tool for forming pilot holes disposed accurately in a utility passage cover or the like through a layer of flooring. A circle saw uses the pilot holes to cut larger holes through the utility passage cover via an opening formed through a layer of flooring material overlying the utility passage. The tool comprises an elongate staff terminating in a punch portion at one end thereof. An anvil element is carried by the staff at one end and a hammer element is carried by and movable along the staff into and out of engagement with the anvil element for striking

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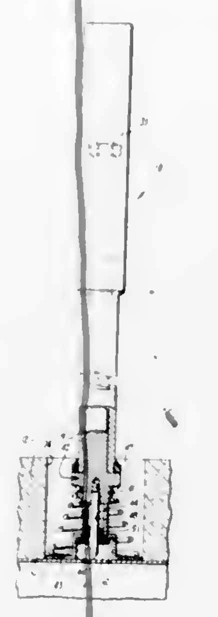
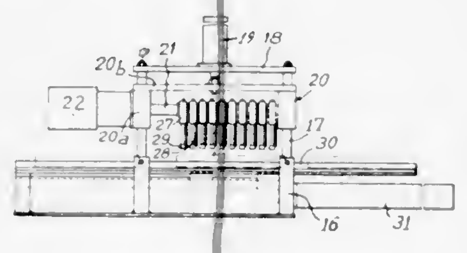
blows thereagainst to drive the punch. Guide means carried about the punch portion engage the side walls of the opening



to accurately position the punch. The punch element moves freely through the guide during driving of the punch.

3,791,035
INSTALLATION FOR PRODUCTION OF SOFT AND WASHED-CURD CHEESES

Jean-Pierre Barbier, and Jean-Pierre Feugnet, both of Retiers, France, assignors to Laiteries E. Bridel, Retiers, France
Division of Ser. No. 874,488, Nov. 6, 1969, Pat. No. 3,756,238. This application Oct. 21, 1971, Ser. No. 191,502
Int. Cl. A01j *25/06*
U.S. Cl. 31—46 **1 Claim**

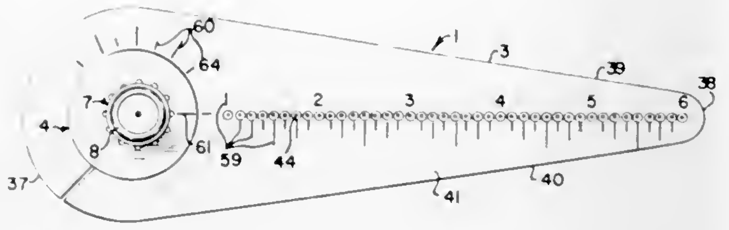


Installation for production of soft and washed-curd cheeses, including a device for molding washed-curd, consisting of giant molds, each having the section of the final cheese product and capacity corresponding to a multiple of the final cheese volume, said molds being grouped in units; a drainer device including means for turning over the mold units by imparting to them a tilting motion, followed by a pendular one, to drive out the serum; and a device for cutting the molded curd taken out of the mold into slices to the final dimensions of the cheeses, including a cutting device equipped with means to adjust knife spacing in function of the length of the molded curd in order to obtain equal curd parts regardless of the length of molded curd.

3,791,036
DRAFTING INSTRUMENT

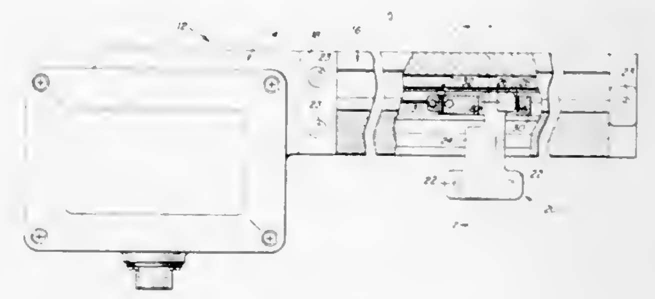
Leslie V. Stober, Jr., and Victor C. Mathis, both of 13006 Raytown Rd., Kansas City, Mo.
Filed July 3, 1972, Ser. No. 268,525
Int. Cl. B43l *9/04*
U.S. Cl. 33—27 C **8 Claims**

A drafting instrument for drawing circles and arcs, said instrument including an elongate arm adapted to overlie, in substantially parallel relation, a work surface on which a circle or arc is to be drawn, said arm having a plurality of marking device receiving apertures therethrough and having indicia to indicate the position of the apertures. The instrument or compass also includes eccentric adjusting means for fine adjustment of the desired radius with indicia to indicate the amount of fine adjustment and includes transparent sighting means with a center designation for visual positioning of the compass on the work surface.



3,791,037
LINEAR ENCODER

James J. DiCiaccio, Somerville; John W. Gjertsen, Bedford, and Alfred S. Nathanson, Brookline, all of Mass., assignors to Itek Corporation, Lexington, Mass.
Filed Feb. 17, 1972, Ser. No. 227,138
Int. Cl. G01h *3/10, 7/02*
U.S. Cl. 33—125 R **6 Claims**



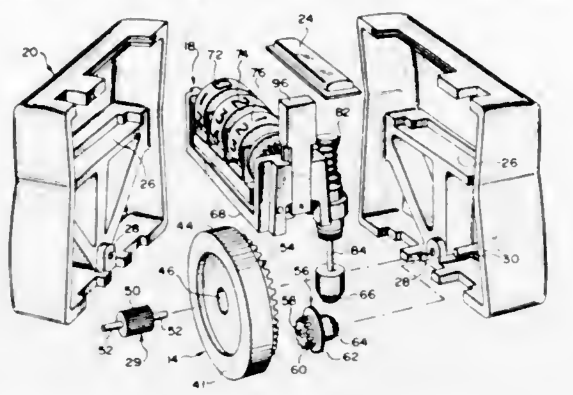
A linear encoder for precisely measuring distances along a measurement axis. One end of a flexible measuring tape is attached to an object, the movement of which is to be measured. The remainder of the measuring tape is wound in a helical configuration around a precise measuring cylinder. One central shaft supports the cylinder for rotational movement. The central shaft rotates with the measuring cylinder, and also supports for rotation a rotary encoder disc plate and a second cylinder which forms part of a constant torque spring motor. Movement of the measured object along the measurement axis results in the measuring tape being either drawn off or wound upon the measuring cylinder. This causes rotation of the measuring cylinder on the central shaft which in turn causes rotation of the encoder disc plate. A reading station adjacent to the encoder plate produces a digital output signal indicative of rotational movement of the encoder plate which is in turn indicative of movement of the measured object along the measurement axis. The constant torque spring motor maintains the measuring tape under constant tension.

3,791,038
MEASURING INSTRUMENT

Nicholas G. Polydoris, Kenilworth, and Burnell J. Wollar, Barrington, both of Ill., assignors to E N M Company, Chicago, Ill.
Filed Nov. 8, 1971, Ser. No. 196,358
Int. Cl. G01b *3/12*
U.S. Cl. 33—141 R **1 Claim**

A measuring instrument for measuring linear distance on a surface by rolling a wheel on the surface along the linear

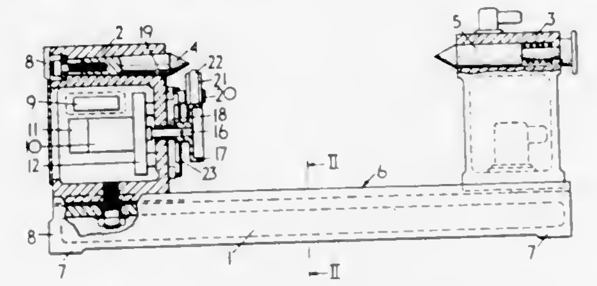
distance to be measured. The wheel is mounted in a housing, and the wheel is drivingly connected to a counter which in-



dicates the distance which the wheel has rolled. The counter is calibrated to indicate linear measurement in a selected system of measurement.

3,791,039
BENCH TEST CENTRES

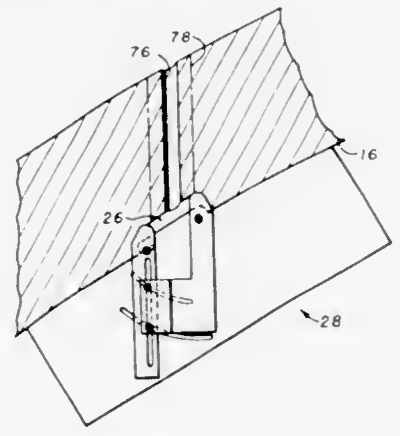
Charles Vivian Marrett Allix, London, England, assignor to C. V. Precision Tools Limited, Chiswick, London, England
Filed Dec. 31, 1970, Ser. No. 103,227
Claims priority, application Great Britain, Jan. 6, 1970, 672/70
Int. Cl. B23b *33/00*, **G01b** *5/10*
U.S. Cl. 33—174 Q **4 Claims**



The component testing apparatus described comprises bench test centres. A headstock and a tailstock are mounted on a base; each stock has a body in which a centre is mounted. The component, when under test, is arranged between the two centres, which are coaxial. The headstock includes a drive for rotating the component under test. A brake is also provided to stop rotation of the component at a selected position.

3,791,040
RECESS TEMPLATE

James Marvin Conner, Chattanooga, Tenn., assignor to Combustion Engineering Inc., Windsor, Conn.
Filed Apr. 7, 1972, Ser. No. 243,524
Int. Cl. G01b *5/20*
U.S. Cl. 33—174 G **2 Claims**



A manually manipulatable template is disclosed having particular utility in giving an indication of the amount of material which must be removed to accurately machine a uniform depth, uniform diameter recess in a spherical surface. A parallel linkage having members bearing the desired recess profile is pivotally attached to a mounting plate one edge of which has a radius of curvature conforming to that of the spherical surface. The parallel linkage is particularly unique in that a constant distance is maintained between the profile bearing members, as the linkage is rotated on the mounting plate.

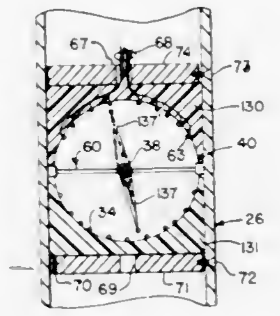
3,791,041
SHELF MARKING PUNCH

David A. Phillips, Box 101, Coppell, Tex.
Filed May 4, 1972, Ser. No. 250,217
Int. Cl. B26f *1/00*
U.S. Cl. 33—189 **4 Claims**

A shelf marking punch comprising a support plate having a lower end positioned along a floor and having spring retractable punch elements arranged in rows spaced vertically and horizontally over the plate. The rows have indicia adjacent thereto for designating one row or a plurality of rows of punches arranged to correspond to positions at which brackets should be mounted for various shelf arrangements employed in residential building.

3,791,042
PENDULUM TYPE BOREHOLE DEVIATION MEASURING APPARATUS

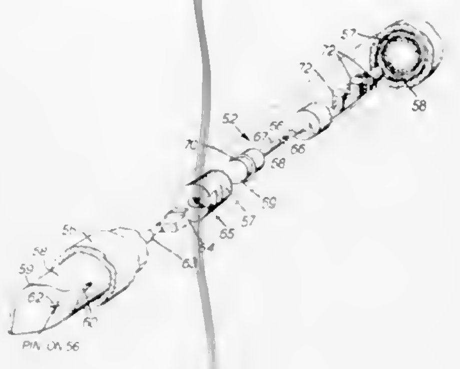
Forrest E. Bell, Box 1675, Pecos, Tex.
Filed Sept. 13, 1971, Ser. No. 179,824
Int. Cl. G01c *9/06*; **E21b** *47/22*
U.S. Cl. 33—304 **5 Claims**



Apparatus for measuring deviation in a vertically disposed borehole. The apparatus is housed within a sub, and the drilling operation can be momentarily suspended at any time and the hole deviation measured. The apparatus includes a plurality of spaced apart pendulum type sensor devices, each connected to an oscillator which produces a signal of a frequency which is proportional to the magnitude of the deviation. A receiver located at the surface of the ground discriminates between the various frequencies of the signals and correlates the frequency reading with hole deviation.

3,791,043
INDICATING INSTRUMENTS

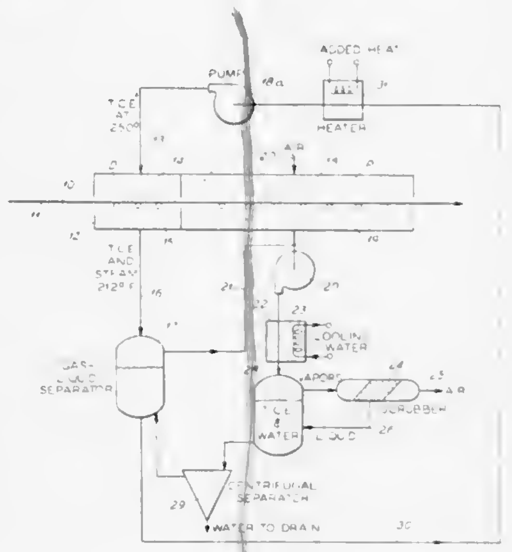
Michael King Russell, Cheltenham, England, assignor to Scientific Drilling Controls, Costa Mesa, Calif.
Continuation of Ser. No. 764,157, Oct. 1, 1968, abandoned.
This application June 9, 1971, Ser. No. 151,561
Int. Cl. G01c *9/04*; **E21b** *47/022*
U.S. Cl. 33—312 **9 Claims**



An inclinometer comprising a sensing unit and a readout unit which in use are remotely connected together through a cable, the sensing unit including two inclination sensors with sensing axes arranged at right angles and associated electronic circuitry to provide output signals which are fed to the readout unit through the cable. Also, along each of three coordinate axes there is provided a magnetic sensor, and the readout unit comprises means for converting AC signals from the inclination and magnetic sensors to DC analog signals whereby both inclination and azimuth of said sensing unit are continuously provided.

3,791,044
THROUGH DRYING FOR FIBROUS WEB

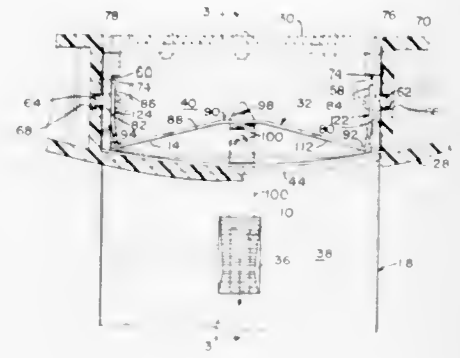
Leroy H. Busker, and Robert A. Daane, both of Rockton, Ill., assignors to Beloit Corporation, Beloit, Wis.
Filed June 8, 1972, Ser. No. 260,807
Int. Cl. F26b *3/00*
U.S. Cl. 34—9 **15 Claims**



A method and mechanism for the continuous drying of a traveling fibrous web such as a web of paper received from a paper making machine and containing water, including supporting the moving web on a porous screen in a drying zone and directing a flow of heated heat transfer liquid immiscible with the water through the web for evaporating the water and carrying water out with it through the web, separating the immiscible liquid from the water and recycling the immiscible liquid to again pass it through the web in the drying zone for a continuous cycle.

3,791,045
HAIR DRYER WITH ONE FINGER HEAD RELEASE

Earle H. Landis, Leola, and Frank W. Bostick, Lancaster, both of Pa., assignors to Schick Incorporated, Lancaster, Pa.
Filed Feb. 20, 1973, Ser. No. 334,104
Int. Cl. A45d *20/24*; **E05c** *3/06*
U.S. Cl. 34—99 **7 Claims**

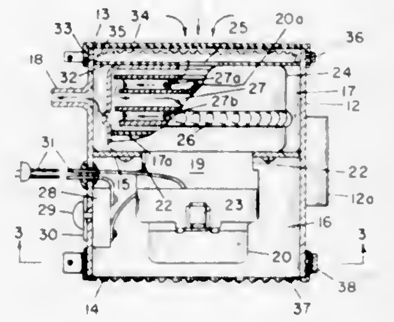


A portable hair dryer of the hard hat type, having a head assembly which is pivotally mounted on a head support assembly, is provided with a novel, one-finger head lock release feature by which the head assembly is unlocked from the operating configuration for pivotal movement. The one-finger lock release feature simultaneously unlocks detents at both sides of the head support element, thereby eliminating any twisting at the hinge connecting the head and head support element.

In a preferred embodiment, only two movable parts are required for the release mechanism.

3,791,046
DRYING APPARATUS FOR BARN MILK LINES

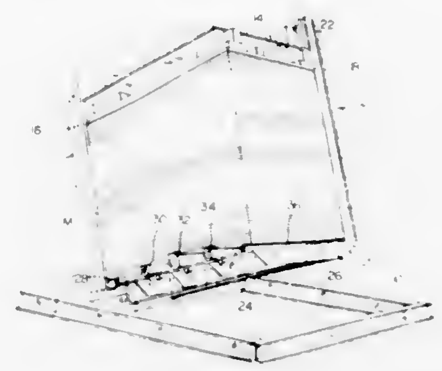
Gordon J. Bruggink, Sr., P.O. Box 248, Oostburg, Wis.
Filed Mar. 1, 1973, Ser. No. 337,083
Int. Cl. F26h *25/00*
U.S. Cl. 34—104 **6 Claims**



A drying apparatus for a barn milk pipe line system having a casing divided into a motor compartment and a fan compartment by a partition which supports a motor driven blower unit within the casing. The blower unit has a motor housing positioned within the motor compartment and a fan housing positioned on the opposite side of the partition within the fan compartment. A fan within the fan housing draws drying air into the fan housing and forces it outwardly through the fan compartment and casing outlet pipe to the pipe line without contact between the drying air and the motor.

3,791,047
SHEET WINDING AND TURNING APPARATUS

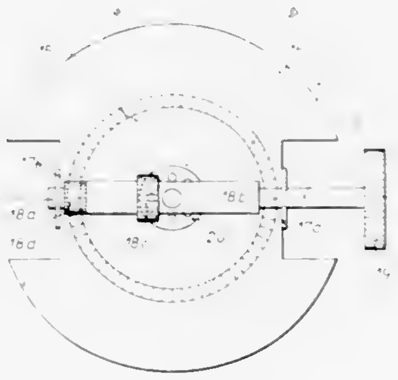
Lamar T. Atwood, Cumberland Center; Joseph E. Radomski, Saco, and David E. Wilson, Cumberland Center, all of Maine, assignors to Southworth Machine Company, Portland, Maine
Filed Dec. 22, 1972, Ser. No. 317,866
Int. Cl. F26b *13/00*
U.S. Cl. 34—150 **8 Claims**



Sheet winding and turning apparatus for printed cardboard and the like wherein a stack of horizontal sheets comprising the stack are rotated about a longitudinal axis, while being confinedly supported, through an angle greater than 90°, and with the boards being projected against a curved surface defined by a plurality of aligned spaced tubes of different sizes, so arranged as to constitute in effect a bowed plate, the tubes being replaceable and interchangeable with different sizes of tubes for altering the curvilinear configuration, to implement breaking any ink pack existing and to bow the sheets to provide enhanced column strength to prevent a tendency of the board slipping to the bottom of the pile as retaining jaws of the turner are opened, with resultant bottom edge pressure preventing winding or aeration when the sheets are rotated back to a 90° orientation, and preferably tilted by the apparatus to dispose the bottom and side edges at an angle from the horizontal and vertical planes with the bottom edges of the sheets being winded and jogged to align sheet edges.

3,791,048
TOY AND TEACHING WATCH, PARTICULARLY DIVER-WATCH

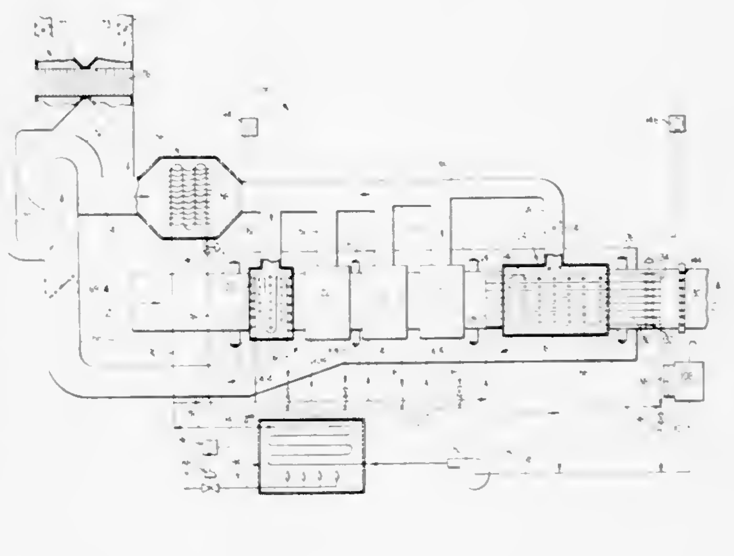
Frank Picard, Eitorf, Sieg, and Ludwig Becker, Vollmersbach, both of Germany, assignors to Sohni & Co. GmbH, Hauptstrasse, Germany
Filed Nov. 13, 1972, Ser. No. 305,845
Int. Cl. G09b *19/12*
U.S. Cl. 35—39 **3 Claims**



A toy and/or teaching watch is disclosed which comprises a case consisting of an open top upper part and a bottom part, a hand-operable movement mounted on a platen for driving a minute and an hour hand in the correct relative ratio and consisting of an operating knob mounted on one end of an arbor having a larger diameter portion and being rotatably mounted in two lugs bent at right angles out of a platen, said platen and a dial attached thereto having registering windows for displaying other information provided on a crown wheel which meshes with gear teeth on the arbor and carries one hand, whereas a second crown wheel meshing with a pinion on the arbor is coaxially mounted with the first crown wheel and carries the other hand.

3,791,049
DRYING METHODS WITH MOISTURE PROFILE CONTROL

Horace L. Smith, Jr., Richmond, Va., assignor to Smitherm Industries, Inc., Richmond, Va.
Continuation of Ser. No. 46,704, June 16, 1970, abandoned.
This application Oct. 4, 1971, Ser. No. 186,372
Int. Cl. F26b *7/00*
U.S. Cl. 34—16 **7 Claims**



Methods of and apparatus for drying material in web, sheet, and similar forms by a combination of radiant and convective heating in which provision is made for controlling the moisture or other volatiles profile across the width of the material being dried

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ERRATUM

For Class 35—39 see:
Patent No. 3,791,048

3,791,050
SHOE SOLE AND HEEL

Robert B. Egtvedt, Comstock Park, Mich., assignor to Wolverine World Wide, Inc., Rachford, Mich.
Filed Jan. 19, 1972, Ser. No. 219,081
Int. Cl. A43b *13/18*
U.S. Cl. 36—28 **9 Claims**

A shoe sole and heel integrally molded of an elastomeric material having a filler of hollow glass spheres dispersed

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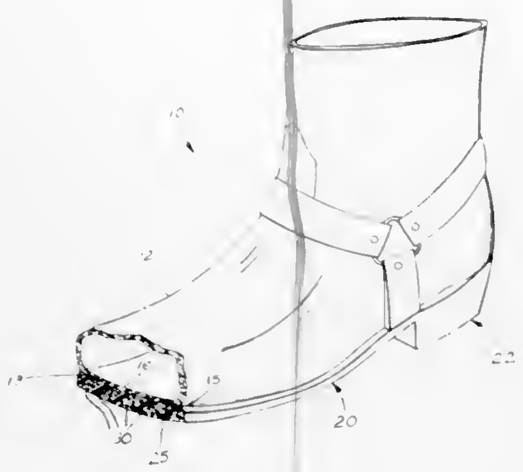
therein. The spheres are mixed with the elastomeric material prior to molding. The resulting composition is injection



molded in the shape of a heel and sole directly on the bottom of a shoe upper to form a lightweight, relatively inexpensive and wear-resistant shoe bottom.

3,791,051
INNER SOLE

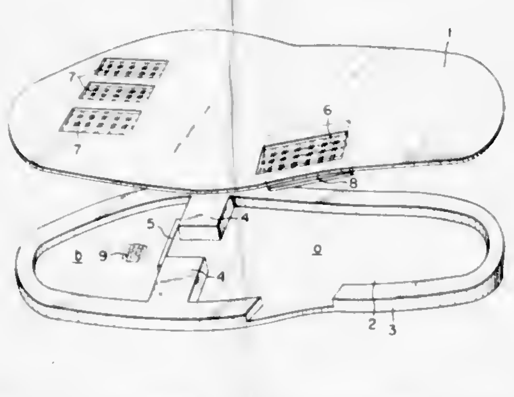
Sinya Kamimura, 1-2-308, Sakonyama, Akahi-ku, Yokohama, Japan

Filed June 7, 1972, Ser. No. 260,664

Claims priority, application Japan, June 22, 1971, 46/53226

Int. Cl. A43b *13/38*

U.S. Cl. 36—44 **6 Claims**



An inner sole consisting of an upper sheet of leather having openings for air inlet and outlet, a lower sheet of leather, a rectangular elastic member having a valve at a central part of the sole and placed between said upper and lower sheets of leather along the rims of them and a piece of tape combining the three. Air is compulsorily passed through the inner sole so that the toes in a shoe are kept dry while walking and helps in preventing athlete's foot.

3,791,052
TRACTOR COMPRISING A PIVOTABLE DRIVER SEAT

Cornelis Van Der Lely, 7, Bruschenaain, Zug, Switzerland

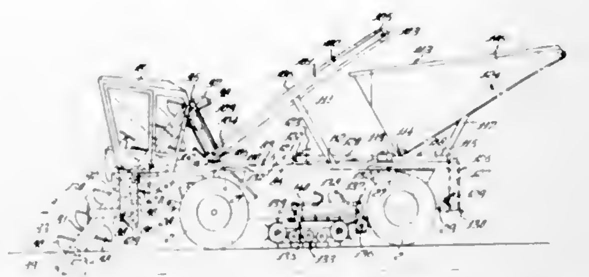
Filed Jan. 25, 1971, Ser. No. 109,311

Claims priority, application Netherlands, Jan. 26, 1970, 7001034; Feb. 19, 1970, 7002381

Int. Cl. A01b *35/00*

U.S. Cl. 37—8 **13 Claims**

A tractor has a driver seat mounted on a body which is preferably flat. The seat is connected to the frame by a pivotable arm so that the seat can be moved laterally relative to the remainder of the tractor. The tractor has a hydraulic system,



including lifts and supports which can furnish support and connection for earth moving attachments.

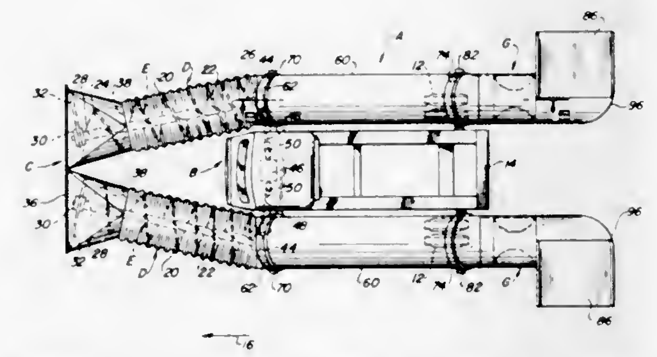
3,791,053
SNOW COMPACTING APPARATUS

Frank D. Breckbill, 703 Clarendon Ave. N.W., Canton, Ohio

Filed Nov. 8, 1971, Ser. No. 196,658

Int. Cl. B30b *9/00*

U.S. Cl. 37—10 **7 Claims**



An apparatus for compacting snow includes a conveyor screw rotatably positioned in an elongated housing. The housing and screw each have a substantially uniform cross-sectional shape along their entire lengths. The screw has a discharge end portion and restriction means is positioned in the housing spaced from the discharge end of the screw. The screw forces snow through the restriction means for compressing the snow to a much smaller volume. The size of the opening through the restriction means is automatically variable in accordance with the density of the snow being forced therethrough.

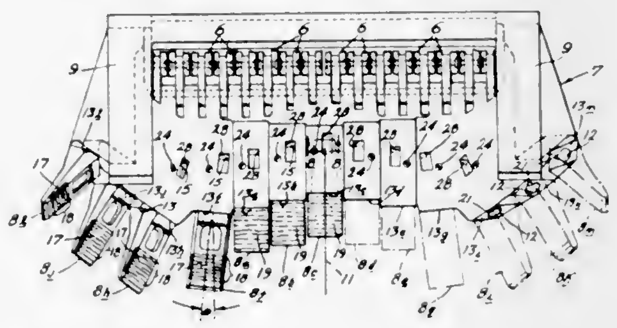
3,791,054
LIP CONSTRUCTION FOR BUCKETWHEEL EXCAVATORS

Stanton F. Bierwith, San Leandro, Calif., assignor to Great Canadian Oil Sands, Limited, Toronto, Canada

Filed June 15, 1972, Ser. No. 263,336

Int. Cl. E02f *3/24*

U.S. Cl. 37—141 R **4 Claims**



A lip for an excavating bucket has a row of sockets in each of which a respective excavating tooth is mounted, the center of the lip being relieved (i.e., offset with respect to the corners thereof) in two mutually perpendicular planes, such that the corner teeth do the initial excavating without interference from the center teeth, in both forward and lateral movements of the bucket. The combination of the shorter teeth used in the center of the lip plus the relief mentioned causes the corner teeth to engage the working face in advance of the other teeth, in both forward and lateral bucket movements.

3,791,055
APPARATUS FOR IRONING ARTICLES OF LAUNDRY

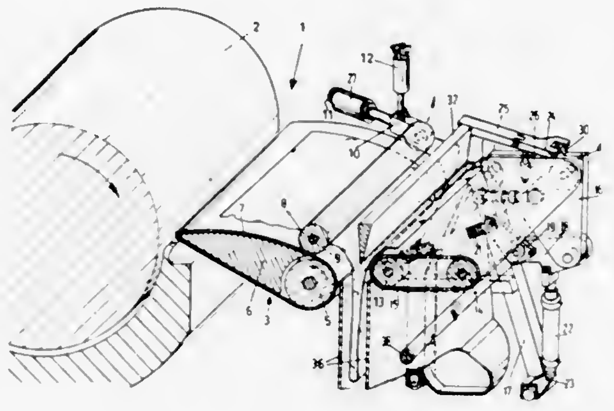
Wilhelmus Joannes Cornelius Maria Bazelmans, Nr. 122, Provincialeweg, and Jozef Alfons Maria Bazelmans, Lepelkesweg 2, both of Veldhoven, Netherlands

Filed Feb. 5, 1973, Ser. No. 329,329

Claims priority, application Netherlands, Feb. 4, 1972, 7201521

Int. Cl. D06f *69/02*

U.S. Cl. 38—11 **7 Claims**



Apparatus for ironing articles of laundry, comprising an ironing machine operating with a mangle roller, a fixed feed device, a movable feed device which consists of one or more drivable endless belts extending around guide rollers disposed in parallel relationship to the guide rollers of the fixed feed device, said movable feed device being disposed in a framework movable back and forth between two end positions and a plate movable above the shaft transversely or substantially transversely of the plane of transportation of the movable feed device, whereby the framework is connected to a pneumatically or hydraulically drivable rocker mechanism which is prestressed in such manner that in one end position a force is exerted which is directed towards the other end position.

3,791,056
CONTINUOUS PRESSING MACHINE FOR TEXTILE FABRIC

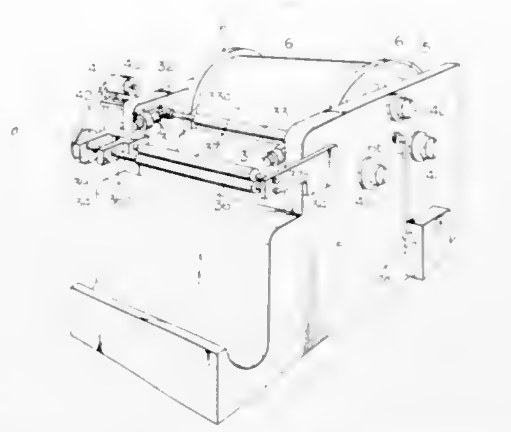
Katsumi Inoue, Suzuka, and Motokichi Fujiwara, Yokkaichi, both of Japan, assignors to Toyobo Co., Ltd., Osaka, Japan

Filed Nov. 17, 1972, Ser. No. 307,532

Int. Cl. D06f *63/00, 65/00*

U.S. Cl. 38—56 **8 Claims**

Continuous pressing machine provided with a heating cylinder and at least one pressing bed member having an arched concave surface facing said cylinder. While turning on its own axis, the axis of the cylinder moves with a planetary motion around the geometrical center of an assumed cylindrical surface a portion of which is defined by the arched concave surface of the bed member so that the cylinder rolls upon the arched concave surface of the bed member without slip. The bed member is urged toward the cylinder under a predetermined pressure. The cylinder and the bed member



are maintained at a predetermined temperature during the operation. A fabric is fed into a space between the cylinder and the bed member.

3,791,057
SHEET STRAIGHTENING AND TENSIONING APPARATUS

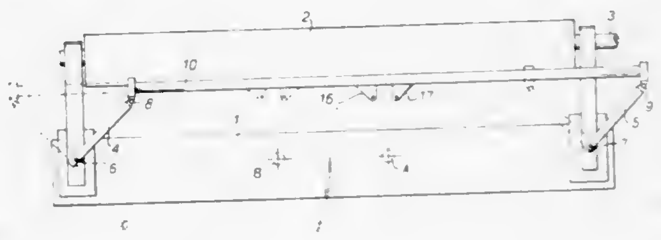
Roger Smith Hall, Thirsk, England, assignor to Baker Perkins Jaxons Limited, Glasgow, Scotland

Filed Aug. 24, 1972, Ser. No. 283,413

Claims priority, application Great Britain, Sept. 8, 1971, 41911/71

Int. Cl. D06f *67/04*

U.S. Cl. 38—143 **5 Claims**



Apparatus for tensioning the edge of a sheet of flexible material, comprising two clips each capable of gripping a corner of the sheet, and means for mounting and controlling the clips so that they move between a first position wherein the clips lie side-by-side at a first loading station to one side of the centreline of the apparatus, and a second position wherein the clips lie side-by-side at a second loading station to the other side of the centreline of the apparatus, and, during each successive movement between the first and second positions, a third position wherein the clips are separated in positions substantially symmetrical about the centreline.

3,791,058
VISUAL EFFECT PRODUCER

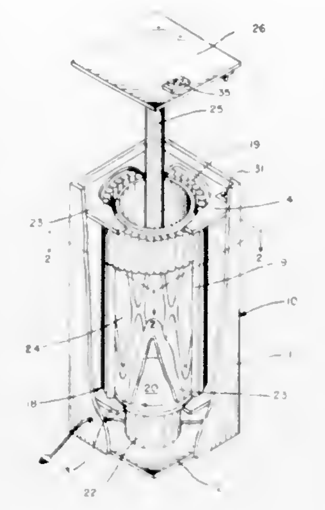
Michael J. Mollica, 1435 Fayette Ave., Reading, Pa.

Filed Apr. 27, 1972, Ser. No. 248,114

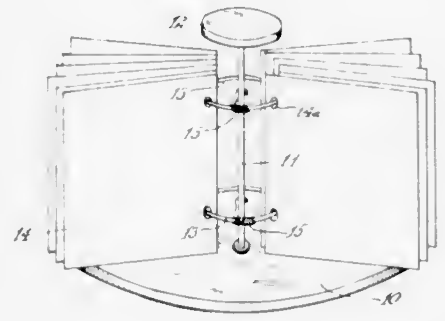
Int. Cl. G09f *11/02*

U.S. Cl. 40—33 **7 Claims**

A device for providing attractive visual effects consisting of a source of black light, a rotatable, hollow cylindrical translucent element carrying a pattern subject to fluorescence surrounding the source of black light, a stationary, hollow, cylindrical lens system having surface undulations and suitably composed of a continuous series of contiguous clear plastic rods, or rod-like portions, surrounding the rotatable patterned element and an outer housing having translucent lateral walls composed of a smoked or tinted plastic, glass or the like, the housing enclosing the elements previously referred to. Upon energization of the device, the black light causes the pattern on the rotating cylindrical element to fluoresce and the light rays thereby produced impinge upon the stationary lens system which, due to refraction of the light rays caused thereby, transmits a distorted pattern image through the translucent walls of the outer casing as the pattern rotates.



3,791,059
ROTARY CARD FILE RINGS
Aaron H. Shneider, 2835 N. Western Ave., Chicago, Ill.
Filed July 27, 1972, Ser. No. 275,712
Int. Cl. G09f *11/00*
U.S. Cl. 40—72 **1 Claim**

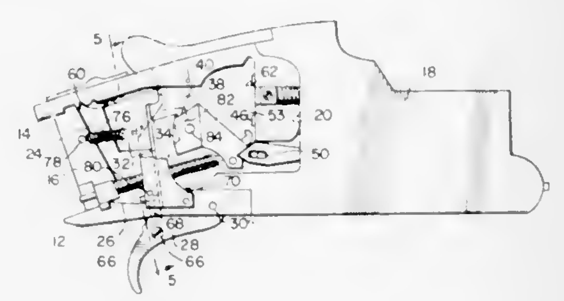


The rings of a rotary card file serve to impale a group of cards which are slidable along the rings. In the present improvement each ring has a gap for the insertion or removal of cards; and a closely-wound spring forms a closer for the gap. One end of the ring is plain for fitting one end of the closer thereon, while the other end of the ring is made with an inward bend leading to a stop in the central region of the ring. The other end of the closer has an eye freely impaled on the inward bend, permitting the closer to swing down to pendent position when its first-mentioned end has been drawn off the plain end of the ring. This creates the gap; and the closer can then be pushed back along the inward bend toward the stop to hang out of the way.

3,791,060
CONVERTIBLE BOLT ACTION RIFLE
Norman K. Weaver, Rt. 3, Poplar Bluff, Mo.
Filed Mar. 8, 1973, Ser. No. 339,136
Int. Cl. F41c *11/00, 15/00*
U.S. Cl. 42—16 **5 Claims**

A bolt action rifle is convertible for use by either right hand or left hand shooters through alteration of the position of the bolt actuating handle and the shell ejector. The bolt actuating handle is mounted by screw means extended through a reversible sleeve. Shell ejection is effected by a lug extended into a selected one of two off-center bolt grooves which alters the direction of ejection of expended shells after firing.

3,791,061
MEANS FOR CONVERTING A PULL TRIGGER TO A RELEASE TRIGGER
John C. Tirone, 500 Amsterdam Ave., Roselle Park, N.J.
Filed Dec. 6, 1971, Ser. No. 204,979
Int. Cl. F41c *19/00*
U.S. Cl. 42—41 **12 Claims**

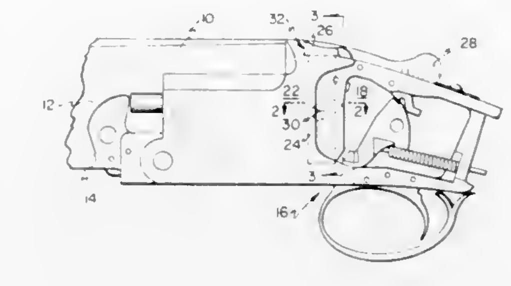


In a trigger device with a firing pin and hammer means for striking said pin, and sear means for releasing said hammer means, with connector means operatively connected to said sear means for moving it to release said hammer, and a pull trigger engaging said connector means to actuate to release said sear means, release trigger means pivotally connected to the trigger device, said pull trigger having means thereon for engaging said hammer means to prevent it from being released, and detachable cam means disposed on said pull trigger for engagement with said release trigger to prevent release of said hammer means until pressure on said pull trigger is released.

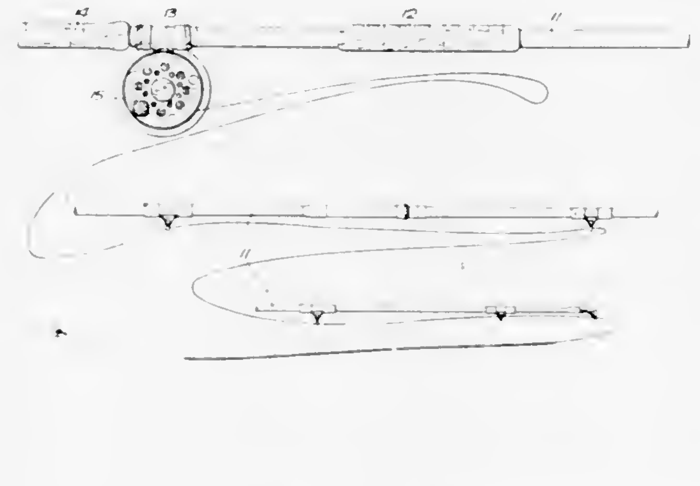
3,791,062
TOP LEVER MECHANISM FOR FIREARMS
Jean Paul Jules Martial, Haccourt, Belgium, assignor to Fabrique Nationale Hestal S.A. en Abrege FN, Herstal-lez-Liege, Belgium
Filed Jan. 8, 1973, Ser. No. 321,793
Claims priority, application Belgium, Jan. 14, 1972, 778024
Int. Cl. F41c *11/08*
U.S. Cl. 42—44 **9 Claims**

A device for overcoming axial play of the top lever of a firearm such as that found on multi-barreled shotguns. The

device includes a receiver having journalled therein a rod or post attached to and extending downward from an operating arm of the top lever. The rod is adapted with a slanted blind opening having an axis which is inclined upwardly towards the operating arm. A spring biased pin is carried within the opening and extends outwardly therefrom a distance sufficient to engage a groove penetrating the wall of the receiver. As wear occurs on the pin, the blind opening in the rod and/or the groove in the receiver, the spring biased pin is automatically and continuously urged outwardly into and against the receiver insuring a continuous precision fit and thereby avoiding axial play of the rod journalled therein.

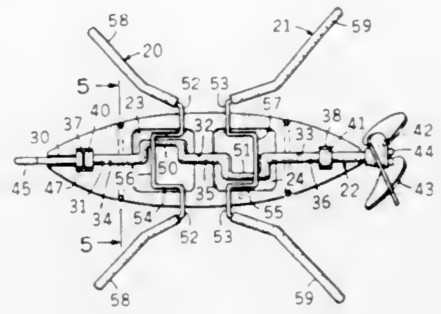


3,791,063
METHOD OF CASTING
William Edmund Harker, Midland Hotel, Derby, England
Division of Ser. No. 56,811, July 21, 1970, abandoned. This application Dec. 8, 1972, Ser. No. 313,539
Int. Cl. A01k *69/00*
U.S. Cl. 43—4.5 **3 Claims**



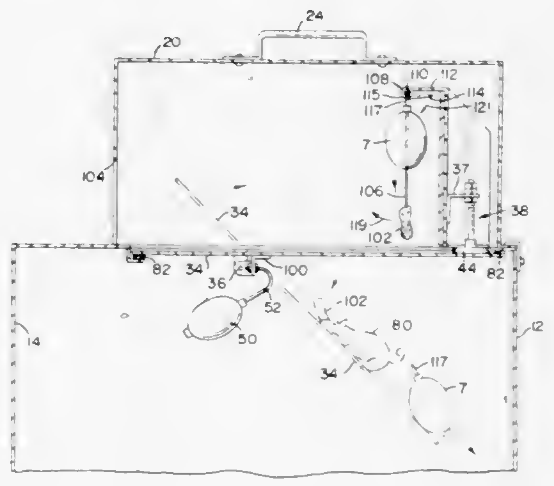
A method of casting a line and fly when fishing by means of a fishing rod having a detachable handle, the detachable handle having a reel attached thereto, comprising the steps of separating the detachable handle carrying the reel from the rest of the rod, and holding the detachable handle with the reel in one hand and the rest of the rod in the other hand, the reel being restrained to prevent rotation thereof, making a back cast, bringing the hands near each other with the reel restrained, releasing the reel, and immediately thereafter making a forward cast with the hand holding the rod, while simultaneously drawing the other hand holding the detachable handle and reel away from the hand holding the rod, thus accelerating the reel ready to pay out line, permitting line to pay out, and reconnecting the detachable handle to the rest of the rod after the line and fly have dropped on the water in front of the angler, and retrieving the line by winding the line on the reel.

3,791,064
FISHING LURE
Edmond J. Van Iseghem, Jr., c/o Mueller-Perry Co. Inc., 1200 So,-Florissant Rd., St. Louis, Mo.
Filed Apr. 10, 1972, Ser. No. 242,408
Int. Cl. A01k *85/06*
U.S. Cl. 43—26.2 **4 Claims**



This lure includes a body having a propellor driven longitudinal crank shaft which induces oscillating motion into front and rear depending leg elements without positive connection between the legs and shaft. The body includes separable upper and lower portions held together by removable snap rings to facilitate replacement of the legs. The lure can be used to simulate surface active or sub-surface active bait, and in the former case is preferably formed from relatively buoyant materials.

3,791,065
ANIMAL TRAP
Frank H. Snow, 1208 E. Idlewild Ave., Tampa, Fla.
Filed Feb. 23, 1973, Ser. No. 335,042
Int. Cl. A01m *23/04*
U.S. Cl. 43—69 **24 Claims**



This invention relates to an animal trap including an air tight chamber in which an animal is forced by automatic release of bait by the animal, when located on an animal attracting means. A plurality of weights are interconnected to various pieces of bait arranged in predetermined configuration over a movably mounted chamber entrance door wherein removal of the bait causes release of at least one weight so as to drop onto the entrance door thereby opening it and forcing, due to gravity, the animal to fall into the chamber. The entrance door is normally held in a closed position by a releasable connector means. The chamber may or may not be air tight causing death of the animal by suffocation.

3,791,066

the head glows more or less brightly depending on the power

3,791,070

3,791,072

3,791,066

ENHANCING THE OPERATION OF A GASOLINE ENGINE

Louis E. Furlong, Westfield; Abraham A. Zimmerman, New Providence, and Hugh F. Shannon, Scotch Plains, all of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed Sept. 1, 1971, Ser. No. 177,162

Int. Cl. C10l *1/22*

U.S. Cl. 44—66 **6 Claims**

By incorporating a fluorinated aliphatic compound, more particularly a fluorinated aliphatic hydrocarbon, fluorinated aliphatic hydrocarbyl amine, or fluorinated aliphatic hydrocarbyl amine salt into a gasoline composition the distribution of the air/fuel mixture in the intake manifold of a multicylinder gasoline engine will be improved when that engine is run with the resulting blend, thereby increasing operating efficiency. The fluorinated compound has a total of about 8 to 30 carbon atoms, the total number of fluorine atoms that are attached to either or both of the carbon atoms that are the terminal carbon atom of an aliphatic chain and the carbon atom immediately adjacent thereto being at least three. Representative fluorinated compounds include perfluoro kerosene and perfluoro tributyl amine.

3,791,067

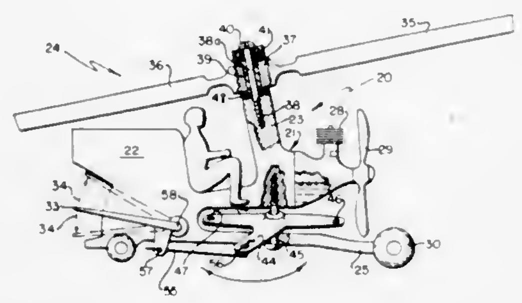
MODEL AUTO-GIRO

Murray Guttman, 250 Johnochs Dr., Saddle Brook, N.J.

Filed June 20, 1972, Ser. No. 264,629

Int. Cl. A63h *27/12*

U.S. Cl. 46—75 **10 Claims**



Four configurations of a model auto-giro are disclosed with appropriate methods and means of control for each configuration. Two configurations utilize a pivoting stabilator and a fixed rotor shaft and permit the auto-giro to take off, ascend, loop, descend and land, but do not permit it to hover. Two further configurations utilize a fixed horizontal stabilizer and a tiltable rotor shaft, the combination of which permit the model auto-giro to perform all the flight maneuvers of the first two configurations and permit it to hover also. Methods and means for controlling each type of configuration by captive control lines and confining them to circular flight paths are disclosed. Methods and means for remotely controlling each type of configuration by radio controls permitting free flight are also disclosed.

3,791,068

DUAL FACE ILLUMINATED DOLL

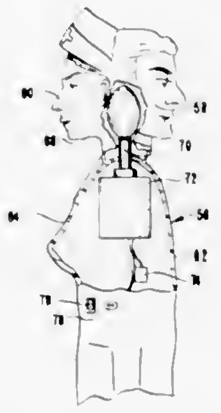
Mary Pietrowiak, 1304 Maple Ave., Baltimore, Md.

Filed Aug. 22, 1972, Ser. No. 282,759

Int. Cl. A63h *3/12*

U.S. Cl. 46—228 **3 Claims**

The doll is preferably made of a transluscent flesh colored resilient plastic material, having a hollow body, legs and arms, and a plurality of extra interchangeable heads representing an assortment of different persons, the body being provided with electric power means for lighting a bulb which is mounted in the neck of the body and extends into the hollow of any head that might be mounted thereon. Upon switching on the light, the head glows more or less brightly depending on the power of the light bulb and the transparency of the flesh colored plastic material the head is made of. Additional bulbs may be used in the other hollow parts of the body to light it all up when desired. Blinkers may be included in the circuit to produce an interrupted lighting effect, and a timer may be used to limit the period of lighting. A child will be readily attracted by a doll of this type, especially if a suitably recognizable head of a doctor or a nurse, mother, sister, brother or other person, used in accordance with the child's show of interest, is selected for it. A double-faced head may be used to instantly alternate between the two selected persons emulated, by turning the desired head forwardly on the body. The double faced head may further be provided with a wiglet, the hair of which may be shifted on top of the head so as to cover the face turned to the rear. In another modification, by matching the clothing exposed on the opposite sides of a body with the faces on said sides, all that needs to switch from simulating one person to the other is to turn the body over from one side to the other as desired. The doll may be battery powered or it may be plugged into the house current for supplying the current to the light bulb through a switch on the body which may be concealed by a portion of the clothing.



3,791,069

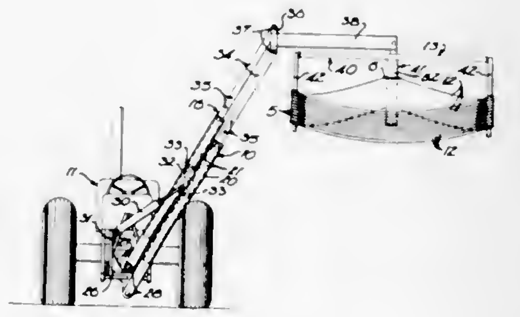
ORCHARD TREE COVERING DEVICE

Roy A. Nelson, 1419 Mahon, Richland, Wash.

Filed Aug. 30, 1972, Ser. No. 285,107

Int. Cl. A01g *13/02*

U.S. Cl. 47—21 **4 Claims**



An orchard tree covering device is described for use in placing individual covers or strips of cover material over orchard trees to prevent frost damage. The device is adapted to fit on conventional tractors and includes an adjustable elevational support and a cover holding magazine. The magazine is designed to hold a plurality of covers and includes means for selectively releasing individual covers onto trees below. In an alternate form, the covers are connected in strips and rolled onto spools. The strips may then be reeled out by the device over long rows of trees.

3,791,070

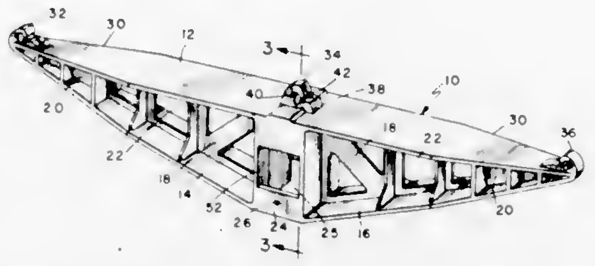
CROSS BEAM FOR GRAPE STAKES

James C. Roberts, 1860 Jeffrey, Escondido, Calif.

Filed Aug. 9, 1972, Ser. No. 278,986

Int. Cl. A01g *17/06*

U.S. Cl. 47—46 **5 Claims**



A cross beam for grape stakes comprising an upper planar member supported by a housing member that projects normal thereto, and has an opening in the bottom for fitting on the top of a grape stake, and with second planar members projecting from the ends of the first planar member at an angle thereto to the sides of the housing, and ribs positioned between the planar members for grasping the grape wires, all being made of a ductal plastic material that provides a rigid support that can stand abuse, is relatively light weight, and that does not wear the galvanizing off of the grape supporting wire lines.

3,791,071

MOTOR VEHICLE CONSTRUCTION

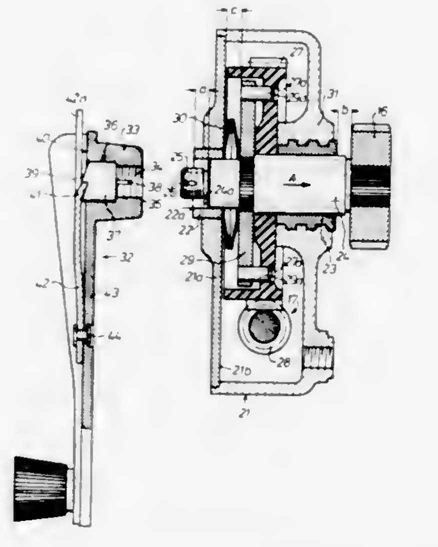
Bernd Niklaus, Plittersdorf, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed June 26, 1972, Ser. No. 266,444

Claims priority, application Germany, July 8, 1971, 2134027

Int. Cl. E05f *15/14*

U.S. Cl. 49—140 **11 Claims**



A rotatable shaft can be turned to shift a window or similar component of a motor vehicle. A coupling is provided for turning the shaft and includes one coupling section which is fixedly mounted on and turns with the shaft and another coupling section which surrounds the shaft and is adapted to be driven by a motor. A biasing spring urges the shaft axially of itself so that the section of the coupling on the shaft engages the section which is driven by the motor. To operate the arrangement in the event that the motor should fail, a manual crank is provided which can be engaged with a free end portion of the shaft, and an arrangement is provided which, when such engagement is effected, will displace the shaft axially in a sense separating the two coupling sections so that it is not necessary to turn against the resistance of the motor.

3,791,072

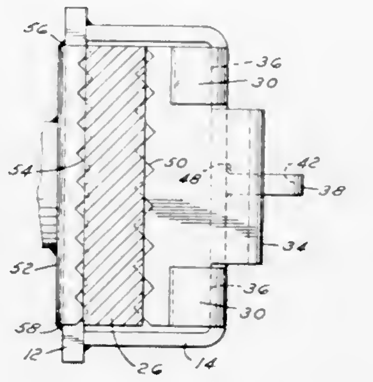
GATE ARM CLAMP AND SERRATING LEVER

Harold L. Miller, Grosse Pointe Park, Mich., assignor to Vemco Products Inc., Detroit, Mich.

Filed July 17, 1970, Ser. No. 55,840

Int. Cl. E05c *15/02*

U.S. Cl. 49—141 **4 Claims**



An improved clamp for mounting the wooden arm of an automatic parking gate onto the actuating mechanism of the parking gate. The clamp features a lever operated serrated clamping edge which grips the arm when clamped into place and creates a fracture line in the arm along the serration where the arm will break if struck by an automobile. In the event the arm is broken, the arm, now about 6" shorter, can be reinserted and reused. The arm can therefore be used a number of times after accidental breakage until it is too short for practical use.

3,791,073

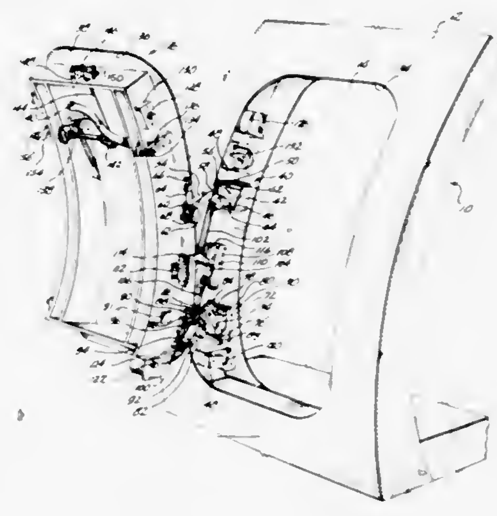
AIRCRAFT DOOR WITH MOVING HINGE LINE

Irwin G. Baker, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Apr. 28, 1972, Ser. No. 248,445

Int. Cl. E05d *15/40*

U.S. Cl. 49—249 **18 Claims**



An aircraft door and hinge assembly therefor is mounted in an opening in an airframe, which opening lies at an angle with the horizontal plane of the aircraft. The door is mounted on a hinge assembly which provides first for upwardly inclined movement of the door to disengage it from its stop engagement with the opening in the airframe. Thereafter, the hinge assembly provides for outward movement of the door, displacing the hinge axis of the door from a position in which the axis makes an acute angle with the horizontal plane of the airframe to a position at which the hinge axis is substantially perpendicular to the horizontal plane. The door is mounted or hinged on the hinge assembly at two points. The hinge assembly provides for one of the hinge points to move outwardly from the

airframe a greater distance than the other. Thus the hinge axis

the outer edges of the door and the inner edge of the door

laying the strip on two rigid supports, and above said strip a tu-

the transverse movement of the lap over the work piece. Al-airframe a greater distance than the other. Thus the hinge axis can be vertically aligned with respect to the airframe. When the hinge axis is vertically positioned the door can swing to an open position away from the opening in the airframe, allowing ingress and egress through the opening.

3,791,074
WINDOW OR DOOR CONSTRUCTION

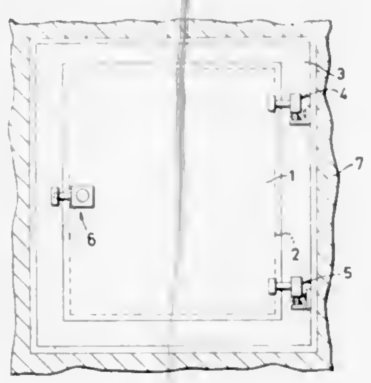
Franz Waffenschmidt, Waffenschmidtstrasse 2, Cologne, Germany

Filed July 27, 1971, Ser. No. 176,362

Claims priority, application Germany, July 29, 1970, 2037517

Int. Cl. E05d *7/04*

U.S. Cl. 49—399 **18 Claims**



A wall or other support has an opening in which one or more frameless glass panes of a window or door are located. The panes are secured to the adjacent support by hinges which are adjustable so as to permit adjustment of the pane or panes within the opening, and which have a portion directly connected with the respective pane, as by welding or bonding. Suitable latches or similar securing means are also provided, and at least one component of such latch or securing means is also directly connected to the respective pane or panes.

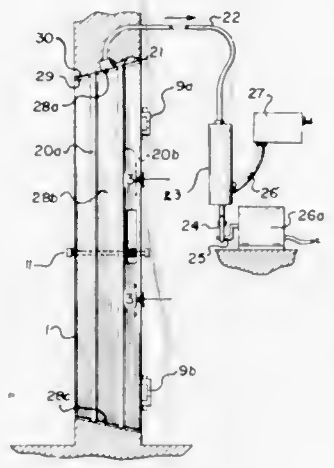
3,791,075
ENVIRONMENTAL-ISOLATION ROOM DOOR-SEAL

Bernard I. Blickman, 536 Gregory Ave., Meehawken, N.J.

Filed Jan. 24, 1972, Ser. No. 220,156

Int. Cl. E06b *7/23*

U.S. Cl. 49—484 **3 Claims**



An environmental-isolation room door-seal in which the mating faces of a door frame and of a door closable thereinto in a preferred embodiment are of structures which define between opposing surfaces thereof a channel circumscribing the outer edges of the door and the inner edge of the door frame extending around the perimeter of the door, including on each of opposite sides of the door channel a sealing strip, each sealing strip also circumscribing the door, and a vacuum pump and a pressure equalizing conduit and switch operatively connected to the channel, with the exhaust of the vacuum pump outlet being directed through a chemical purifying device, whereby the vacuuming of the channel serves both to further lock together the closed door and frame thereof, and to trap and conduct away any air or gases which might under adverse circumstances seep past the inner-door seal into the vacuumed channel, thereby preventing contamination of environment outside of the door of the environmental-isolation room.

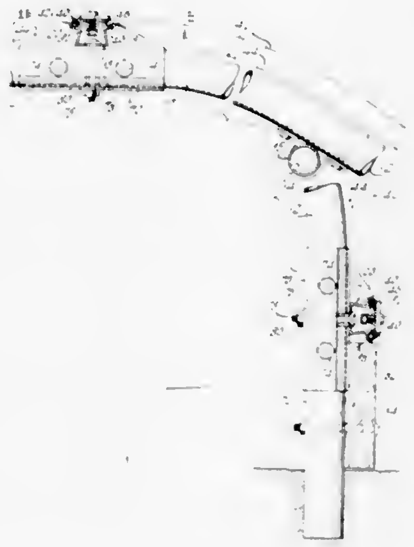
3,791,076
PLASTIC COVERED BUILDING STRUCTURES

Charles C. Gahler, West Long Branch, N.J., assignor to X. S. Smith, Inc., Red Bank, N.J.

Filed Dec. 27, 1971, Ser. No. 212,069

Int. Cl. E04b *1/345*

U.S. Cl. 52—2 **18 Claims**



A plastic covered building structure comprised of a metal frame supporting superimposed layers of plastic sheets having an inflated area between the sheets providing insulation to the interior of the structure. The super-imposed plastic sheets are secured to the frame by means of longitudinally extending rails having longitudinally extending upwardly concave portions and complementary clamping rods adapted to secure the edges of the super-imposed plastic sheets between the rods and the upwardly concave portions of the rail. The rails are adapted to receive clamping members at any point along the length of the rails to clamp the rods into the upwardly concave portions.

3,791,077
METHOD AND APPARATUS FOR STRETCHING STRIP OF SHEET MATERIAL ON RIGID SUPPORTS

Francesco Ventimiglia, via Francesco Crispi, Catania, Italy

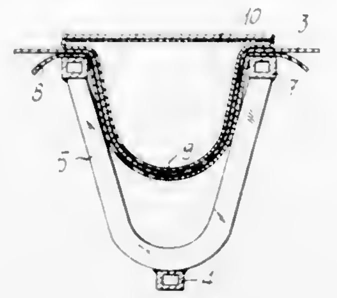
Filed Jan. 17, 1972, Ser. No. 218,081

Claims priority, application Italy, Jan. 19, 1971, 19508/71

Int. Cl. E04g *11/04;* **E04b** *1/00, 1/347*

U.S. Cl. 52—2 **8 Claims**

Method for stretching strips of flexible sheets, consisting of laying the strip on two rigid supports, and above said strip a tubular element, superimposing on the latter an inextensible strap which is restrained at its ends. By inflating the tubular element, an even stretching for the flexible strip is provided.



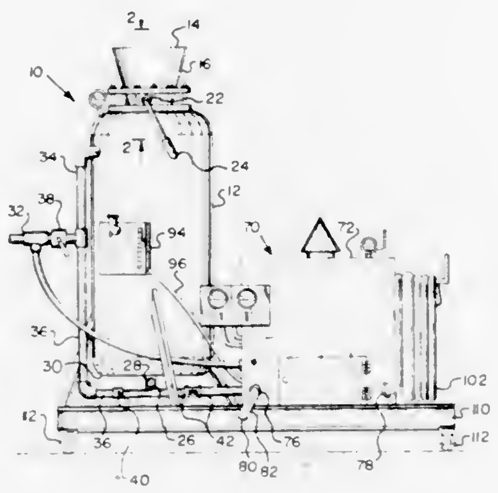
3,791,078
APPARATUS FOR PREPARING A PAINTED METAL SURFACE FOR REPAINTING

Henry Fleisher, 18 Notch Park Rd., Little Falls, N.J.

Filed Oct. 19, 1972, Ser. No. 299,034

Int. Cl. B24c *3/06*

U.S. Cl. 51—5 **13 Claims**



An apparatus is provided for preparing an object having a painted metal surface for repainting which apparatus is a combination sand-blasting, degreasing and steam generating and spraying unit. Separate means for directing a stream of abrasive and air, with or without volatile chemical solvent and/or water, on to the metal surface, and separate steam spray means are employed. Compressed air is employed to propel the abrasive, blow away any abrasive dirt and grease build-up on the metal surface and to drive water into the steam generating unit thereby eliminating the need for expensive motors and pumps.

3,791,079
PRESSURE APPLICATOR FOR SURFACE GENERATING APPARATUS

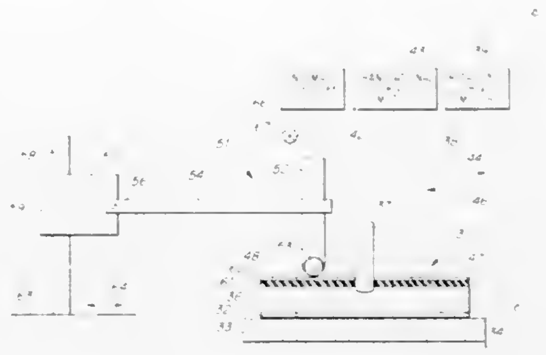
James B. McCallum, Plymouth, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed May 23, 1972, Ser. No. 256,052

Int. Cl. B24b *7/22*

U.S. Cl. 51—56 **13 Claims**

Apparatus for controlling the distribution of pressure between a lapping tool and a work surface being treated. The apparatus comprises structure for applying a predetermined force at a desired position on the moving lap in order to obtain desired pressure characteristics between the lap and the work piece. The structure may be employed to compensate for nonuniform surfacing rates that would otherwise be caused due to the transverse movement of the lap over the work piece. Alternatively, it can be employed to intentionally introduce localized pressure differentials at particular areas between the lap and the work piece to assist in obtaining desired surface characteristics.



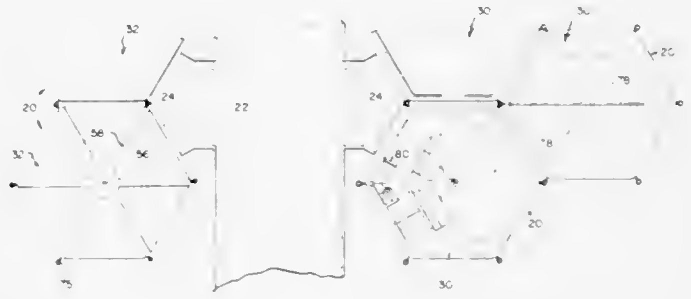
3,791,080
FLOATING OR LAND BASED MODULAR ASSEMBLY FOR HOUSING OR COMMERCIAL USE

John B. Sjoberg, 5330 Opihi St., Honolulu, Hawaii

Filed Sept. 10, 1971, Ser. No. 179,331

Int. Cl. E04b *1/348*

U.S. Cl. 52—79 **11 Claims**



A floating or land based modular assembly for housing or commercial use including one or more selectively interengageable units. Each unit is of polygonal prefabricated shape and comprises complemental base or hull sections and a roof section which sections are spaced apart by supporting columns, the supporting columns being removed to permit collapsing of the unit. Means are provided for joining any desired number of modular units together, and for retaining the assembly in place on water or land.

3,791,081
MULTI UNIT DWELLING STRUCTURE

Laurent Felciai, 34, Place Jean Bart, 59, Dunkerque, France

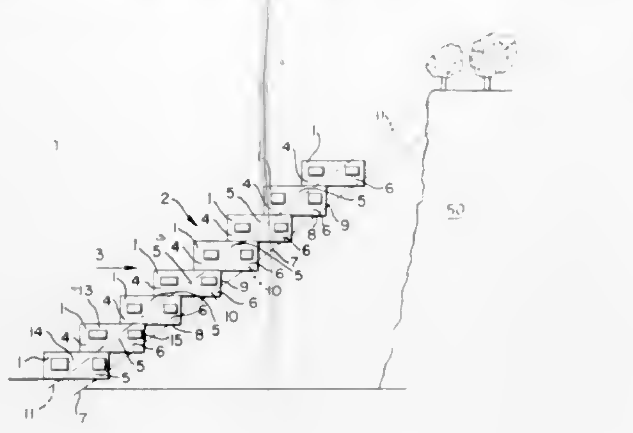
Continuation-in-part of Ser. No. 143,390, May 14, 1971, abandoned. This application Feb. 23, 1972, Ser. No. 228,672

Claims priority, application France, May 5, 1971, 71.17266

Int. Cl. E04h *1/34*

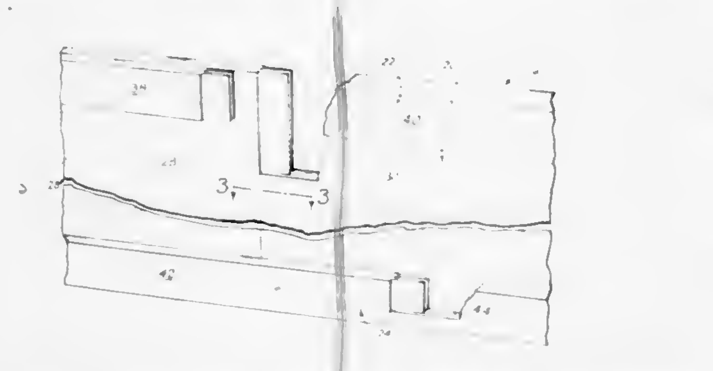
U.S. Cl. 52—79 **6 Claims**

A multi unit dwelling structure comprising a plurality of individual dwelling units positioned and secured together in adjacency. The units may be arranged in a horizontal row or a tier inclined both to the horizontal and to the vertical and the horizontal rows may be arranged in an inclined tier. The structure is supported by a member, such as a cable, positioned to support the lower portions of each dwelling unit and the units are not suspended below the cable support. The cables are attached to the rooms and the adjoining rooms may be subjected to a compressive pre-stress prior to being attached to the cables.



3,791,082
RIDGE ROOF BEAM

J. Dennis Bowling, Battleground, Wash., assignor to Hearin Forest Industries, Beaverton, Oreg.
Filed Aug. 7, 1972, Ser. No. 278,548
Int. Cl. E04c *3/00*
U.S. Cl. 52—79 **11 Claims**



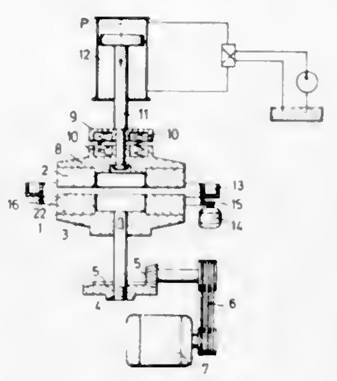
A ridge roof beam for a modular housing unit. The beam includes an elongated plywood web and a pair of elongated wood flanges extending adjacent and parallel to opposite edge margins of the web and secured in face-to-face relation to one face of the web. The web and flanges are each constructed of elongated wood sections bonded together in end-to-end relation. Finger grooves extending along adjacent end edges of the sections interlock to form a secure joint therebetween.

3,791,083
APPARATUS FOR MACHINING BALLS

Klaus Messerschmidt, Schonungen, Germany, assignor to Sebastian Messer-Schmidt Specialmaschinenfabrik, Schonungen, Germany
Filed Sept. 13, 1971, Ser. No. 179,694
Claims priority, application Germany, Oct. 15, 1970, 2050662
Int. Cl. B24b *5/20*
U.S. Cl. 51—117 **12 Claims**

The specification describes a polishing or lapping machine for steel balls, comprising a stationary disc and a coaxial rotary disc between which the balls are rolled and lapped. The two discs are pressed together by a loading force which is so applied that its line of action intersects a base axis in a specific length of the base axis. The base axis is defined as an axis intersecting the axis of the stationary disc perpendicularly passing through the center of gravity of the stationary disc and through a recess provided in the stationary disc for the introduction and removal of balls. The specific range of the base axis in which the intersection with the line action of the loading force occurs is defined as the range beginning at the center of gravity of the stationary disc and extending away from the center of gravity and away from the recess.

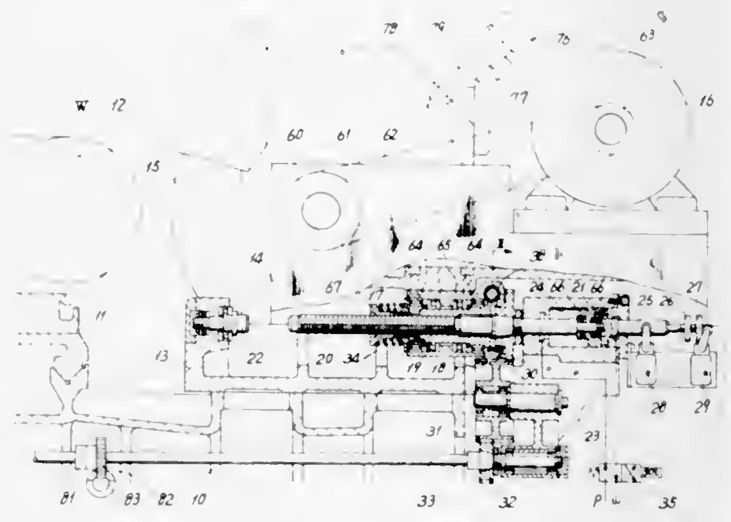
With this arrangement of the line of action of the loading force the force exerted on the balls in the working gap between the discs rises from a minimum at the position of entry into the working gap to a maximum value and then decreases to a minimum value again at the position at which the balls are removed from between the discs.



The parts adjacent to the ends of the working gaps and adapted to feed balls into the working gap between the discs and receive them as they leave the gap are lined with a shock absorbing wear resistant material such as nylon.

3,791,084
GRINDING MACHINE WITH WHEEL DRESS COMPENSATING APPARATUS

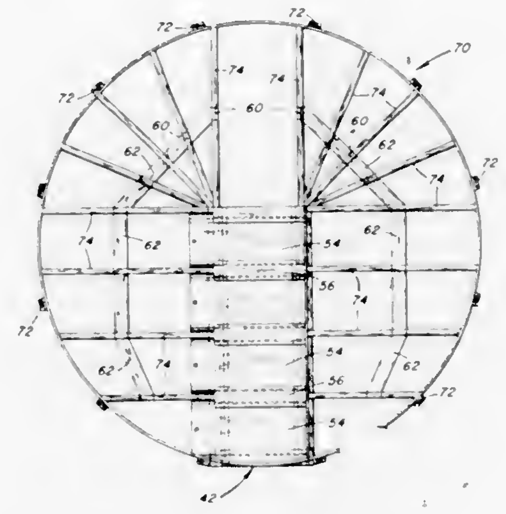
Ichizo Kakumu, Nagoya, and Teruyuki Ito, Kariya, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Aichi-ken, Japan
Filed Oct. 15, 1971, Ser. No. 189,584
Claims priority, application Japan, Oct. 16, 1970, 45-103868
Int. Cl. B24b *49/18*
U.S. Cl. 51—165.87 **6 Claims**



A grinding machine having a feed nut rotatably journalled in a wheel head, a lead screw rotatably journalled in a bed being threadedly engaged with the feed nut, a worm wheel coaxially mounted on the feed nut and a worm rotatably journalled in the wheel head being meshed with the worm wheel is provided with compensating means connectable with the worm to rotate the same and thereby advance the wheel head for compensating for grinding wheel dressing and a motor for rotating the worm in an opposite direction to retract the wheel head for exchanging grinding wheels when the wheel in use has become too worn.

3,791,085
UNLOADING ARRANGEMENT FOR EXISTING CORN CRIBS

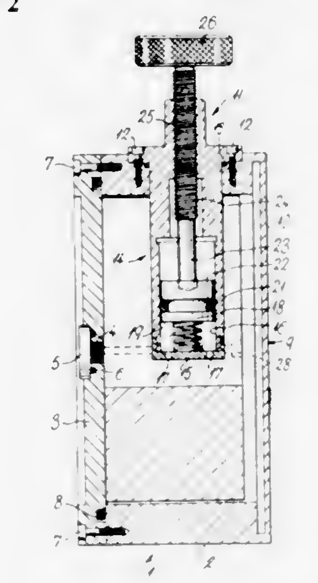
Richard B. Groves, 102 S. Water St., Chestertown, Md.
Continuation of Ser. No. 847,038, Aug. 4, 1969, abandoned. This application Oct. 6, 1971, Ser. No. 187,067
Int. Cl. EO4h *7/00;* **B66b** *13/08*
U.S. Cl. 52—197 **1 Claim**



A labor saving arrangement is provided for storing and removing ear corn from existing corn cribs. Hopper structure is described for installation into any shape of existing corn crib to easily convert it for removal of the contents by gravity feed to the unloader sloping beams support steel plating of simple geometrical shapes in a downwardly converging floor which terminates in a gate frame. The gating may be either of the removable board type or consist of slide boards which are manipulated to valve any dispensing rate desired.

3,791,086
FLEXIBLE WALL SURFACE

Ernest Henry Pinn, Richmond, England, assignor to National Research Development Corporation, London, England
Filed June 19, 1972, Ser. No. 264,010
Claims priority, application England, June 22, 1971, 29214/71
Int. Cl. B24d *17/00*
U.S. Cl. 51—212 **5 Claims**



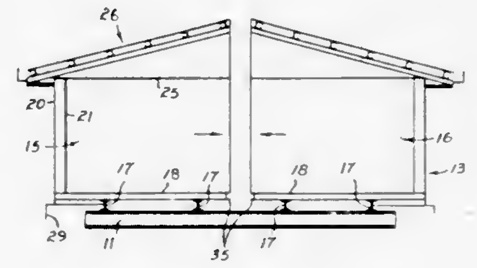
A reference surface, e.g. a lapping surface, is formed on one of the external faces of a hollow pressure vessel. There are elements to vary the internal volume of this vessel, and the volume is filled with fluid. When the surface wears from its true shape, the volume is adjusted so as to change the pressure acting upon the face from the inside, so as to change the contour of the reference surface and compensate for the wear.

ERRATUM

For Class 52—2 see:
Patents Nos. 3,791,076 and 3,791,077

3,791,087
BUILDING

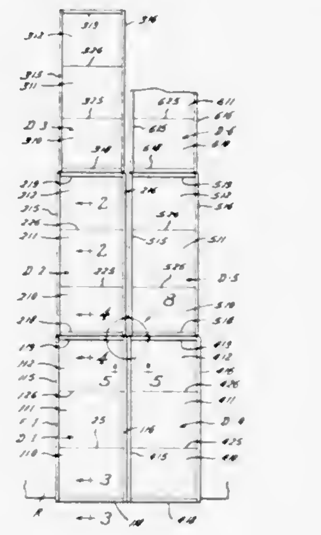
Barnet Maxwell Sigal, Wingfield, South Australia, Australia, assignor to Sigal Industries Proprietary Limited, Wingfield, South Australia, Australia
Filed Oct. 1, 1971, Ser. No. 185,704
Int. Cl. E04h *9/06;* **E02d** *27/00*
U.S. Cl. 52—293 **4 Claims**



A building having a steel chassis supported on footings and peripheral metal supports which stand out from the chassis and support the outer peripheral walls of the building so that the ground supporting the footings is shielded from the effects of moisture penetration by the building itself.

3,791,088
PREFABRICATED MULTIPLE DOME UNITS OR SKYLIGHTS AND COMPOSITE THEREOF

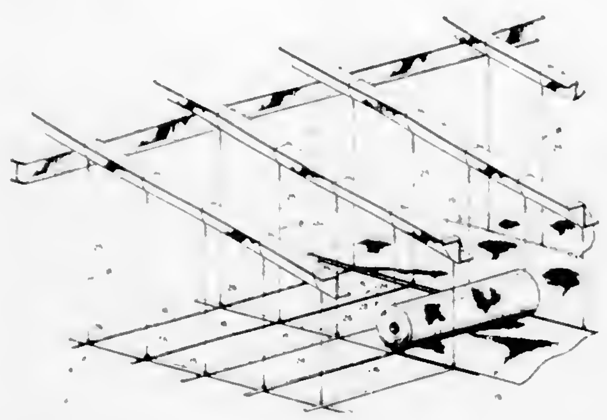
Kiyoshi Sandow, and Thomas L. Anderton, both of Houston, Tex., assignors to Plasteco, Inc., Houston, Tex.
Filed Nov. 8, 1971, Ser. No. 196,382
Int. Cl. E04b *7/18*
U.S. Cl. 52—200 **7 Claims**



Prefabricated multiple dome units or skylights and composite thereof, wherein each multiple dome unit has several domes of transparent or translucent material mounted together on a common frame, and wherein means are provided for assembling a plurality of such dome units into a composite thereof on a building, with the units lapped and interfitted so as to provide a continuous drainage system discharging to the exterior of the units in the composite assembly.

3,791,089
SUSPENDED CEILING

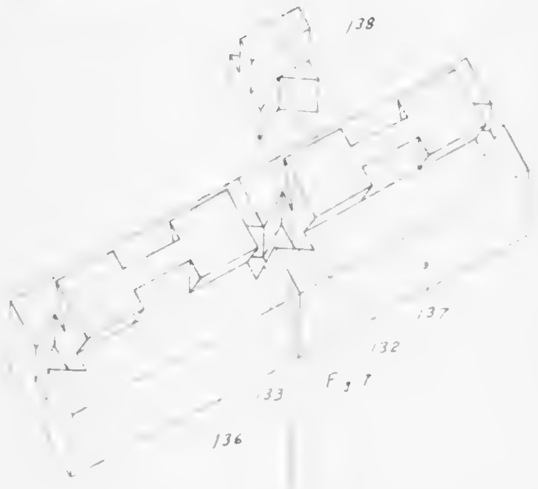
Robert Joe Alderman, Rt. 4, Lawrenceville, Ga.
Filed July 24, 1972, Ser. No. 274,168
Int. Cl. E04b *5/52*
U.S. Cl. 52—484 **6 Claims**



A ceiling assembly is provided wherein a support lattice defining a plurality of rectangular openings is suspended in a horizontal attitude below the roof of the building. A plurality of elongated sheets of ceiling material rest upon and are supported by the support lattice and each sheet extends across a plurality of the rectangular openings. The lattice is supported by wires suspended from the roof structure of the building, with the wires connected at points on the lattice arranged in rows across the lattice, and the sheets of material are placed upon the lattice in rolls and the rolls are unrolled between the suspension wires of the lattice.

3,791,090
BUILDING BLOCK

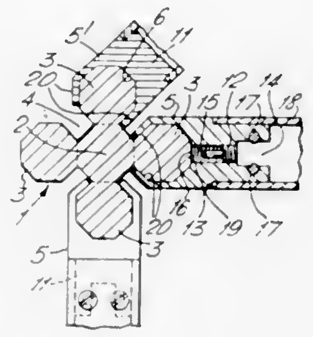
Alfred Beryl Kniefel, 3510 Nashville Ave., El Paso, Tex.
Filed Dec. 30, 1971, Ser. No. 51,305
Int. Cl. E04c *1/30;* **A63h** *33/10*
U.S. Cl. 52—593 **3 Claims**



A building block having dovetail tongue and groove configuration for interlocking with adjacent blocks by sliding in a longitudinal direction. The dovetail tongue protrudes outwardly from one side of the block and has two widened longitudinal end portions have a cross-sectional shape defining an inverted triangular wedge which end portions are interconnected by an intermediate portion rectangular in cross section which intermediate portion extends one-third the length of the tongue. The opposite side surface of the block has a complementary shape inverse to that of the tongue forming a groove of constant depth. The end portions of the groove are of slotted dovetail configuration widening from the opposite side surface inwardly of the block. The ends of the recess have substantially the width of the intermediate portion of the tongue whereby the tongues may be longitudinally slid into the recess for interlocking engagement.

3,791,091
COMPONENTS FOR CONSTRUCTIONAL PURPOSES

Alexander Rubin De Cervin Albrizzi, London, England, assignor to Albrizzi Ltd., London, England
Filed Oct. 27, 1971, Ser. No. 193,048
Claims priority, application Great Britain, Aug. 5, 1971, 36962/71
Int. Cl. E04b *1/38*
U.S. Cl. 52—593 **10 Claims**

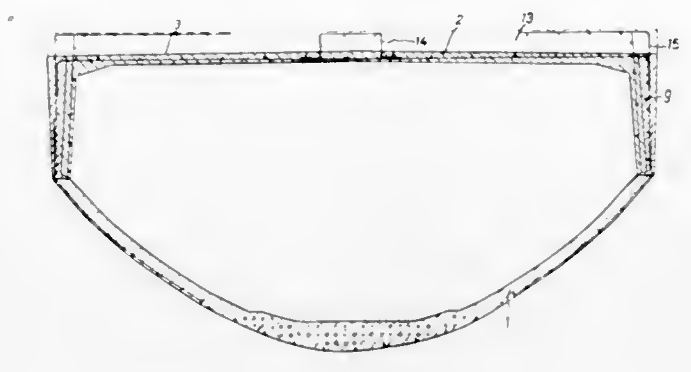


Components for constructional purposes in the form of bars or columns which form male components and female components fixable thereto for coupling with connecting components to make frames of various kinds as for tables or shelving or the like, the bar or column comprising sub-columns of polygonal or octagonal-based section spaced around and integral with a central core, each sub-column being adapted to form a male element of a joint with one or more of the female components which are provided with an open-sided bore having a corresponding polygonal or octagonal-based wall and adapted to embrace a sub-column and be secured thereto at any appropriate position therealong. Columns with sub-columns of identical section form a modular unit for cooperation with a standard form of female component which may be fitted to any one of the sub-columns and be designed for locating and fixation to a standard form of frame component by spigot and socket coupling preferably so that the frame component comes flush with the female component. The female components may be fitted by screws countersunk in channels in the female components to tighten such components on the sub-columns and be designed for connection to the frame components by self-tapping screws in open-sided bores at the sides of the channels to cause them to grip the frame components.

3,791,092
HOLLOW BOX SUPPORT

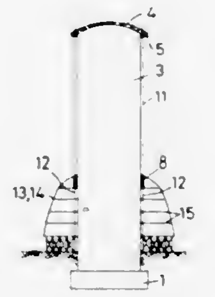
Adolf Schmitter, Kranstrasse, Altstatten, Switzerland
Filed Oct. 29, 1971, Ser. No. 193,723
Claims priority, application Switzerland, Nov. 3, 1970, 16283/70; Jan. 27, 1971, 1171/71
Int. Cl. E04c *3/00;* **E04b** *1/16;* **E04c** *3/34*
U.S. Cl. 52—600 **1 Claim**

A hollow box support comprising a reinforced lower structural element at least partially formed of concrete, and a reinforced upper structural element at least partially formed of concrete, both said upper and lower elements being separately fabricated. The upper and lower elements are rigidly connected with one another along their lengthwise extending sides connection layers, and viewed in cross-section, the wall of the lower element extends towards the outside in ascending fashion in the direction of and toward the upper element. The connection layers are defined by a respective essentially upright concrete connection layer each of which bears against the associated lengthwise extending sides of both the upper element and the lower element. Reinforcement means incorporating reinforcement elements are provided for the upper and lower elements and extend in the transverse direction of the hollow box support. Such reinforcement means extend into the concrete connection layers and overlie or overlap one another at such location, and wherein the reinforcement means located at the lower element extends neighboring the outside wall of the lower element.



3,791,093
MULTI-STORY BUILDING AND METHOD OF CONSTRUCTION THEREFOR

Ulrich Finsterwalder, Munich-Obermenzing, and Helmut Bomhard, Starnberg, both of Germany, assignors to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Germany
Filed Oct. 12, 1972, Ser. No. 297,081
Claims priority, application Germany, July 8, 1972, 2233632
Int. Cl. E04h *1/04;* **E04g** *21/00*
U.S. Cl. 52—745 **2 Claims**

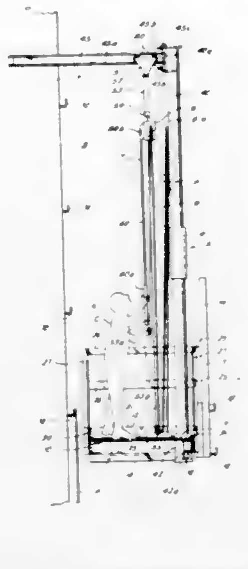


Multi-story building having a central column of reinforced concrete at the upper end of which the story ceilings that surround the column are anchored by means of suspension members and which has a shell that expands outwardly from the upper end of the column, within which extend the suspension members that are anchored on the upper end of the column.

3,791,094
METHOD AND APPARATUS FOR MOUNTING BUILDING PANELS

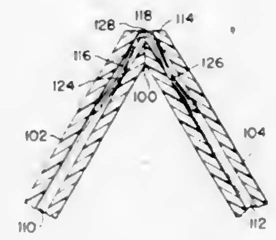
Joseph R. Shannon, Jr., P.O. Box 40006, Houston, Tex.
Filed Oct. 16, 1972, Ser. No. 297,996
Int. Cl. E04g *21/00*
U.S. Cl. 52—747 **5 Claims**

A method and apparatus for mounting building panels, wherein a plurality of building panels may be raised alongside a building structure and then separately mounted on the structure to form a wall thereof, which method and apparatus requires a reduced number of men and a much safer operation.



3,791,095
DECORATIVE GRILL JOINT

Robert I. Martin, Manheim, Pa., assignor to Rimar Manufacturing Inc., Manheim, Pa.
Continuation of Ser. No. 885,095, Dec. 15, 1969, abandoned. This application Dec. 9, 1971, Ser. No. 206,531
Int. Cl. E04b *1/48*
U.S. Cl. 52—758 H **1 Claim**



A decorative window grill construction employing a plurality of interconnected, elongated grill bars of flattened construction to insert within the insulating space of an insulated window assembly and including connecting pins affixed at the free ends of the grill bars for insertion into undersized holes provided in the periphery of the insulated glass construction. The grill bars insert within axially aligned bores and distort portions of the internal grill bar construction. Grill bars forming diamond shaped configurations and having axially aligned central bores abut in angular relation by means of undersized bent pins which insert within the bores and restrict therein at the bent portions.

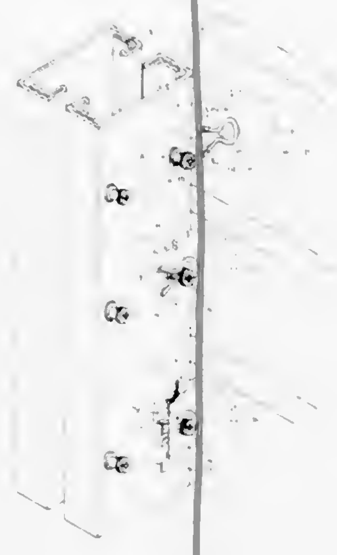
3,791,096
COUPLING UNIT FOR STRUCTURAL ELEMENTS

Helmut Epperlein, Dietersweiler, Germany, assignor to Christian Holzapfel K.G., Horb/Neckar, Germany
Filed Feb. 16, 1972, Ser. No. 226,685
Claims priority, application Germany, Oct. 6, 1971, 2149831
Int. Cl. F16b *1/00*
U.S. Cl. 52—758 C **6 Claims**

An angular first member is a bracket having two mutually inclined arms one of which can be fastened to a structural element and the other of which extends normal to it and has a free edge with a slot extending inwardly from the free edge and a pair of holes being formed in the region of the free edge at opposite lateral sides of the slot. A spring clip is provided on this other arm overlying the slot having a substantially circular

plastic tubing that has two discrete stable dimensional states.

the aid of an air jet to the input end of a conveyor, and supportion which encircles an inner end of the slot and two legs which extend in unbiased condition of the spring clip at 90° angle to the circular portion and whose free ends are received in the holes provided in the other arm, so that the legs are biased towards one another to some extent and their juncture with the circular portion defines a width or gap which is



somewhat narrower than the width of the slot. A second member is configurated as a bolt which can be secured to another structural element and whose shaft can be snapped into the circular portion of the spring clip, being retained therein by the legs of the spring clip in the region of their juncture. The shaft has a head which prevents its withdrawal in axial direction from the slot.

3,791,097
METHOD OF DETECTING AND REPAIRING A STRUCTURAL ROOF DAMAGED BY SUBSURFACE MOISTURE

John N. Cassella, Bloomfield Hills, and James J. Cavalier, Orchard Lake, both of Mich., assignors to The Tremco Manufacturing Company, Cleveland, Ohio

Filed Jan. 19, 1973, Ser. No. 325,025

Int. Cl. E04b *1/66*, **H01j** *31/50*

U.S. Cl. 52—741 **7 Claims**

A method under the title of the application, which involves generating an infrared image of a roof from an airborne position, from infrared radiation emitted by the roof in the spectral band from about 2 to about 14 microns, preferably from about 8 to 14 microns, thus locating roof portions corresponding to areas of anomalous radiation which are potentially moisture laden areas of the roof, and effecting repairs of those roof portions where the presence of subsurface moisture is confirmed by coring or other inspection procedures.

ERRATUM

For Class 52—79 see:
Patents Nos. 3,791,080 thru 3,791,082

3,791,098
METHOD OF MANUFACTURING A PRESSURIZED DISPENSING PACKAGE

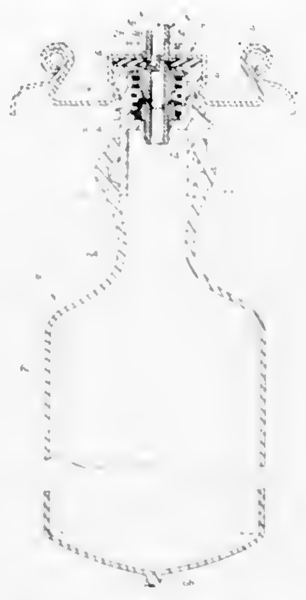
Milo E. Webster, Braintree, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Feb. 8, 1971, Ser. No. 113,545

Int. Cl. B65b *43/00*; **B29c** *17/07, 27/00*

U.S. Cl. 53—30 **10 Claims**

A pressurized dispensing package includes a rigid outer container and an inner container disposed within the outer container. The inner container is formed of a length of organic plastic tubing that has two discrete stable dimensional states. In forming the inner container, a portion of the tubing is disposed in a mold and expanded against the wall of the mold to form a thin walled body portion. A seal is formed in one end of the body portion and the other end of the tubing is secured



to a valve assembly by positioning that end over a stub of the valve assembly and heating that end portion to shrink it and form a firm mechanical joint. The inner container may have a dip tube in it secured to the bottom of the container, and in another embodiment, this tube extends entirely through the inner container.

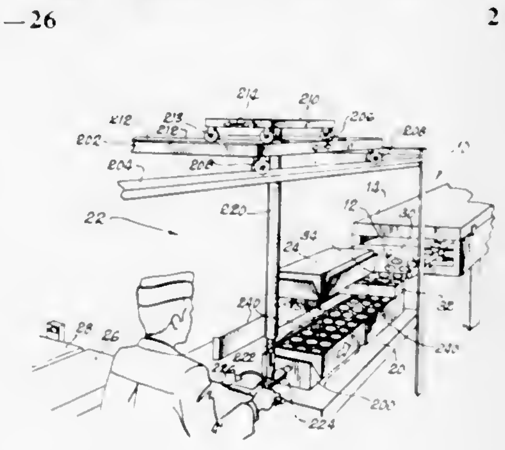
3,791,099
METHOD AND APPARATUS FOR PACKAGING ARTICLES

Richard C. Wagner, Clarendon Hills, Ill., assignor to Integral Process Systems, Inc., Park Forest, Ill.

Filed Apr. 6, 1972, Ser. No. 241,767

Int. Cl. B65b *5/00, 35/50, 67/00*

U.S. Cl. 53—26 **21 Claims**



This application discloses a method and apparatus for stacking a plurality of articles in superposed relation and subsequently placing a plurality of full stacks of the articles into a container. The articles are initially moved in end-to-end relation in transversely spaced rows along a path and are dropped at the end of the path towards a lower support. An intermediate shuttle plate is positioned between the end of the path and the support to briefly interrupt the downward movement of the articles. The articles are then dropped and received on the support to form a stack in an area. The stacks of the articles are periodically moved along the support to a collection area. An open topped shovel is utilized to periodically remove a plurality of stacks from the support. The plurality of stacks on the shovel are then placed in a container with its top facing downwardly over the open topped shovel and thereafter rotating the shovel and container to place all of the stacks on the shovel into the container.

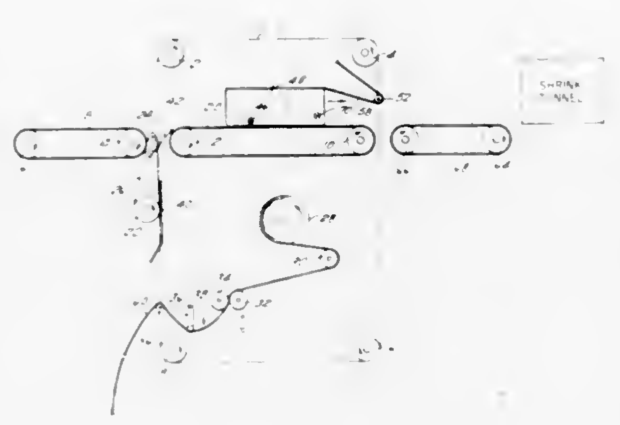
3,791,100
BUNDLING MACHINE AND PROCESS

Alfred C. Monaghan, Warren, N.J., assignor to Weldotron Corporation, Piscataway, N.J.

Filed Feb. 4, 1971, Ser. No. 112,616

Int. Cl. B65b *11/12, 41/12, 57/12*

U.S. Cl. 53—74 **22 Claims**



A bundling process and apparatus utilizes a conveying system which is coordinated with the movement of at least one wrapping bar for successively positioning one end of a length of enwrapping material in position on one end of an intermittently operated conveyor of the conveying system. An article to be wrapped is placed over the positioned end of the enwrapping material and then carried forward to rest fully on the conveyor, whereupon the conveyor stops. While the article is on the stationary conveyor, the wrapping bar travels a path encircling the conveyor and carries the opposite end of the enwrapping material around the article, positioning it so that as the article moves onto another conveyor of the system it laps the end positioned underneath the article, and the lap is then sealed and the enwrapping material heat shrunk to form a tight sleeve wrap or bundle.

Means are provided for controlling the feed of the wrapping material from a continuous roll mounted beneath the conveying system, in the middle of the wrap bar travel path, for severing the proper length of material and for maintaining the leading end of the severed material in position on the end of the intermittent conveyor until the article is placed thereon.

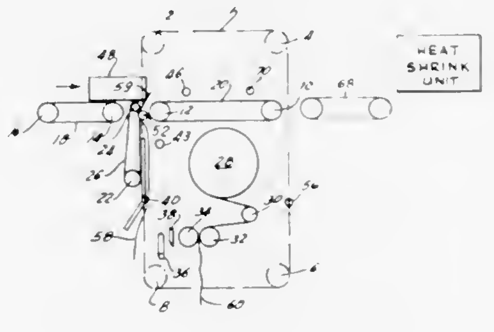
3,791,101
PACKAGING MACHINE AND PROCESS

Alfred C. Monaghan, Warren, N.J., assignor to Weldotron Corporation, Piscataway, N.J.

Filed Apr. 20, 1971, Ser. No. 135,644

Int. Cl. B65b *11/12, 41/12, 49/16*

U.S. Cl. 53—210 **4 Claims**



This invention relates to a bundling process and apparatus using a conveying system in which the leading end of a predimensioned sheet of wrapping material is advanced with the aid of an air jet to the input end of a conveyor, and supported by the air jet to lie in the path of an incoming article to be wrapped. The article supplied to the conveyor contacts, and proceeds to rest upon, the leading end of the sheet, and a wrapping bar then travels around the article carrying the trailing end of the sheet to form a sleeve around the article. This sleeve wrap is then completed by passing the article from the conveyor to another surface, causing the trailing end of the wrapper sheet to overlap the leading end underneath the article, and the overlapped ends are then heat sealed and the wrapping material heat shrunk to form a tight sleeve wrap.

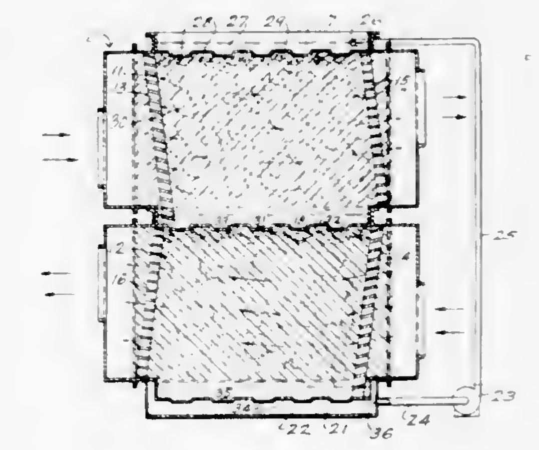
3,791,102
MULTIPLE COMPARTMENT PACKED BED ABSORBER-DESORBER HEAT EXCHANGER AND METHOD

Richard L. Huntington, Rt. No. 1, Van Buren, Ohio

Filed June 10, 1971, Ser. No. 151,727

Int. Cl. B01d *47/14*

U.S. Cl. 55—32 **7 Claims**



The invention is a multiple compartment packed bed absorber-desorber heat exchanger. The absorber-desorber heat exchanger includes at least one set of upper and lower compartments containing suitable tower packing. Gas inlets, gas outlets and liquid distributors are provided for each packed bed chamber. The gas flows in the upper and lower compartments are isolated from each other by a liquid seal. The upper and lower packed beds are wetted by a common irrigation liquid or heat exchange fluid which gravitates downwardly through the packed beds to a sump and recycling pump. The dual packed beds can be operated to absorb and desorb gases, to concentrate gaseous contaminants, or to transfer heat and to condense vapors. Preferably, the dual packed bed chambers are of modular construction.

3,791,103
METHOD OF TREATING WASTE GAS ARISING FROM INDUSTRIAL FACILITY

Kazuto Kusano, and Kenji Miyata, both of Tokyo, Japan, assignors to Japan Gasoline Co., Ltd., Tokyo, Japan

Filed June 30, 1972, Ser. No. 268,158

Claims priority, application Japan, July 10, 1971, 46-51203

Int. Cl. B01d *53/04*

U.S. Cl. 55—73 **6 Claims**

A method of treating waste gas containing harmful components arising from an industrial facility by the use of a waste-gas treating equipment, which comprises the provision of an open bypass duct leading directly from the outlet for waste gas of the industrial facility to the exhaust system and a

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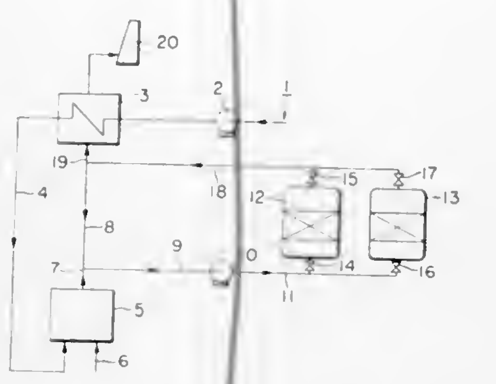
3,791,109

duct equipped with a blower and a waste gas treating equipment which branches off said bypass duct to lead to the exhaust system, said blower working to pass at least the whole quantity of the waste gas generated in the industrial facility through said waste gas treating equipment.



3,791,104

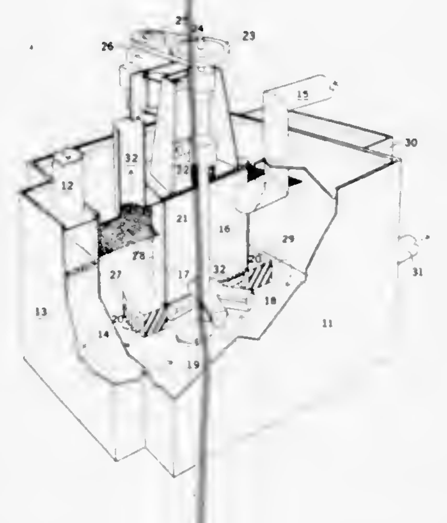
HIGH ENERGY GAS-LIQUID CONTACTING PROCESS

Jay B. Clitheroe, Salt Lake City, Utah, assignor to Mineral & Chemical Resource Company, Houston, Tex.

Filed June 26, 1972, Ser. No. 266,333

Int. Cl. B01d *47/02*

U.S. Cl. 55—86 **5 Claims**



Gases and liquids, with or without solids suspended in either phase, are contacted within a closed chamber at high shear energy and internally recirculated for repeated contact within the closed chamber. Gas-liquid interface surface area is increased, thereby increasing gas diffusion rate into the liquid and promoting absorption of constituents from the gas stream into the liquid medium or reaction of solids within the liquid medium with a gaseous constituent.

3,791,105

METHOD AND APPARATUS FOR SEPARATING OIL FROM A MIXTURE OF OIL AND A GASEOUS FLUID

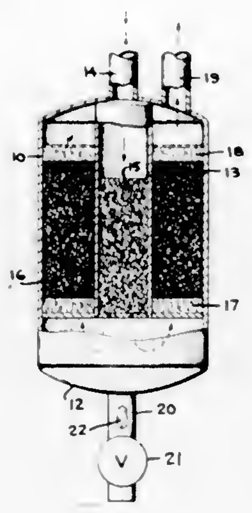
Herbert M. Rhodes, New Orleans, La., assignor to Oil Mop, Inc., New Orleans, La.

Filed July 27, 1971, Ser. No. 166,459

Int. Cl. B01d *45/02*

U.S. Cl. 55—97 **2 Claims**

The present disclosure is directed to an oil filter for removing oil from a gaseous fluid in which the oil containing gaseous fluid is passed through two filter stages, the first of which is a medium packed petrophilic aerophobic hydrophobic material and the second stage is a densely packed filter media of the same material. The oil free gaseous fluid is removed from the top of the second stage while the oil is drained by gravity from the bottom of the second stage.



3,791,106

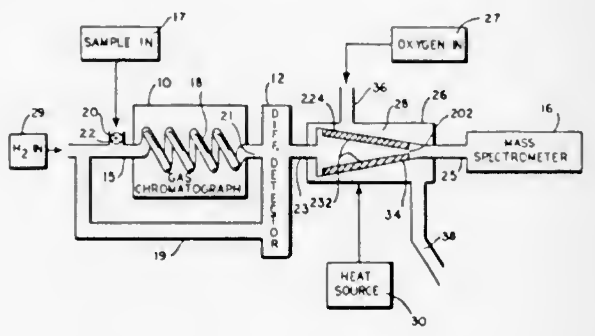
GAS ANALYSIS SYSTEMS AND PALLADIUM TUBE SEPARATOR THEREFOR

Floyd C. Haley, La Canada, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Division of Ser. No. 852,825, Aug. 25, 1969,. This application Sept. 24, 1970, Ser. No. 75,278

Int. Cl. B01d *53/22*

U.S. Cl. 55—158 **2 Claims**



Sequential analytical determination of the composition of a vapor sample is performed by suspending the sample in a major amount of hydrogen carrier gas or a mixed carrier gas consisting of hydrogen and helium and passing the suspension through a gas chromatograph. More than 90 percent of the hydrogen carrier gas is removed from the effluent of the chromatograph by passing the effluent through a heated palladium tube before delivering to a detector such as a mass-spectrometer. Removal of the hydrogen portion of the carrier gas through the wall of the tube may be enhanced by providing an oxygen containing atmosphere at the outside surface of the tube.

3,791,107

OFF-GAS SYSTEM FOR NUCLEAR REACTORS

Eric Borje Gustavsson, Vasteras, Sweden, assignor to AB Asea-Atom, Vasteras, Sweden

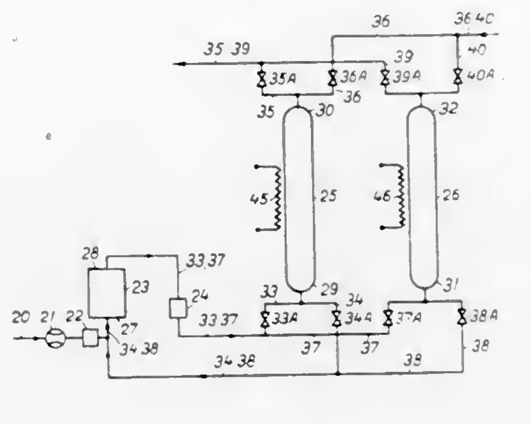
Filed Jan. 20, 1972, Ser. No. 219,373

Claims priority, application Sweden, Feb. 10, 1971, 1654/71

Int. Cl. B01d *53/04*

U.S. Cl. 55—179 **5 Claims**

An off-gas system for nuclear reactors includes a delay container to delay fission gases and two absorption units to absorb fission gases. An openable and closeable connection is provided from the outlet of the delay container to each of the absorption units. Arrangements are provided by which gas may be furnished to one end of each absorption unit while this unit is disconnected from the outlet of the delay container to pass through and regenerate the absorption unit and then to return to the delay container. This is done when the gas normally escaping from the absorber unit is found to contain fission gases.



3,791,108

FLOW-ACCELERATING NOZZLE FOR GAS SCRUBBER

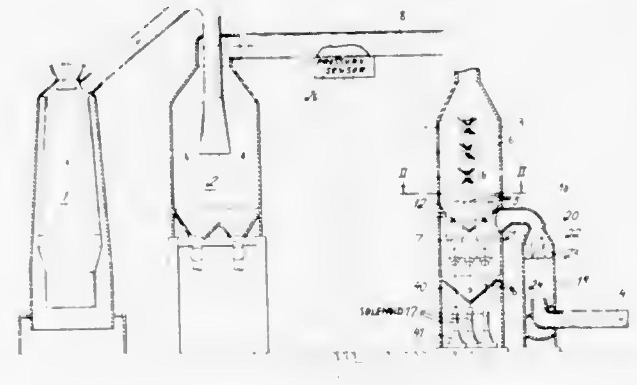
Gerhard Hausberg, and Karl-Rudolf Hegemann, both of Essen-Bergerhausen, Germany, assignors to Gottfried Bischoff Bau Kompl Gosreinigungs und Wasseruckkuhlanlagen KG, Essen, Germany

Continuation-in-part of Ser. No. 188,557, Oct. 13, 1971, Pat. No. 3,726,065. This application Mar. 16, 1972, Ser. No. 235,149

Claims priority, application Germany, Oct. 10, 1970, 2049902; Dec. 2, 1970, 20592000

Int. Cl. B01d *47/10*

U.S. Cl. 55—226 **6 Claims**



A washer for the scrubbing of flue gases contains one or more flow-accelerating nozzles with generally pear-shaped inserts vertically displaceable in a tubular housing to vary the width of an annular gap formed between the insert and the housing to give passage to a descending gas stream. The lower part of the housing is flared outwardly and provided with several spacedly nested, similarly flared sleeves forming therewith a plurality of annular exit channels around a central port accommodating a stem which supports the insert.

3,791,109

GAS CLEANING APPARATUS

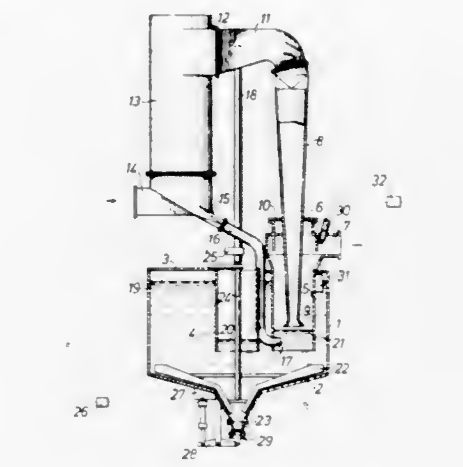
Karl Axel G. Gustavsson, Enkoping, Sweden, assignor to AB Bahco Ventilation, Enkoping, Sweden

Filed Sept. 7, 1971, Ser. No. 178,016

Claims priority, application Sweden, Sept. 7, 1970, 12115/70

Int. Cl. B01d *47/02*

U.S. Cl. 55—229 **3 Claims**



A gas cleaning apparatus is described having a common container for a liquid take-up zone and a sedimentation zone. The container is normally closed except for first and second casings which extend downwardly from the top of the container and have open lower ends. The first casing has a top open to the atmosphere and the second casing is an inlet chamber having its top portion connected to a conduit for gas to be cleaned. A vacuum maintained in the container causes liquid levels in the casings to be below a liquid level in the container. A vertically extending gas treatment passage has a lower end terminating above the liquid level of the liquid take-up zone in the second casing and the other end connected to a liquid droplet separator in turn connected to a suction fan to draw a mixture of liquid droplets and gas to be cleaned upwardly through the treatment passage into the droplet separator. The upper end of this passage is connected to the top of the container to maintain the vacuum in the container. Liquid separated in the droplet separator is returned by a conduit into the lower end of the second casing at a position spaced above the sedimentation zone so that any solids can settle as sludge in the container. Rotating scrapers driven by a shaft extending downwardly through the first casing move settled sludge toward a discharge valve at the lower end of the conical bottom. The valve is operated in response to the load on the motor to open the valve to discharge sludge. A level detector in the container controls the introduction of make-up liquid.

3,791,110

APPARATUS FOR PRODUCING GRANULAR SOLIDS FROM THE GASEOUS PHASE SUCH AS BY SUBLIMATION

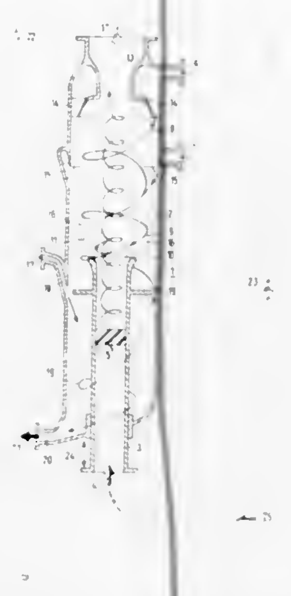
Heinrich Klein; Rudolf Pieper, both of Erlangen, and Joachim Sieth, Essen, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 17, 1971, Ser. No. 154,050

Int. Cl. B01d *45/12*

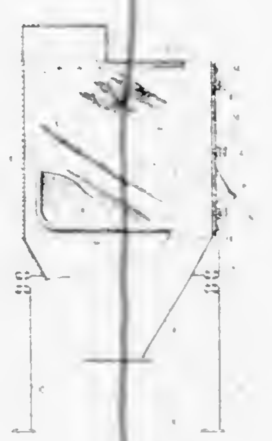
U.S. Cl. 55—261 **1 Claim**

Granular solids are produced (sublimated) from gaseous-phase substances entrained in a gaseous carrier medium. Applied for this purpose is a tornado flow constituted by an outer circulatory flow and an inner rotational (vortex-filament) flow in a cylindrical chamber. The substance to be sublimated, preferably entrained in a gaseous carrier medium, such as air, is introduced into the cylindrical chamber from an axial side thereof to form the inner rotational flow. An auxiliary medium, which may also be air, is supplied into the wall adjacent region of the cylindrical chamber in a direction opposed to that of the rotational flow, so that the flow of auxiliary medium essentially consitutes the circulatory flow. The supply of auxiliary medium is kept at a temperature lower than that of the introduced flow of carrier medium. In the transitional region between the warmer rotational flow and the cooler circulatory flow there occurs a formation of the solids out of the gaseous-phase substance. The solids are discharged, preferably by entrainment in a branched-off portion of the circulatory flow, through an outlet surrounding the incoming flow of carrier medium.



3,791,111
FILTER DEVICE

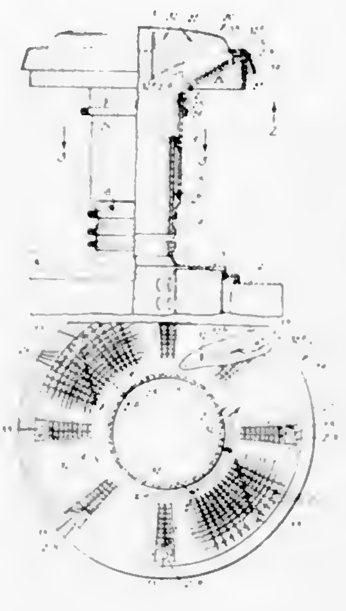
Gert Wolfgang Kroll, 18 Bayernstrasse, Hosel near Dusseldorf, Germany
Continuation-in-part of Ser. No. 77,651, Oct. 2, 1970, abandoned. This application Apr. 30, 1973, Ser. No. 355,451
Int. Cl. B01d *46/02*
U.S. Cl. 55—341 **3 Claims**



A gas filtering device in which a series of filter units are arranged parallely within a housing Each filter unit comprises a frame about which fabric filter is wrapped to form parallel sides, thereby providing a filter pocket. The filter units are inserted into a casing through slots in a casing wall. The free edge of the filter fabric is wound around a sealing ring so as to form a welt. A sheet metal cover strip closes the open front side of each frame, clamps the welt against the casing wall at the slot edges, and this cover has a tubular connector disposed outside of the housing and affording sole access to the filter pocket.

3,791,112
MOISTURE REMOVING STACK CAP FOR ENGINE AIR INTAKES

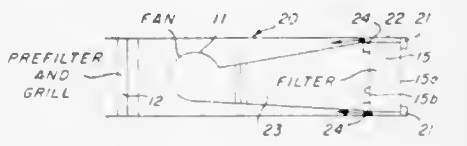
James E. Lidstone, St. Louis Park, Minn., assignor to Donaldson Company Inc., Minneapolis, Minn.
Filed Sept. 23, 1971, Ser. No. 182,962
Int. Cl. B04c *3/06*
U.S. Cl. 55—385 **7 Claims**



A centrifugal separator is shown, including a collector tube that is large enough to fit over the top end of a vertically extending engine air intake stack to provide a moisture collecting chamber between the walls of the stack and tube; a stack cap base member with a central opening connected to the tube and walls with air intake openings therein flaring outwardly from the central opening; a cover member mounted over the base member to form a chamber therebetween; and a plurality of spaced, tangentially directed vanes mounted in the chamber between the intake openings and central opening.

3,791,113
SEALS FOR AIR FILTERS

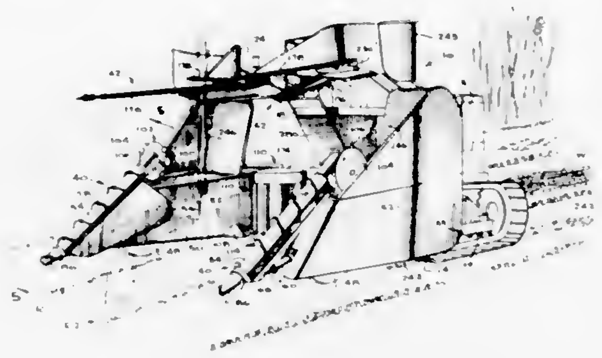
Robert Arnold Elder, 106 Edgewood Dr., Chateauguay Centre, Quebec, Canada
Filed Feb. 29, 1972, Ser. No. 230,422
Int. Cl. B01d *46/10*
U.S. Cl. 55—473 **2 Claims**



An air filtering device for clean air particularly for systems for use in "clean rooms". One of the problems existing with devices of this nature has been that when small leaks develop at the bonded joints, contaminated air enters the clean area. The present invention seeks to overcome this disadvantage by causing any leaks, which do occur, to be away from the clean area rather than into it. The invention provides a device having an outer chamber with an air filter therein; sealing means between one face of the filter and the chamber; a plenum chamber and sealing means between the other face of the filter and the plenum chamber. A fan is operatively connected to the plenum chamber and is adapted to move air to be filtered across the filter through the faces thereof.

3,791,114
TWO ROW CUTTER WINDROWER HARVESTING MACHINE

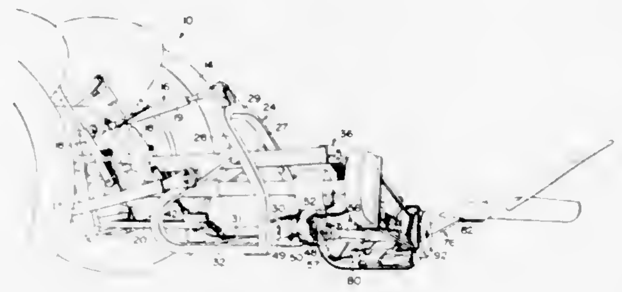
Larry G. Fowler, Belle Glade, Fla., assignor to Sugar Cane Growers Cooperative of Florida, Belle Glade, Fla.
Filed May 18, 1972, Ser. No. 254,372
Int. Cl. A01d *45/10*
U.S. Cl. 56—13.9 **29 Claims**



A sugar cane harvesting machine is disclosed including a tracked vehicle on which two identical row harvesting means are provided for two adjacent rows with the harvesting means including a lower cane chopper for chopping the cane of the row at ground level, a cane lifting and guiding scroll means for lifting fallen cane toward a vertical position and cutting tangles or mats incapable of vertical orientation to prevent uprooting of such cane forwardly of the lower cutting means, upper guide chains for guiding the tops of the vertically oriented cane to a cane top cutter where the tops are cut and guided to fall beneath the tracks of the vehicle; the lower cane cutting means includes kicker rolls operative to deflect the severed cane into an inverted U-shaped orienting chute in which the cane is oriented parallel to the rows with the cane from both rows being formed into a single windrow between the two rows being harvested.

3,791,115
TRACTOR-MOUNTED MOWER

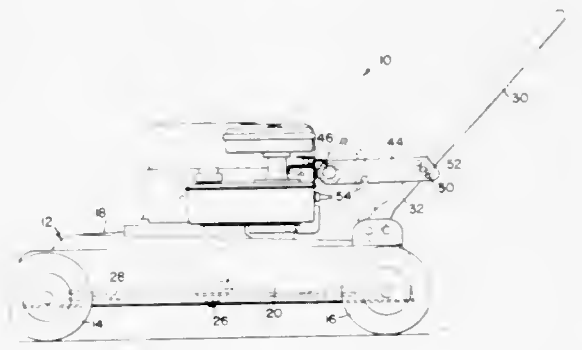
Arlyn Ray Nelsen, and Wilfred LeeRoy Steuerwald, both of Ottumwa, Iowa, assignors to Deere & Company, Moline, Ill.
Filed July 6, 1972, Ser. No. 269,344
Int. Cl. A01d *55/28*
U.S. Cl. 56—15.2 **28 Claims**



A three-point hitch-mounted mower has a main frame that is mounted on and vertically adjustable with the tractor hitch. A generally fore-and-aft subframe is swingably mounted on the main frame on a transverse pivot, and the forward end of the subframe is connected to the tractor drawbar so that the rearward end of the subframe raises at a more rapid rate than the main frame. A transversely extending drag bar is universally pivoted to the main frame and carries a yoke at its outer end, a mower driving head being pivotally connected to the yoke for swinging about a fore-and-aft axis. A transversely extending cutter bar extends outwardly from the driving head and is driven thereby, and the driving head is connected to the rearward end of the subframe by a chain which causes the driving head to rock and thereby raise the cutter bar as the subframe raises, the chain having a predetermined amount of slack when the cutter bar is in operating position to allow the outer end of the cutter bar to float downwardly. A tension spring also extends between the rearward end of the subframe and the driving head offset from the driving head pivot, so that the spring partly counterbalances the weight supported on the mower shoes at the inner and outer ends of the cutter bar, a chain being mounted in parallel with the spring to limit the spring extension and raise the inner end of the cutter bar after the main frame and subframe raise a predetermined amount.

3,791,116
HANDLE SUPPORT FOR A WALK-BEHIND MOWER

Lloyd Arnold Wykhuis, Mayville, Wis., assignor to Deere & Company, Moline, Ill.
Filed May 14, 1973, Ser. No. 359,862
Int. Cl. A01d *35/26*
U.S. Cl. 56—17.5 **6 Claims**



A walk-behind rotary mower includes a stamped sheet metal deck on the top central portion of which is mounted a motor for driving the mower blade. A handle is pivotally connected to a rear portion of the deck and is supported by means of a pair of rearwardly extending support arms which are pivotally connected to the opposite ends of a transverse bracket fixed to the rear side of the motor

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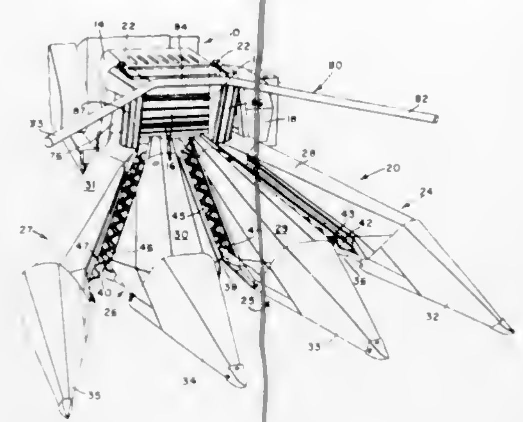
3,791,117
ROW CROP HARVESTER ATTACHMENT

Allan Keith Lawrence, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.
Filed July 24, 1972, Ser. No. 274,632
Int. Cl. A01d *45/02*
U.S. Cl. 56—98 **3 Claims**

A three-row row crop harvesting attachment for a forage harvester has three generally fore-and-aft passages which receive three rows of row-planted crops as the machine advances, a cutting apparatus being provided at the forward end of each passage for severing the crop from the field A pair of gathering devices are disposed along opposite sides of each passageway and move the stalks upwardly and rearwardly to the crop inlet on the forage harvester. Each gathering device includes an endless chain trained around front and rear sprockets and having belt-like loops which extend into the passageway and intermesh with the loops in the opposite gathering device to grasp the stalks of the crop, the rear sprockets for the center pair of gathering devices being disposed above the level of and forwardly of the other rear sprockets. A pair of rollers extend upwardly from the rearward end of the fenders overlying the outer two gathering devices and are respectively coaxially connected to the outer rear sprockets, so that the inner peripheries of the rollers engage the crop in the outer two passageways to assist in the convergence of the crop into the inlet opening. A pair of generally horizontal forwardly diverging arms extend forwardly from the upper ends of the rollers to guide the upper portions of the stalks.



3,791,118

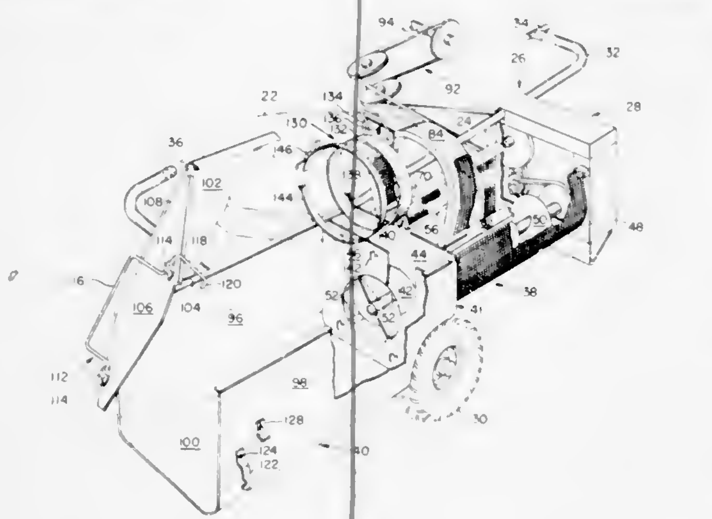
COMPACTOR ATTACHMENT FOR A LAWN MOWER

Robert Nick Behrens, Horicon, Wis., assignor to Deere & Company, Moline, Ill.

Filed May 18, 1973, Ser. No. 361,499

Int. Cl. A01d *38/22*

U.S. Cl. 56—202 **8 Claims**



A lawn and garden type tractor has a belly-mounted rotary lawn mower with a side discharge opening communicating with an inlet opening at the lower inner side of a fore-and-aft elongated, material-receiving housing or housing section extending longitudinally alongside the tractor. A substantial portion of the walls of the material-receiving section are foraminous so as not to impede the flow of air created by the cutting blade or blades of the mower and the material-receiving housing is large enough so that material entrained in the flow of air from the mower will be temporarily suspended therewithin before falling onto an auger which is rotatably mounted in the bottom and projecting from the rearward end thereof into a tubular member forming part of an intermediate housing or housing section, the tubular member opening into a relatively large compaction housing or housing section of the structure. The compaction housing is adapted to support a plastic bag or the like in a position with its open end in material-receiving relation to the outlet of the tubular member through means of a removable mounting ring assembly, the bag when so positioned being operable for having material compacted therein by the auger. Once a bag is filled with compacted material, it may be removed from the enclosure and replaced by an empty bag. The housings form part of a unitary structure which is supported on a single ground wheel located at the outer side of the structure and the structure is pivotally connected to the tractor by means permitting it to follow undulations of the ground and move vertically relative to the tractor.

3,791,119

DEVICES FOR UNWINDING FILAMENTARY MATERIAL FROM A BOBBIN OR SPOOL

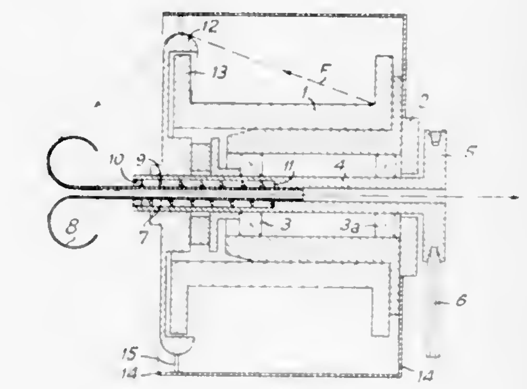
Jean Godderidge, Houilles, France

Filed Apr. 25, 1972, Ser. No. 247,277

Claims priority, application France, Nov. 5, 1971, 7117034

Int. Cl. D01h *7/00*

U.S. Cl. 57—34 R **4 Claims**



This invention relates to devices for unwinding filamentary material from a bobbin or spool. The bobbin or spool has at least one cheek and a rotatable capping flange surrounds this cheek: a tube is located at the centre of the bobbin or spool and has a flared end, and means are provided for rotating the central tube and the capping flange together. As a result of the apparatus, the filamentary material may be taken off the bobbin or spool, be passed over the flared end of the central tube and along the latter and out of its other end.

3,791,120

APPARATUS FOR HEATING OF ENDLESS FILAMENTS, YARNS OR THE LIKE

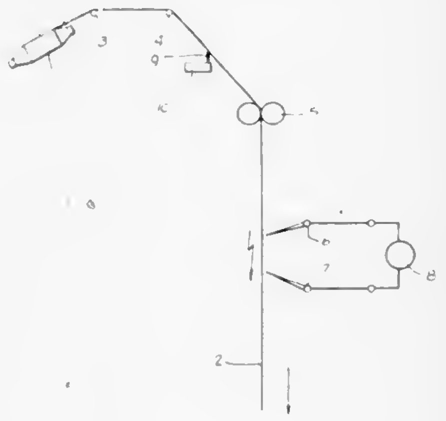
Leodegar Hess, Wattwil, Switzerland, assignor to Heberlein & Co. A.G., Wattwil, Switzerland

Filed Sept. 21, 1972, Ser. No. 290,849

Claims priority, application Switzerland, Sept. 21, 1972, 13744/71

Int. Cl. D02g *1/02;* **D01h** *13/28*

U.S. Cl. 57—34 HS **16 Claims**



Apparatus for heating yarns of indefinite continuous length as the yarn advances longitudinally comprises as arc discharge device positioned in the vicinity of the yarn or in contact therewith so that the arc follows the yarn or passes through same. Means may also be provided to moisten the yarn with a conductive fluid before the arc is applied.

3,791,121

APPARATUS FOR TEXTURING OR DRAWING AND TEXTURING SYNTHETIC YARNS

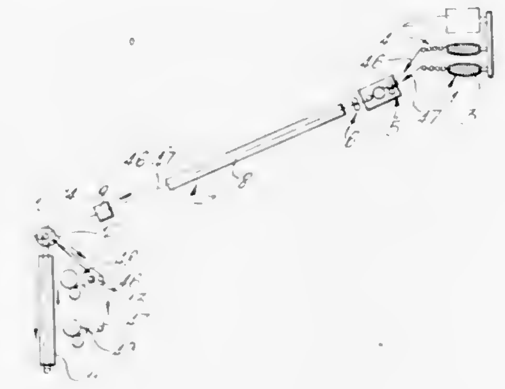
Walter Ernst, Guttingen, Thurgau, Switzerland, assignor to Ernest Scragg & Sons Limited, Macclesfield, England

Filed June 19, 1972, Ser. No. 264,129

Claims priority, application Germany, June 19, 1971, 2130551

Int. Cl. D02g *1/02*

U.S. Cl. 57—34 HS **8 Claims**



Apparatus for texturing synthetic thermoplastic yarn is in the form of a self-contained machine unit comprising a long straight support spline with which a drive transmission shaft is co-extensive, the spline carrying at least one set of yarn feed rolls, a heater and a yarn texturing mechanism The feed rolls are at one end of the spline and drivably connected to the transmission shaft, and at the other end of the spline a belt pulley also connected to the shaft can be belt coupled to a drive motor individual to the machine unit. Multiple machine units can be mounted in inclined spaced parallel disposition on a framework, as a horizontal row, to build a machine. The framework supports the motors for the machine units, and also optional setting apparatuses and winding assemblies associated with the machine units to form production units Detachable spline extensions carry further feed rolls for cooperation with the first feed rolls for drawing yarn prior to texturing.

3,791,122

FALSE TWIST PROCESS AND APPARATUS

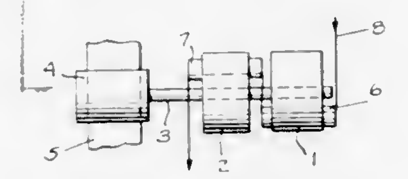
Josef Raschle, Butschwil, Switzerland, assignor to Heberlein & Co. AG, St. Gall, Switzerland

Filed Mar. 15, 1972, Ser. No. 234,777

Claims priority, application Switzerland, Mar. 18, 1971, 4031/71

Int. Cl. D01h *7/92*, **D02g** *1/04*

U.S. Cl. 57—77.45 **13 Claims**



Yarn to be texturized by false twist is passed axially and sequentially through tubes, the input and output angles of the yarn in respect of the tube axes totaling between 300° and 600°.

3,791,123

METHOD AND APPARATUS FOR REPLACING BOBBINS ON SPINNING OR TWISTING MACHINES

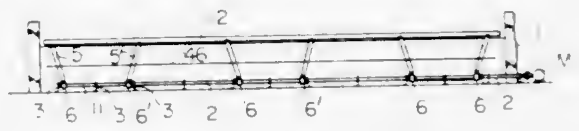
Yoshikazu Kawauchi, Aichi-ken, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya-shi, Japan

Filed Nov. 24, 1971, Ser. No. 201,814

Claims priority, application Japan, Nov. 27, 1970, 45/104982; Dec. 11, 1970, 45/110822

Int. Cl. D01h *9/08*

U.S. Cl. 57—52 **6 Claims**



A method of and apparatus for simultaneous doffing full packaged bobbins from respective spindles and donning fresh bobbins on the empty spindles of a spinning or twisting machine. This doffing and replacing operation is carried out by gripping the head of each bobbin by means of bobbin gripping members disposed on a horizontal holding bar which can be displaced upward or downward parallel to the spindle rail of the spinning or twisting machine.

3,791,124

METHOD AND APPARATUS FOR CONTROLLING THE DOFFING OF BOBBINS AND THE DONNING OF TUBES ON SPINDLES OF RING SPINNING AND RING TWISTING MACHINES

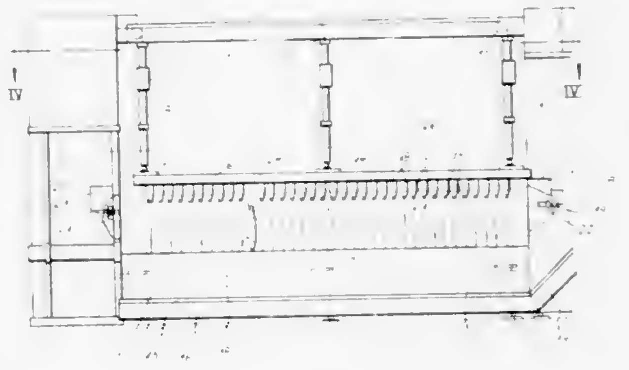
Siegfried Kaufmann, and Hans Rutz, both of Winterthur, Switzerland, assignors to Rieter Maschine Works, Ltd., Winterthur, Switzerland

Filed June 12, 1972, Ser. No. 263,754

Claims priority, application Switzerland, June 18, 1971, 8896/71

Int. Cl. D01h *9/00, 13/14*

U.S. Cl. 57—52 **21 Claims**



A light source is positioned to direct a beam of light on a receptor on a straight line axis located above the row of spindles but within the contour of the tubes mounted on the spindles. After doffing, the light source is turned on to detect the presence of undoffed tubes or the presence of a spindle which may have been torn up during doffing. If the beam of light is interrupted, donning of fresh tubes can be prevented until the spindles are cleared.

3,791,125
SPINNING MACHINE YARN PACKAGE TUBE EXCHANGING DEVICE

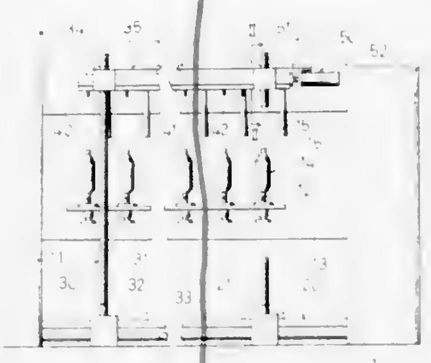
Hajime Kawakami, Hyogo-ken, Japan, assignor to Nippon Keori Co., Ltd., Kobe, Japan

Filed May 3, 1972, Ser. No. 250,027

Claims priority, application Japan, May 10, 1971, 46-31378

Int. Cl. D01h *9/08, 9/18*

U.S. Cl. 57—52 5 Claims



A device for removing fully wound yarn packages including the associated tubes from the spindles of a spinning machine and replacing the full packages with new empty tubes comprises, a conveyor for feeding the empty tubes outwardly along the longitudinal length of a spindle rail which has a plurality of longitudinally spaced spindles thereon. The device includes a vertically arranged threaded spindle of a transport member, which is engaged with a nut portion of a carriage which moves vertically and which carries a rail which is shiftable horizontally. The rail has a plurality of first gripper elements which are alternately spaced with second gripper elements and which depend therefrom and which may be aligned first with the new tubes which are delivered outwardly by the conveyor to engage the first gripper elements with the tubes. The carriage is then elevated to position the new tubes over the spindles and to align the second gripper elements with the spindles. The carriage is subsequently moved downwardly to engage the second gripper elements with the full tubes on the spindles and to remove them by lifting them upwardly. The rail may be shifted horizontally to then align the new tubes vertically over the spindles which are now empty, and the carriage is again movable downwardly to position the new tubes in place. The fully wound tubes are then delivered back to the conveyor for transport away from the spindles.

3,791,126
AUTOMATIC DOFFING APPARATUS

Tatsuo Kose; Kiyokazu Hori, and Kazuo Ochi, all of Wakayama, Japan, assignors to Daiwa Boseki and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariyashi, both of, Japan

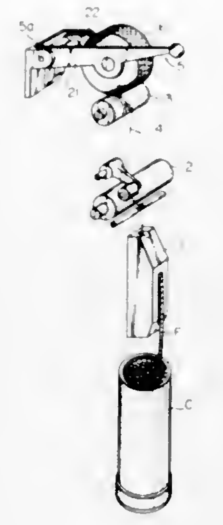
Filed May 28, 1971, Ser. No. 147,814

Claims priority, application Japan, June 1, 1970, 45-47776; June 10, 1970, 45-53931

Int. Cl. D01h *9/10, 1/12*

U.S. Cl. 57—53 14 Claims

An automatic doffing apparatus adapted for use with an open end spinning machine having a plurality of spinning units arranged in side-by-side relation, for doffing full packages one by one from the respective spinning units during operation of the spinning machine while travelling along the front face of the spinning machine. The apparatus comprises a rotary doffer for disengaging the full package from a traversing roller, domounting the full package from a bobbin holder and then mounting an empty bobbin in the bobbin holder; and a cutting and suction device for cutting a spun yarn between the traversing roller and a take-up roller and lapping one of the cut yarn ends around the empty bobbin.



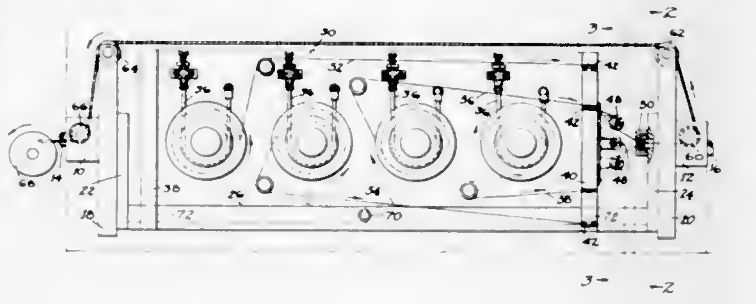
3,791,127
WIRE TWISTING MACHINE

Marshall F. Wesson, Auburn, Mass., assignor to James Smith & Son, Inc., Worcester, Mass.

Filed Apr. 24, 1972, Ser. No. 246,885

Int. Cl. D07b *3/12;* **D01h** *7/86*

U.S. Cl. 57—58.52 6 Claims



A frame for a creel, the frame comprising an elongated slotted bar suspended on a pair of oscillatable arms depending from coaxial supports and located between a pair of spaced flier arms, and aligned with a twisting die, in combination with a new and improved creel which is easily mounted and abstracted from the creel frame, said creel comprising a generally upright narrow flat member and a disc at each end, the flat creel member having on each side thereof a plurality of spool holders, and guides for the wire from the spools directed to one of the flier arms over sheaves on one of the creel end discs, and through the die where the twisting occurs, the flier arms being rapidly rotated on the axis of the die and of the creel, and means leading the twisted wire longitudinally reversely across the creel to a sheave on the axis of the other flier arm and thence to an external takeup reel or spool.

3,791,128
METHOD AND APPARATUS FOR STOPPING AND STARTING ONE OR MORE OPEN-END-SPINNING DEVICES

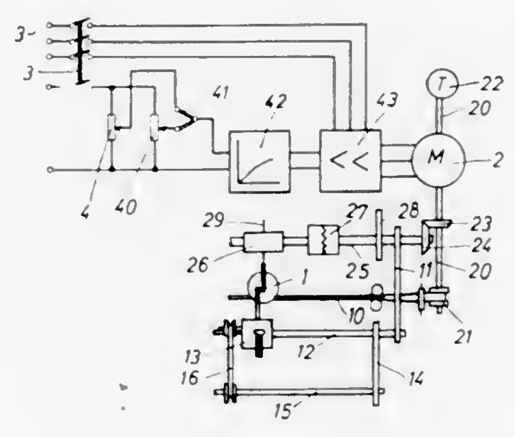
Hans Landwehrkamp, Gerolfing, and Heinrich Niestroj, Ingolstadt, both of Germany, assignors to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany

Filed Nov. 18, 1971, Ser. No. 200,024

Claims priority, application Germany, Nov. 28, 1970, 2058604; June 21, 1971, 2130669

Int. Cl. D01h *1/30, 1/34, 1/12*

U.S. Cl. 57—93 8 Claims



Yarn breakages or irregularities are avoided by connecting spinning apparatus, fiber sliver supply devices, and yarn drawoff devices by suitable mechanical connections to a common variable speed motor to maintain a constant speed ratio between such components of spinning apparatus. A plurality of spinning apparatuses may have individual drive motors connected electrically to the common motor. Interposed between the main operating switch and the drive motor are a pair of intermediate circuits, one circuit having a potentiometer control to limit the motor to a low variable speed range, and the second circuit having relatively high speed range including normal production speed. Selector switches cooperate to connect the drive motor to one or the other of the intermediate circuits, but one or more of such selector switches may be operable manually or by cam control drums' to effect switching from one intermediate circuit to another to effect low speed operation for an indefinite or a predetermined time to facilitate bobbin-changing or return of an escaped yarn end, for example.

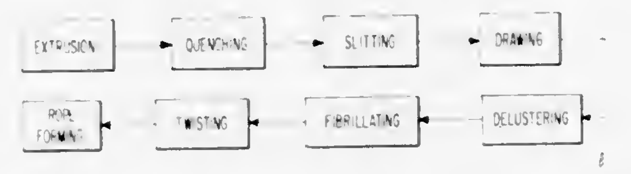
3,791,129
ROPE AND ITS MANUFACTURE

Abner P. Shuford, Hickory, N.C., assignor to Shuford Mills, Inc., Hickory, N.C.

Filed Sept. 3, 1971, Ser. No. 177,784

Int. Cl. D02g *3/06*

U.S. Cl. 57—140 R 4 Claims



Rope having improved working qualities and hand without need to contain sizing or lubricants consists of a plurality of strands of fibrillated polyolefin film having a delustered surface. The film is delustered by surface abrasion prior to fibrillation and twisting into strands. Such rope exhibits low internal friction producing its good working qualities and low abrasion to objects in which it comes in contact producing its improved hand.

3,791,130
METHOD FOR FALSE-TWISTING A SYNTHETIC FILAMENT YARN

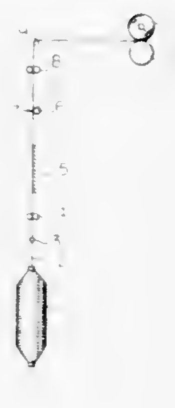
Hisao Inuyama, Otsu; Sadao Tomioka, Kusatsu, and Yoshihiko Chiba, Kyoto, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Oct. 28, 1971, Ser. No. 193,331

Claims priority, application Japan, Nov. 4, 1970, 45-96965; Nov. 4, 1970, 45-96966

Int. Cl. D02g *1/02*

U.S. Cl. 57—157 TS 7 Claims



In the method, the yarn is heated at a temperature at which the yarn is plasticized. The yarn is then passed through a closed path formed around a pin while contacting the periphery of the pin. A portion of the yarn emerging from the closed path is brought into contact with a portion of the yarn entering the closed path. The entering and the emerging portions of the yarn are entwined with each other at entry and exit regions of the closed path in such a manner that each portion of the yarn goes around the other in at least one turn under friction while travelling in the same direction.

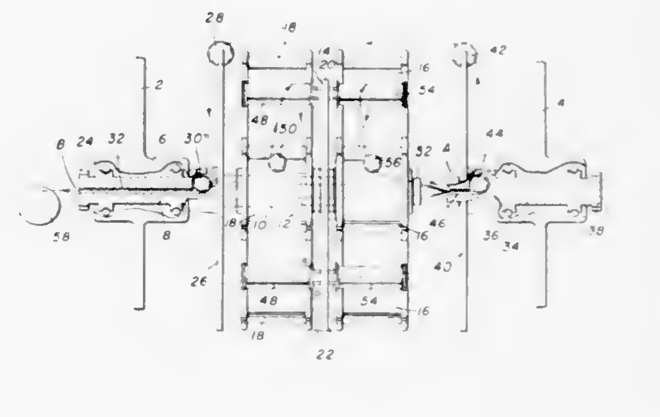
3,791,131
METHOD OF MAKING A CONCENTRIC WIRE ROPE ON A DOUBLE TWIST STRANDER

Roger M. Scott, Worcester, and Marshall F. Wesson, Auburn, both of Mass., assignors to Morgan Construction Company, Worcester, Mass.

Filed Mar. 27, 1972, Ser. No. 238,391

Int. Cl. D07b *3/00*

U.S. Cl. 57—161 5 Claims

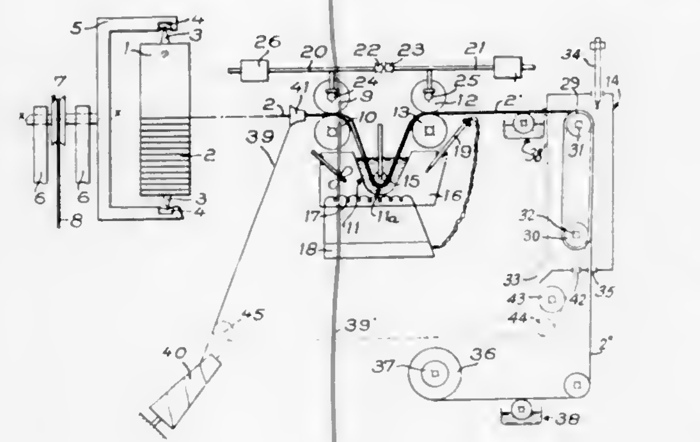


The method of making a concentric wire rope on a double twist strander in which the rope is comprised of outer strands and a core strand and in which the lay of the wires of the outer strands is opposite the lay of the wires of the core strand and in the finished rope the length of the lay of the wires of the core strand has been shortened and the length of the lay of the wires of the outer strands has been increased.

3,791,136

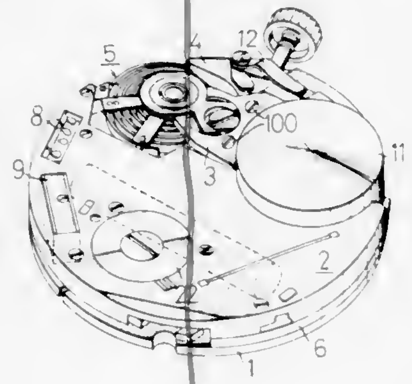
the fluidised bed. The exhaust gas from the turbine of the

3,791,132
PROCESS FOR SIZING TEXTILE FIBRES
Richard Adrien Schutz, and Pierre Elisee Exbrayat, both of Mulhouse, France, assignors to Centre Technique Industriel: Institut Textile De France, Boulogne Sur Seine, France
Filed Dec. 1, 1971, Ser. No. 203,720
Claims priority, application France, Dec. 3, 1970, 7043555
Int. Cl. D02g *3/36*
U.S. Cl. 57—164 **8 Claims**



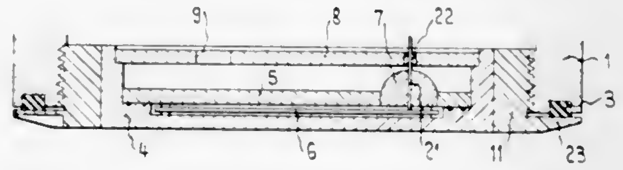
Process for sizing slivers or rovings of textile fibres in which the slivers or rovings are unwound from a supply thereof and are accelerated progressively and smoothly to a given speed by a pulling force which is always less than the cohesion force between the fibres constituting the slivers or rovings. The slivers or rovings are then flattened by passing between a first pair of pressure rollers, before dipping into a bath of size and then passing through a second pair of pressure rollers to be forwarded onto a drier for drying the size whereafter they are wound up on a bobbin. The size has the effect of gluing the fibres of slivers or rovings together and imparts sufficient cohesion for the slivers or rovings to be worked as such in a loom or knitting machine. The size may subsequently be removed after manufacture of a textile article from the slivers or rovings.

3,791,133
CRYSTAL OSCILLATOR TYPE SMALL TIMEPIECE
Takashi Hashimura, Saitama-ken; Akira Nikaido; Isao Koyama, both of Tokyo; Hisao Wakabayashi, Saitama-ken, and Hideki Ohuye, Tokyo, all of Japan, assignors to Citizen Watch Company, Limited, Tokyo, Japan
Filed June 22, 1972, Ser. No. 265,180
Int. Cl. G04c *3/00*
U.S. Cl. 58—23 AC **8 Claims**



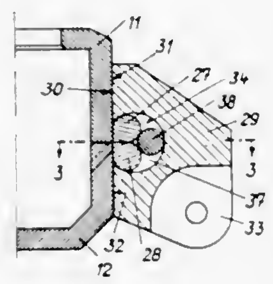
A small electronic timepiece is disclosed, especially a watch, comprising a piezo-electric crystal oscillator as a time base means thereof, a frequency divider for dividing the oscillation fed from the oscillator, and a balance wheel motor for conversion of the frequency divided electric signal fed from the divider into a corresponding mechanical oscillative movement for driving a time-keeping gear train of the timepiece. The improvement of the timepiece comprises the oscillator comprising a piezoelectric oscillation crystal bar which is suspended in the interior of a totally enclosed and evacuated cylindrical container by suspension means at a position along its length defining a nodal point near at least one of the ends of the bar. The suspension means comprises at least two wire mounts each of which is formed at its intermediate portion into a shock-absorbing coil and suspended between two of four rigid supporting pillars fixedly mounted in the container, on the one hand, and the crystal bar, on the other hand. The container is mounted through a resilient sleeve tightly covering substantially the whole length of the container, thereby providing a doubled shock-absorbing means.

3,791,134
TIMEPIECE HAVING A NUCLEAR POWER SOURCE
Karl Adler, Grenchen, and Georges Ducommun, Feldbrunnen, both of Switzerland, assignors to Biviator S. A., Grenchen, Switzerland
Filed Feb. 8, 1971, Ser. No. 112,920
Claims priority, application Switzerland, Feb. 23, 1970, 2551/70
Int. Cl. G04c *3/00;* **G04b** *37/00, 37/08*
U.S. Cl. 58—23 BA **5 Claims**



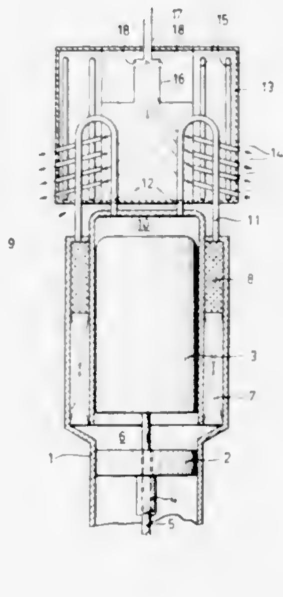
A timepiece comprising a nuclear power source in a capsule having a sensitive insulation of an output terminal, this insulation and output terminal respectively being protected by a protecting plate forming an intermediate back.

3,791,135
CASE WITH FLUID-TIGHT CLOSURE DEVICE
Bernard Taubert, 27 Chemin Sous-Caran, 1222 Vesenaz, Switzerland
Filed May 28, 1973, Ser. No. 364,653
Claims priority, application Switzerland, June 19, 1972, 9147/72
Int. Cl. G04b *37/08*
U.S. Cl. 58—90 R **5 Claims**



A case, e.g., a watch case, includes two case parts and two slide-operated devices for gripping together the case parts thereby deforming a packing ring to ensure fluid-tight closure of the case. Each device includes rail-forming elements disposed facing one another on the peripheries of the respective case parts, and a slide piece including a channel which straddles and slidably engages about the adjacent elements. The rail-forming elements are part cylindrical and include opposed convex surface portions against which oblique surfaces of said channel contact to wedge the case-parts together.

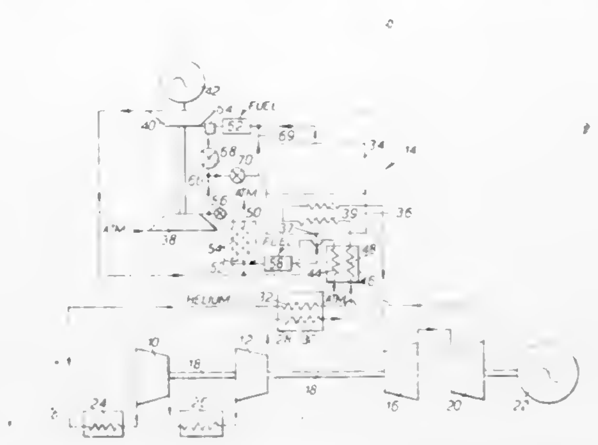
3,791,136
HOT-GAS ENGINE
Roland Anton Johan Otto Van Witteveen, and Gregorius Theodorus Maria Neelen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Phillips Corporation, New York, N.Y.
Continuation of Ser. No. 26,639, April 8, 1970, abandoned.
This application Oct. 14, 1971, Ser. No. 189,336
Claims priority, application Netherlands, Apr. 18, 1969, 6906103
Int. Cl. F02g *1/04*
U.S. Cl. 60—24 **8 Claims**



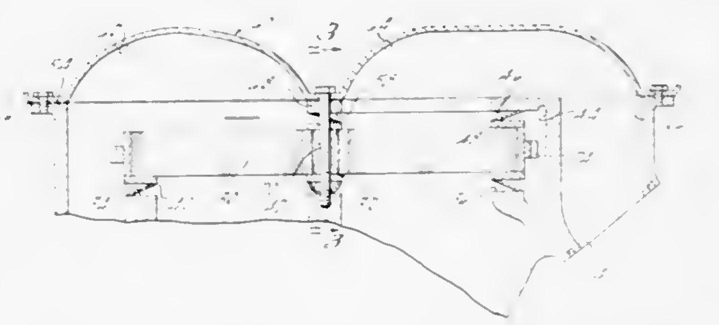
A hot-gas engine to which thermal energy is supplied by means of a heating system, which conducts a flow of heated medium along the heater and in which the heater is formed by a first wreath of pipes which communicate at their one end with the expansion space and at their other and communicate with further pipes which communicate with the regenerator and in which the further pipes are situated at least partly within a container in which a substance or a mixture of substances is present in which sensible and/or melting heat can be stored, the container comprising, in the zone over which the further pipes extend within the container, a number of ducts through which the heating medium flows away after passage of the first wreath of pipes.

3,791,137
FLUIDIZED BED POWERPLANT WITH HELIUM CIRCUIT, INDIRECT HEAT EXCHANGE AND COMPRESSED AIR BYPASS CONTROL
Albert Jubb, Kenilworth, and David Eyre Williams, Rugby, both of England, assignors to The Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
Filed May 15, 1972, Ser. No. 253,023
Int. Cl. F02c *1/04, 3/00*
U.S. Cl. 60—39.18 R **10 Claims**

A power unit consists basically of two gas turbine engines. In the first which is a closed cycle the working fluid (helium) is heated by passing it through a duct embedded in a fluidized bed. The exhaust gas is passed through a conventional heat exchanger before being returned to the compressor. In the second engine, consisting of a compressor and a turbine, air from the compressor is passed through the particulate material of the fluidised bed with fuel which maintains combustion in the fluidised bed. The exhaust gas from the turbine of the second engine is passed through a conventional heat exchanger and then to atmosphere. The two engines each drive an alternator.



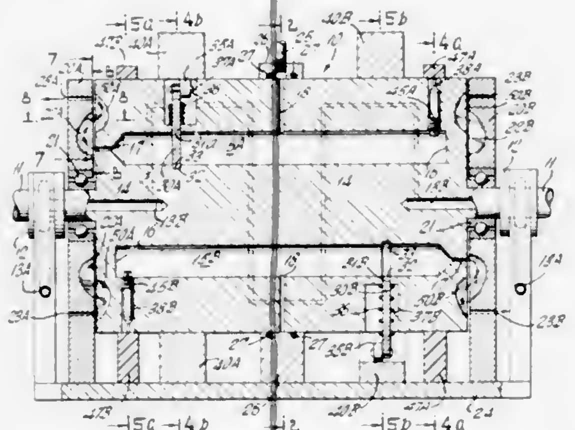
3,791,138
GAS TURBINE ENGINE REGENERATOR
Thomas R. Stockton, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed June 19, 1972, Ser. No. 263,829
Int. Cl. F02c *7/10;* **F28d** *19/04*
U.S. Cl. 60—39.51 H **6 Claims**



A heat regenerator system for a gas turbine engine comprising a main turbine housing adapted to enclosed the power turbine wheel and the compressor drive wheel, a cylindrical regenerator core having axial gas flow passages mounted for rotation about a vertical axis in the upper region of the housing, a regenerator cover in the housing defining a high pressure regenerator inlet chamber in communication with the outlet side of the compressor, a generally circular lower seal surface formed in the housing in registry with a lower peripheral seal for the regenerator core, an arcuate enclosure formed within the housing for receiving a peripheral portion of the regenerator core and forming an upper regenerator core seal support surface surrounding the low pressure exhaust region for the regenerator core and an exhaust gas flow passage formed in the housing and adapted to receive low pressure exhaust gases directed by the regenerator cover from the regenerator core exhaust region.

3,791,139
TURBINE ENGINE WITH VALVED, ROTATING COMBUSTION CHAMBER
Leon Simons, New City, N.Y., assignor to N & S Co., Southfield, Mich.
Filed Dec. 26, 1972, Ser. No. 318,285
Int. Cl. F02c *3/16*
U.S. Cl. 60—39.34 **10 Claims**

The engine includes a rotatably supported, axially elongated cylindrical rotor formed with a plurality of equiangularly spaced axially elongated chambers all located at the same radial distance from the rotor axis. Each chamber has a closed inner end and an outer end connected to a respective discharge passage extending through an axial end surface of the rotor. Alternate chambers communicate with one axial end surface of the rotor and intermediate chambers communicate with the opposite axial end surfaces. A pair of stators engage the opposite end surfaces of the rotor, and each is provided with a circular series of radial stator vanes communicating, at the inner radial end, with the discharge passages extending through the respective adjacent end of the rotor. Each end surface of the rotor has a respective circular series of radial rotor vanes communicating at their inner radial ends with the outer radial ends of the associated series of stator vanes. Each chamber has, substantially at its midpoint, a radial fuel supply passage and, as the rotor rotates, the fuel supply passages are sequentially and successively aligned with a fuel supply pipe. Between its fuel supply passage and its discharge passage, each chamber has associated therewith a respective gate which is spring biased to an open position completely clearing the associated chamber and is operable, by a ring cam surrounding the rotor, to be moved to a position closing the associated chamber immediately after fuel has been supplied to the chamber. Adjacent its inner end, each chamber has associated therewith an ignition device, such as a spark plug, which, as the rotor turns, engages an electrical contact to ignite the fuel mixture then in the associated chamber shortly after the associated gate has closed. Following the ignition, the ring cam permits the associated gate to open to that the combustion gases are discharged through the discharge passages into the stator vanes, to propel the rotor by reaction, with the combustion gases being redirected into the rotor vanes to provide a further rotor propelling action and with the combustion gases then being discharged from the radially outer ends of the rotor vanes through discharge passages extending through the stators. The engine is particularly designed for use with a metallic fuel, such as pure metallic dust or a catalyzed metal fuel, with the metallic dust being preferably suspended in a gel which immediately liquifies in the combustion chamber to form a fuel in addition to the metal powder.



3,791,140

OPERATION OF HYBRID ROCKET SYSTEMS

Thomas P. Rudy, and Raymond J. Muzzy, both of Saratoga, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 12, 1972, Ser. No. 252,692
Int. Cl. C06d *5/10*

U.S. Cl. 60—207 **4 Claims**

In the operation of a hybrid rocket system, a solid fuel consisting essentially of a polybutadiene, trimethylolpropane trimethacrylate, polymethylmethacrylate and an organic peroxide is burned in a combustion zone in the presence of an oxidizer that is supplied to the zone at varying flow rates. Because the solid fuel burns without char formation at low oxidizer to fuel ratios, it is possible to operate the system over a wide thrust range.

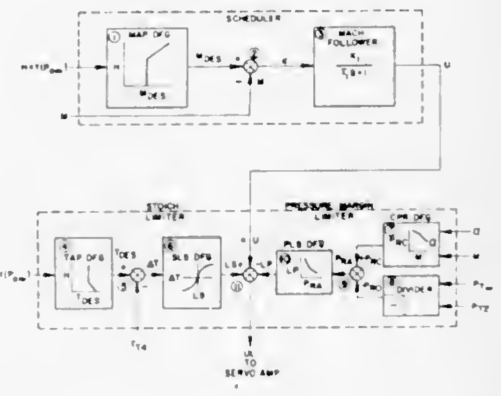
3,791,141

RAMJET ENGINE FUEL CONTROLLER

John E. Bush, and Leland M. Horgan, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 2, 1972, Ser. No. 294,049
Int. Cl. F02k *7/10*

U.S. Cl. 60—243 **3 Claims**



A ramjet engine fuel controller for automatically giving the desired fuel/air ratio for all engines operating conditions. The controller consists of a scheduler and a limiter. The entire system is electronic or fluidic.

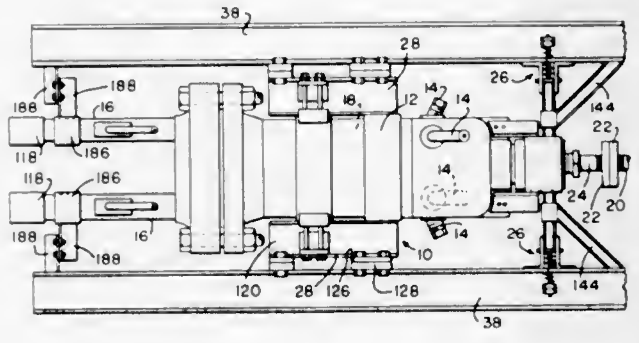
3,791,142

FLUID-POWERED ENGINE

Antonio Caldarelli, Apt. 29 Clinton Manor, 281 W. Clinton St., Dover, N.J.

Filed Sept. 14, 1972, Ser. No. 289,002
Int. Cl. F02k *11/00;* **F02c** *7/20*

U.S. Cl. 60—263 **10 Claims**



The engine, in one embodiment thereof, comprises an impulse velocity, staged turbine operative under the influence of energized fluid to provide thrust, or rotary torque, or both. Ancillary fluid admitting means are provided to enhance thrust or to depressurize the plenum chamber/exhaust space of the engine so that the engine can function with a low pressure-differential with respect to the inlet and outlet thereof. The turbine is coupled to a housing and frame in a manner accommodating for thermal expansion thereof relative to the housing and frame. Downstream of the turbine, straight exhaust pipes or nozzled exhaust pipes are through connected with the plenum chamber/exhaust space for venting expanded fluid from the turbine.

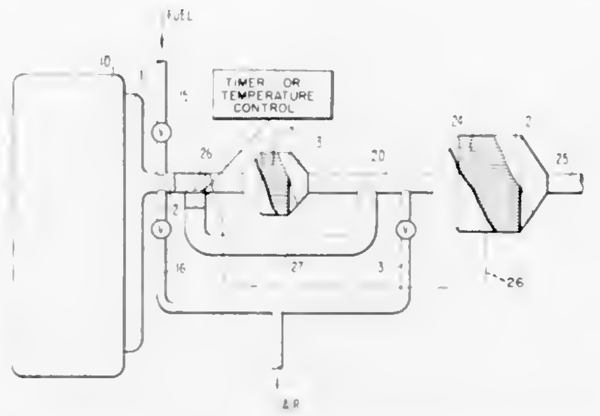
3,791,143

PROCESS AND APPARATUS

Carl D. Keith, Summit, and John J. Mooney, Wyckoff, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Murray Hill, N.J.

Filed Nov. 10, 1971, Ser. No. 197,348
Int. Cl. F01n *3/14*

U.S. Cl. 60—274 **20 Claims**



There is disclosed a process for purifying exhaust gases containing carbon monoxide and hydrocarbons which is highly effective, even when starting cold engines. The system employs a plurality of catalytic zones, preferably the initial catalyst zone being in a separate vessel positioned near the engine manifold, and supplemental fuel is charged to the initial catalyst zone at least during start-up of the engine. After engine start-up, the exhaust gases may be by-passed around the initial catalyst zone and into a subsequent catalyst zone which has been heated during the start-up period by gases passing from the initial catalyst zone. The supplemental fuel addition may be stopped after a predetermined time from the beginning of engine operation. A preferred supplemental fuel is methanol, and preferred catalysts are of the honeycomb type.

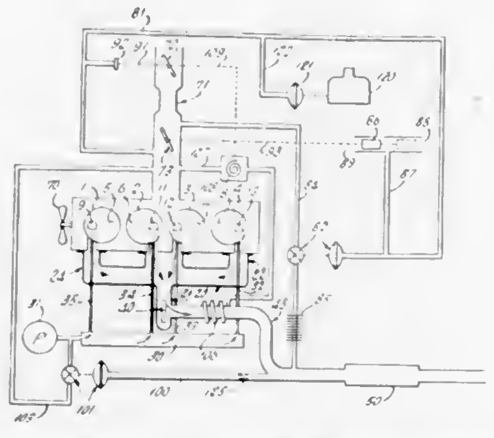
3,791,144

REACTOR ASSEMBLY TO REDUCE AUTOMOTIVE EMISSIONS FROM AN INTERNAL COMBUSTION ENGINE

Robert J. Lang, Watchung, N.J., assignor to Esso Research and Development Company, Linden, N.J.

Continuation-in-part of Ser. No. 66,384, Aug. 24, 1970. This application Mar. 31, 1972, Ser. No. 239,940
Int. Cl. F02b *75/10;* **F01n** *3/10*

U.S. Cl. 60—278 **23 Claims**



The level of contaminants in exhaust gases emitted from the exhaust ports of an internal combustion engine is markedly reduced by mixing the exhaust gases with air, oxidizing carbon monoxide and hydrocarbons in the mixture in the area adjacent to the exhaust ports during start-up and oxidizing the carbon monoxide and hydrocarbons in a reactor when normal operating temperatures are reached. Flameholders are utilized in each exhaust port of the engine to speed warm-up and lower emissions. A further refinement is the recycle of cooled exhaust gases under certain operating conditions. The reactor is preferentially of the type comprising a generally annular or circular combustion chamber, with exhaust inlet means disposed to tangentially introduce the exhaust gases into the combustion chamber and also containing exhaust outlet means positioned and proportioned relative to the inlet means so that the exhaust gases leaving the reactor through the outlet means are substantially completely combusted. A further refinement is the utilization of nitrogen oxides reducing catalyst means located upstream of the reactor for reducing the level of nitrogen oxides in the exhaust gases prior to combustion thereof in the reactor.

3,791,145

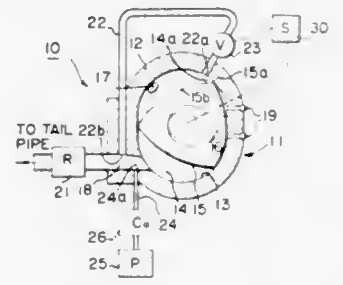
METHOD FOR REDUCING EXHAUST NOXIOUS EMISSION OF ROTARY ENGINE AND THE SYSTEM THEREFOR

Kenichi Yamamoto, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Aki-gun, Hiroshama-ken, Japan

Filed Mar. 8, 1972, Ser. No. 232,671

Claims priority, application Japan, Mar. 10, 1971, 46-13231; May 8, 1971, 46-40445
Int. Cl. F02b *75/10*

U.S. Cl. 60—286 **19 Claims**



Method and system for reducing unburned and partially burned noxious gases inevitably contained in engine exhaust gases of a rotary engine having an exhaust gas cleaner in its exhaust system. In the method and system, a fresh air-fuel mixture existing in the engine chamber is periodically introduced into the exhaust system directly into or upstream of the exhaust gas cleaner in response to the compression condition of the engine chamber, thus improving the afterburning condition of the exhaust gas cleaner through warming-up. For this purpose, an enriched mixture left behind in a trailing portion of the engine chamber may exclusively be drawn into the cleaner so as to uniformalize the mixture ratio distribution in the whole engine chamber. Furthermore, the mixture may be shut off when the operating temperature of the cleaner is above a predetermined level dictating that the warming-up thereof is completed.

3,791,146

SECONDARY AIR REGULATING SYSTEM FOR AUTOMOTIVE INTERNAL COMBUSTION ENGINE

Yoshimasa Hayashi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 27, 1972, Ser. No. 247,985

Claims priority, application Japan, Nov. 1, 1971, 46/100897
Int. Cl. F02b *75/10*

U.S. Cl. 60—289 **5 Claims**

A secondary air regulating system for regulating the amount of secondary air to be supplied to an exhaust port of an internal combustion engine for facilitating oxidizing reaction of engine exhaust gases to eliminate the noxious and harmful components therein. The secondary air regulating system has an air gallery leading from a pneumatic pump through a main

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passageway and communicating with the exhaust manifold of drivingly interconnected by a shaft coupling, and a centrifugal

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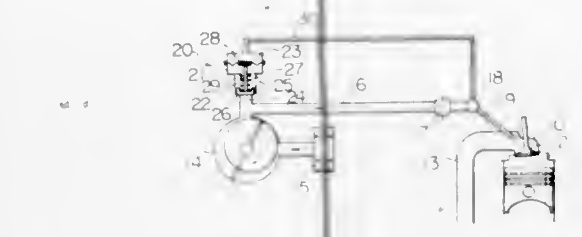
3,791,150

FLOATING BREAKWATER FOR ATTENUATING SEAS

said vertical shell being tall enough to project above sea level, when the bottom is on the sea floor, for a height adequate for passageway and communicating with the exhaust manifold of the engine through a secondary air inlet pipe opening into the exhaust manifold, and a control valve assembly which is located in the main passageway to selectively discharge an excess secondary air to the atmosphere to adjust the amount of secondary air to be supplied to the exhaust manifold of the engine to a value optimum for effecting satisfactory oxidizing reaction of the engine exhaust gases, the control valve assembly being adapted to be responsive to at least one of the pressure prevailing in the air gallery and the pressure of exhaust gases in the exhaust manifold thereby to control the amount of leakage of secondary air to the atmosphere in response thereto.



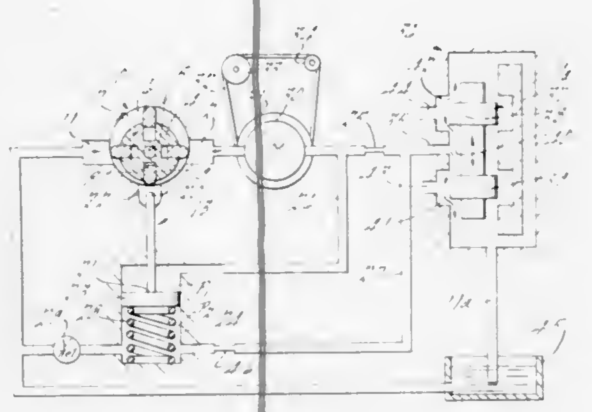
3,791,147
AUTOMOBILE ACCESSORY DRIVE

Christopher Nuss, Warren, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Jan. 15, 1973, Ser. No. 323,555

Int. Cl. F16h *39/46*

U.S. Cl. 60—422 **15 Claims**



A plurality of automobile accessory devices are driven by a single constant speed hydraulic motor by means of the constant fluid output from a variable displacement hydraulic power steering pump driven in turn by the automobile engine at speeds proportional to the engine speed. Constant fluid output from the pump is maintained by a displacement control means that controls the displacement of the pump inversely with the pressure differential across a predetermined restriction in the pump outlet.

3,791,148
MOTOR-DRIVEN HYDROSTATIC TRANSMISSION

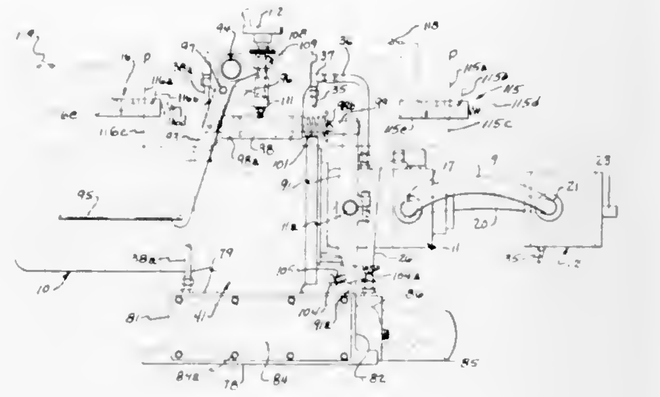
Richard A. Alcock, Rockford, and Wayne A. Shosie, Loves Park, both of Ill., assignors to Fastener Engineers, Inc., Rockford, Ill.

Filed Dec. 13, 1972, Ser. No. 314,757

Int. Cl. F16h *39/46, 41/30*

U.S. Cl. 60—456 **8 Claims**

A motor-driven hydrostatic transmission of the type having an electric drive motor for driving an hydraulic pump that supplies fluid to an hydraulic motor. The electric drive motor and hydraulic pump are face mounted on opposite sides of a centrifugal blower housing with their shafts in alignment and drivingly interconnected by a shaft coupling, and a centrifugal blower is mounted on the shaft coupling for blowing air over a heat exchanger connected in the hydraulic circuit of the hydraulic transmission



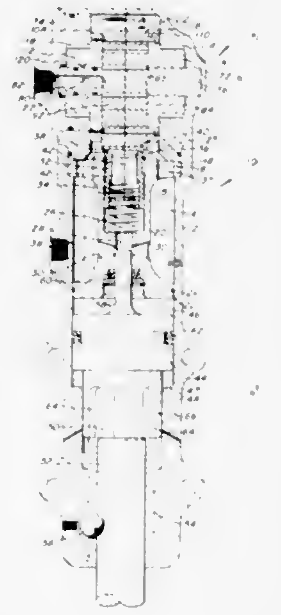
3,791,149
ROTARY ECCENTRIC FLUID MOTOR

Gerald L. Strecker, Arvada, and Dennis L. Schultz, Lakewood, both of Colo., assignors to Gardner-Denver Company, Quincy, Ill.

Filed July 11, 1972, Ser. No. 270,777

Int. Cl. F15b *7/02*

U.S. Cl. 60—543 **4 Claims**



An internal gear type fluid motor comprising an inner gear member mounted stationary and an outer gear or internally toothed member mounted for orbital movement about the stationary inner gear in response to pressure fluid being introduced into the expansible chambers formed by the cooperating gear members. The outer gear member is mounted in a housing which itself is mounted for rotation about an axis in response to the orbital movement of the outer gear member. The housing includes a cam surface which provides an eccentric drive for a hydraulic percussion mechanism. The fluid motor and percussion mechanism are mounted in a tool housing in such a way that the percussion mechanism receives hydraulic fluid discharged from the fluid motor.

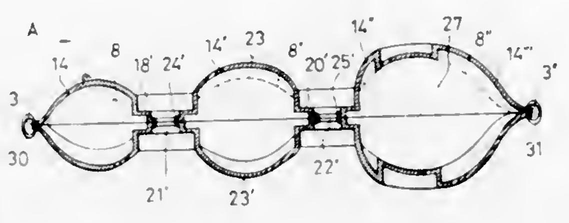
3,791,150
FLOATING BREAKWATER FOR ATTENUATING SEAS

Muneoki Tachii, Mito, Japan, assignor to Debero Kogyo Co., Ltd., Mito, Japan

Filed Sept. 7, 1971, Ser. No. 178,083

Int. Cl. E02b *3/06*

U.S. Cl. 61—5 **1 Claim**



A floating breakwater for attenuating seas which has two or more expanding portions so disposed as for each to be increasingly enlarged in size increasingly, in turn, from the front to the rear and disposed against the propagation of sea waves

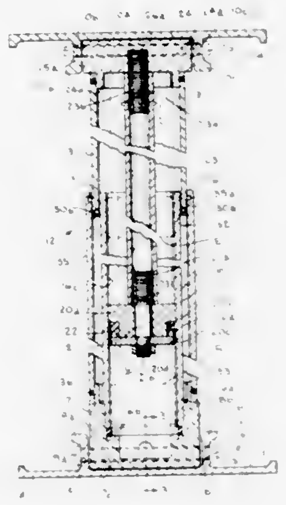
3,791,151
SHORING APPARATUS

David O. Plank, P.O. Box 12591, Houston, Tex.

Filed Nov. 8, 1972, Ser. No. 304,824

Int. Cl. E21d *5/00*

U.S. Cl. 61—41 A **3 Claims**



A hydraulic shoring apparatus including oppositely positioned trench rails adapted for placement against the sides of a trench or other excavation and hydraulic jack means pivotally connected with the trench rails. The hydraulic jack means including a hydraulic cylinder having a piston slidably mounted therein, the piston having a rod adjustably attached therewith whereby the application of hydraulic fluid under pressure into the cylinder causes movement of the piston and rod to an extended position such that the trench rails are maintained against the sides of the trench. Protective sleeve means are mounted over the cylinder and rod with the rod in the extended position in order to protect both the cylinder and the rod from damage.

3,791,152
OFFSHORE STORAGE SYSTEM

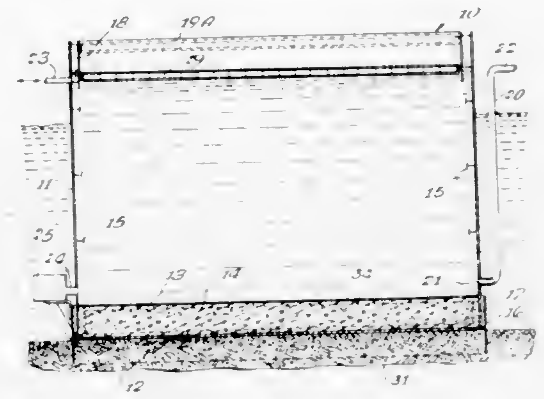
William Allen Davis, Glen Ellyn, and Gerald Edward Burns, Villa Park, both of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Feb. 16, 1972, Ser. No. 226,775

Int. Cl. E02b *17/00*

U.S. Cl. 61—46 **10 Claims**

An offshore storage tank having a circular cylindrical vertical shell, a continuous horizontal rigid bottom containing solid ballast joined to the shell and adapted to rest on a sea floor, said vertical shell being tall enough to project above sea level, when the bottom is on the sea floor, for a height adequate for the shell to hold, when full, a liquid to a liquid level above sea level to provide a pressure, together with the pressure of the tank weight, adequate to hold the tank in place during storm conditions at a locality where the tank is to be positioned and said vertical shell, only when supplemented by said internal liquid pressure, being able to withstand storm conditions without collapsing when the tank rests on a sea floor.



3,791,153
METHOD FOR PLACING HYDRAULIC CONCRETE

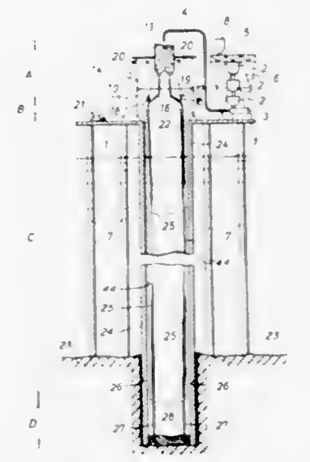
Giichi Inoue, Sakai; Naoshi Kubo, Ashiya, and Shogo Hatano, Habikino, all of Japan, assignors to Naoshi Kubo, Ashiya-shi; Osaka Cement Co., Ltd. and Osaka Consulting Engineers, Ltd., both of Osaka-shi, all of, Japan

Filed Feb. 15, 1972, Ser. No. 226,487

Claims priority, application Japan, Feb. 15, 1971, 46-6196; July 13, 1971, 46-51451

Int. Cl. E02d *5/40, 15/02*

U.S. Cl. 61—46 **6 Claims**



A method for placing hydraulic concrete to form a concrete structure in the water which is characterized in that a paste consisting of portland cement, fine aggregate and water is transferred to the bottom of the water through elastic and watertight tubes, each of said tubes being provided with a paste delivery apparatus having a control valve, and said control valve can be controlled from the remote place above the water surface by means of hydraulic pressure, and after the placement of the predetermined amount of the paste, said tubes are wound up for a certain height and transferring of the paste is repeated again to continue the placing.

3,791,154

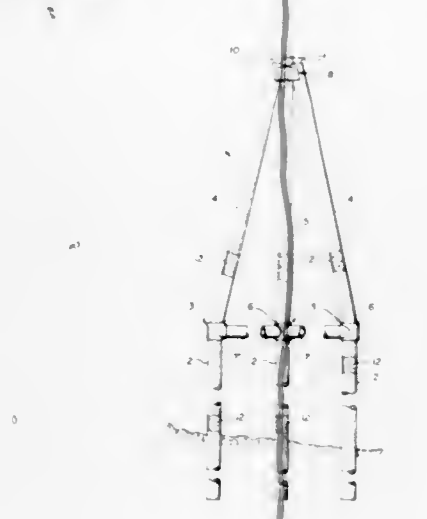
MOORING STRUCTURE AND METHOD

Graydon H. Crain, Freedom Rd., R.D. 3, Mars, Pa.

Continuation-in-part of Ser. No. 151,641, June 10, 1971. This application Mar. 2, 1973, Ser. No. 337,595

Int. Cl. E02d *13/00;* **E02b** *3/06,* **E04h** *12/06*

U.S. Cl. 61—46 **3 Claims**



This invention relates to a mooring structure and method, comprising a triangular template or diaphragm having vertical sleeves at the corners through which tubular legs or piles are driven in telescoping arrangement. The vertical sleeves have diametrical offsets to enable their easy connection to the diaphragm. The sleeves are welded to angularly cut bottom ends of the legs. A prefabricated triangular casting is welded to the interior surfaces of the tops of the legs. Concrete is then poured through a funnel simultaneously into all the legs. One or more diaphragms may be used with each structure at a selected height above or below the water level.

3,791,155

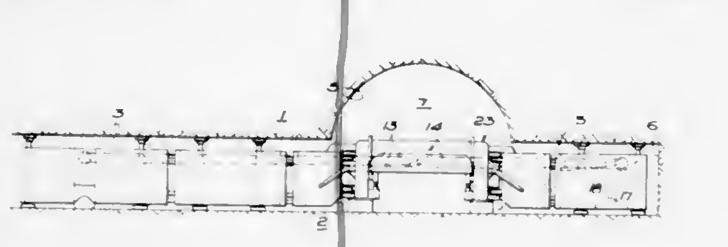
STOWING AND PACKING DEBRIS IN MINES

Peter Lockwood, Sheffield, England, assignor to Lockwood Bennett Limited, Sheffield, England

Filed June 26, 1972, Ser. No. 266,477

Int. Cl. E21f *15/00*

U.S. Cl. 61—63 **23 Claims**



Underground stowing or packing apparatus for stowing or packing debris into a pack-hole or worked out mineral seam comprising, when the apparatus is operationally associated with the pack-hole or seam, one or more chains adapted to extend over the length of the pack-hole or seam required to be stowed or packed with debris and into or beyond a mine roadway adjacent to said pack-hole or seam, the chain or chains each having an upper and lower run passing at their ends about a drive sprocket and a return sprocket respectively and only being guided and supported at their ends, a sweeping means mounted on the chain or chains so as to be located at or near the roof of the pack-hole or worked out seam and so as to be traversable by the chain or chains between a debris collecting position and a debris packing or stowing position, means to anchor the drive and return sprockets so as to tension the chain or chains therebetween and means for constraining the movement of debris away from a pack as it is being formed in the pack-hole or worked out mineral seam.

3,791,156

METHOD AND APPARATUS FOR DETERMINING THE POSITION OF A PIPELINE OR THE LIKE DURING THE ENTRENCHING THEREOF

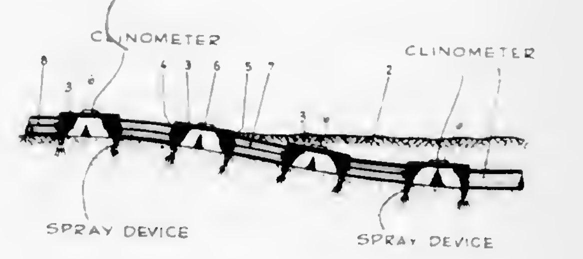
Antonie C. Van Zutphen, Bergschenhoek, Netherlands, assignor to N.V. Industrieele Handelscombinatie Holland, Rotterdam, Netherlands

Filed Sept. 13, 1971, Ser. No. 179,793

Claims priority, application Netherlands, Sept. 14, 1970, 7013562

Int. Cl. E02f *5/02;* **B21c** *51/00*

U.S. Cl. 61—72.4 **4 Claims**



Pipelines are entrenched on a marine floor by dragging therealong a plurality of spray nozzles that dig a trench for the pipeline. Undesirably sharp local curvature of the pipeline is avoided by providing each spray device with a clinometer the clinometer readings being transmitted to a point above the surface of the water and the composite of these received clinometer readings permitting control of the trenching process so as to avoid that undesirable curvature.

3,791,157

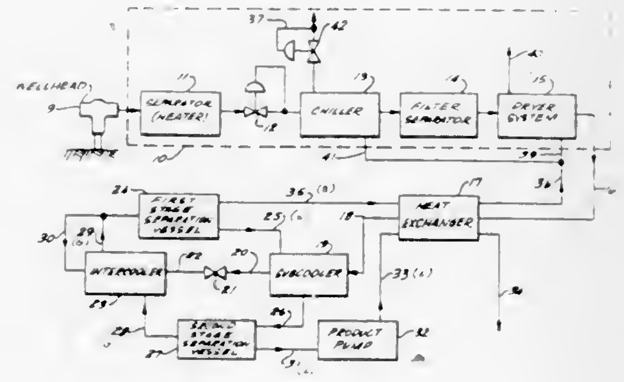
PROCESS FOR PURIFICATION OF NATURAL GAS

Richard R. Tracy, Pasadena, and Reginald G. Spear, San Marino, both of Calif., assignors to Tioga Wells Corporation, Pasadena, Calif.

Filed Nov. 9, 1970, Ser. No. 87,853

Int. Cl. F25j *1/00, 3/06*

U.S. Cl. 62—41 **13 Claims**



Process for the purification of natural hydrocarbon gases which, as may be produced at a wellhead, are contaminated by substantial proportions of incombustible constituents such as nitrogen. Contaminated gas at elevated pressure is condensed by cooling in two steps, thereafter expanded to approximately atmospheric pressure to effect phase separation between a hydrocarbon-rich liquid and a contaminant-rich vapor. The hydrocarbon-rich liquid is partially vaporized and a second phase separation yields a liquid enriched in hydrocarbon. The vapor from the second separation is cooled and returned to the first separation while the vapor product from first separation along with the liquid product from the second separation are separately employed to effect condensation of the contaminated hydrocarbon.

3,791,158

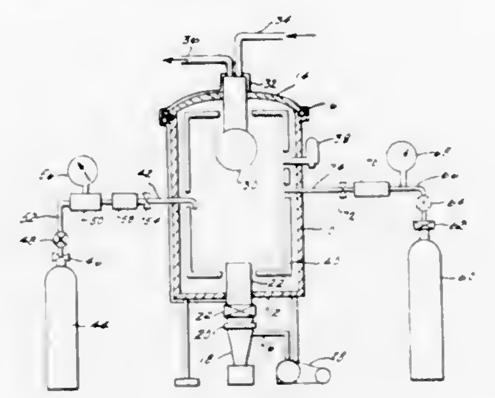
CRYOSORPTION PUMPING WITH FROST SORBENTS

Kenneth E. Tempelmeyer, Toronto, Ontario, Canada, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 23, 1972, Ser. No. 283,023

Int. Cl. B01d *5/00*

U.S. Cl. 62—55.5 **3 Claims**



A system for providing very high vacuums in closed vessels having a hydrogen, helium or neon gaseous atmosphere. The gaseous atmosphere is placed in communication with a cryogenically cooled frost coated structure. The frost is formed on the cooled surface by depositing a sorbent gas, such as carbon dioxide, sulfurdioxide or methyl chloride onto the surface under processing conditions that produce a disordered or amorphous frost structure. The formation technique utilized in forming the frost provides a structure that adsorbs hydrogen, helium or neon gas molecules as they come in contact with the frost surface to a degree not heretofore achieved. As a result, the hydrogen, helium or neon atmosphere is, in effect, pumped out of the closed vessel resulting in the production of a very high vacuum therein.

3,791,159

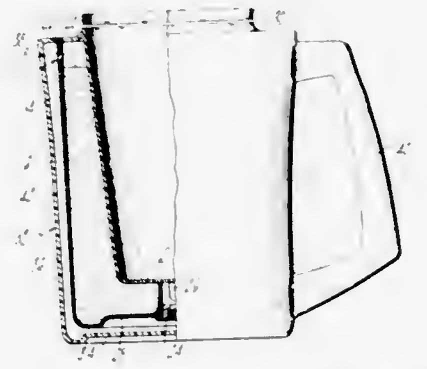
METHOD FOR CONVERTING A LIQUID COMESTIBLE TO A PARTIALLY FROZEN CONDITION

Edward J. Devlin, Madison, Conn., assignor to Glacier Ware, Inc., Clinton, Conn.

Continuation-in-part of Ser. No. 53,231, July 8, 1970. This application July 21, 1971, Ser. No. 164,790

Int. Cl. A23g *5/00*

U.S. Cl. 62—68 **7 Claims**



A method for converting an individual serving portion of a liquid comestible such as a carbonated beverage or the like to a partially frozen, two phase composite mixture of macroscopically uniform thixotropic consistency. In the method, an enclosed conversion zone for containing the comestible and a refrigerant zone containing a refrigerant in a particular mass ratio to the comestible mass are provided. The refrigerant zone partially surrounds and is in heat transfer relationship with the conversion zone. The refrigerant is frozen and the liquid comestible is subsequently placed in the conversion zone and converted to a slush-like condition by transfer of heat energy from the conversion zone to the refrigerant zone.

3,791,160

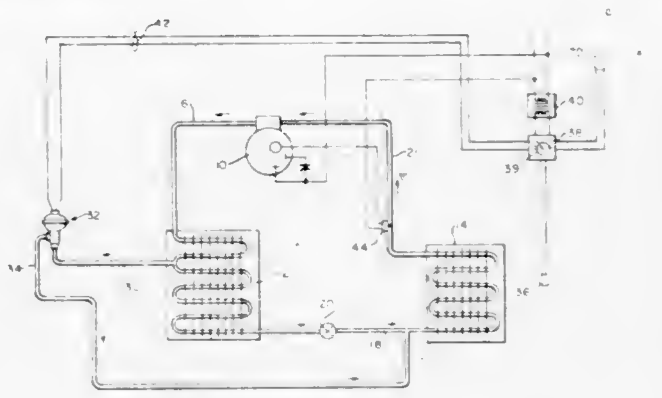
AIR CONDITIONING SYSTEM WITH TEMPERATURE RESPONSIVE CONTROLS

Rubin Seymour Savitz, Hillside, and Paul Komroff, Union, both of N.J., assignors to National Union Electric Corporation, Jersey City, N.J.

Filed Sept. 16, 1971, Ser. No. 180,991

Int. Cl. F25b *41/00*

U.S. Cl. 62—196 **1 Claim**



An air conditioning system comprising a compressor, condenser, and evaporator includes a refrigerant bypass line for passing a portion of the heat laden high-pressure refrigerant from the compressor output into the lower heat level reduced pressure refrigerant fed to the evaporator or the suction line of the compressor. A valve in the bypass line monitors the flow of the bypassed refrigerant as a function of room temperature to thereby continuously modulate the thermal capacity of the system in order to maintain room temperature relatively constant

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3,791,161

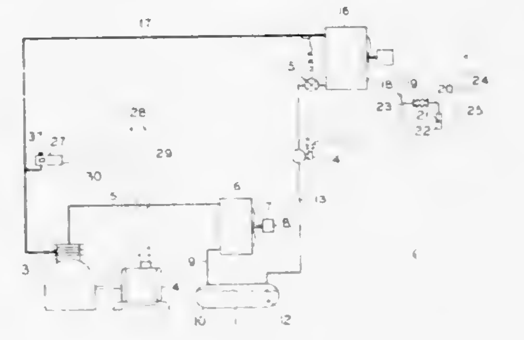
PRESSURE SWITCH FOR REFRIGERATION SYSTEM

Daniel E. Kramer, 2009 Woodland Dr., Yardley, Pa.

Filed Apr. 10, 1972, Ser. No. 242,442

Int. Cl. F25b *1/00*

U.S. Cl. 62—226 **6 Claims**



A pressure switch for sensing and responding to pressure on the low side of refrigeration systems where the conduit, which connects the refrigeration system low side to the pressure switch bellows, is restricted for the purpose of minimizing transmission of pressure pulsations from the low side to the bellows. The conduit has a substantial enlargement positioned to act to prevent the entry of oil into the restricted portion of the conduit.

3,791,162

DOUBLE BELT FREEZING MACHINE

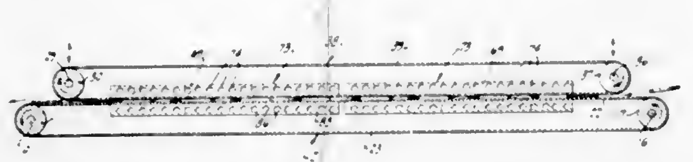
Edward D. Baker, Belmont, Calif., assignor to NPI Corporation, Burlingame, Calif.

Filed July 13, 1972, Ser. No. 271,247

Int. Cl. F25c *5/14*

U.S. Cl. 62—341 **4 Claims**

A double belt freezing machine has a pair of thermally conducting belts trained around drums mounted on a frame so that the horizontal upper run of the lower belt and the horizontal lower run of the upper belt are spaced apart a distance adjustable by moving a carriage on which the upper belt is mounted up and down on the frame. In thermal contact with the belts are platens joined to a refrigerating system at least in part mounted on the frame, the upper platen having flexible connections thereto. Foodstuffs such as hamburger patties are fed between and in thermal contact with the adjacent runs of the belts and emerge frozen.



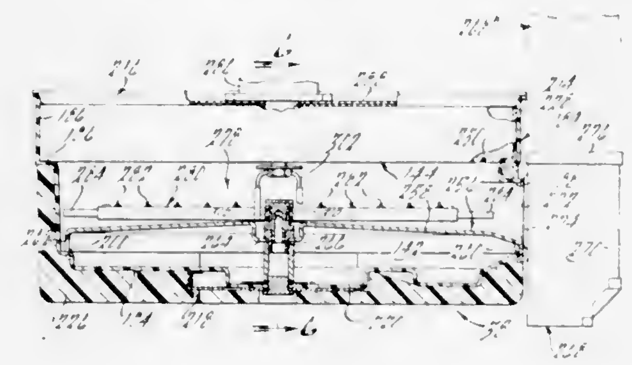
3,791,163
ICE MAKING MACHINE

George Dickson, and Robert K. Westergaard, both of Alden, Minn., assignors to King-Seeley Thermos Co., Ann Arbor, Mich.

Filed Oct. 18, 1971, Ser. No. 190,234

Int. Cl. F25c *1/12*

U.S. Cl. 62—347 **42 Claims**



An ice-making machine comprising a plurality of ice-forming molds or cups; a rotatable water spray bar for communicating make-up water from a water sump toward the molds during a freezing cycle; a refrigeration system including a compressor, a condensor and an evaporator for freezing water sprayed into the molds; a water holding tank or platen for retaining thawing water in heat transfer relationship to the ice molds to effect release of the ice formed therein during a harvest cycle, with the platen including means providing for a controlled flow of water into the water sump to cause dilution of the make-up water and thus minimize any accumulation of foreign material within the water system; the refrigerator evaporator, ice-forming molds, water spray bar, as well as the water sump and platen being arranged in a compact unitized assembly; and a control system for operating thh spray bar and associated water pump continuously during both the harvest and freezing cycles, whereby to assist in effecting release of the ice formed in the ice-forming molds and thus reduce the overall cycle time of the machine.

3,791,164
CRYOGENIC STORAGE TANK FACILITY WITH DIKE WALL COOLED BY LEAKING LIQUEFIED GAS

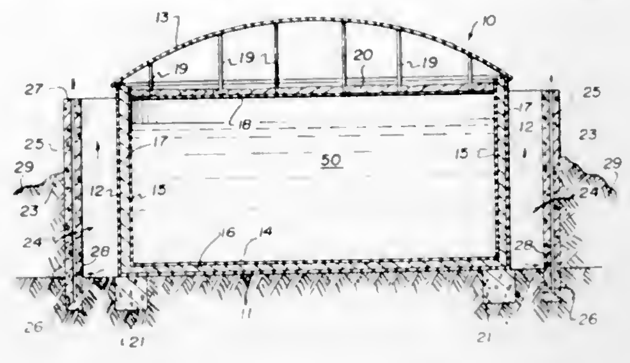
Royce Jay Laverman, South Holland, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed May 15, 1972, Ser. No. 253,111

Int. Cl. F17c *7/03*

U.S. Cl. 62—50 **9 Claims**

A storage tank facility for a liquefied gas having an enclosed tank, a vertical dike wall around and spaced from the tank side wall thereby defining a well space between the dike wall and the tank side wall and a plurality of vertical conduits in the dike wall communicating with the bottom of the well space for venting cold liquefied gas vapors therethrough to the atmosphere



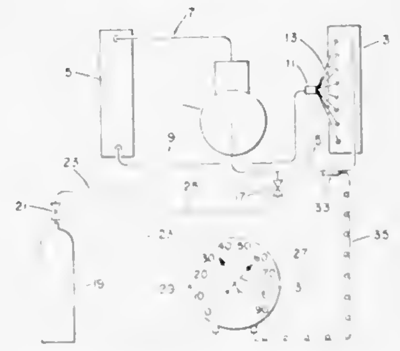
3,791,165
CHARGING METHOD AND APPARATUS FOR A REFRIGERATION SYSTEM

Fred V. Honnold, Jr., North Syracuse, and Richard L. Johnson, Baldwinsville, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 18, 1971, Ser. No. 199,948

Int. Cl. F25b *45/00*

U.S. Cl. 62—77 **7 Claims**



A method and apparatus for accurately charging a refrigeration system having a fixed restriction refrigerant expansion device by adding or removing refrigerant to the system to obtain a preselected superheat temperature of the refrigerant leaving the evaporator coil as sensed by the difference in pressure of the refrigerant leaving the evaporator coil and the pressure of refrigerant in a refrigerant charged sensing bulb disposed in heat transfer relation with the refrigerant line leaving the evaporator.

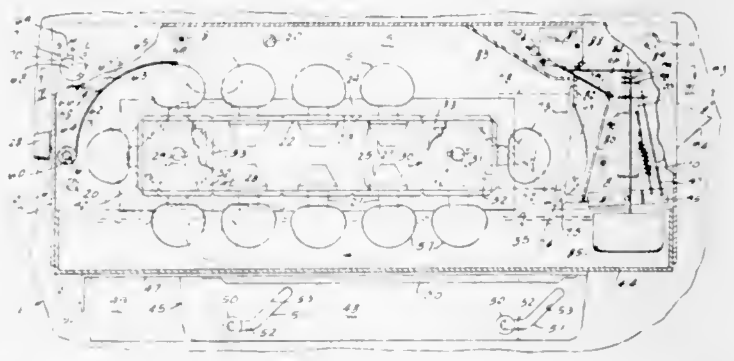
3,791,166
CLEAR ICE PELLET MAKER

Leroy R. Maleck, 1012 W. Frank St., Galesburg, Ill.

Filed June 26, 1972, Ser. No. 266,277

Int. Cl. F25c *1/10*

U.S. Cl. 62—138 **27 Claims**



Ice pellets are formed on orbitally moving freezing studs guided to dip repeatedly into a water supply until the desired pellet size has built up and is sensed by a size selector which activates an ice harvester ejector to displace the pellets from the studs. Water supply control, easily cleanable water tray and segmented plastic belt or drum type stud carriers are provided. Mounting of the device may be effected in the freezing or refrigerating compartment of a domestic refrigerator, utilizing freezing air from the freezing compartment

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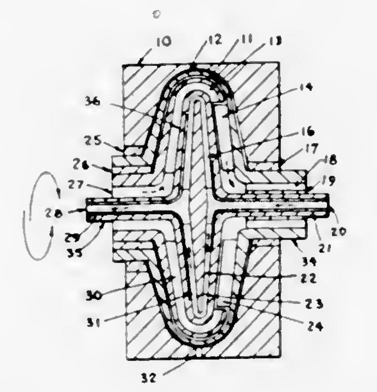
3,791,167
HEATING AND COOLING WHEEL WITH DUAL ROTOR

Michael Eskeli, 6220 Orchid La., Dallas, Tex.

Filed Jan. 20, 1972, Ser. No. 219,212

Int. Cl. F25b *3/00*

U.S. Cl. 62—401 **11 Claims**



A method and apparatus for producing heating or cooling by passing two fluids in heat exchange relationship with each other within two rotating rotors wherein said fluids are pressurized to a higher pressure. The first fluid is a compressible fluid, such as air, which when compressed will also have a temperature increase; the second fluid may be either a compressible fluid or may be a liquid, which when compressed may not have a temperature increase or the temperature increase for the second fluid is less than the said temperature increase for said first fluid. Heat then will be transferred from said first fluid to said second fluid, so that when said fluids are discharged from said rotors, said first fluid will be at lower temperature at exit than at entry, and said second fluid will leave said rotor at a higher temperature than the temperature that said second fluid enters. For the first fluid, air or other compressible gases may be used; said air may enter at ambient temperature. For said second fluid, air, water or other fluids may be used; said water or air may be at ambient or natural temperature at entry. Said apparatus may be used as a heating and cooling unit for air conditioning, or be used as a liquid heater, or be used as a vaporizer or steam generator.

3,791,168
APPARATUS FOR OPENING AND CLOSING A DOOR IN THE DUCT WORK OF AN AIR CONDITIONED TRANSPORTATION VEHICLE

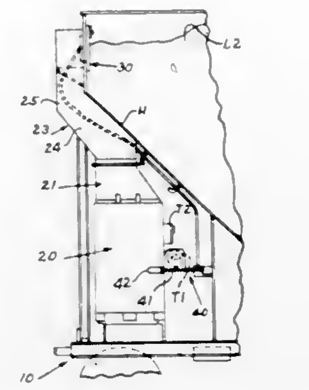
Edward L. Coyle, St. Charles, and Howard L. Murph, St. Louis, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Aug. 30, 1972, Ser. No. 285,105

Int. Cl. F25d *17/04*

U.S. Cl. 62—408 **11 Claims**

In an air conditioned transportation vehicle such as a railroad car, a door is provided in the duct work carrying return air to the air conditioning unit. Actuating means to open and close the door are provided adjacent the air conditioning unit which cover a point of reference on or near the air conditioning unit such as a thermometer and/or thermostat when the door is closed and exposes the reference point when the door is open. Thus it will be easy for an operator to determine that the door is properly closed when the air conditioning unit is not being used and insure that lading will not follow the duct work into the air conditioning unit when the unit is off and the lading is usually smaller and more readily blown, and is filled to a greater height in the vehicle, near the duct work. Locking means may be provided to insure that the door will remain in the open or closed position, as desired, during transit and/or storage.



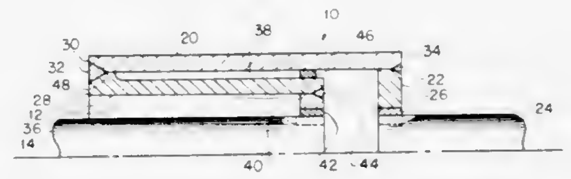
3,791,169
TORSIONALLY RESILIENT SHAFT COUPLING

John Wright, Baltimore, Md., assignor to Koppers Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 123,666, March 12, 1971, Pat. No. 3,673,813. This application June 30, 1972, Ser. No. 268,049

Int. Cl. F16d *3/00*

U.S. Cl. 64—1 V **12 Claims**



A coupling for connecting a pair of coaxially aligned shafts for torsionally resilient driving rotation, comprising a first tubular member surrounding a portion of at least one of the shafts and having an end adapted for connection to the shaft; second tubular member surrounding the first tubular member and having an end adapted for connection to the other shaft; and the remaining ends of both tubular members being joined to one another for forming a torsionally resilient connection between the shafts.

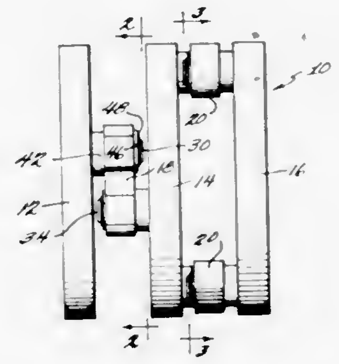
3,791,170
COUPLING

Richard Schmidt, Cincinnati, Ohio, assignor to The Tool Steep Gear & Pinion Company, Cincinnati, Ohio

Filed Nov. 7, 1972, Ser. No. 304,413

Int. Cl. F16d *3/70*

U.S. Cl. 64—19 **12 Claims**



A coupling comprising three disk-like members arranged to provide a central member and outer members on opposite sides thereof and two pairs of parallel links pivotally interconnected between adjacent members, the members being of a shape which is symmetrical about an axis of rotation and the links being arranged symmetrically about the axis of rotation when the coupling is connected between two shafts in axial alignment, the coupling being operable to drivingly interconnect the shafts when in such alignment without vibration or when disposed or moved into various misaligned positions with a minimum of vibration and with constant angular output movement in response to constant angular input movement during each revolution.

3,791,171

CENTRIFUGAL GOVERNOR PARTICULARLY FOR ALTERING THE MOMENT OF INJECTION START IN DIESEL ENGINES

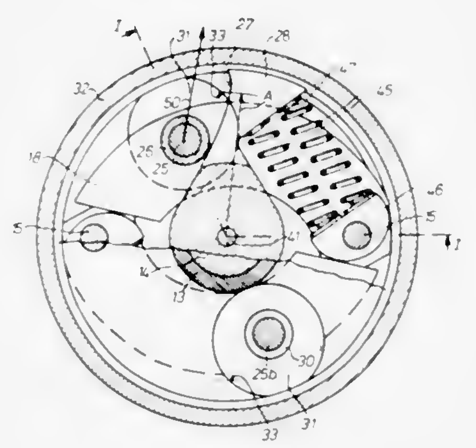
Eberhard Hofmann, Kirchberg/M. Neuhof, Germany, assignor to Robert Boach GmbH, Stuttgart, Germany

Filed July 5, 1972, Ser. No. 269,174

Claims priority, application Germany, July 14, 1971, P 21 35 111.1

Int. Cl. F16d *5/00*

U.S. Cl. 64—25 **3 Claims**



In a centrifugal governor connecting a driving shaft with an axially aligned driven shaft for varying the phase angle between the two shafts in an rpm-dependent manner, each centrifugal weight rotates in unison with the driving shaft and has a rigidly affixed pin extending parallel to and spaced from the pivotal axis of the weight. The pin projects beyond either side of the weight. One terminus of the pin is in continuous engagement with a curved track of a component keyed to the driven shaft for changing the phase angle as the weights swing in response to an rpm change. The other terminus of the pin carries an abutment ring of arbitrary diameter which, after the weight has swung through a predetermined path, engages the bounding edge of a recess provided in a component affixed to the driving shaft to limit the phase angle alteration to a predetermined, arbitrary value.

3,791,172

APPARATUS FOR MAKING A GLASS OR THE LIKE COATED WIRE

Giovanni Manfre, and Domenico Vianello, both of Novara, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

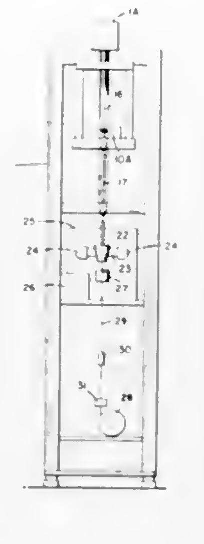
Filed July 20, 1972, Ser. No. 273,638

Claims priority, application Italy, July 21, 1971, 7513/71; July 21, 1971, 7514/71

Int. Cl. C03b *37/02*; **B22d** *11/00*

U.S. Cl. 65—11 W **4 Claims**

An apparatus for coating a wire with glass or the like having a means for moving a metal rod and a glass or the like tube thereabout along the same path independently of each other into a heating means comprises rollers for gripping and moving the rod and a worm screw and carriage threadedly secured to the screw and for gripping the tube. The rollers and carriage are driven by independent drive means. A device for heating the metal rod is provided with a truncated conically shaped crucible heated electrically as a resistor and with means for



cooling a coated wire drawn from the mass of metal and glass in the crucible.

3,791,173

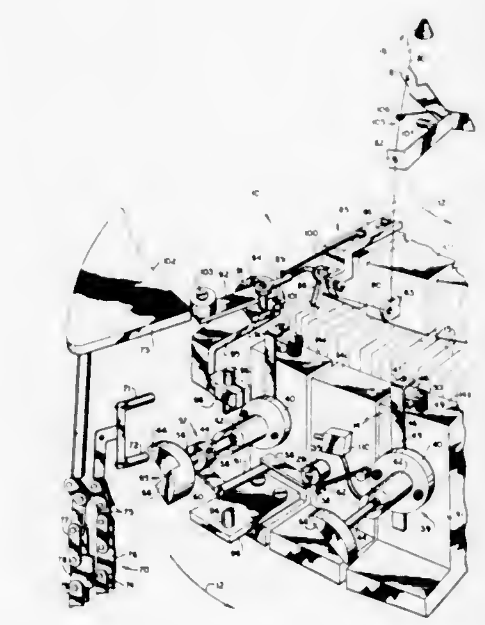
METHOD AND APPARATUS FOR FORMING RANDOM STRIPE IN KNITTED GARMENTS

Tommy R. Furr, Oakboro, N.C., assignor to Oxford Industries, Inc., Atlantic, Ga.

Filed Mar. 23, 1972, Ser. No. 237,277

Int. Cl. D04b *9/06, 15/32, 15/60*

U.S. Cl. 66—20 **6 Claims**



A dial and cylinder circular knitting machine wherein yarns are continuously fed to the needles at most of the pairs of needle cam sections revolving about the needles while at selected ones of the other pairs of cylinder cam sections the knitting movements of the short cylinder needles are arrested and no yarn is fed to the needles at these pairs of cam sections. When a colored stripe is to be knitted in the fabric the selected pairs of the cylinder cam sections are adjusted to cause the short cylinder needles to knit and yarn of a different color is fed to the needles at the adjustable cylinder cam sections.

3,791,174

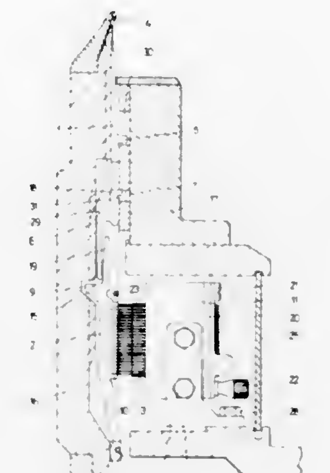
PATTERNING MECHANISM FOR CIRCULAR KNITTING MACHINES

Jose Maria Dalmau Guell, Badalona, Spain, assignor to Jumberca, S. A., Badalona, Spain

Division of Ser. No. 868,046, Oct. 21, 1969, abandoned. This application Nov. 1, 1971, Ser. No. 194,622

Int. Cl. D04h *9/38, 15/68*

U.S. Cl. 66—50 R **2 Claims**



A rocking jack pattern mechanism for a circular knitting machine in which corresponding pairs of selector jacks and intermediate jacks cooperate in controlling selection of needles to perform knitting operations and in which cancellation of selection of corresponding pairs of selector and intermediate jacks occurs during the performance of knitting operations by the corresponding needles and selection of corresponding pairs of selector and intermediate jacks occurs prior to initiation of the next subsequent knitting operation to be performed by the corresponding needles.

3,791,175

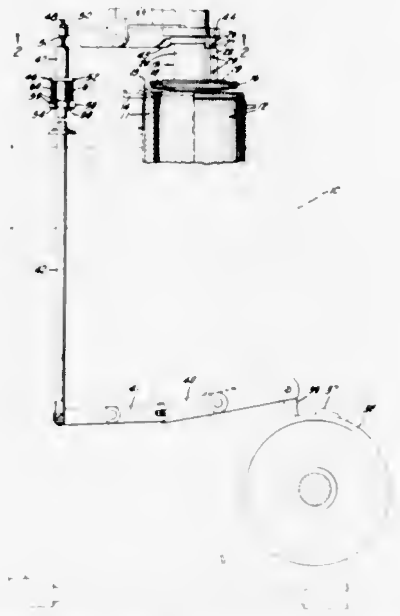
SAFETY DEVICE FOR DIAL TRANSFER CAMS

Walter Imboden, Wyomissing, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed May 18, 1972, Ser. No. 254,443

Int. Cl. D04h *15/02*

U.S. Cl. 66—95 **2 Claims**



A dial transfer cam safety device for a circular hosiery knitting machine that includes a toe closing apparatus. The device is provided with a mechanism for suppressing the selected movement of the transfer cam into operating engagement with the butts of transfer bits should said butts be out of alignment for receiving the cam when entering that cycle of closing the toe of the knitted hosiery article being formed.

3,791,176

DETECTION DEVICE FOR ERRORS IN THE ANGULAR POSITION OF A PATTERN CONTROL DRUM FOR A TEXTILE MACHINE

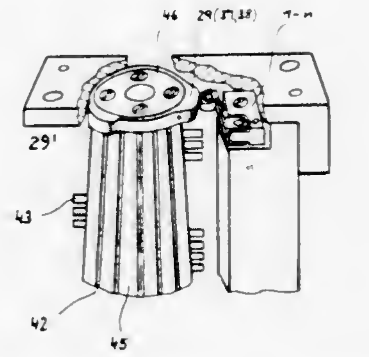
Pius Kohler, Wurmlingen, and Falk Kuhn, Kiebingen, both of Germany, assignors to Fouquet-Werk Frauz & Planck, Rottenburg am Neckar, Germany

Filed Dec. 15, 1971, Ser. No. 208,115

Claims priority, application Germany, Dec. 28, 1970, 2064013

Int. Cl. D04b *15/66*

U.S. Cl. 66—138 **17 Claims**



The Jacquard pattern controllers are formed as holders for pattern jacks, and mounted for indexing movement with movement of the textile machine, typically a flatbed or circular knitting machine; to monitor the position of the pattern holders, electrical switches are fixed in location with respect to the holders, which are provided with switch operating cams, or the like, the electrical contacts being connected in a supervisory circuit which determines the state of the switches and, when one of the switches is not in its predetermined state, gives an alarm signal and stops the machine. The supervisory circuit may be a pair of circuits, through which the switches are all connected in parallel, the circuit sensing whether the switches are all open, or all closed, and at least one switch not being in its proper position, causing the alarm.

3,791,177

CIRCULAR KNITTING MACHINES

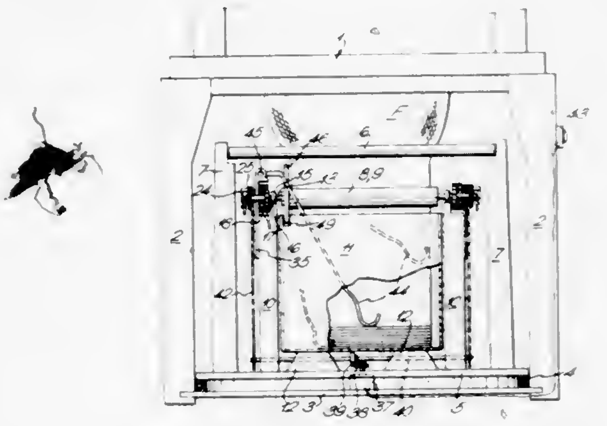
Barry Frederick Swanwick, Melton Mowbray; Colin Vincent Roper, Braunstone, and Dennis Gell, Leicester, all of England, assignors to Stibbe Machinery Limited, Leicester, England

Filed Jan. 12, 1972, Ser. No. 217,332

Claims priority, application Bulgaria, Jan. 21, 1971, 2,850/71

Int. Cl. D04b *35/00*

U.S. Cl. 66—147 **22 Claims**



Method and apparatus for stacking knitted fabric issuing from a circular knitting machine in layers in a container by im-

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parting reciprocal motion to the fabric so that it is folded in

3,791,180

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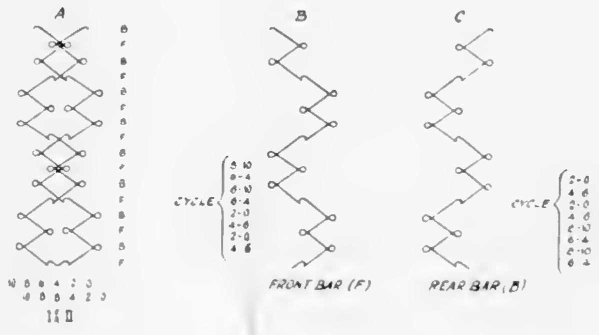
ing assembly may be provided for moving the fastening ap-

tainer housing the billet a skirt of metal whereby is produced a parting reciprocal motion to the fabric so that it is folded in concertina fashion. The means for layering the fabric are in the form of a pair of rods or rollers driven by reversible or non-reversible drive means, said rods or rollers operating in a stationary horizontal plane, or being raised in increments with the stacked fabric.

3,791,178
KNIT FABRIC

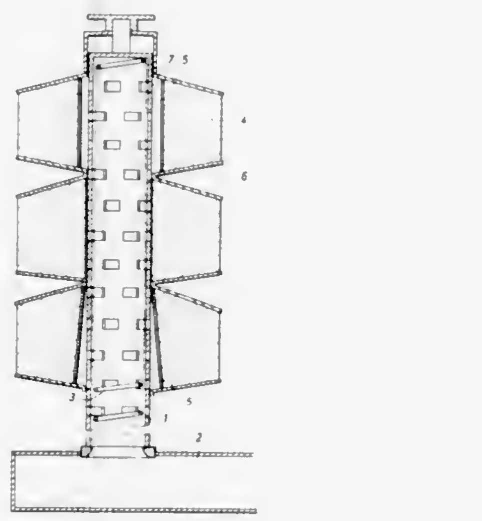
Robert B. Meyer, 25 Luddington Rd., West Orange, N.J.
Filed June 28, 1971, Ser. No. 157,240
Int. Cl. D04b *21/00*
U.S. Cl. 66—196 **1 Claim**



A multi-layer fabric formed of monofilament threads, each layer having a pattern forming relatively large interstices between the interlocked threads and wherein the two layers are interlocked so that the interstices of one layer are displaced relative to those of the other layer.

3,791,179
APPARATUS FOR DYEING YARNS IN BOBBINS

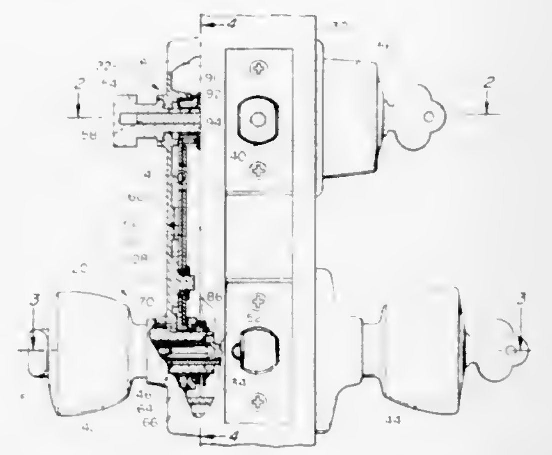
Jens Brun, Hornbaek, Denmark, and Hans Nielsen, Reinach, Basel-Land, Switzerland, assignors to Vald. Henriksen A/S, Soborg, Denmark
Filed Feb. 24, 1972, Ser. No. 228,844
Claims priority, application Denmark, Feb. 24, 1971, 838/71
Int. Cl. B05c *8/02, 11/122*
U.S. Cl. 68—198 **2 Claims**



An apparatus for dyeing bobbins in which there is a coil spring in the distributor pipe on which the bobbins are placed.

3,791,180
COMBINED LATCH BOLT AND DEAD BOLT MECHANISM INCLUDING SINGLE ACTION DOUBLE BOLT RELEASE

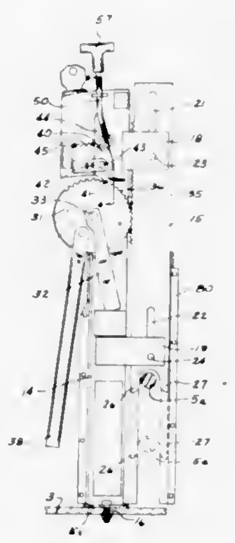
William J. Doyle, La Habra, Calif., assignor to Emhart Corporation, Bloomfield, Conn.
Filed Apr. 24, 1972, Ser. No. 246,648
Int. Cl. E05b *63/14*
U.S. Cl. 70—107 **16 Claims**



First and second latch assemblies are interconnected such that operation of inside and outside operators of the second latch assembly will extend or retract a deadbolt of the second latch assembly without affecting the first latch assembly, operation of an outside operator of the first latch assembly will retract a spring extended latch of the first latch assembly without affecting the second latch assembly, and operation of an inside operator of the first latch assembly will retract both the latch of the first latch assembly and the deadbolt of the second latch assembly generally simultaneously. The interconnection between the latch assemblies preferably includes a rotatable gear and pivotal rack.

3,791,181
BRAKE LOCKING DEVICE FOR PREVENTING THEFT OF SELF-PROPELLED VEHICLES

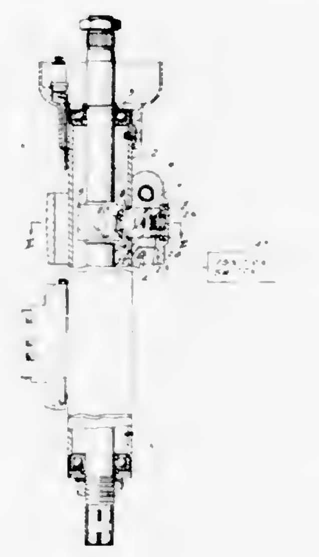
Manuel Fouces, and Juan M. Fouces, both of 2416 Mandell, Houston, Tex.
Filed Feb. 8, 1972, Ser. No. 224,483
Int. Cl. G05g *5/00*
U.S. Cl. 70—202 **3 Claims**



A device for preventing the theft of a self-propelled vehicle, such as an automobile, may comprise a support carriage attached to the floorboard of the vehicle near its brake pedal and fastening apparatus carried by the support carriage, movable from a first position to a second position engaging the brake pedal and holding it in a depressed position. An operating assembly may be provided for moving the fastening apparatus to the second position. A lock may also be provided for engagement with the operating assembly to lock the fastening apparatus in the second position.

3,791,182
STEERING COLUMN LOCKING DEVICE

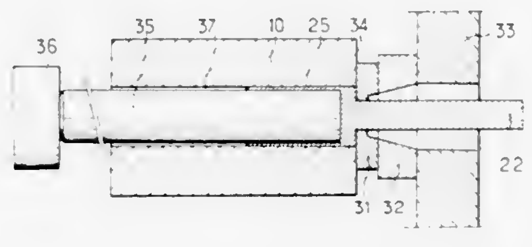
Gerald K. Oxley, and Mahendrakumar B. Shah, both of Lafayette, Ind., assignors to TRW Inc., Cleveland, Ohio
Filed May 18, 1972, Ser. No. 254,382
Int. Cl. B60r *25/02, 25/04*
U.S. Cl. 70—252 **1 Claim**



Ignition and steering column lock for motor vehicles operated by a key controlling both the ignition switch and steering column locking element. The lock comprises a bolt biased by a spring to engage a keeper hole in a sleeve secured to the steering column. The bolt is withdrawn by a cam operated by turning movement of the key and key cylinder. The ignition switch is operated by a rod rectilinearly moved by turning movement of the key cylinder through a rack and pinion connection. A blocking plunger is guided in the lock housing to block movement of the rod and key cylinder when moving in a direction to lock the steering column. The plunger is depressible by the operator to free movement of the rod to accommodate movement of the key cylinder to effect locking of the steering column.

3,791,183
HEAT-EXTRUSION METHOD

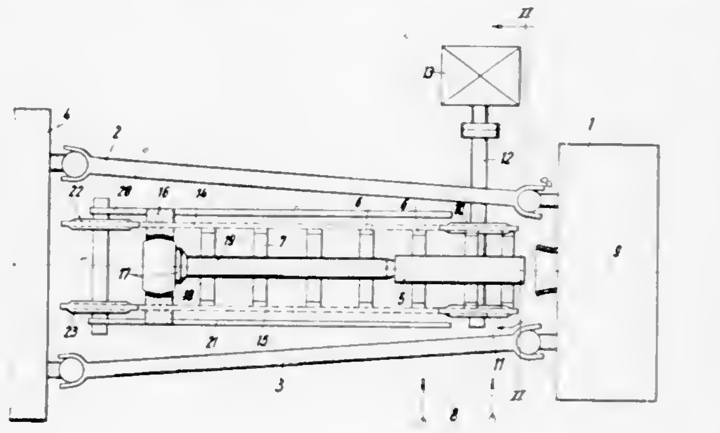
Robert Creuzet, Route de Beyssac, 47 Marmande, France
Filed Feb. 9, 1971, Ser. No. 113,820
Claims priority, application France, Feb. 19, 1970, 7005988
Int. Cl. B21h *45/00*
U.S. Cl. 72—46 **1 Claim**



A method and machine for the manufacture of metallic parts by heat extrusion of a heated metal billet through a draw-plate. Prior to being pressed, by means of a chisel the front surface of which is smaller than that of the billet, the latter is coated on its lateral surface, as well as on its front face, with a powdered retaining product, so that after extrusion there remains on the inner wall of the bore of the container housing the billet a skirt of metal whereby is produced a metallic part the outer surface of which is devoid of any defects.

3,791,184
SKEW ROLLING OF SOLID INGOTS

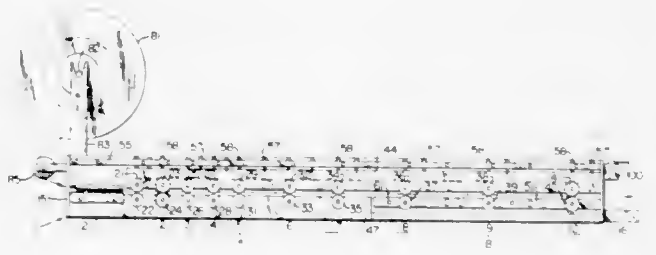
Gerd Pfeiffer; Hans-Peter Kran, both of Mulheim/Ruhr, and Wilhelm Feldmann, Duisburg, all of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany
Filed Aug. 26, 1971, Ser. No. 175,361
Claims priority, application Germany, Sept. 3, 1970, 7033450[U]
Int. Cl. B21b *19/04*
U.S. Cl. 72—97 **2 Claims**



Skew rolling mill for piercing solid ingots having a stand with a center line and a mandrel on that line on one side of the stand, and pushing means on the other side of the stand, mounted for turning on an axis and for pivoting transverse thereto, the pushing means mounted on a cross bar; first and second drum means driven in unison and disposed respectively on both sides of the center line, on said other, the feeder side of the stand, the drum means having pitch circle that is tangent to a plane that runs through the center line; chains on the drum means and connected to the cross bar for displacing the cross bar and the pushing means on the center line.

3,791,185
METHOD AND APPARATUS FOR FORMING MULTIPLE PANEL SHAPES

Gary A. Knudson, 7485 Upham Ct., Arvada, Colo.
Filed Aug. 3, 1972, Ser. No. 277,519
Int. Cl. B21d *5/08*
U.S. Cl. 72—181 **11 Claims**



A method and apparatus for forming more than one shape in a material wherein a first group of pairs of opposed rollers are arranged to impart a first shape to the material and a second group of pairs of opposed rollers following the first group are arranged to impart a second shape to the first-shaped material. One roller or each pair of the second group being readily releasable and conjointly movable away from the other associated roller of each pair to a non-shaping position to alternately form only the first shape or the first and second shapes in the material. A roller bending arrangement at the inlet end bends the material with a coil set against the coil set to a substantially flattened condition prior to contact with the

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such collapsible feed mechanism typically residing

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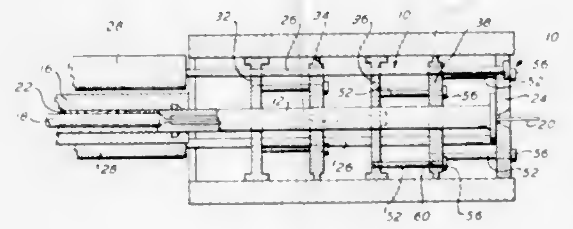
mediate portions which include at least one pair of dies in

3,791,192

first and second groups of rollers to reduce the tendency thereof to buckle or ripple during the shaping thereof.

3,791,186
COLLAPSIBLE FEED MECHANISM

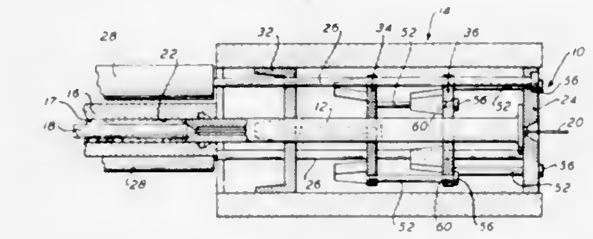
George A. La Lena, Warminster, and Jack D. Stewart, Doylestown, both of Pa., assignors to Princeton Metal Systems Corporation, Montgomery Township, N.J.
Filed Dec. 29, 1972, Ser. No. 319,284
Int. Cl. B21c *27/00*
U.S. Cl. 72—272 **8 Claims**



A collapsible feed mechanism for providing radial support to a longitudinally extending member and for preventing bending and buckling of said longitudinally extending member during the axial advancement thereof while under an axial compressive load, such collapsible feed mechanism for residing axially displaceably within an outer support structure, including a plurality of axially displaceable radial support members positioned around the longitudinally extending member; each radial support member having an outer axial surface and an inner axial surface; the outer axial surfaces of alternate ones of the radial support members being greater in axial length than the inner axial surfaces of the alternate ones of the radial support members; the inner axial surfaces of other alternate ones of the radial support members being greater in axial length than the outer axial surfaces of the other alternate ones of the radial support members; the outer axial surfaces of greater axial length for slidably engaging the outer support structure during the axial displacement of the radial support members and for preventing the tendency of the axially displaceable support members to rotate with respect to an axis perpendicular to the longitudinally extending member and bind during the axial displacement of the radial support members; the inner axial surfaces for slidably engaging the longitudinally extending member during the axial displacement of the radial support members and for providing the radial support to the longitudinally extending member.

3,791,187
COLLAPSIBLE FEED MECHANISM

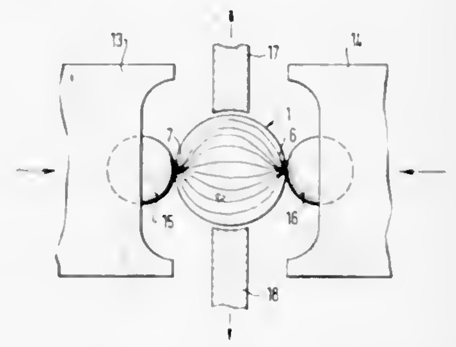
Gene L. Oberley, Minford, Ohio, and Jack D. Stewart, Doylestown, Pa., assignors to Princeton Metal Systems Corporation, Montgomery Township, N.J.
Filed Dec. 29, 1972, Ser. No. 319,287
Int. Cl. B21c *27/00*
U.S. Cl. 72—272 **3 Claims**



Collapsible feed mechanism for providing radial support to a longitudinally extending member and for preventing bending and buckling of the longitudinally extending member during the axial advancement thereof while under an axial compressive load, such collapsible feed mechanism typically residing axially displaceably within an outer support structure, including a plurality of axially displaceable radial support members positioned around the longitudinally extending member and for providing the radial support thereto; each radial support member having an outer axial surface and an inner axial surface and the outer axial surface being greater in axial length than the inner axial surface; the outer axial surfaces of greater axial length for slidably engaging the outer support structure during the axial displacement of the radial support members and for preventing the tendency of the axially displaceable support members to rotate with respect to an axis perpendicular to the longitudinally extending member and bind during the axial displacement of the radial support members; and the inner axial surfaces for slidably engaging the longitudinally extending member during the axial displacement of the radial support members and for providing the radial support to the longitudinally extending member.

3,791,188
METHOD OF DIE-FORMING PARTS WITH IMPROVED GRAIN STRUCTURE

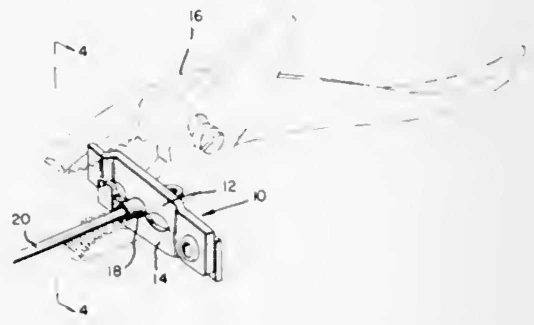
Emil Deussen, Haus Hoehenblick, Munderkingen, Germany
Filed Oct. 26, 1971, Ser. No. 192,289
Int. Cl. B21j *5/02*
U.S. Cl. 72—356 **5 Claims**



A method of die-forming parts so that, in their final shape, they have a substantially continuous grain structure, whereby a cylindrical blank is shaped into a spherical part by drawing the grain line ends together in two polar areas, and the spherical part is reshaped into a ring of final dimensions without breaking any of the grain lines.

3,791,189
CRIMPING TOOL

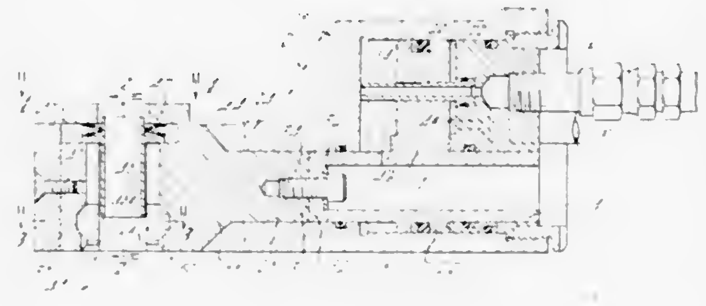
Gustaf Rudolph Lawson, Willingboro, N.J., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Nov. 14, 1972, Ser. No. 306,464
Int. Cl. B21d *37/00*
U.S. Cl. 72—410 **8 Claims**



A crimping tool has identical stamped and formed second class levers which are pivotally joined at their first ends so that a pair of pliers or the like may be used to apply compression force at the opposite free ends to cause the levers to pivot toward each other. The levers respectively have aligned, intermediate portions which include at least one pair of dies in their opposed faces for crimping a terminal to a wire when compression force is applied at the free ends. The first ends are in over-lapping side-by-side relationship with respective coaxially aligned holes extending therethrough to receive a pin about which the levers pivot. The free ends are respectively misaligned and include overlapping alignment tabs so that when the tool is oriented with respect to the pliers in any position which will cause the levers to pivot toward each other, the compression forces are resolved in a direction to produce sliding contact between the tabs and the free ends to maintain the intermediate portions of the tool in alignment throughout crimping.

3,791,190
TWO JAW TOOL

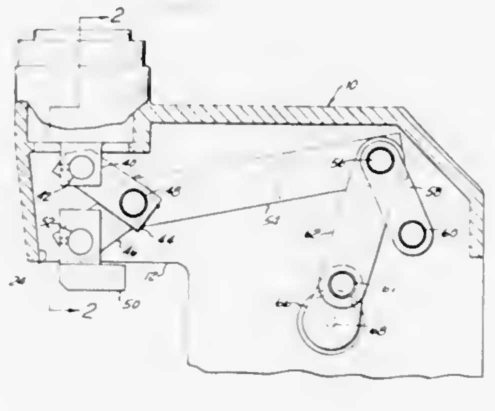
Peter R. Chirco, Utica, Mich., assignor to Huck Manufacturing Company, Detroit, Mich.
Filed July 13, 1972, Ser. No. 271,568
Int. Cl. B21d *37/10*
U.S. Cl. 72—412 **1 Claim**



A two jaw crimping tool for crimping a nut onto a bolt and in which the nut and bolt extend through the jaws in a direction transverse to the direction of motion of the piston actuating the jaws.

3,791,191
PRESS PRESSURE AND CLOSED POSITION CONTROL

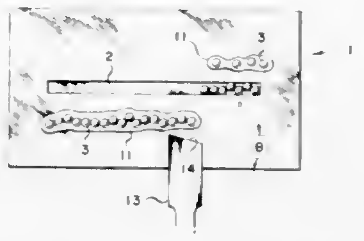
Joseph W. Baldyga, Mt. Clemens, Mich., assignor to Diamond Die & Mold Co., Mt. Clemens, Mich.
Filed Nov. 29, 1971, Ser. No. 202,896
Int. Cl. B21j *9/18*
U.S. Cl. 72—431 **9 Claims**



A mechanically actuated press in which actuating means has a predetermined stroke normally effective to move a die or the like into a predetermined position relative to a work support or second die. The actuating means is extensible, such for example as a toggle, and acts between the movable die and a prestressed resilient abutment to limit the application of pressure.

3,791,192
PARTICLE STANDARD AND CALIBRATION METHOD

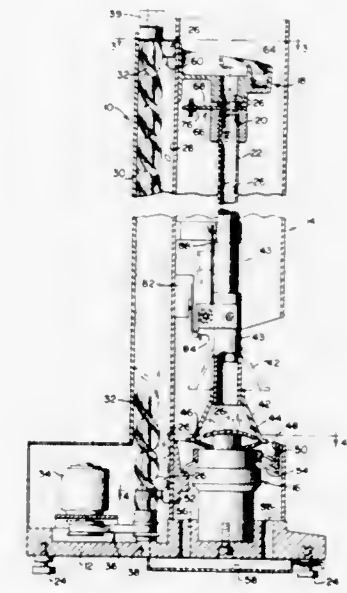
John V. Butler, Newhall, Calif., assignor to Lockhead Aircraft Corporation, Burbank, Calif.
Filed July 3, 1972, Ser. No. 268,852
Int. Cl. G01n *15/00*
U.S. Cl. 73—1 R **58 Claims**



Apparatus and method for establishing an absolute particle calibration standard useful for fluid contamination control and like applications. A soluble carrier releasably secures a known number of standard size particles (microbeads) in a geometric array, which serves as the reference standard. The carrier may be selectively dissolved to release the standard particles into the system to be tested or calibrated. The reference standard is manufactured by introducing solid particles of known size, or within a given size range, into a precisely-dimensioned metering slot or groove which constrains a predetermined number of the particles in the desired array. Examination by microscope or other suitable means verifies the count of the standard particles. The geometry of the array facilitates visual counting. A soluble adherent carrier medium is applied to the arrayed particles, after which the carrier and the adhered particles may be removed from the metering slot and transported as an integral set.

3,791,193
LENS FRANGIBILITY TESTING APPARATUS

Hamilton B. Bole, Sturbridge, Miss., assignor to American Optical Corporation, Southbridge, Mass.
Filed July 19, 1972, Ser. No. 273,239
Int. Cl. G01n *3/62*
U.S. Cl. 73—12 **5 Claims**

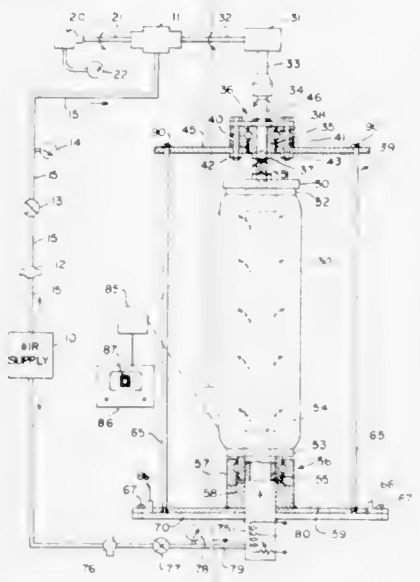


Ball dropping apparatus for testing the frangibility of lenses including a base having an elongated hollow tower extending vertically therefrom with lens supporting means in the tower adjacent the base and a receptacle for receiving and guiding a steel ball to a drop point adjacent the uppermost end of the tower. A motor driven ball elevator screw extends along one side of the tower from a point adjacent the lens supporting means to the receptacle adjacent the uppermost end of the tower. An electrically operated gate releases one test ball at a time from the drop point for impact upon a lens placed upon the supporting means and each dropped ball is guided to the elevator screw for return to the upper receptacle and reuse.

3,791,194
TESTING OF FUEL FILTERS USING THERMOGRAPHY

Anthony P. Pontello, Springfield, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 25, 1972, Ser. No. 292,013
Int. Cl. G01m *3/38;* G01n *25/00*
U.S. Cl. 73—15 R **9 Claims**

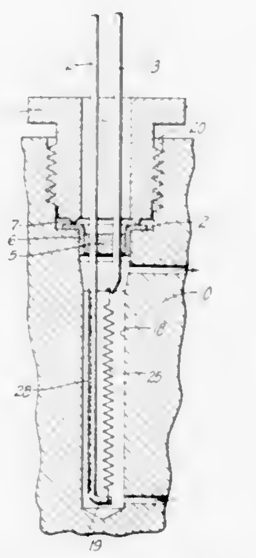


A coalescer element that functions as a filter for aircraft fuels is connected by means of a bearing surface to a heated air supply. The coalescer element is slowly rotated and scanned by means of an infrared device for sensing temperature on the outer surface of the fuel filter. The infrared scanner supplies signals to a color or black and white video screen which displays thermograms of the surface of the fuel filters. Non-uniform high temperatures on the surface of the filter, indicative that the filter is faulty, on being scanned by the scanner are displayed as a light color or light shade on the thermogram indicating a flaw in the coalescer element.

3,791,195
THERMAL CONDUCTIVITY ELEMENT

Winston C. Loe, 4851 DelMonte, La Canada, Calif.

Filed Sept. 21, 1972, Ser. No. 291,091
Int. Cl. G01n *31/00*
U.S. Cl. 73—27 R **6 Claims**



A thermal conductivity detector element is mounted within a small diameter cavity and held by support posts, one of which extends closely adjacent to a metallic cavity wall. Electrical short circuiting between the support post and wall is prevented by providing the support post or at least the portion thereof adjacent to the cavity wall with electrically non-conductive heat resistant coating such as glass or a ceramic frit The coating is preferably fused onto the post so that it becomes an integral part of the support post

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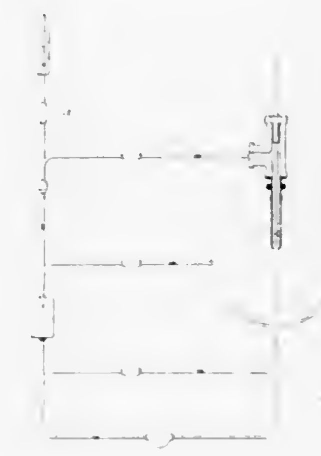
3,791,196
DILUTION SYSTEM FOR PARTICLE ANALYZER

James M. Lepper, Jr., Los Altos, Calif., assignor to Wehr Corporation, Milwaukee, Wis.

Filed Mar. 22, 1972, Ser. No. 237,150
Int. Cl. G01n *31/00*
U.S. Cl. 73—28 **10 Claims**

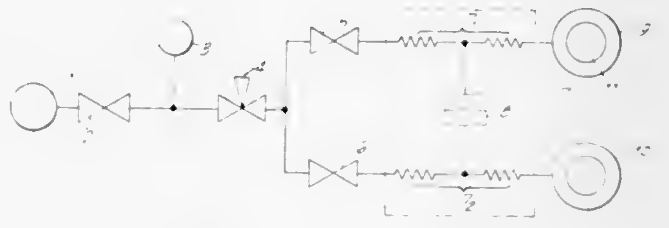


An airborne particle analyzer is provided with an adapter which affords dilution of the aerosol sample introduced into the analyzer. The adapter receives the clean exhaust air, which would otherwise be discharged into the ambient, and directs the clean air to the injector through which the aerosol sample is directed into the sensing area of the analyzer. The adapter has an adjustable exhaust to permit discharge to the ambient of a measured portion of the clean air so that a corresponding volume of new sample is drawn into the unit. The sample aerosol is injected into the center of the continuously circulating air in the unit directly at the sensing area. Regulation of the amount of fluid discharged into the ambient provides control over the amount of sample introduced into the unit for entrainment with the clean circulating air and, correspondingly, the degree of dilution of the sample.

3,791,197
AIR LEAKAGE DETECTOR USING A DIRECT PRESSURE SYSTEM

Akira Eukuda, 2-22-8 Kasuga-cho, Nerima-ku, Tokyo, Japan

Filed May 5, 1972, Ser. No. 250,724
Claims priority, application Japan, Jan. 10, 1972, 47/5878
Int. Cl. G01m *3/04*
U.S. Cl. 73—49.3 **1 Claim**



A pneumatic circuit for testing articles for leaks which includes a pair of receptacles, one for the object being tested and the other for a comparison object. The pneumatic bridge circuit includes a pair of restrictors in the charging circuit.

3,791,198
TESTING PANEL FOR INSPECTION PENETRANTS HAVING CRACKS OF CONTROLLED DEPTH AND WIDTH

James R. Alburger, 5007 Hillard Ave., La Canada, Calif.

Filed Nov. 27, 1972, Ser. No. 309,690
Int. Cl. G01n *11/00, 19/08*
U.S. Cl. 73—53 **5 Claims**

A test panel which may be used for evaluating inspection penetrant crack detection performance, comprising essentially a soft, malleable metal substrate coated with a brittle surface layer of controlled thickness within the range of from about 5 microns to 50 microns, said brittle layer having a pattern of craze cracks which are generated by a mechanical stretching of the panel to a point where the average crack width falls within the range of values from about 0.5 micron to 20 microns

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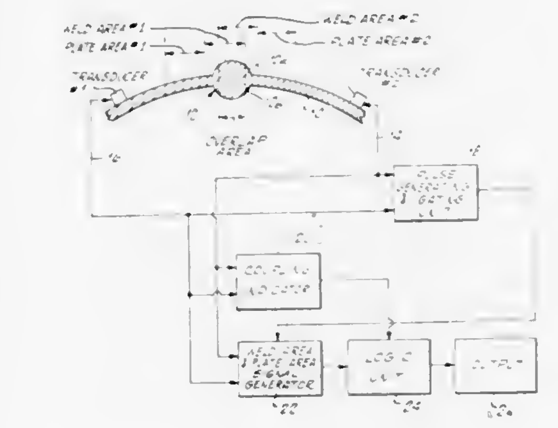
3,791,199
ULTRASONIC INSPECTION METHOD AND APPARATUS

James M. Toth, Euclid, and Tyler W. Judd, Chardon, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Filed Aug. 1, 1969, Ser. No. 846,819
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.9 **10 Claims**



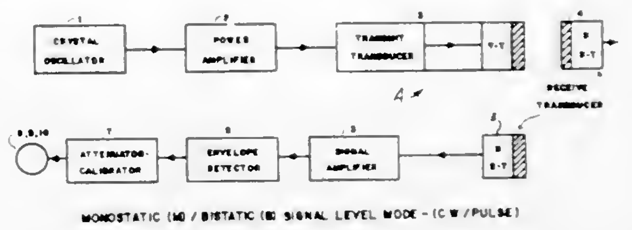
Testing method and apparatus, incorporating a pair of transducers positioned on opposite sides of a weld seam. The transducers are alternately energized, and signals from the transducers are gated to develop signals representative of defects in various regions of the workpiece under test. Individual references are established for the different regions, and the signals are compared with the associated references. Output signals representing major defects are generated in accordance with various relationships of signals from the different regions of the workpiece.

3,791,200
FLUID POLLUTION MONITORING APPARATUS AND METHOD

Harbhajan S. Hayre, 10 Legend Ln., Houston, Tex.

Continuation-in-part of Ser. No. 43,123, June 3, 1970, abandoned. This application Sept. 9, 1971, Ser. No. 179,090
Int. Cl. G01n *29/02*
U.S. Cl. 73—67.1 **7 Claims**

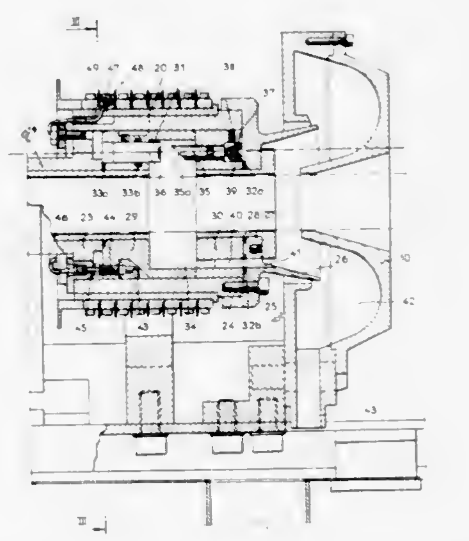
A new and improved method and apparatus for monitoring fluids to determine the presence of pollutants in the fluid and further to identify the type and quantity of pollutants in the fluid by analysis of the acoustic impedance properties of the fluid.



3,791,201
ULTRASONIC TESTING DEVICE

Jacques Dory, Meaux, France, assignor to Realisations Ultrasoniques, Paris, France

Filed Aug. 19, 1972, Ser. No. 173,123
Claims priority, application France, Aug. 21, 1970, 7030710
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.8 S **3 Claims**



Improvement to devices for ultrasonic testing and measurement of a cylindrical product by helicoidal exploration of the product.

A rotary head comprising transducers placed in a radial chamber is so positioned that each transducer faces a mirror and that the ultrasonic ray is reflected at a suitable angle on to the part under test, the chamber remaining filled with water by centrifugal force.

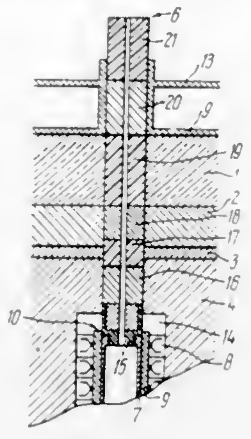
For application to dimensional testing and fault-seeking in industrially manufactured tubes or bars.

3,791,202
DIFFERENTIAL MICROCALORIMETER

Alfred Alfredovich Vichutinsky, ulitsa Vavilova, 86, kv. 213, and Boris Jurievich Zaslavsky, Bolshaya Dorogomilovskaya, 56, kv. 25, both of Moscow, U.S.S.R.

Filed Feb. 23, 1972, Ser. No. 228,659
Int. Cl. G01k *17/00;* G01n *25/20*
U.S. Cl. 73—15 B **1 Claim**

A differential microcalorimeter employs a thermostat which accommodates a device for temperature equalization in the thermostat, the device accommodating a detector block with measuring cells symmetrically arranged in relation to a longitudinal axis of the device. In each measuring cell provision is made for a calorimetric cell holder having a longitudinal axis and composed of a plurality of heat conducting and insulating material layers disposed one above another in the direction of the longitudinal axis of the calorimetric cell holder. The material of each layer and the sequence of the layers correspond to the materials of the thermostat, the temperature equalizing device, the detector block and the measuring cell when the calorimetric cell holder is inserted into measuring cells, thereby effecting the closure of the temperature fields around the measuring cells.



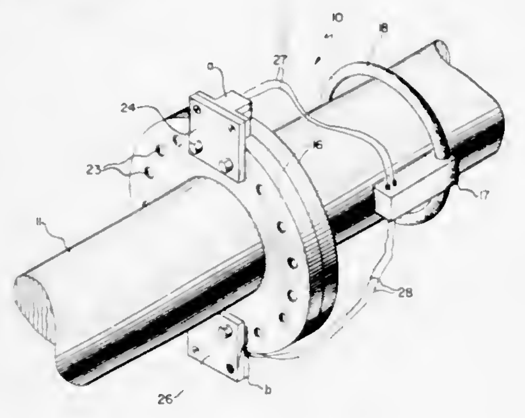
3,791,203
METHOD FOR MEASURING TORSIONAL VIBRATION

Keith E. Rice, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed Jan. 3, 1972, Ser. No. 214,907

Int. Cl. G01n *29/00*

U.S. Cl. 73—70.1 **3 Claims**



A method for measuring torsional vibration of a rotating horizontal shaft having no free end for attachment thereto. A pair of matched accelerometers are diametrically mounted on a hub of the shaft and their summed outputs analyzed to obtain a representative value of the torsional vibration in the rotating shaft. The diametric relationship of the pair eliminates any error which would be introduced by the effects of gravity acting on a single accelerometer.

3,791,204
ROLLING MILL FORCE MEASURING APPARATUS

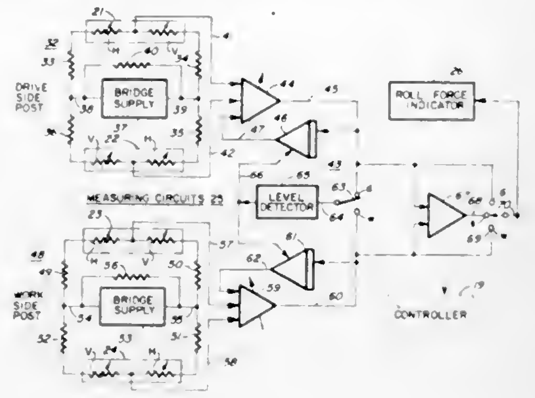
Harold A. List, and Jack H. Baker, both of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Aug. 28, 1972, Ser. No. 283,995

Int. Cl. G01l *1/22;* **G01b** *7/18*

U.S. Cl. 73—88.5 R **4 Claims**

A means for making a simple and economical roll force measurement on rolling mill stands. A strain gage consisting of a half-bridge of vertical and horizontal semiconductor strain elements is cemented to opposing strain sites on a given post of both side frames of a rolling mill stand. These half-bridges are wired into a full-bridge strain gage circuit for each post which is responsive to post strain as a function of roll force, but is not responsive to bending moments in the post. Thermal variations affecting strain gage sensitivity are compensated for by energizing each full-bridge circuit with a separate constant current source. Thermal and mechanical drift affecting strain gage zero are compensated for by automatically nulling amplified strain gage output signals by electronic means during the absence of a workpiece in the rolling mill stand. Roll force signals from individual posts, or their sum, are selectively fed to a utilization device such as a roll force indicator or controller.



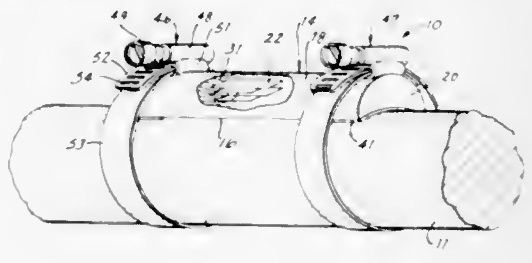
3,791,205
POTTED STRAIN GAUGE

Douglas B. Hooker, 924 Wheaton, Kalamazoo, Mich.

Filed Feb. 4, 1972, Ser. No. 223,479

Int. Cl. G01b *7/18*

U.S. Cl. 73—88.5 R **13 Claims**



A strain gauge construction for removable attachment to a test piece which includes one or more electrical strain gauge elements located intermediate the ends of, and encapsulated in, an elongate protective member. The protective member is preferably contoured to the surface of the test piece to be monitored. Abrasive gripping elements located remotely from the strain gauge element are interposed between the ends of the protective member and the surface of the test piece. A clamp is provided opposite each abrasive gripping element for fixing the ends of the protective member to the test piece, whereby a change in the axial dimension of the test piece results in a corresponding change in the length of the protective member and in the output of the strain gauge elements. In a modified embodiment, the change in length of the protective member is substantially concentrated in the zone occupied by the strain gauge elements for multiplying the output of the strain gauge construction.

3,791,206
FORCE-MEASURING SYSTEMS

Rudolf Grasman, and Walter Hell, both of Vienna, Austria, assignors to Waagner-Biro Aktiengesellschaft, Vienna, Austria

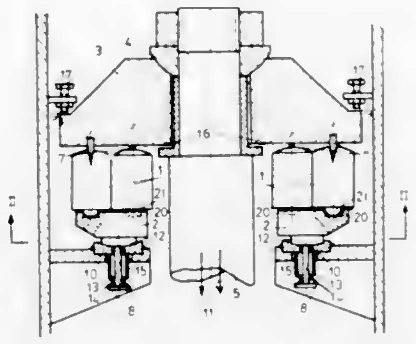
Filed Sept. 15, 1972, Ser. No. 289,318

Claims priority, application Austria, Sept. 17, 1971, 8120/71

Int. Cl. G01l *1/26*

U.S. Cl. 73—141 R **9 Claims**

A force-measuring system capable of converting a tensile force into a compressive force. A pulling force is applied to a crosshead which is capable of rocking freely with respect to the axis along which the pulling force extends, and this crosshead applies the pulling force to a plurality of pressure-measuring cells which are arranged uniformly in groups around the axis of the pulling force. The groups of pressure-measuring cells respectively engage supports which are freely tiltable and which are in turn supported by a stationary supporting structure, so that in response to the application of the pulling force to the crosshead the plurality of cells are capable of measuring the pulling force while being placed in compression.



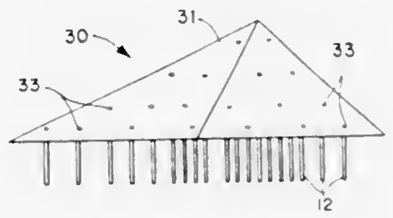
3,791,207
WIND TUNNEL MODEL AND METHOD

Charlie M. Jackson, Jr., Yorktown, and Dallas G. Summerfield, Hampton, both of Va., assignors to The United States of America as represented by the National Aeronautics and Space Administration, Washington, D.C.

Filed June 19, 1972, Ser. No. 263,815

Int. Cl. G01m *9/00*

U.S. Cl. 73—147 **8 Claims**



A wind tunnel model having pressure measurement orifices formed integrally therein and a process for making same.

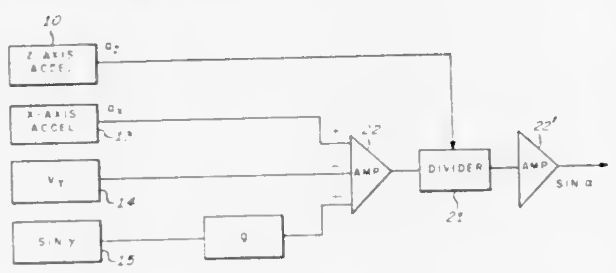
3,791,208
ANGLE OF ATTACK COMPUTER

Harry Miller, Scottsdale, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 873,044, Oct. 31, 1969. This application Mar. 16, 1971, Ser. No. 124,690

Int. Cl. G01c *21/10*

U.S. Cl. 73—180 **8 Claims**



Apparatus for providing a measure of the true angle of attack of an aircraft without external probes or vanes, which measure is derived from computations involving measurements of longitudinal and normal accelerations of the aircraft in conjunction with air data derived computations of vertical speed and true airspeed. Supplementary outputs of the angle of attack computer are instantaneous vertical speed of the aircraft which is accurate under pitch and roll maneuvers, true flight path angle, and acceleration of the craft along the flight path.

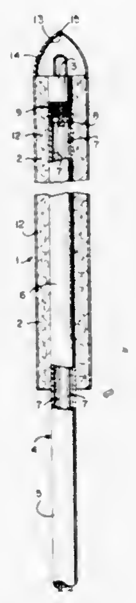
3,791,209
HIGH TEMPERATURE RECORDING LANCE

William Carl Norburn, 1201 N. 35th St., Allentown, Pa.

Filed Nov. 11, 1971, Ser. No. 197,869

Int. Cl. G01k *7/02, 1/14*

U.S. Cl. 73—359 **2 Claims**



An expendable recording lance or probe adapted for immersion in hot baths such as molten metals or salts and for mounting over the end of an elongated lance holder containing wires for interconnecting the lance with an electrical device for converting electrical information obtained from the lance to useful information. The lance includes an elongated hollow tube carrying a recording device at its front end and covered by a metallic sheath projecting beyond the front end of the tube over the recording device to protect the recording device as the lance is plunged into a hot bath.

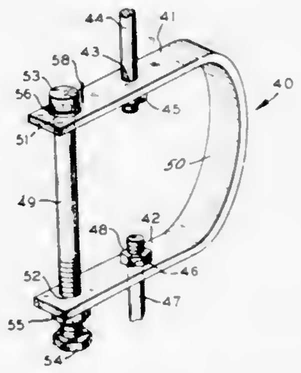
3,791,210
CABLE TENSION MEASURING DEVICE

Lucian W. Taylor, San Jose, Calif., assignor to Velcon Filters, Inc., San Jose, Calif.

Filed May 17, 1972, Ser. No. 254,094

Int. Cl. G01l *5/06*

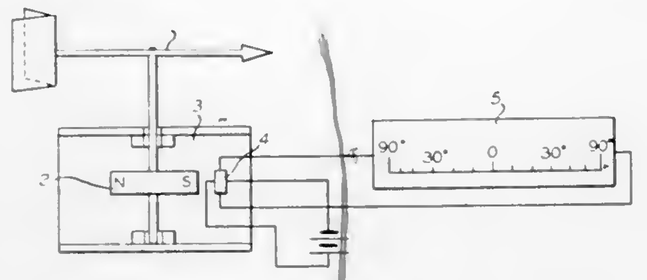
U.S. Cl. 73—143 **5 Claims**



A cable tension measuring device which utilizes the relative movement of its component members under tension to indicate the point at which a desired cable tension is reached. In one form the device uses the elongation of a cylinder under tension to release a collar held between the cylinder ends. In an alternative form, the device uses the separation of the sides of a U-shaped body under tension to prevent the movement of the indicating means.

3,791,211
WIND DIRECTION INDICATOR FOR SAILBOATS

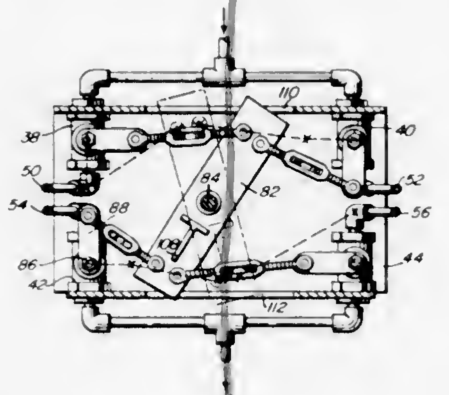
Franz Xaver Dobesch, Villingen, Germany, assignor to VDO Tachometer Werke Adolf Schindling GmbH, Frankfurt am Main, Germany
Filed Aug. 9, 1971, Ser. No. 170,059
Int. Cl. G01w *1/00*
U.S. Cl. 73—188 **2 Claims**



A wind direction indicator for sail boats, which comprises a vane. A rotatably mounted permanent magnet is connected with the vane and is adapted to operate as a measuring value indicator. A controllable semi-conductor is controlled by the magnetic field of the permanent magnet in dependency upon the wind direction to the midship line of said boat.

3,791,212
FLUID METERING APPARATUS

Wayne A. Blackburn, 240 Oregon Ave., and Sevall W. Hemness, 313 GW Ave., both of Lovell, Wyo.
Filed Jan. 7, 1972, Ser. No. 216,059
Int. Cl. G01f *3/16*
U.S. Cl. 73—251 **8 Claims**

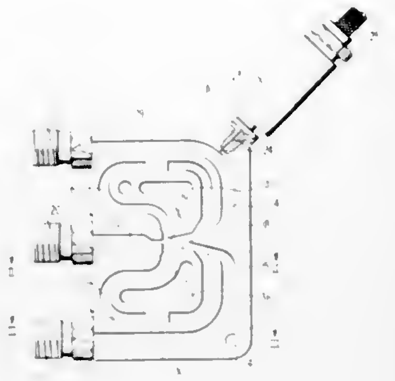


A fluid metering apparatus for dispensing additives into petroleum products or the like, said apparatus comprising a cylinder with fluid handling ports at opposite ends, a piston reciprocally mounted in the cylinder, a counter operatively connected to the piston to record the number of piston strokes indicative of the volume of fluid dispensed, a plurality of on-off valves controlling the flow of fluid through the cylinder, and a snap-action over-center mechanism interconnecting the piston with the valves by way of adjustable couplings to assure simultaneous actuation of the valves.

3,791,213
TEMPERATURE FEELER

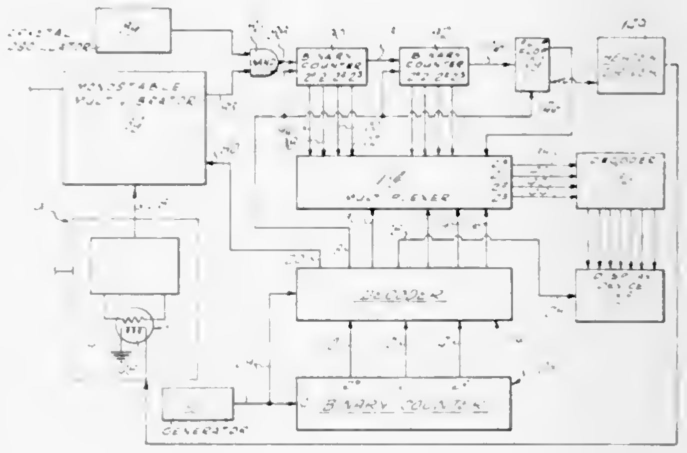
Gerhard Walliser, Waiblingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Oct. 21, 1971, Ser. No. 191,481
Claims priority, application Germany, Oct. 30, 1970, 2053319
Int. Cl. G01k *11/22*
U.S. Cl. 73—339 A **12 Claims**

A temperature sensing device for hot gases, which consists of a pneumatic oscillator provided with an inlet channel, a diffusor, and a wedge projecting into the diffusor which is adjoined by two outlet channels, from which branch off two return channels leading to the inlet side of the diffusor whereby the oscillator consists of a lamella packet into which are worked the channels and of two cover plates which are provided at the sides facing the lamella packet with recesses through which a portion of the gases is conducted whose temperature is to be measured.



3,791,214
DIGITAL CLINICAL THERMOMETER

Arlie L. Keith, 1815 Gerda Ter., Orlando, Fla.
Filed Aug. 10, 1971, Ser. No. 170,468
Int. Cl. G01k *7/24*
U.S. Cl. 73—362 AR **7 Claims**



A counter is preset to a count that represents a temperature slightly below a range of clinical interest. The counter is incremented by a gated oscillator, in response to the output of a thermistor bridge, thereby augmenting the content of the counter so that its count is representative of the temperature of the thermistor. The content of the counter is displayed visually, in a serial digit-by-digit manner, on a display device. The time required for the thermistor to reach the temperature that is being measured is shortened by preheating the thermistor to a temperature within the range of clinical interest.

3,791,215
BAROMETER

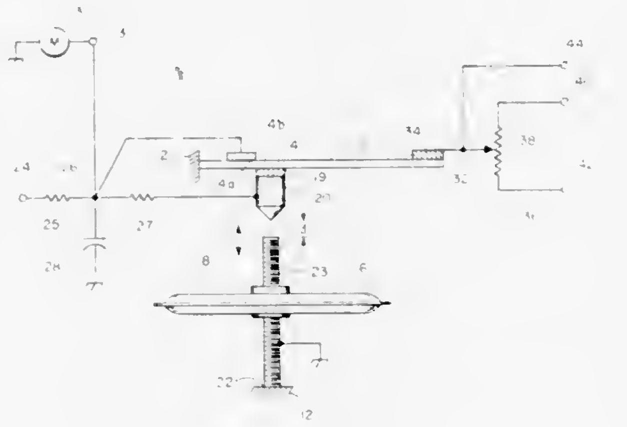
Medard W. Welch, 1111 Sheridan Rd., Winnetka, Ill.
Filed Sept. 25, 1972, Ser. No. 291,672
Int. Cl. G01l *7/20*
U.S. Cl. 73—385 **2 Claims**

This is a barometer of the mercury column type in which the diameter of the column is sufficiently small such that when the level changes, due to changes in atmospheric air pressure, the change in the level of the pool surface will be less than the accuracy within which conventional barometers can be read.

Thus the scale opposite the top of the column does not have to be adjusted or "zeroed" to the pool level change.

3,791,216
PIEZOELECTRIC DRIVEN UNLOADED PRESSURE SENSOR

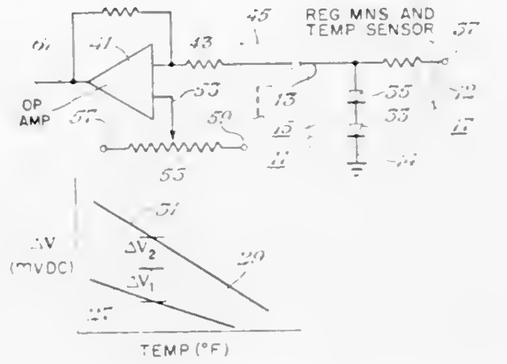
William C. Blanchard, Baltimore, Md., assignor to The Bendix Corporation, Southfield, Mich.
Filed Sept. 25, 1972, Ser. No. 292,217
Int. Cl. G01l *9/08*
U.S. Cl. 73—398 R **5 Claims**



A d.c. voltage is applied through a series resistor to a capacitive piezoelectric device which is part of a cantilevered beam. The beam is thus made to deflect from a starting position until it contacts a grounded aneroid cell thereby partially discharging the piezoelectric device so that it moves back slightly toward the starting position sufficiently to break the ground contact. The capacitive piezoelectric device is thus alternately charged and discharged as the beam alternately makes and breaks ground by contact with the grounded aneroid cell. Since the expansion of the aneroid cell is in response to ambient pressure, the beam deflection as well as the voltage impressed across the piezoelectric device are related to ambient pressure.

3,791,217
TEMPERATURE SENSOR EMPLOYING MARRIED DIODE JUNCTION MEANS

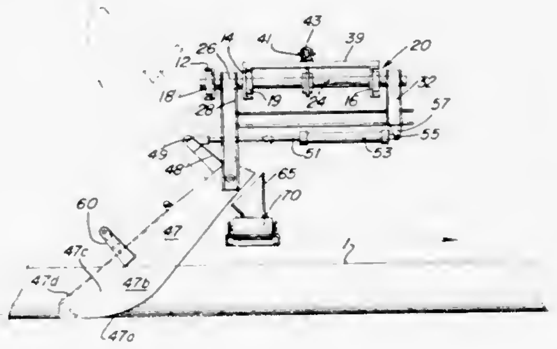
Beauford F. Stout, Grandview, and George W. Hann, Fort Worth, both of Tex., assignors to Kodata, Inc., Fort Worth, Tex.
Filed Nov. 8, 1971, Ser. No. 196,269
Int. Cl. G01k *7/24*; **H01l** *1/22*
U.S. Cl. 73—342 **5 Claims**



An improved system employing a plurality of economical, linear and interchangeable temperature sensors, characterized by (1) diode junction temperature sensors that include a plurality of serially connected diode junctions that are preselected to have a predetermined standard operating curve, at a constant current within the range of −100° F. to +350° F.; and (2) power supply means and regulator means for maintaining a substantially constant current flowing through the diode junction temperature sensor. Also disclosed are specific embodiments including. (1) temperature sensors connected with an electrical common and employing a single readout lead carrying a signal that is relatively insensitive to the length of the lead, and (2) multiplexing equipment for monitoring a plurality of such readout leads.

3,791,218
APPARATUS FOR REMOVING SAMPLES OF PARTICULATE MATERIALS FROM AN ENDLESS BELT CONVEYOR

Fred A. Pennington, Harrisburg, Pa., assignor to D & P Minerals, Inc., Harrisburg, Pa.
Filed Jan. 5, 1972, Ser. No. 215,584
Int. Cl. G01n *1/10*
U.S. Cl. 73—423 R **6 Claims**



Representative quantities of ores and other particulate materials are removed, when desired, from the upper flight of a substantially horizontally disposed, transversely concave, endless belt conveyor by a relatively narrow elongate scoop which is pivotally suspended from above with its lower end normally extending in an upstream direction and into close proximity, or contact, with the surface of the upper flight of the endless belt conveyor. After the desired sample has been received through an inlet port in the elongate scoop, the normally lower end of the latter is raised and the particulate materials are permitted to flow by gravity through the remainder of the elongate scoop and discharged through an outlet port in the normally upper end and fed onto a cross-conveyor which transfers the sample to wherever desired. The raising of the free end of the pivotally mounted elongate scoop causes it to move through an arc which extends longitudinally of the endless belt conveyor; and additional pivotal means are provided for moving the lower end of the elongate scoop through an arc which extends transversely with respect to the endless belt conveyor. Through this last-named means the lower end of the elongate scoop may be so adjusted that the inlet port thereof receives samples of particulate material from different positions transversely of the moving stream.

3,791,219

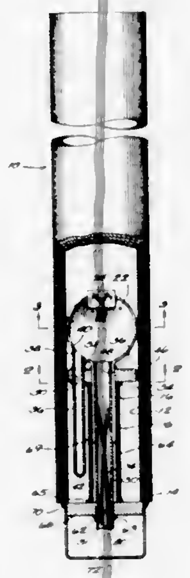
IMMERSION SAMPLE CARTRIDGE

Richard A. Falk, 519 Westminster Dr., Waukesha, Wis.

Filed Aug. 2, 1972, Ser. No. 277,190

Int. Cl. G01n *1/12*

U.S. Cl. 73—425.4 R **7 Claims**



A sample mold cartridge for a molten metal sampling lance is pre-assembled prior to insertion in the hollow interior of a tubular lance used for holding the cartridge during immersion in a bath. The cartridge includes opposed mold halves defining a mold cavity and a smooth walled tube extending into the mold cavity for conveying the metal to the mold cavity. The parts are secured together by a refractory disc having an aperture which receives mold parts and a refractory insulative shield which supports the free end of the smooth walled tube. A paperboard sleeve arranged around the mold parts and the smooth walled tube and located between the disc and shield is cemented to the refractory shield and disc to rigidity the assembly.

3,791,220

PNEUMATIC METAL SAMPLER

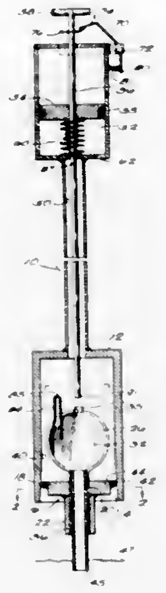
Richard A. Falk, 519 Westminster Dr., and William R. Falk, 1505 Chapman Dr., both of Waukesha, Wis.

Filed Aug. 11, 1972, Ser. No. 280,010

Int. Cl. G01n *1/12*

U.S. Cl. 73—425.6 **8 Claims**

Apparatus for obtaining a sample of molten metal includes a sample cartridge with an entry port for receiving the sample and a lance with a cartridge receiving chamber which holds the cartridge while a sample is taken. The lance chamber is sealed by a gasket on the sample cartridge and a pump or other pressure reducing device in the lance in communication with the chamber lowers the pressure in the cartridge to cause a flow of molten metal into the cartridge interior.



3,791,221

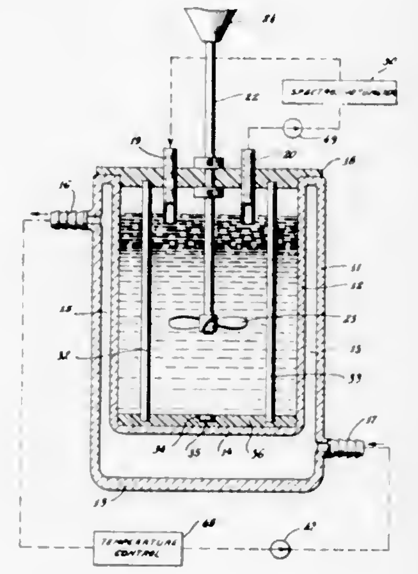
DISSOLUTION TESTING DEVICE

Lawrence Kirschner, Flanders; Thomas Simon, Succasunna, and William A. Campbell, Chester, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Apr. 7, 1972, Ser. No. 242,168

Int. Cl. B01f *1/00*

U.S. Cl. 73—432 R **12 Claims**



The specific disclosure provides a dissolution rate testing device for tablets and capsules comprising a closed chamber having a solution medium therein, a removable holder positioned in the bottom of the chamber for at least one tablet or capsule, and an impeller for circulating the solution medium about the at least one tablet or capsule so that the dissolution rate can be observed.

3,791,222

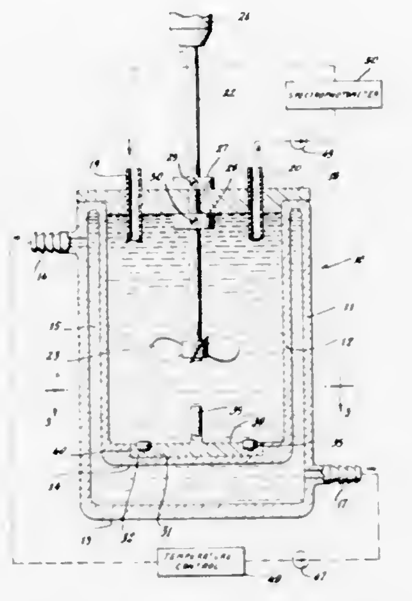
DISSOLUTION TESTING DEVICE

Frank Goodhart, Morristown, and William A. Campbell, Chester, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Apr. 7, 1972, Ser. No. 242,170

Int. Cl. B01f *1/00*

U.S. Cl. 73—432 R **7 Claims**



The specific disclosure provides a dissolution rate testing device for tablets and capsules comprising a closed chamber having a solution medium therein, a removable holder positioned in the bottom of the chamber for at least one tablet or capsule, and an impeller for circulating the solution medium about the at least one tablet or capsule so that the dissolution rate can be observed.

ERRATUM

For Class 73—519 see:
Patent No. 3,791,224

3,791,223

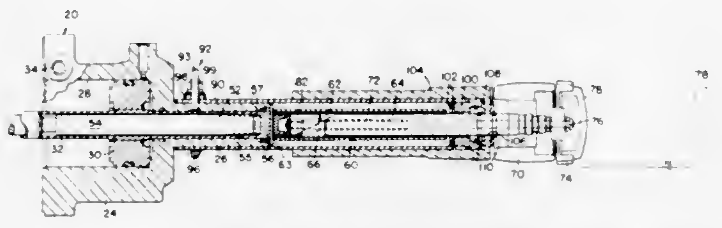
ADJUSTABLE STEERING COLUMN

Richard Treichel; Cleon Arthur Wood, both of Cedar Falls, and Fredrick Charles Christenson, Janesville, all of Iowa, assignors to Deere & Company, Moline, Ill.

Filed June 28, 1972, Ser. No. 267,181

Int. Cl. B62d *1/18*

U.S. Cl. 74—493 **2 Claims**



A tractor has a hydrostatic steering system which includes a hydraulic cylinder and a valve package mounted in a housing disposed immediately in front of the tractor instrument panel. A steering shaft extends upwardly and rearwardly from the housing through the instrument panel and has a steering wheel mounted on its rearward end, the forward end of the steering shaft being connected to the steering valves so that rotation of the shaft actuates the valves. The housing is mounted on a transverse pivot, which permits vertical swinging adjustment of the steering shaft and the steering wheel about the axis of the pivot, a latching device being provided below the instrument panel to lock the housing in the desired position. The rearward part of the shaft, which projects from the housing, includes telescoping portions, which are lockable in different relative axial positions to vary the length of the steering shaft. The locking device includes a wedge member, which is forced into locking engagement with the two telescoping shaft portions in response to rotation of a rod, which is threadably connected to the wedge member and extends rearwardly through the shaft to a knob adjacent the hub of the steering wheel.

3,791,224

APPARATUS FOR MOUNTING THE MAGNET SHAFT OF A SPEEDOMETER

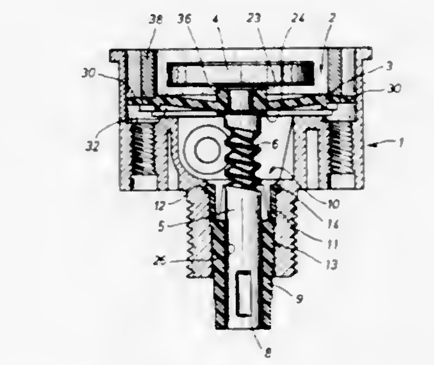
Karl Sinz, Ditzingen; Karl Nirenberg, Neuhausen, and Hans Repphun, Kirchheim, all of Germany, assignors to Moto Meter GmbH, Leonberg/Wurtt., Germany

Filed Oct. 2, 1972, Ser. No. 294,099

Claims priority, application Germany, Oct. 1, 1971, P 21 49 146.3

Int. Cl. G01p *1/04, 3/49*

U.S. Cl. 73—519 **13 Claims**



In a measuring device such as a speedometer, the magnet shaft with an attached magnet is rotatably mounted within a cylindrical plastic bushing mounted in the speedometer body in order to secure the shaft against any radial movement. A plastic holding disc is attached to the magnet shaft and then secured within the speedometer body so as to prohibit any axial displacement of the shaft.

3,791,225

POSITIVE CONTROL ENGINE STARTER

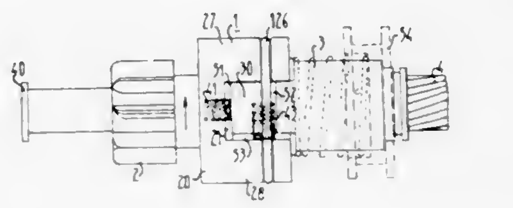
Jules Henri Molliet, 2, rue Traversiere, 21 Arnay-le-Duc, France

Filed Dec. 10, 1971, Ser. No. 206,706

Claims priority, application France, Dec. 15, 1970, 7045926

Int. Cl. F02n *15/06*

U.S. Cl. 74—7 R **7 Claims**



A positive control engine starter with a novel coupling between the drive pinion and a helical-spline drive shaft, the coupling including male and female coupling elements cooperating with one another over an axial clearance and an angular clearance. The coupling parts are axially and angularly spring-biased against closing of the clearance gaps, thereby allowing the pinion to yield axially and angularly when tooth collision occurs during engagement. The same spring bias facilitates the pinion retraction after engine firing, by temporarily eliminating the tooth pressure on the gears and by initiating the retracting motion of the male coupling part on the drive shaft.

wardly therefrom and about a sprocket wheel. A ratchet wheel

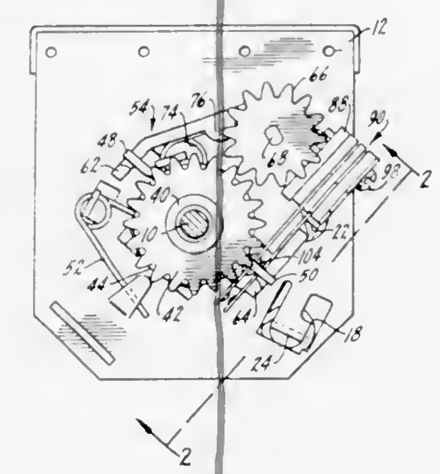
to shutdown. Preferably the motion transmitting means

3,791,226

SLIP CLUTCH FOR TELEVISION FINE TUNING MECHANISM

Norman D. Cappelle, Arlington Heights, and Henry H. Tap, Cary, both of Ill., assignors to Oak Industries Inc., Crystal Lake, Ill.

Filed Jan. 22, 1973, Ser. No. 325,240
Int. Cl. H03j *1/08, 1/12, 1/14*
U.S. Cl. 74—10.8 **13 Claims**



A slip clutch for the fine tuning mechanism of a television tuner.

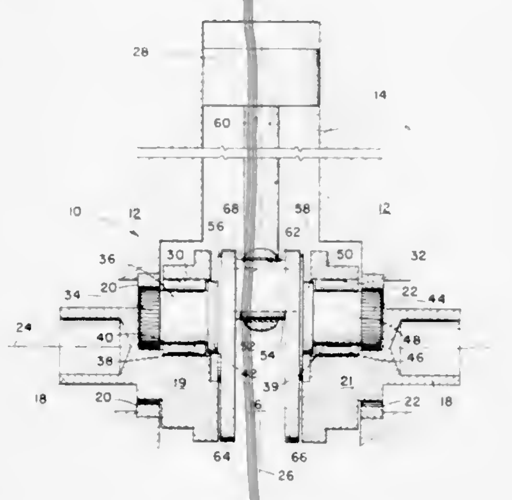
The slip clutch includes a slider which may be slidably moved into position to effect fine tuning, and either a coil spring positioned about the fine tuning shaft or mating beveled surfaces positioned on the drive gear and slider.

3,791,227

VIBRATION FREE PISTON ENGINE

Myron E. Cherry, P.O. Box 4213, Las Cruces, N. Mex.

Filed Apr. 21, 1972, Ser. No. 245,836
Int. Cl. F16h *37/12*
U.S. Cl. 74—52 **5 Claims**



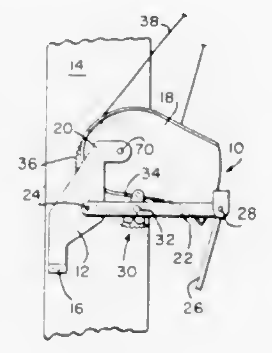
In combination with an apparatus having at least one stationary ring gear and one planet gear for each ring gear for converting rotary motion into rectilinear reciprocating motion of a reciprocating member attached to the pitch circle of the said planet gear by rotary attach means, a planet gear swallowing counterweight for each planet gear having mass sufficient to offset that of the reciprocating member, the counterweight having a cross sectional shape which is quadrilaterally symmetrical about its center of gravity, the center of gravity of the counterweight being located on a line passing through the pitch circle of the planet gear, diametrically opposite the reciprocating member and offset from the axis of the planet gear by a distance equal to one half the pitch diameter of the planet gear for substantially eliminating vibration therefrom while simultaneously providing offset counterbalancing for the reciprocating member.

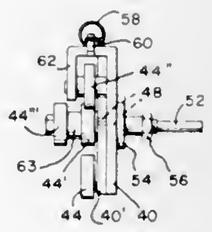
3,791,228

CAMMING MEANS

Gary E. Raymond, P.O. Box 531, Kenvil, N.J.

Filed Feb. 8, 1973, Ser. No. 330,501
Int. Cl. F16h *25/08*
U.S. Cl. 74—54 **10 Claims**





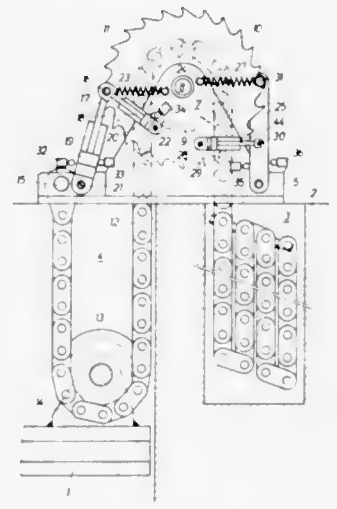
In the depicted embodiment, the means include a cam plate assembly, and a crank arm, rotatably and pivotally coupled to a mounting plate, respectively, with a cam follower assembly pivotally carried by the crank arm. The assembly has a pair of rollers thereon which engage opposite sides of a camming ridge formed on the cam plate assembly. The follower assembly defines a yoke, of pivotally coupled limbs, which slidably carries one of the rollers, and has a spring which urges the one roller, and a shaft upon which it is mounted, towards the other roller. Thus, a constant "nipping" contact of the rollers, in follow of the ridge, is assured.

3,791,229

LIFTING DEVICE FOR LIFTING AND LOWERING HEAVY LOADS

Heinz Liedtke, Neuss, Germany, assignor to Schiess Aktiengesellschaft, Dusseldorf-Oberkassel, Germany

Filed May 24, 1972, Ser. No. 256,450
Int. Cl. F16h *27/02*
U.S. Cl. 74—128 **7 Claims**



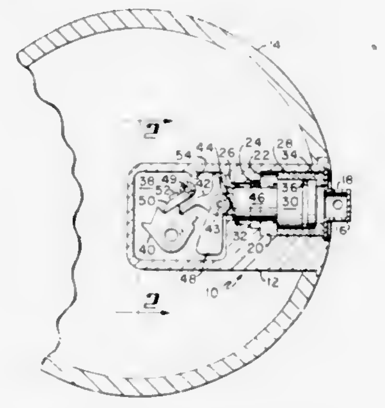
A power transmitting device, especially for lifting heavy loads, in which a chain is connected to the load and leads upwardly therefrom and about a sprocket wheel. A ratchet wheel is coaxial with and nonrotatably connected to the sprocket wheel and pawls are provided adjacent the ratchet wheel for driving the ratchet wheel in load lifting direction or for permitting controlled rotation of the ratchet wheel in load lowering direction. Fluid motors are connected to the pawls for the actuation thereof. A plurality of sprockets and ratchet wheels can be provided and operated in synchronism.

3,791,230

PRESSURE OPERATED INDEXING MECHANISM

George Webb, Richmond, Ind., assignor to Avco Corporation, Richmond, Ind.

Filed June 23, 1972, Ser. No. 265,437
Int. Cl. F16h *27/02*
U.S. Cl. 74—128 **8 Claims**



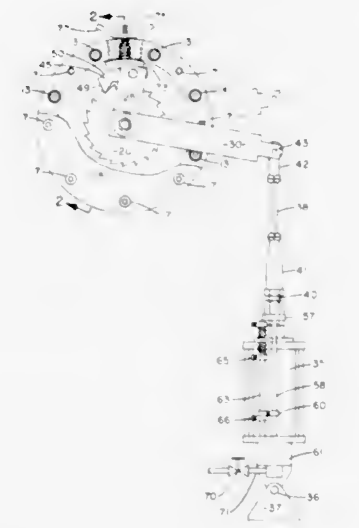
A pressure operated indexing mechanism to provide remote indexing of a mechanism through the use of fluid pressure pulses is disclosed. The device provides a means where a munition or other device can be indexed or set while in a closed container. A pair of telescoping pistons are acted on by externally applied pressure. The primary piston will advance the mechanism one position for each pulse of a predetermined pressure. Pressures higher than another and greater predetermined pressure will cause the secondary piston to cause the mechanism to reset to the start or safe position.

3,791,231

TURBINE TURNING MECHANISM

Carl H. Geary, Greensburg, Pa., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Apr. 3, 1972, Ser. No. 240,603
Int. Cl. F16h *27/02*
U.S. Cl. 74—142 **3 Claims**



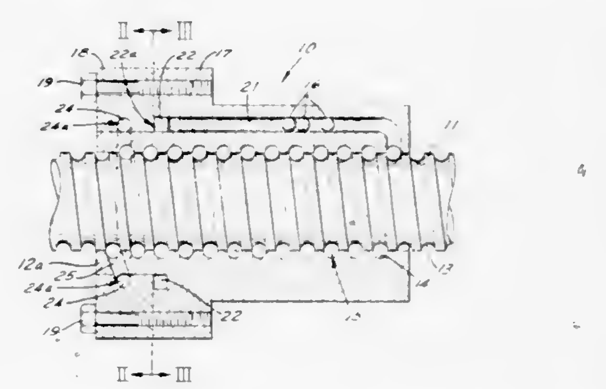
A fluid operated piston and cylinder structure is employed to impart intermittent rotation to a steam turbine subsequent to shutdown. Preferably the motion transmitting means between the piston and cylinder structure and the turbine shaft consists of a ratchet wheel fixed to the shaft and a pawl operated by the piston and cylinder. Means is provided to restrain movement of the pawl into engagement with the ratchet when the turbine is operating. Preferably the pawl restraining means is operated automatically upon the turbine reaching a predetermined speed.

3,791,232

ADJUSTABLE BALL LEAD NUT

Jesse Norman Helmer, Rt. 1, Box 241, Lake City, Mich.

Continuation-in-part of Ser. No. 157,377, June 28, 1971, abandoned. This application Feb. 12, 1973, Ser. No. 332,011
Int. Cl. F16h *55/28, 55/18*
U.S. Cl. 74—459 **12 Claims**



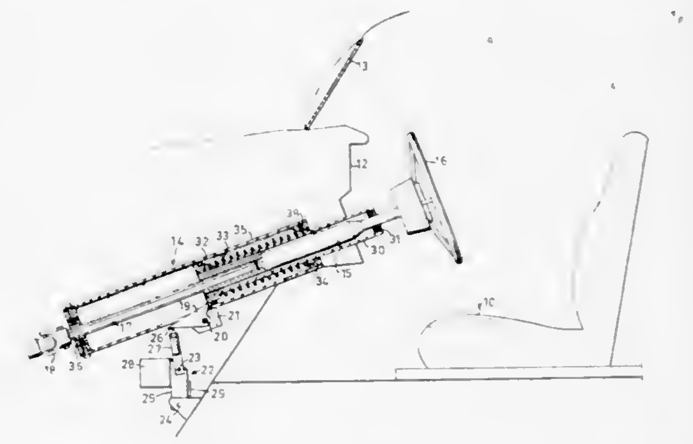
In combination, an adjustable ball lead nut and a ball lead screw having complementary channels or grooves cooperating to define a helical duct, an adjustment disc mounted at one end of the nut and adapted to rotate with respect thereto over a limited angle, the lead nut and adjustment disc being provided with complementary channels or grooves cooperating to define an adjustment loop duct being in series with the helical duct, and a plurality of ball bearings disposed within the ducts, rotation of the adjustment disc in one direction causing the adjustment loop duct to decrease in length, thereby bringing the ball bearings into mutual engagement and providing compensation for wear of said ball bearings. Additional structure is provided to facilitate the movement of ball bearings through the various ducts.

3,791,233

COLLAPSIBLE VEHICLE-STEERING SYSTEMS

Lars Olof Bane, Goteborg, Sweden, assignor to AB Volvo, Goteborg, Sweden

Filed Nov. 6, 1972, Ser. No. 303,946
Int. Cl. B62d *1/18;* **G05g** *17/00*
U.S. Cl. 74—492 **12 Claims**



An improved collapsible vehicle-steering system comprising a steering wheel and steering wheel shaft assembly extending between the steering wheel and means for transmitting steering wheel movement to the vehicle wheels. The shaft assembly is divided into an upper section and a lower section arranged for coaxial movement relative to each other. The upper shaft section carries the steering wheel and is freely movable axially from a first steering position to a second safe position and is releasably held in its first steering position by a latch means which co-acts with means sensitive to vehicle retardation forces. The means sensitive to vehicle retardation forces is adapted to actuate the upper shaft section latching means at forces exceeding a predetermined magnitude, to permit axial movement of the upper shaft section relative the lower, from said first position to said second position.

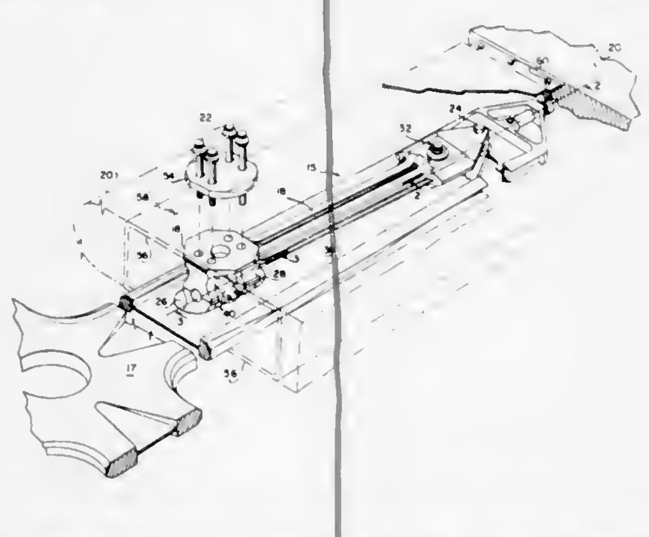
3,791,234
A RETENTION MEMBER

Howard Kastan, Northridge, and Joe C. Pena, La Canada, both of Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Division of Ser. No. 38,396, May 18, 1970, Pat. No. 3,695,779. This application May 8, 1972, Ser. No. 251,093

Int. Cl. F16c *5/00*

U.S. Cl. 74—579 R **14 Claims**



A blade retention member which is compressible and torsionable in installation and operation of a rotor control system, the torsional stiffness of the member decreasing with increasing rotor blade speed, the compressible stress not exceeding the strength of the material out of which the member is fabricated. Its inboard end is fixedly connected to either the rotor blade or a movable hub enveloping it at its inboard end, while its outboard end is fixedly connected to the fixed hub or extension thereof in the rotor system. Means are also provided in the system for isolating bearing means supporting the blade from the blade retention member. The member itself comprises a plurality of circumferentially spaced parallel rails spacedly disposed radially equidistant and arcuately about from a common centerline coincident with the feathering axis for the blade.

3,791,235
SPLIT INTERMEDIATE HOUSING SECTION FOR MULTI-ROTOR ROTARY MECHANISM

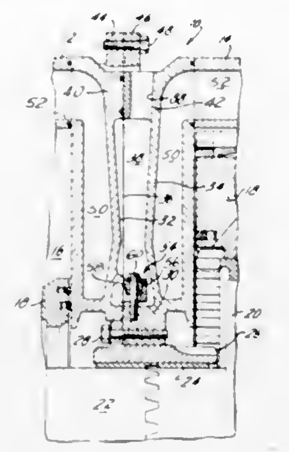
George H. Woodier, Ringwood; Charles Jones, Hillsdale, and Walter L. Hermes, Cedar Grove, all of N.J., assignors to Curtiss-Wright Corporation, Woodridge, N.J.

Filed Apr. 19, 1973, Ser. No. 352,438

Int. Cl. F16h *57/02*

U.S. Cl. 74—606 **18 Claims**

The improved split intermediate housing section comprises a plurality of fastening assemblies disposed between the two parts of the housing section and radially inward of the outer periphery of the housing section. Each assembly has a fixed camming surface on one part of the housing section and an adjustable camming surface on the other part of the housing section disposed to abut the fixed camming surface. A bolt coacts with the adjustable camming surface to move the latter relative to the fixed camming surface and develop a reactive, axially directed force drawing the two parts of the housing section together. Access port means is provided in the housing section for each fastening assembly to permit a tool to extend from a point exteriorly of the housing section, in the housing section to engagement with the bolt for rotation.



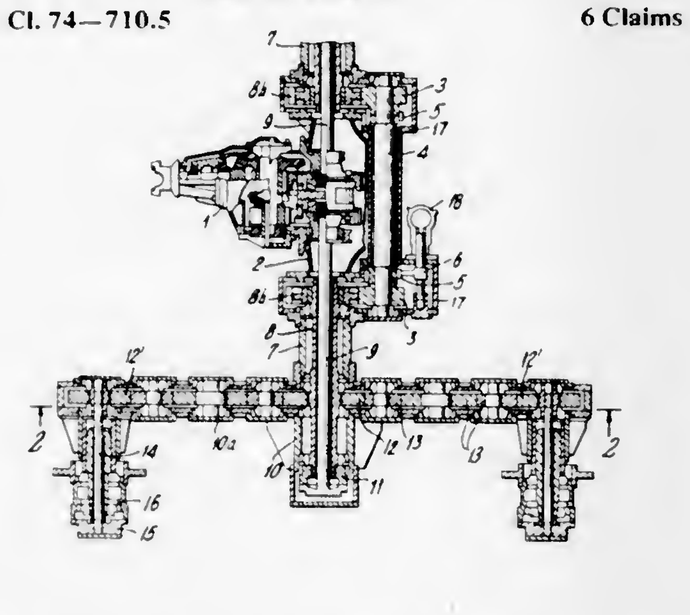
3,791,236
BRIDGE FOR POWER TRANSMISSION FROM A CENTRAL POINT TO TWO LATERAL POINTS

Jose Luis Whitaker Ribeiro, Sao Paulo, Brazil, assignor to Engesa-Engenheiros Especializados S.A., Sao Paulo, Brazil

Continuation of Ser. No. 115,608, Feb. 16, 1971, abandoned. This application Jan. 26, 1973, Ser. No. 326,821

Int. Cl. F16h *1/44*

U.S. Cl. 74—710.5 **6 Claims**



Bridge for power transmission from a central point to two lateral points, a transmission for a heavy duty vehicle, including a differential two shaft means driven by the differential, a pair of wheel supports and gear trains connecting the shaft means to the wheel supports; a blocking mechanism, with tubular axle shaft and at least one gear capable of rotating on the central shaft, and clutch means to connect said gear to the central shaft.

3,791,237
DIFFERENTIAL

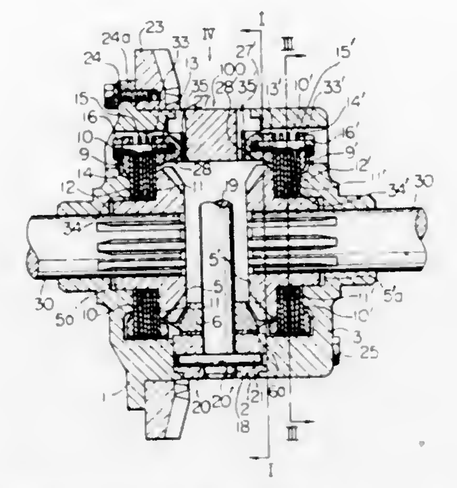
Shin Kitano, and Tooru Kagata, both of Toyota, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi Pref., Japan

Filed Apr. 21, 1971, Ser. No. 136,139

Int. Cl. F16 h *1/44*

U.S. Cl. 74—711 **2 Claims**

A differential applicable to an automobile in which variations between the speeds of the wheel axles is regulated in accordance with the actual speed of the axles compared with the speed of the differential housing by a cam means which translates the variations in speed of the wheel axles compared with the speed of the differential housing into porportional increases in the pressure applied to a multiple disc friction clutch means for producing a resultant braking force, which force returns back to the cam means and is thus translated again into further pressure increases to the clutch means to cause the clutch discs to engage more tightly to each other.



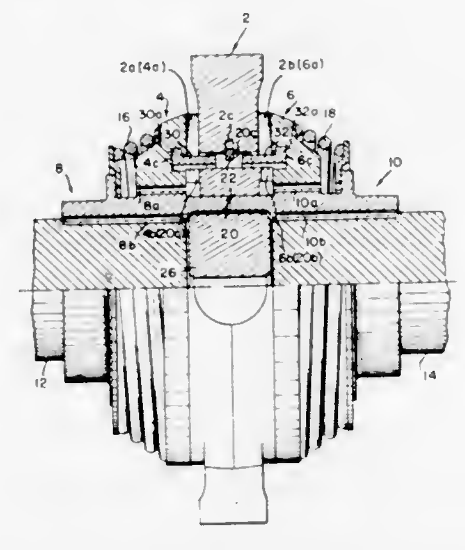
3,791,238
DIFFERENTIAL MECHANISM OF THE HOLDOUT RING TYPE

Ronald D. Bokovoy, Bloomfield Hills, Mich., assignor to Boise Cascade Corporation, Boise, Idaho

Filed Aug. 4, 1972, Ser. No. 276,681

Int. Cl. F16h *35/04*

U.S. Cl. 74—650 **6 Claims**



A differential mechanism of the type including a pair of annular driven clutch members spring-biased into driven engagement with an annular central driving member arranged colinearly therebetween, and holdout ring means operable when one of the driven shafts overruns the other for maintaining the corresponding driven clutch member in a disengaged condition relative to the driving member, characterized in that each of the axially split resilient holdout rings is normally biased radically outwardly in an expanded condition into frictional engagement with the outer side wall of the driven clutch recess in which it is rotatably supported. Pilot means contained solely within the driving member are provided for piloting the adjacent ends of the side gears upon which the driven clutch members are axially slidable. According to the preferred embodiment, the adjacent ends of the side gears are journalled in the central cam member, the spring biasing means being arranged either externally or internally of the driven clutch members. According to an alternate embodiment, the piloting is effected by a telescopic connection between the adjacent ends of the side gears.

3,791,239
VEHICLE TRANSMISSION CONTROL SYSTEM FOR VEHICLES

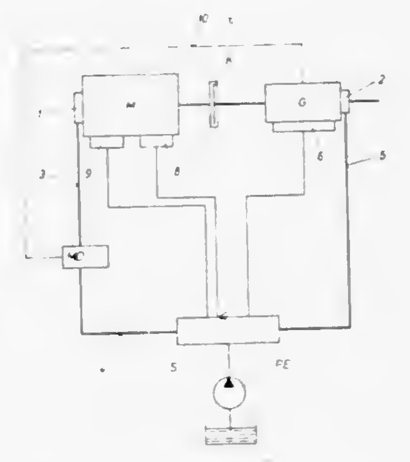
Friedrich Schreiner, Eichelen, Germany, assignor to Zahnradfabrik Friedrichafen AG, Postfach, Germany

Filed July 9, 1971, Ser. No. 161,171

Claims priority, application Germany, July 11, 1970, P 20 34 503.3

Int. Cl. B60k *21/00*

U.S. Cl. 74—752 C **7 Claims**



A vehicle transmission having a shiftable type of gear ratio control mechanism, is automatically operated in accordance with variations in engine speed and vehicle speed. Gear ratio shift is effected under joint control of a vehicle speed signal and an engine speed signal modulated by an amount dependent upon the gear ratio condition of the transmission.

3,791,240
METHOD OF REPRODUCING FLAT KEYS AND TOOLS USED TO THIS END

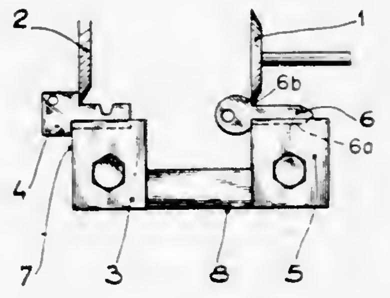
Angelo Meoni, Paris, France, assignor to Cemsa, Montreuil-sous-Bois, France

Filed Mar. 12, 1971, Ser. No. 123,736

Claims priority, application France, Mar. 19, 1970, 70.09833

Int. Cl. B23c *3/35*

U.S. Cl. 76—110 **1 Claim**



This invention relates to a method of reproducing flat keys according to their number and code, and tools used to this end, wherein a number of gauges equal to the number of the notches of the key are successively reproduced, each of these gauges having a single notch whose shape, depth and relative distance correspond to those of the key to be reproduced.

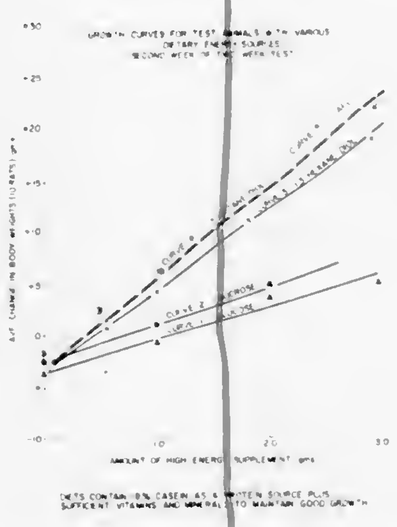
3,791,241
HIGH ENERGY FOOD SUPPLEMENTS COMPRISING LINEAR ALIPHATIC 1,3-DIOLS

John W. Frankenfeld, Atlantic Highlands, N.J., and Sanford A. Miller, Chestnut Hill, Mass., assignors to Esso Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 809,645, March 24, 1969, which is a continuation-in-part of Ser. No. 725,782, Feb. 1, 1968. This application June 30, 1972, Ser. No. 268,089

Int. Cl. A23k *1/00*

U.S. Cl. 99—2 R **9 Claims**



Metabolic energy sources in foods are increased by incorporating in the foods from 1 to 75 percent by wt. of a compound selected from linear aliphatic polyols an mixtures thereof. The polyols have from about five to 15 carbon atoms in the chain and hydroxy groups only on alternate carbon atoms and on at least the first and third carbon atom.

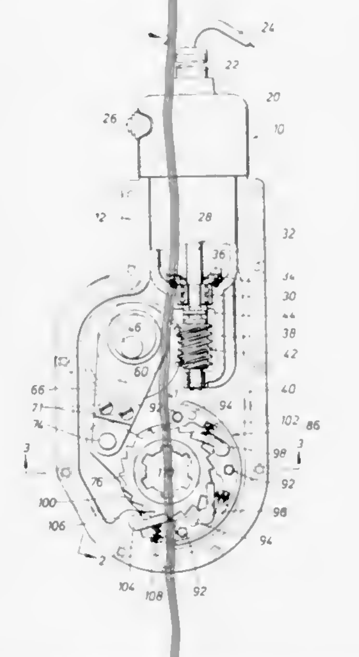
3,791,242
POWER OPERATED WRENCH MECHANISM

Alexander P. Bartusch, 40333 Central Ave., Coldsprings, Tex.

Continuation-in-part of Ser. No. 669,668, Sept. 21, 1967, abandoned. This application Mar. 20, 1969, Ser. No. 808,774

Int. Cl. B25b *17/00, 21/00*

U.S. Cl. 81—57.13 **5 Claims**



A motor operated wrench mechanism for imparting successive rotative movement to an object to which the wrench mechanism is applied. The wrench mechanism includes a motor which imparts reciprocational movement to a connecting rod through a worm gear eccentric crank shaft mechanism. The connecting rod imparts successive rotational movements to a ratchet gear through a driving mechanism including a plurality of driving pawls capable of varying the effective rotative driving stroke of the drive mechanism. A lost motion connection may be provided between the connecting rod and the ratchet drive mechanism to provide infinite variance in the length of the operative stroke of the wrench mechanism and to provide impacting actuation of the drive mechanism for breaking loose the object to be rotated.

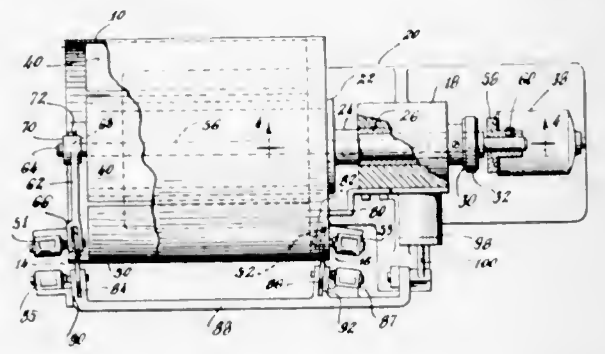
3,791,243
METHOD AND APPARATUS FOR FORMING EDGES ON AN ENDLESS BELT

Thomas J. Holinski, Monroe, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed May 8, 1972, Ser. No. 251,046

Int. Cl. B26d *3/22*

U.S. Cl. 83—54 **8 Claims**



A well-defined edge is formed on an endless belt by positioning the belt on a generally cylindrically shaped mandrel with an inner surface thereof adjacent to a first stationary rotatably mounted cutter blade, advancing into engagement with an outer surface of the endless belt at a location oppositely disposed to the first cutter blade a second rotatably mounted cutter blade, rotating each of the cutter blades and rotating the mandrel through at least one revolution thereby forming a well-defined edge on the belt.

3,791,244
SHEARING MACHINE FOR CUTTING OF BAND MATERIAL

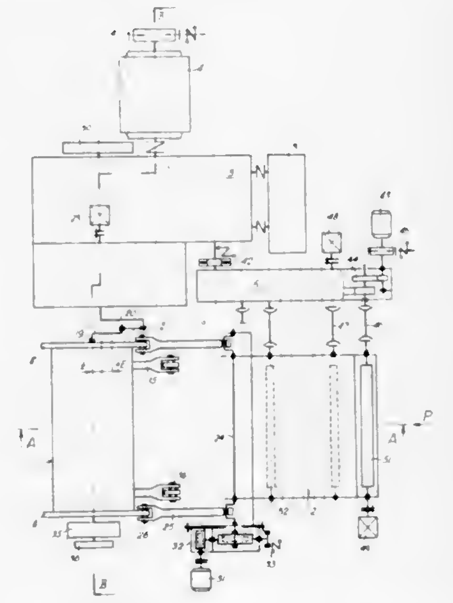
Frantisek Dofek, Zdar Nad Sazavou, Czechoslovakia, assignor to Zdarske Strojirny a slevarny, narodni podnik, Zdar nad Sazavau, Czechoslovakia

Filed July 14, 1972, Ser. No. 271,709

Claims priority, application Czechoslovakia, July 16, 1971, 71/5249

Int. Cl. B23d *25/12*

U.S. Cl. 83—305 **11 Claims**



A shearing machine for cutting metal bands is provided in which the cutters are synchronized with the rate of feed, within a predetermined range of cut lengths, by imparting to the cutters a variable speed in the feed direction. A twin crank synchronizing mechanism is employed for this purpose and variations of the speed are controlled by adjustment of the eccentricity between the cranks of the twin crank mechanism.

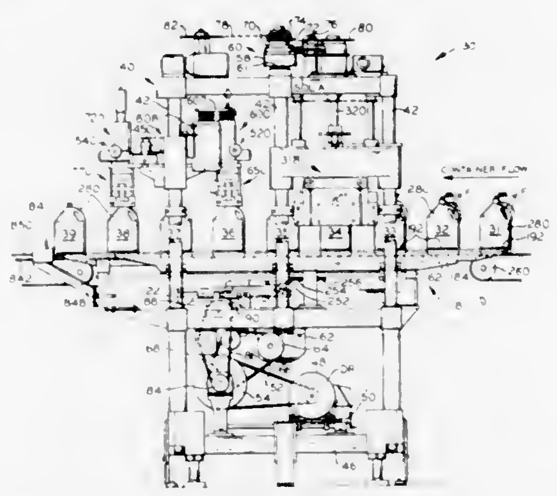
3,791,245
MOLDED PLASTIC CONTAINER SECONDARY OPERATIONS MACHINE

Noel B. Eggert, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 93,069, Nov. 25, 1970, Pat. No. 3,716,910. This application Nov. 28, 1972, Ser. No. 310,176

Int. Cl. B26d *5/04, 5/28*

U.S. Cl. 83—370 **14 Claims**



A method and apparatus is provided for performing secondary operations on plastic containers including deflashing, machining, leak detecting and dimension checking. The assemblies for performing these secondary operations are synchronized and designed to enable sequential operations to each of a continuing succession of containers to enable more and faster operations than in the past. A transfer mechanism indexes the containers between operation stations. Defective containers are rejected as the containers emerge from the processing apparatus.

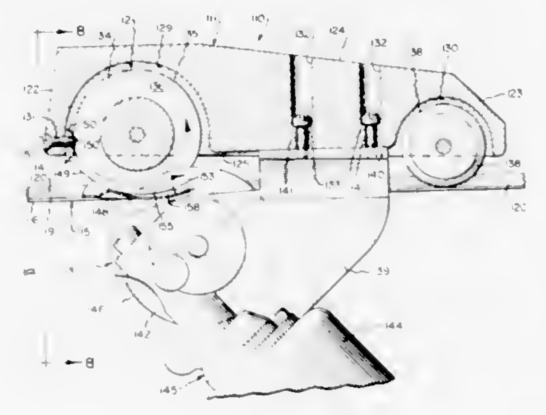
3,791,246
MACHINE FOR CUTTING-SHEET-LIKE MATERIAL SUCH AS FABRIC

Casimir M. Lazickas, East Aurora, N.Y., assignor to Eastman Machine Company, Buffalo, N.Y.

Filed Feb. 26, 1973, Ser. No. 335,579

Int. Cl. B26d *1/22*

U.S. Cl. 83—375 **12 Claims**



A carriage is mounted for manual movement along a slotted track and supports the peripheral cutting edge of a rotary knife within the slot. A roller is mounted on the carriage for rotation about an axis parallel to that of the rotary knife to hold a portion of material to be cut against the track and has a peripheral groove arranged to receive a portion of the rotating cutting edge of the knife. A nip is defined at the point where the cutting edge enters the roller groove to abradingly cut material arranged in its path movement. A cantilevered throat plate is preferably mounted on the carriage and has split trails at its free end to receive the cutting edge therebetween and to smooth such held material proximate the nip. The configuration of the split trails tends to insure the rotative independence of the roller and the knife.

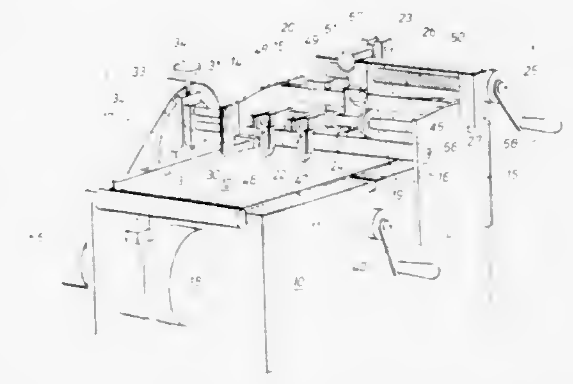
3,791,247
PAPER TRIMMING MACHINE

Floyd H. Pretz, 1508 W. Carter, Orange, Tex.

Filed Aug. 28, 1972, Ser. No. 284,360

Int. Cl. B26d *3/12*

U.S. Cl. 83—418 **4 Claims**



Apparatus for trimming paper having improved workpiece support and alignment structure. The machine accurately trims the workpiece by holding the workpiece accurately aligned with the cutter discs and advancing the workpiece rapidly through the cutter assembly.

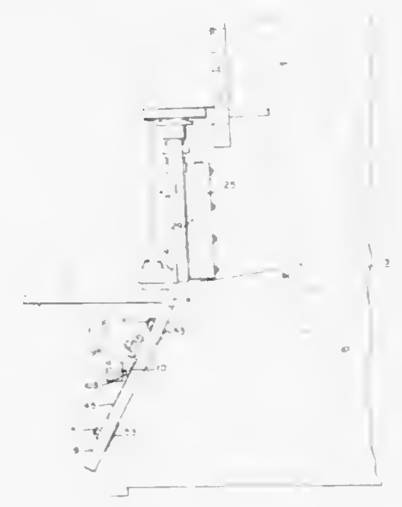
3,791,248
SHEAR MACHINE KNIFE ADJUSTMENT

Eugene W. Pearson, Orinda, Calif., assignor to Canron, Inc., Oakland, Calif.

Filed Aug. 14, 1972, Ser. No. 280,193

Int. Cl. B26d *1/00, 5/08*

U.S. Cl. 83—641 **6 Claims**



In a shear machine, the lower or fixed knife which is installed in a bed or table which, in turn, is slidably supported on the front sloping edges of the machine side housings, is adjustable horizontally with respect to the upper or movable knife by an adjustable wedge assembly installed frontally, in position to elevate the bed or table along the sloping edges, to reduce the horizontal spacing between the knives. The wedge angle with respect to the horizontal, is sufficiently steep, to cause the bed or table to respond to gravitational pull as the wedge adjustment is reversed, thereby to increase the horizontal spacing between the knives.

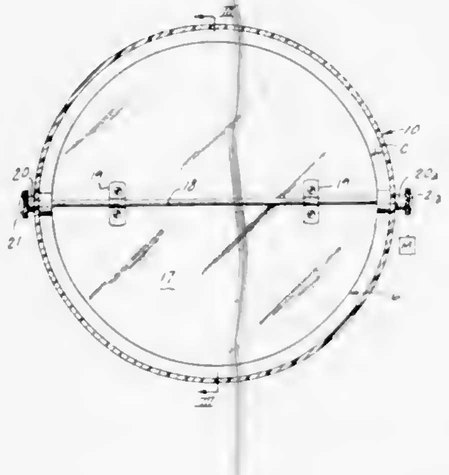
3,791,249
DRUM

Richard I. Frigo, 18 W. 224 16th St., Villa Park, Ill., and William F. Crowden, 2420 W. Berwyn Ave., Chicago, Ill.

Division of Ser. No. 103,752, Jan. 4, 1971, Pat. No. 3,724,313. This application Sept. 8, 1972, Ser. No. 287,349

Int. Cl. G10d *13/02*

U.S. Cl. 84—411 **3 Claims**



A drum or other musical percussion instrument made of a seamless cylindrical shell of an integral synthetic plastic, such as a methyl methacrylate resin, with a tone or sound modulator associated therewith comprising a one- or multi-part panel of similar transparent plastic material mounted for rotation about an axis parallel to a drum head and intersecting said shell with clearance therebetween and between the panel and the head, or heads, of the drum to permit adjustability of the panel into various angular positions relative to the plane of the head in order to modulate the sounds caused by playing on said head.

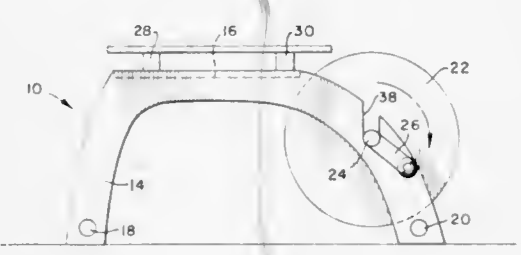
3,791,250
APPARATUS FOR SIMPLIFYING THE PLAYING OF A SONG BELL TYPE INSTRUMENT

John M. Buchman, 10327 Langmuir Ave., Sunland, Calif.

Filed Mar. 8, 1973, Ser. No. 339,155

Int. Cl. G10b *15/00*

U.S. Cl. 84—483 **3 Claims**



Apparatus for simplifying the playing of a song bell type instrument said apparatus including a stand having a support for the song bell instrument with a rotatable roll mounted adjacent thereto with a music sheet attached to the surface of the roll, said sheet having indicia thereon coordinated with the instrument keyboard to indicate which key is to be struck and the order for striking.

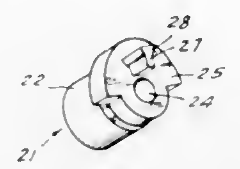
3,791,251
TIMEPIECE ESCAPEMENT

Ulrich R. Pohlmann, Chicago, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed June 5, 1972, Ser. No. 259,863

Int. Cl. G04b *1/00*

U.S. Cl. 58—116 R **10 Claims**



An integral impulse pin and guard roller assembly is mounted adjustably on the balance wheel staff of a clockwork escapement, enabling the escapement to be put into beat easily by simply rotating the impulse pin and roller assembly on the staff to a position where the escapement operates with equal beats. The inner end of the hairspring is directly and non-adjustably attached to the staff. The impulse pin and guard roller assembly is mounted with the impulse pin more remote from the balance wheel than the roller, thus increasing the clearance between balance wheel and escapement lever, over the more conventional arrangement.

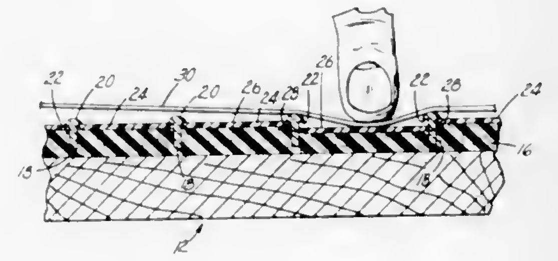
3,791,252
FRETTED STRINGED INSTRUMENTS

Ralph R. Sibert, 1854 Buena Vista Dr., Euclid, Ohio, and Paul R. Misley, 17914 Brazil Rd., Cleveland, Ohio

Filed June 13, 1973, Ser. No. 369,522

Int. Cl. G10d *3/06*

U.S. Cl. 84—314 **6 Claims**



A fretted stringed instrument wherein yieldably mounted frets are provided between rigid fret bars. This allows the strings to be stopped off with much less pressure than with conventional non-yieldable frets, and still produce a true tone.

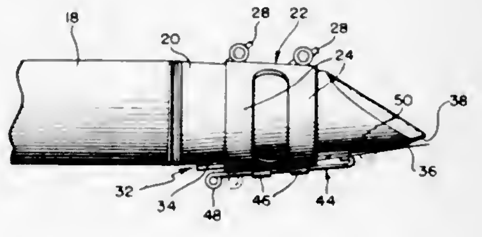
3,791,253
CLARINET MOUTHPIECE WITH IMPROVED LIGATURE

Vito Pascucci, Kenosha, Wis., and William H. Stubbins, Ann Arbor, Mich., assignors to G. Leblanc Corporation, Kenosha, Wis.

Filed June 26, 1972, Ser. No. 266,384

Int. Cl. G10d *9/02*

U.S. Cl. 84—383 **7 Claims**



A clarinet or the like ligature is provided with a slidably adjustable pressure bar. The outer end of the pressure bar is

turned under and exerts pressure against the reed along the longitudinal center line. The pressure point is adjustable from beneath the rim of the ligature to some distance down the reed, thereby affording individual control of the vibrational qualities of the reed, and hence of the tone characteristics.

3,791,254
TEACHING AID FOR DEMONSTRATING THE HARMONIC SYSTEM

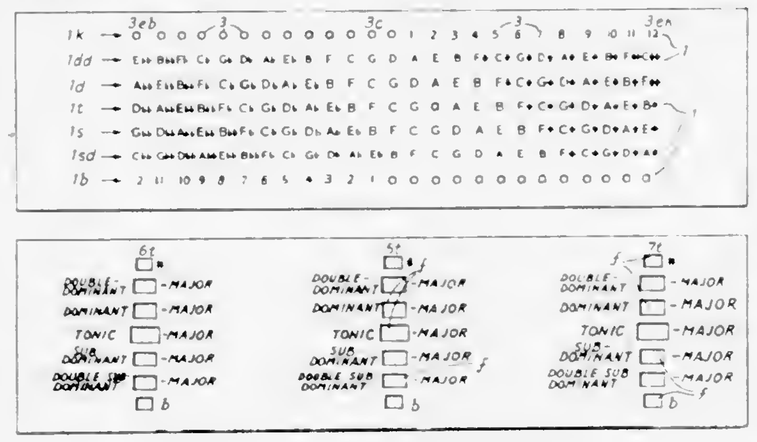
Egon Muller, 7, Hauptstrabe, D-7501, Grunwettersbach, Germany

Filed Nov. 1, 1971, Ser. No. 194,176

Claims priority, application Germany, Nov. 6, 1970, 2054561

Int. Cl. G09b *15/02*

U.S. Cl. 84—471 **8 Claims**



A teaching aid for demonstrating the harmonic system comprising two bar members arranged as in a slide rule, the lower member carrying the symbols and the upper member, which masks the lower member, a column of windows through which symbols from the lower bar member appear. By setting one window on a basic key note various harmonics may be read from the other windows.

3,791,255
METHOD OF FILLING BOREHOLES WITH VISCOUS SLURRIED EXPLOSIVES

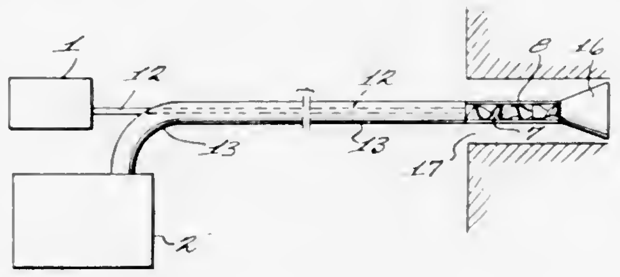
Richard Fox, Hawthorn; Darrell Andrew Williams, West Heidelberg, and Adam Prus Wisinski, Parkdale, Victoria, all of Australia, assignors to ICI Australia Limited, Victoria, Australia

Filed Jan. 10, 1972, Ser. No. 216,431

Claims priority, application Australia, Jan. 18, 1971, 3736/71

Int. Cl. C06b *19/00, 19/04*

U.S. Cl. 86—20 C **5 Claims**



A method of filling a void with a viscous product prepared by mixing two or more free flowing materials which method comprises firstly supplying separate streams of said free flowing material to the required position in a void and secondly mixing the separate streams at said required position to form the said viscous product in situ within said void. Apparatus used in the operation of the method is also described.

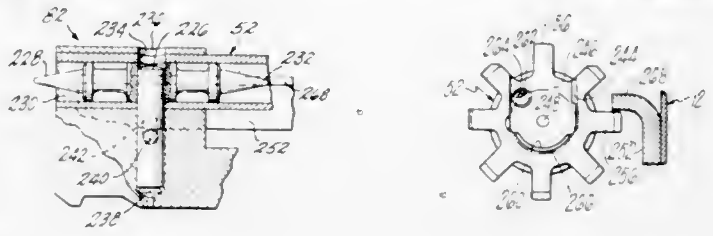
3,791,256
MACHINE GUN

George F. Curtis, East Longmeadow, and Henry J. Tatro, Jr., Westfield, both of Mass., assignors to Colt Industries Operating Corp., New York, N.Y.

Division of Ser. No. 857,479, Sept. 12, 1969, Pat. No. 3,688,641. This application Dec. 14, 1971, Ser. No. 207,938

Int. Cl. F41d *5/04*

U.S. Cl. 89—185 **10 Claims**



The machine gun of this invention features a unitary bolt and bolt drive assembly reciprocably mounted within a receiver along three longitudinally extending bearing supports symmetrically arranged in spaced relation to the receiver; the bolt and bolt drive assembly, together with a recoil buffer constituting an integral operating group removably maintained within the receiver by a single latch mechanism; a bolt carrier of the assembly incorporating actuating means for cartridge belt advance, cartridge extraction and ejection; the bolt carrier housing not only a rotary, front-locking bolt but also a cam follower which fixes a firing pin to the carrier and moves within a contoured slot in the bolt for locking and unlocking it in battery. This machine gun also features a gas recoil system for the bolt and bolt drive assembly having anti-fouling porting means for purging gas from the system under high pressure after firing; an ejector operated by the recoiling bolt and bolt drive assembly independently of its velocity; an automatically engageable, self-aligning barrel and receiver latch construction; and a sight assembly featuring a zero backlash precision screw adjustment means.

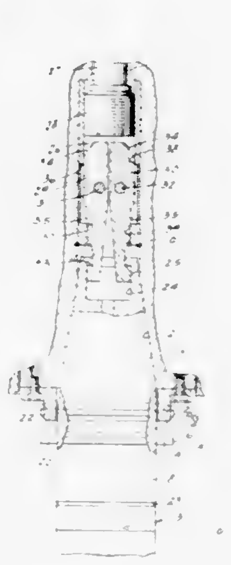
3,791,257
MACHINE TOOL TOOLING

James L. Frazier, Los Alamitos, and Richard Polacek, Palos Verdes Peninsula, both of Calif., assignors to Haudaille Industries, Inc., Buffalo, N.Y.

Filed Mar. 27, 1972, Ser. No. 238,198

Int. Cl. B23c *5/26*

U.S. Cl. 90—11 D **5 Claims**



A machine tool includes a rotatably driven axially movable spindle body having an axial opening terminating in a tool socket, a tool or tool adapter having a shank of corresponding configuration disposed in said tool socket, the shank having an axially opening clamping socket with overhanging shoulder means partially closing the clamping socket, and axially driven clamping means reciprocable in the axial opening of the spindle, and extending into the sockets, the clamping means having a hook portion engageable with the shoulder means in an axial direction within said clamping socket. The tool or tool adapter of itself constitutes an article of commerce which includes a pair of axially spaced circumferential flanges with at least one axially extending slot therethrough, the flanges jointly defining a groove therebetween, the diameter of the shank tapering smaller away from the flanges at one side of the flanges and the diameter being cylindrical at the other side thereof. The axially driven clamping means includes two pivotable clamping members that are positively pivoted to their tool-clamping and tool-releasing positions.

3,791,258
STRAND MILLING MACHINE

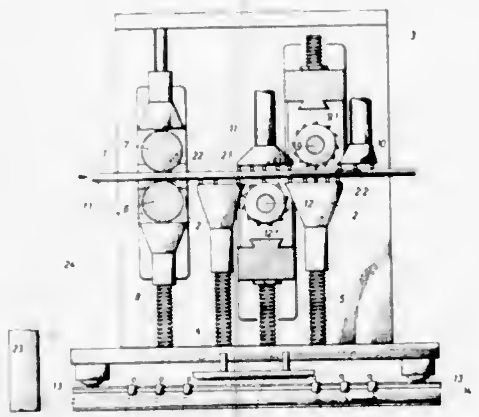
Heribert A. Krall, Wurzburg, and Helmut Maag, Hochberg, both of Germany, assignors to Technica - Guss GmbH, Wurzburg, Germany

Filed Jan. 16, 1973, Ser. No. 324,042

Claims priority, application Germany, Mar. 15, 1972, 2212344

Int. Cl. B23c *3/14*

U.S. Cl. 90—21 C **4 Claims**



A milling machine receives a strand or billet from a continuous casting machine. The machine has a frame and rollers that mount it for back and forth movement on rails in the line of the feed of the strand from the casting machine. A pair of pressure rollers, one above the other, feed the strand therebetween, one of the rollers being rotated by a motor. The milling machine has support tables adjustable vertically, over which the strand moves, rotating milling cutters above and below the strand for milling the same and pressure tables opposite the cutters so that the top and bottom of the strand are both milled. The two sets of electrical circuit limit switches along the rails. On the bottom portion frame of the movable milling machine is adjustable mounted a rail which contacts an actuating arm of the switches as it moves there over. These limit switches are in a control circuit to an electric motor that drives one of the feed rollers. The feed rolls draw the strand through the milling machine. If the circumferential speed of the feed rolls is faster than the medium strand speed from the drawing mechanism of the casting machine, the milling machine is moved towards the continuous casting plant. If it is lower, it moves away from it. The speed is graduated from switch to switch of each set.

3,791,259
STYLUS FOR COPY MILLING

Franz Rossberger, Munich, Germany, assignor to Friedrich Deckel Aktiengesellschaft, Munich, Germany

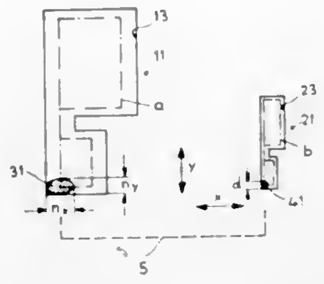
Filed Sept. 20, 1971, Ser. No. 181,764

Claims priority, application Germany, Sept. 25, 1970, 2047381

Int. Cl. B23c *1/16*

U.S. Cl. 90—62 R **10 Claims**

A stylus for use in copy milling at different transfer ratios in different axes. The apparatus aspects of the invention comprises a sensing stylus having an elliptical cross section and/or an elliptical tip in which the elliptical section is generated as a semi-rotational or half of an ellipsoid wherein the dimensions



of major and minor axes of such ellipse are derived as the product of the diameter of the tool multiplied by the inverse value of the transfer ratio in the respective axes of the tracing directions.

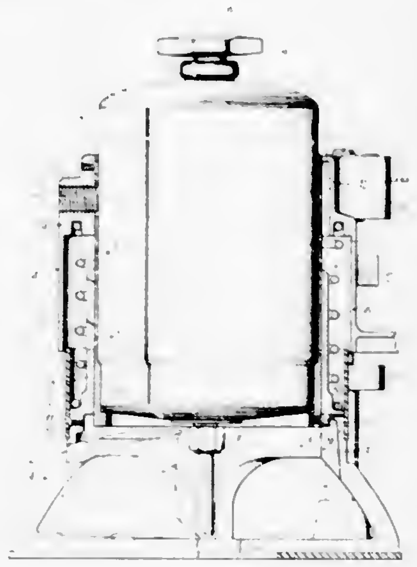
3,791,260
ROUTER

E. Curtis Ambler; Kestutis Damijonaitis, both of Newington, and Paul A. Ketchpel, Simsbury, all of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Feb. 17, 1972, Ser. No. 227,692

Int. Cl. B23c *1/20*

U.S. Cl. 90—12 D **5 Claims**



A portable electric router having a large diameter helical compression spring encircling a router bit drive motor and biasing the motor to a retracted position, and an adjustable stop and one-way locking device for presetting and locking the motor in an extended operating position and providing for plunge cutting to a depth of cut established by the operation position of the motor.

3,791,261
FLUID HANDLING MACHINE WITH AXIAL PRESSURE CONTROL

Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan

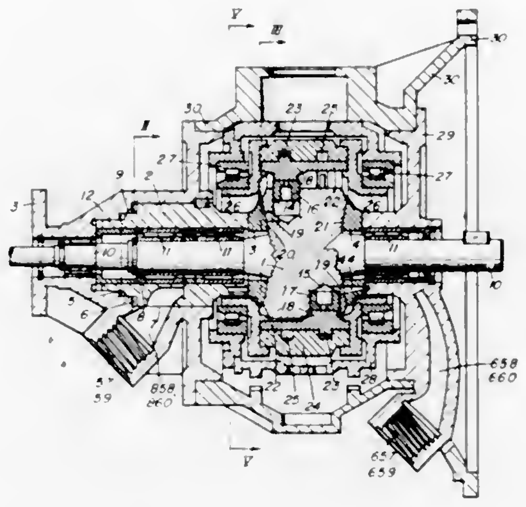
Continuation-in-part of Ser. No. 876,177, Dec. 2, 1969, Pat. No. 3,561,328, which is a continuation of Ser. No. 689,108, Dec. 8, 1967, abandoned. This application Nov. 16, 1970, Ser. No. 89,804

Claims priority, application Germany, Dec. 8, 1966, 902159

Int. Cl. F01b *1/00*

U.S. Cl. 91—485 **8 Claims**

In a fluid handling machine, such as a pump or motor, or a hydrostactic transmission, a presser body abuts at one end a rotor and forms at the other end outer and inner annular pressure chambers with a housing part. The outer periphery of the outer pressure chamber and the inner periphery of the inner pressure chamber are coaxial with the rotor, but slidingly engaged cylindrical face portions along the inner periphery of the outer pressure chamber and outer periphery of the inner pressure chamber have a common axis eccentric to, and parallel with the rotor axis so that the widths of the effective annular pressure faces of the outer and inner pressure chambers varies Fluid at different pressures is located in the inner and outer pressure chambers, and pressure forces are transmitted from the pressure chambers to the rotor to press the rotor against a staionary control face of the housing.



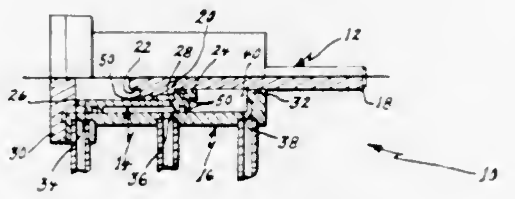
3,791,262
POSITIVE TRI-POSITION LINEAR ACTUATOR

John H. Staehlin, Baltimore, and William J. Meyer, Glen Burnie, both of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation of Ser. No. 59,960, July 31, 1970, abandoned. This application Jan. 4, 1972, Ser. No. 215,444

Int. Cl. F01b *7/20*

U.S. Cl. 92—52 **2 Claims**



A tri-position linear actuator having a pair of pistons slideably mounted within an outer housing. These two pistons are actuated by a pressure differential. By varying the differential pressures acting on one or both of the pistons the actuator is moved to three distinct longitudinal positions.

3,791,263
AUXILIARY POWER STEERING, ESPECIALLY FOR MOTOR VEHICLES

Wolfgang Walter, Schwabisch, Germany, assignor to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Postfach, Germany

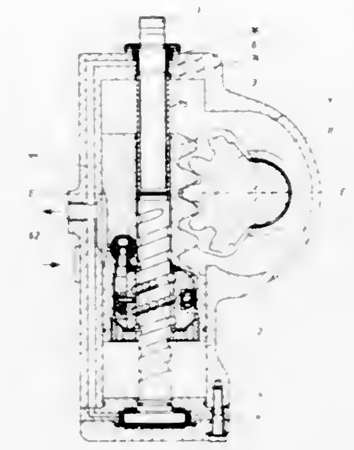
Filed Apr. 3, 1972, Ser. No. 240,732

Claims priority, application Germany, Apr. 8, 1971, 2117140

Int. Cl. F01b *31/18, 9/00*

U.S. Cl. 92—86 **1 Claim**

A hydraulically operated piston and cylinder arrangement for power steering is provided at the steering column end of the steering spindle with a radial bearing and high low pressure sealing gaskets. The other end is provided with radial and thrust bearings. Both bearing arrangements are connected through channels to the exhaust for the cylinder for relieving oil leakage. The arrangement permits construction of the



combination of steering spindle, piston and cylinder which shortens the length of the spindle from the steering column end to the point opposite the gear segment of the steering arm operated by the piston.

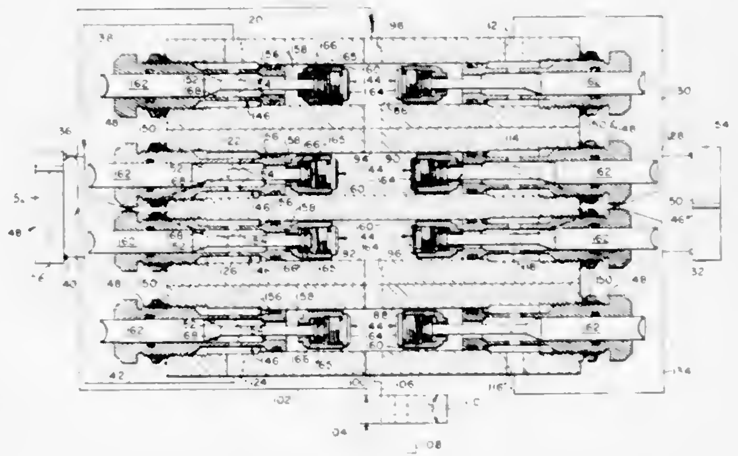
3,791,264
POWER TRANSMISSION DEVICE FOR ROTATING A GRADER CIRCLE

Paul Edmund Hanser, Moline, Ill., assignor to Deere & Company, Moline, Ill.

Continuation of Ser. No. 20,726, March 18, 1970, abandoned. This application Apr. 26, 1972, Ser. No. 247,661

Int. Cl. F01l *15/16;* **F01b** *15/04*

U.S. Cl. 91—176 **7 Claims**



A grader circle has an annular internal gear which is meshed with a gear carried at the bottom of a crank shaft. A pair of double-acting hydraulic actuators have their piston rods connected to the crank pin of the crank shaft and the circle is driven by alternate extensions and retractions of the piston rods. The cylinders of the actuators are swivelly connected to the circle-carrying frame by means of pin structures which are fixed to and swivel with the cylinders as the piston rods are extended and retracted. The pin structures terminate in cams which engage shiftable valve stems of a reversing valve to automatically reverse the flow of fluid to the actuators when the piston rods of the actuators reach the ends of their strokes.

3,791,265

an advancing web of thermoplastic sheet material is longitu-

3,791,269
DEVICE FOR DELIVERING SHEETS

3,791,271
PHOTOGRAPHIC COMPOSITOR

3,791,265
APPARATUS FOR MAKING TOBACCO SMOKE FILTER

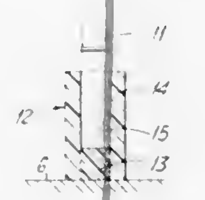
David Thomas Westcott, and Geoffrey Roger Woodman, both of Bristol, England, assignors to Imperical Tobacco Group Limited, London, England

Filed Jan. 14, 1972, Ser. No. 217,797

Claims priority, application Great Britain, Feb. 1, 1971, 3,550/71

Int. Cl. B31f *1/00*

U.S. Cl. 93—1 C **2 Claims**



A tobacco smoke filter is in the form of a cylinder having a low resistance core and a high resistance end wall which cause smoke flow radially through the cylinder wall. The filter is preferably made by compacting the central core of a filter plug to form the dense end wall. Such filter plugs have an efficiency of two or three times that of a conventional filter of the same pressure drop.

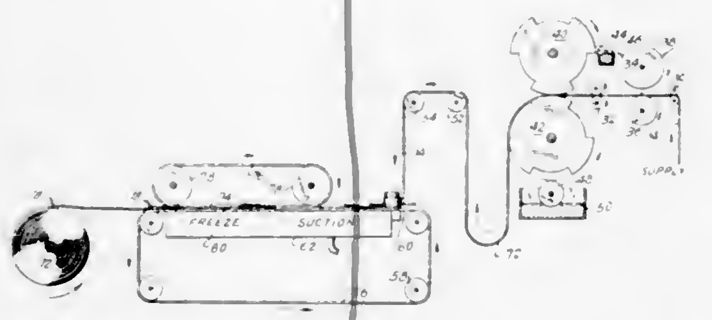
3,791,266
METHOD AND APPARATUS FOR MANUFACTURING TOILET PAPER ROLLS

Brian D. Bucalo, 155 Roberts St., Holbrook, N.Y.

Division of Ser. No. 198,551, Nov. 15, 1971, Pat. No. 3,734,277. This application Feb. 20, 1973, Ser. No. 334,087

Int. Cl. B31d *1/04*

U.S. Cl. 93—1 R **5 Claims**



A roll of toilet paper which has web portions where the web is folded upon itself and provided with an inner film of cleansing composition and an outer barrier layer so that the film of cleansing composition cannot be spread through the convolutions of the roll while at the same time the folded web portions will become unfolded during unwinding of the roll to expose the cleansing composition. After the film of cleansing composition and barrier layer are respectively deposited at opposite faces of the web at preselected areas therealong the web is folded upon itself at the areas where the film of cleansing composition is located and then the film of cleansing composition at each folded web portion is frozen to retain each web portion in its folded condition during winding of the web into a roll.

3,791,267
METHOD AND APPARATUS FOR MAKING PACKAGES OF INTERCONNECTED PLASTIC BAGS AND THE LIKE

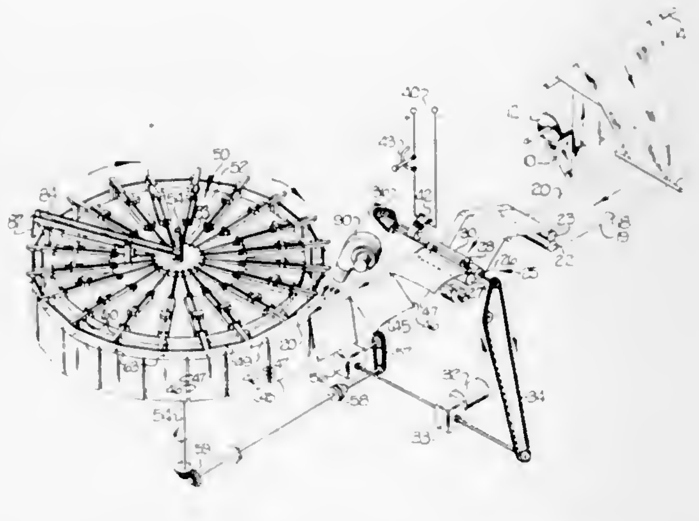
Thomas W. Brooks, Southern Pines, N.C., assignor to Aberdeen Bag Company, Aberdeen, N.C.

Filed Nov. 27, 1972, Ser. No. 309,740

Int. Cl. B31b *1/98, 23/74*

U.S. Cl. 93—35 R **18 Claims**

A method and apparatus for making a plurality of packages of interconnected flexible plastic bags or the like and wherein an advancing web of thermoplastic sheet material is longitudinally folded to define upper and lower overlying sheets. The sheets are then fusibly joined and simultaneously severed along longitudinally spaced transverse lines while leaving a non-severed connecting portion to thereby form a series of connected bags each having a folded bottom edge, fusibly joined side edges, and an open top. The series of connected bags is formed into a plurality of individual stacks of aligned overlying bags by circularly conveying the series about a central axis to form a plurality of overlying convolutions and with the bags of each convolution generally aligned with the bags of the adjacent convolutions. The bags of each stack may then be interconnected, and the connecting portion severed such that each stack forms a separate package of interconnected bags.



3,791,268
MACHINE FOR FLATTENING CARTONS

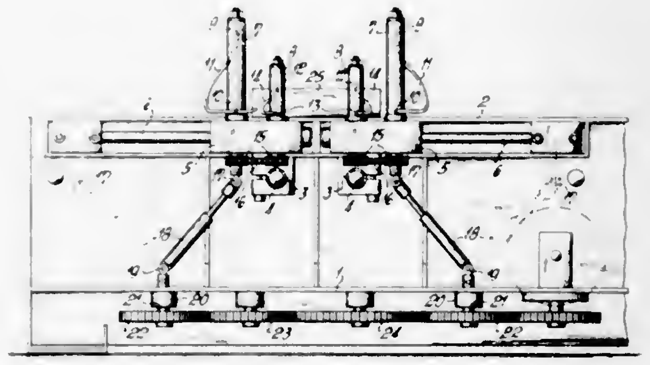
Ulrich Kollmar, Wurm/Pforzheim, Germany, assignor to Gebr. Bellmer KG Maschinenfabrik, Niefern/Baden, Germany

Filed Aug. 7, 1972, Ser. No. 278,502

Claims priority, application Germany, Aug. 5, 1971, 2139198

Int. Cl. B31b *1/52*

U.S. Cl. 93—53 R **12 Claims**



A machine for flattening cartons whereby the carton walls are erected about folding creases pre-embossed along their lower edges and whereby end sections provided on one set of mutually parallel walls are folded inwards at right angles about a vertical folding crease and their outsides can be glued to the insides of the walls which are parallel to them and whereby the ends of two mutually opposite walls are provided with folding creases extending from the lower corners of the carton to the upper edges of the walls under an angle of 45°. The machine is provided with folding devices arranged simultaneously to be moved against all four carton walls.

3,791,269
DEVICE FOR DELIVERING SHEETS

Tetsuya Sawada, Kyoto, Japan, assignor to Rengo Kabushiki Kaisha (Rengo Co., Ltd.), Osaka, Japan

Filed June 1, 1972, Ser. No. 258,784

Int. Cl. B65h *29/66*

U.S. Cl. 93—93 DP **1 Claim**

A device for forming a space between groups of a predetermined number of overlapped sheets moving successively in a line. The device has a first conveyor for conveying sheets of a fixed length which are cut from a band sheet. A second conveyor is provided just beyond the delivery end of the first conveyor for receiving sheets from the first conveyor in overlapping relationship. A suction means is provided adjacent said second conveyor for temporarily holding a sheet on the second conveyor by suction. The second conveyor is movable in such a way that the upper run thereof is movable up and down above and below the level of the suction means. The second conveyor is normally above the suction means, but when a predetermined number of sheets has been delivered to the second conveyor, the second conveyor is lowered, and one of the sheets delivered thereto is held by suction from the suction means to delay its movement along the second conveyor momentarily, after which the second conveyor is again raised to release the delayed sheet from the suction means.

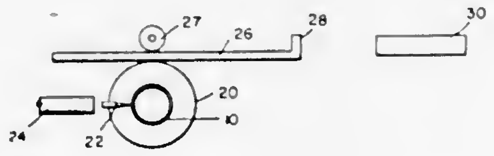
3,791,270
PROCESS FOR ACCURATELY MARKING PRECISE RECTANGULAR AREAS

George R. Brewer, Malibu, and Russell R. Law, Pacific Palisades, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed May 23, 1968, Ser. No. 731,497

Int. Cl. B43l *13/02*

U.S. Cl. 95—1 **1 Claim**



Precise rectangular areas are marked upon a photosensitive substrate by means of an accurate mask. The mask is produced by axially scribing an opaquely metalized quartz tube on its outer, circumferential surface with equally spaced scribe marks through the opaque metallization and circumferentially scribing the quartz tube with equally spaced circumferential marks through the opaque metallization. These two sets of scribed marks produce rectangular areas on the cylinder. The cylinder is rolled in contact with a photosensitive medium, with illumination being supplied from the inside of the quartz tube. Thus, the accurately scribed marks are transferred to the medium, and particularly to a fairly long medium which is not limited by the circumference of the quartz tube.

3,791,271
PHOTOGRAPHIC COMPOSITOR

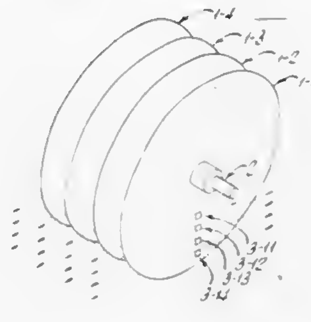
Yukiyasu Nishikawa, Saitama, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Dec. 8, 1971, Ser. No. 205,816

Claims priority, application Japan, July 8, 1971, 46-50513

Int. Cl. B41b *15/06*

U.S. Cl. 95—4.5 **4 Claims**



A photographic compositor character storage and optical retriever includes a plurality of axially spaced coaxially discs each having concentric circular groups of characters, as well as outer flash indexing marks and inner code symbols. Parallel flash beams are directed parallel to a face of each disc and are deflected at successive circular groups perpendicular to the disc and the beams transmitted through aligned characters are then deflected parallel to and along the opposite face of the disc. The sets of character beams from the discs are parallel and each group corresponding to a radially aligned set of characters from a respective disc is reflected by a corresponding first mirror to direct the beams along parallel lines colinear with the respective letter beams of the other discs and directed to respective second mirrors corresponding to longitudinally aligned disc characters which reflect the beams along colinear axes to an objective system. Selection of an individual character from the group in the X Y matrix effected by each flash and as reflected by the mirrors is accomplished by retracting or advancing corresponding one or more of the first and second mirrors.

3,791,272
AUTOMATIC CAMERA SHUTTER CONTROLS WITH STORAGE OR PULSE VOLTAGES

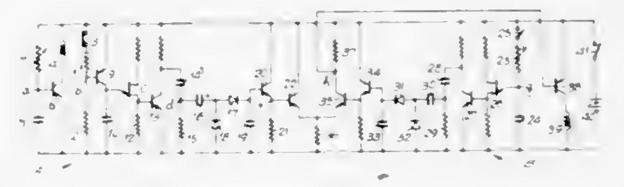
Tsukumo Nobusawa, Tokyo, Japan, assignor to Asaki Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Feb. 5, 1973, Ser. No. 329,854

Claims priority, application Japan, Feb. 7, 1972, 47-13418

Int. Cl. G03b *7/08*

U.S. Cl. 95—10 CT **18 Claims**



An electrical structure for automatically controlling a camera shutter. The structure includes a pair of memory capacitors for respectively storing voltages in response to pulses received by these memory capacitors, and oscillators are respectively connected electrically with the capacitors for transmitting the pulses thereto. One of the oscillators is operated in accordance with variable factors such as brightness at the object to be photographed, diaphragm setting, and film speed, while the other of the oscillators is operated according to a predetermined reference factor. The memory capacitor which stores a voltage in accordance with this reference factor has its operation started when the camera shutter opens and the voltage of this latter memory capacitor is compared with the voltage of the other memory capacitor.

When these voltages have a given relationship with respect to

comfortable and steady manipulation of the camera during

3,791,277

photographic cycle requiring a closed shutter condition. The

When these voltages have a given relationship with respect to each other a signal is automatically transmitted to a structure which brings about closing of the shutter so as to terminate an exposure.

3,791,273

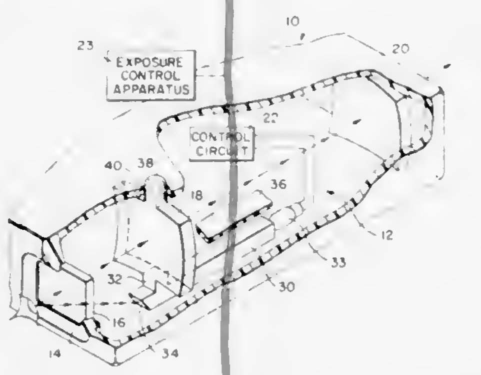
INDICATOR LIGHT FOR CAMERA HAVING ELECTRONIC SHUTTER

David Easton Beach, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 10, 1972, Ser. No. 296,390

Int. Cl. G03b *17/20*

U.S. Cl. 95—11 V **6 Claims**



An indicator for use in a camera of the type having a light responsive electronic circuit which controls the open time of a shutter in relation to scene light intensity, and determines the existence of preselected camera states and/or scene light intensity conditions. The indicator includes a lens element having a portion which is external of the viewfinder, and a lamp connected to the electronic circuit. The indicator includes a light conducting element disposed relative to the lamp and to the lens element so that light from the lamp is transmitted to a location to be observed through a viewfinder of the camera, and to the lens element which transmits the light to the external portion, so that the light transmitted from the lamp to the external portion may be observed at a position removed from the camera viewfinder.

3,791,274

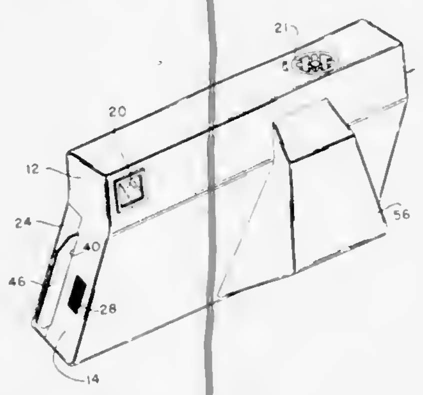
ANATOMICAL CAMERA DESIGN

David E. Hansen, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 5, 1972, Ser. No. 268,934

Int. Cl. G03b *17/02*

U.S. Cl. 95—11 R **8 Claims**



A camera employs two mirrors for establishing a folded optical path along which light rays are reflected from a forwardly facing lens to a rearwardly facing photosensitive film surface. The photosensitive film surface, and a gripping portion of a box-like housing containing the film, are oriented below and at an angle to the lens axis such that the light rays are reflected downwardly and forwardly through more than 180° before impinging at right angles on the film surface. This arrangement affords improved camera compactness and facilitates comfortable and steady manipulation of the camera during picture-taking operations by locating the camera gripping surfaces at a natural or comfortable angle for the photographer's hands and wrists.

3,791,275

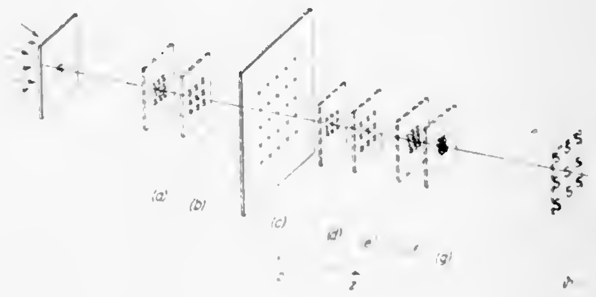
MULTIPLE IMAGE FORMATION THROUGH SELF-IMAGING

Olof Bryngdahl, Cupertino, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 17, 1972, Ser. No. 298,294

Int. Cl. G03b *35/08*

U.S. Cl. 95—18 R **12 Claims**



The present invention relates to the formation of multiple images by self-imaging. Individual points of an incoherently illuminated object serve as sources to achieve self-images of a pinhole array. By using an incoherent, monochromatic light source to illuminate a single object, a plurality of pinholes in a periodic structure allows for the production of sharpened images at defined locations from the structure. At certain defined locations, Fresnel images are formed which are true images of the object numbering higher than said plurality of pinholes.

3,791,276

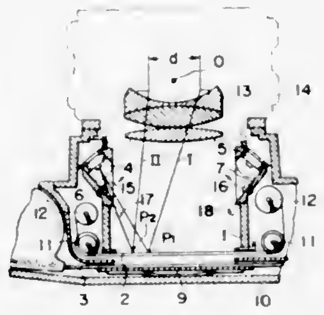
LIGHT MEASURING APPARATUS FOR CAMERA SHUTTER CONTROL MECHANISMS

Hiroshi Ueda, Nara, and Takeshi Egawa, Kainan, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka-fu, Japan

Filed June 4, 1971, Ser. No. 149,939

Int. Cl. G03b *19/12*

U.S. Cl. 95—42 **5 Claims**



In a single lens reflex camera having a focal plane shutter with a light reflecting surface, the light receptive elements are mounted outside of the direct light path from the objective lens to the film so as to receive light reflected from both the film and the light reflecting surface of the focal plane shutter. Structure is mounted to block selected light rays reflected from the film and/or the light reflecting surface of the focal plane shutter.

3,791,277

SWITCHING APPARATUS FOR ELECTRIC SHUTTER MECHANISMS

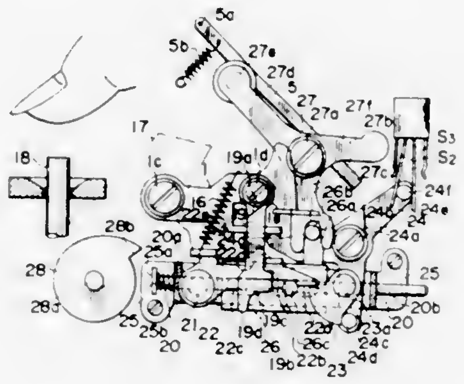
Toshio Kobori, and Masaru Ohba, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan

Continuation-in-part of Ser. No. 165,562, July 23, 1971, abandoned. This application Mar. 8, 1973, Ser. No. 339,282

Claims priority, application Japan, July 25, 1970, 45-65336; Nov. 27, 1972, 47-118107

Int. Cl. G03b *19/12*

U.S. Cl. 95—42 **12 Claims**



An electric shutter switching mechanism includes a first switch for selectively connecting a storage element with a light measuring circuit and a second switch for selectively connecting a timing circuit for closing the shutter with an electric power source. An operating member is movable between first and second positions which respectively represent the viewing condition and the photographing condition of the camera. The member interlocking with the operating member actuates the first switch to electrically isolate the storage element from the light measuring circuit and actuates the second switch to connect the timing circuit to the electric power source. With the operating member in the second position the interconnection between the members and the shutter releasing operation is terminated.

3,791,278

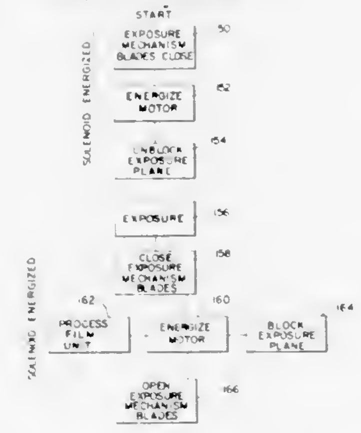
PHOTOGRAPHIC APPARATUS WITH SOLENOID POWERED INSTRUMENTALITIES

Conrad H. Biber, Needham, and Edwin K. Shenk, Littleton, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed July 19, 1971, Ser. No. 163,948

Int. Cl. G03b *9/62*

U.S. Cl. 95—53 EA **18 Claims**



Photographic apparatus incorporating a solenoid driven shutter and self-contained battery power supply. To conserve energy available from the battery, a power-down feature is selectively activated during those portions of an automatic photographic cycle requiring a closed shutter condition. The power-down feature particularly incorporates a dual circuit path configuration leading directly from the battery power supply to the excitation winding of the solenoid. At the commencement of energization of the solenoid, full available current is imposed through both circuit paths until such time as the plunger of the solenoid reaches a high flux linkage condition. As this condition is reached, one circuit path is rapidly switched off to permit energization of the solenoid winding to continue through the opposite circuit path at a selectively lower current level. A signaling arrangement is utilized to initiate the noted switching.

3,791,279

DAMPER UNIT FOR A VENTILATION SYSTEM

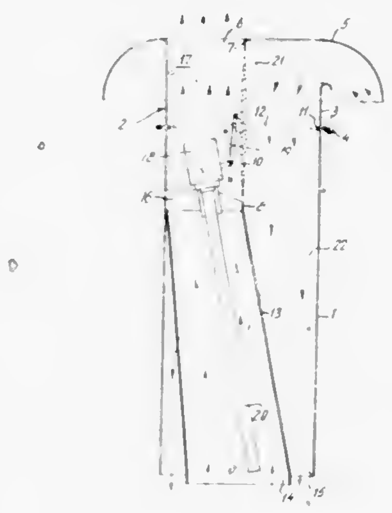
Jorgen Holt, and Hans Christian Hansen, both of Naestved, Denmark, assignors to Nordisk Ventilator Co. A/S, Naestved, Denmark

Filed July 5, 1972, Ser. No. 268,955

Claims priority, application Denmark, July 6, 1971, 3323/71; Sept. 6, 1971, 4371/71

Int. Cl. F24f *7/06*

U.S. Cl. 98—33 A **8 Claims**



A damper unit for ventilating systems and comprising a housing having two internal ducts or passages for fresh air and return air, respectively, and an internal by-pass between the ducts. The ducts are parallel at the outer end of the housing and concentric at the inner end thereof One of the internal ducts is defined by an inclined, tubular partition wall which at its outer end merges with the housing wall and with a central partition between the parallel outer duct ends. A pivotal damper has a first end position in which it obturates the by-pass which is provided in the central partition, and a second end position in which it obturates the outer ends of both ducts and opens the by-pass to provide full recirculation of spent room air. In intermediate positions the damper provides for partial recirculation.

3,791,280

SCREENED VENTILATOR

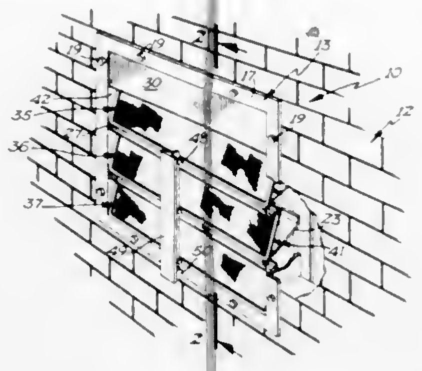
John R. Williamson, 818 E. 39th St., Hibbing, Minn.

Filed Sept. 14, 1972, Ser. No. 289,153

Int. Cl. F24f *7/02*

U.S. Cl. 98—40 VM **6 Claims**

A ventilator for a building having a plurality of inclined louver blades and a plurality of longitudinally pivoted screen sections normally biased into engagement with portions of the adjacent louver sections to form a screen. If the screens become temporarily clogged as with ice or frost, the differential air pressure on opposite sides of the screen sections causes them to swing open against their bias to enable passage of air through the ventilator.



3,791,281

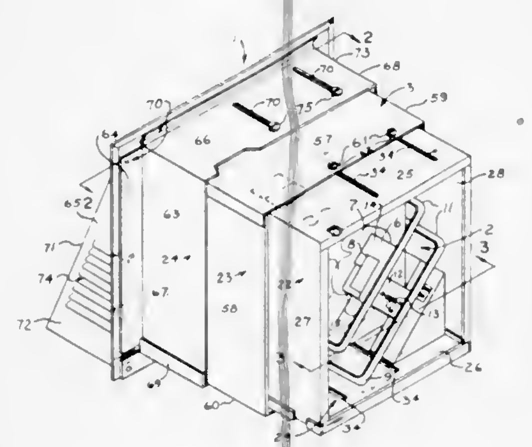
EXHAUST FAN ASSEMBLY

Robert E. Steiner, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Feb. 17, 1972, Ser. No. 227,031

Int. Cl. F24f *7/00*

U.S. Cl. 98—43 **11 Claims**



An improved exhaust fan assembly is provided in which a fan and damper are mounted in a frame, the damper being mounted at the fan outlet, within an exhaust fan housing structure. Two springs are utilized to hold the damper closed. The damper opens by the force of air exerted during fan operation. During that operation, the springs exert a force which helps to hold the damper open. At least one spring has a top extension that contacts a pin on the damper, keeping the over-center force from becoming so great to hold the damper open permanently. The fan and damper are self-contained with respect to the rest of the fan housing and the length of the exhaust fan housing can be varied for differing thicknesses of wall through which the housing is to extend.

3,791,282

WEATHER CAP FOR EXHAUST PIPE

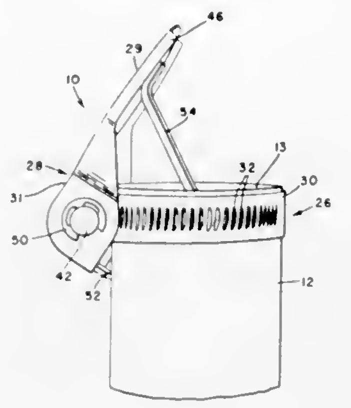
Herman William McElhose, and William Robert Salow, both of Waterloo, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Nov. 10, 1972, Ser. No. 305,476

Int. Cl. F23l *17/02*

U.S. Cl. 98—59 **6 Claims**

A weather cap for an upstanding exhaust pipe includes a cover flap which, in the absence of gas pressure within the exhaust pipe, covers the exhaust port and, in the presence of gas pressure, pivots upwardly to permit escapage of the gas. The cover flap is pivotally secured to the exhaust pipe by a flexible band of variable diameter surrounding the outer wall of the exhaust pipe and held in pressure engagement therewith by a worm carried on one end of the band which worm meshes with aligned slots on the opposite end of the band. Since the diameter of the band is variable, the weather cap has universal application and one weather cap is adaptable to various size exhaust pipes. A counterweight carried on the underside of the cover flap aids in the closing of the cover flap when gas pressure ceases.



3,791,283

METHOD FOR PRODUCING HEAT AND ACID STABLE WHEY PROTEIN MATERIAL

Victor Moreno, White Plains, and David A. Lysak, Pearl River, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Aug. 28, 1970, Ser. No. 68,026

Int. Cl. A23c *21/00*

U.S. Cl. 99—57 **8 Claims**

Heat and acid stable whey protein material is produced having on a weight basis ratios of calcium to protein from .002 to .05, ash to protein from .02 to 0.2 and calcium to ash from .02 to .35. This protein material is derived from liquid whey by means of adjusting the calcium content of liquid whey and then isolating the protein material by means of physical separation techniques.

3,791,284

MACHINE FOR MAKING COFFEE BEVERAGE

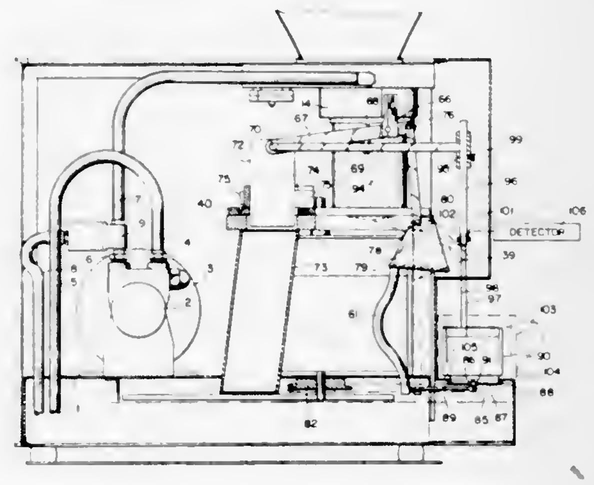
Guy R. Donot, 11, rue Richepanse, Paris, France

Filed Jan. 26, 1972, Ser. No. 220,832

Claims priority, application France, Jan. 29, 1971, 71.03068; June 14, 1971, 71.21546; Aug. 10, 1971, 71.29212

Int. Cl. A47j *31/00*

U.S. Cl. 99—289 **9 Claims**



Machine for making a coffee beverage and dispensing the same into cups. The machine has a single water circuit in a part of which the water is cold and in the other part of which it is hot. The pressure-fed cold water actuates a jack, the mobile armature of which is formed by a boiler completely filled up with hot water. The water actuating the jack first shifts the boiler and then enters the boiler, causing the ejection of an equal amount of hot water. The hot water passes through ground coffee contained in a filtering chamber bounded by the boiler bottom and a duct provided in a swivelling platform.

3,791,285

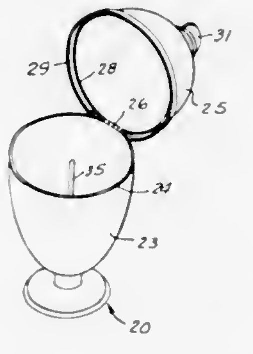
APPARATUS FOR MOLDING AND COOKING EGG PRODUCTS

Leeqett Mack, 641 49th St. N.E., Washington, D.C.

Continuation of Ser. No. 19,350, March 13, 1970, abandoned. This application June 23, 1972, Ser. No. 265,581

Int. Cl. A23p *1/00;* **A47j** *43/18, 43/20*

U.S. Cl. 99—419 **4 Claims**



An egg product is formed by separating the raw egg white from the yoke and hard-boiling the white around a meat or other food center to produce an egg product which resembles a hard-boiled egg having the substitute yoke consisting of any desired food material. The apparatus includes a cup having a spike to support the substitute yoke and an opening at the top to permit the white of the egg to be poured therein, to surround the substitute yoke. The cup has the shape of an egg and when heated in a water bath produces the desired egg product.

ERRATUM

For Class 99—2 R see:
Patent No. 3,791,241

3,791,286

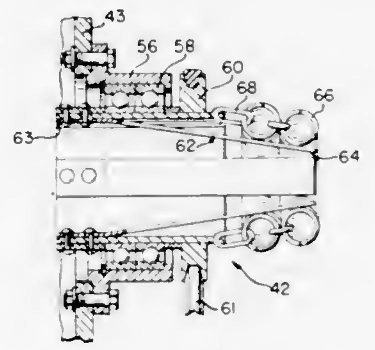
METHOD FOR COMPACTING FIBROUS MATERIAL

Joseph Molitorisz, Bellevue, Wash., assignor to Rotopak Systems, Inc., Seattle, Wash.

Continuation-in-part of Ser. No. 121,704, March 8, 1971. This application Feb. 25, 1972, Ser. No. 229,532. The portion of the term of this patent subsequent to Sept. 19, 1989, has been disclaimed.

Int. Cl. B30b *3/04*

U.S. Cl. 100—40 **6 Claims**



A compressed core of fibrous material is rolled in a single channel defined by a plurality of circumferentially spaced skewed rollers which impart to the core radial, tangential and axial forces. The uncompacted fibrous material fed to the channel is limited to a width less than the length of the channel. The remainder of the channel is a finishing zone. Discharge of the compressed core from the finishing zone is controlled by a density controlling valve. The discharged core is cut into wafers.

3,791,287

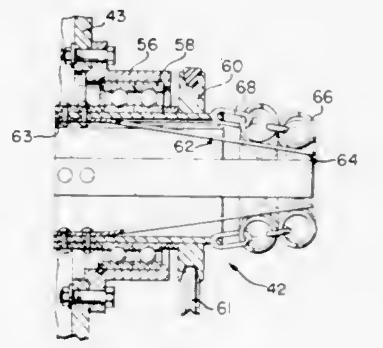
APPARATUS FOR COMPACTING FIBROUS MATERIAL

Joseph Molitorisz, Bellevue, Wash., assignor to Rotopak Systems, Inc., Bellevue, Wash.

Continuation-in-part of Ser. No. 121,704, March 8, 1971. This application Feb. 25, 1972, Ser. No. 229,533. The portion of the term of this patent subsequent to Sept. 19, 1989, has been disclaimed.

Int. Cl. B30b *3/04*

U.S. Cl. 100—89 **19 Claims**



A compressed core of fibrous material is rolled in a single channel defined by a plurality of circumferentially spaced skewed rollers which impart to the core radial, tangential and axial forces. The uncompacted fibrous material fed to the channel is limited to a width less than the length of the channel. The remainder of the channel is a finishing zone. Discharge of the compressed core from the finishing zone is controlled by a density controlling valve. The discharged core is cut into wafers.

3,791,288

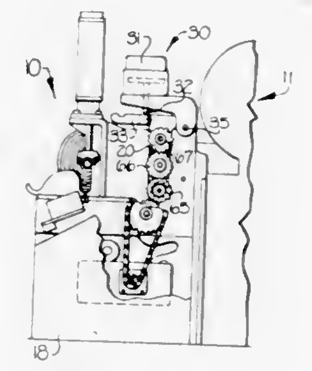
TEXTILE WEB CALENDERING APPARATUS

Marcus G. Whitehurst, Gastonia, N.C., assignor to Piedmont Machine Shop, Inc., Gastonia, N.C.

Filed Dec. 22, 1971, Ser. No. 210,714

Int. Cl. D01b *1/36;* **B30b** *3/04*

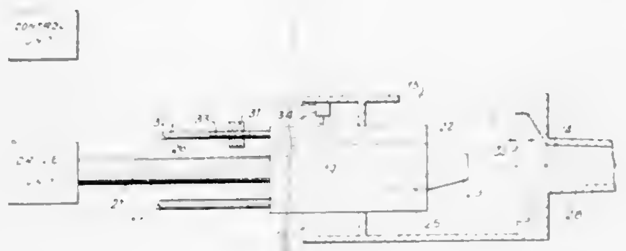
U.S. Cl. 100—170 **8 Claims**



A plurality of calender rolls in a textile web calendering apparatus extend transversely between first and second spaced apart side frame members and are supported by antifriction bearings disposed in elongate slots in the side frame members. By means of a particular mounting arrangement, the side frame members cooperate in maintaining the antifriction bearings and the rolls in assembled relation and in restraining the rolls against movement transversely of the side frame members.

3,791,289
APPARATUS FOR COMPACTING MATERIAL

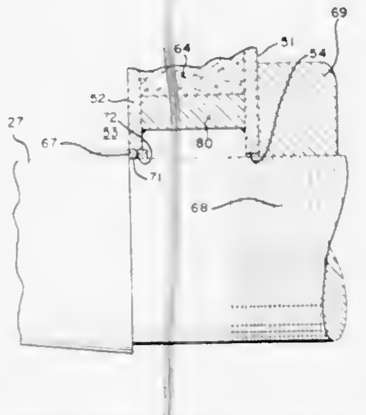
Howard W. Lamorte, and Kostas Pliakos, both of Bronx, N.Y., assignors to Hico Corporation of America, Bronx, N.Y.
Continuation-in-part of Ser. No. 818,332, April 22, 1969, abandoned. This application Mar. 3, 1971, Ser. No. 120,609
Int. Cl. B30h *15/18*
U.S. Cl. 100—179 **11 Claims**



The ram of apparatus for compacting material has a head surface movable into proximity with an outlet duct of a receptacle for the material and a nose coaxially positioned on the head surface and extending forward ahead of the head surface for passing into the outlet duct. An adjustable switch controls the driving movement of the ram and thereby varies the compaction ratio.

3,791,290
HIGH SPEED, HIGH TEMPERATURE EMBOSSING MACHINE AND WHEEL THEREFOR

Gary C. Colledge, 13900 Marquesas Way, Marina Del Rey, Calif.
Division of Ser. No. 216,061, Jan. 7, 1972, Pat. No. 3,730,081. This application Feb. 14, 1973, Ser. No. 332,298
Int. Cl. B41b *2/08*
U.S. Cl. 101—31 **5 Claims**

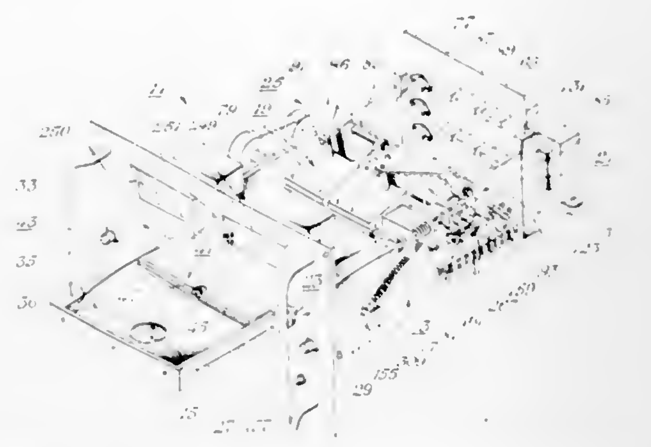


A high speed, high temperature embossing machine for embossing wood products and a high temperature embossing wheel therefor is disclosed. The embossing wheel is electrically heated by elements carried at the rim thereof to temperatures as high as 1,400° F.,and an embossing feed rate as high as 200 feet per minute may be employed. A large diameter hollow wheel filled with a thermally insulating material and a tapered, elongated shaft are employed to minimize heat transfer to the shaft bearings for high speed operation. Embossing wheel tilting and embossing wheel raising and lowering mechanisms are also disclosed.

3,791,291
DUAL PRINTING APPARATUS WITH SELECTIVE HAMMER ARMING MEANS

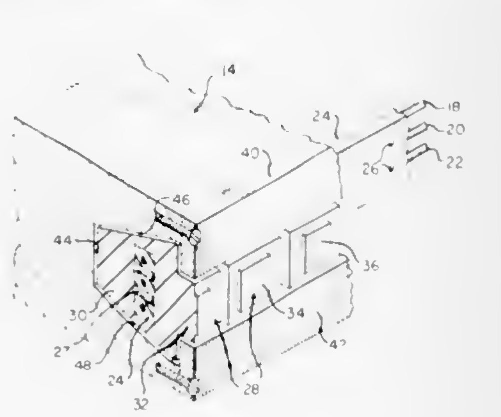
Charles W. Macune, and Walter J. Parrish, both of Fort Worth, Tex., assignors to Kodata, Inc., Ft. Worth, Tex.
Filed Feb. 26, 1973, Ser. No. 336,040
Int. Cl. B41j *45/00;* **G01d** *9/00*
U.S. Cl. 101—69 **22 Claims**

Apparatus for effecting two printing operations on a delivery ticket characterized by a dual printing mechanism having a ticket drawer into which the ticket is emplaced, the drawer being pushed inwardly into a plurality of positions. The inward movement of the drawer arms spring loaded print mechanism, including two print hammers, to deliver a striking force against the ticket to effect a printing from delivery data print wheels. The data print wheels contain product identification, transaction number, and number of units of quantity of product delivered. Also disclosed are specific embodiments enabling remote use of the dual printing mechanism, safety switches and specific structural features.



3,791,292
TYPE BELT FOR A BELT PRINTER

Melvin A. Soderstrom, and John W. Thomas, both of Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio
Continuation of Ser. No. 40,688, May 26, 1970, abandoned. This application Feb. 22, 1972, Ser. No. 228,415
Int. Cl. B41j *5/08*
U.S. Cl. 101—111 **1 Claim**



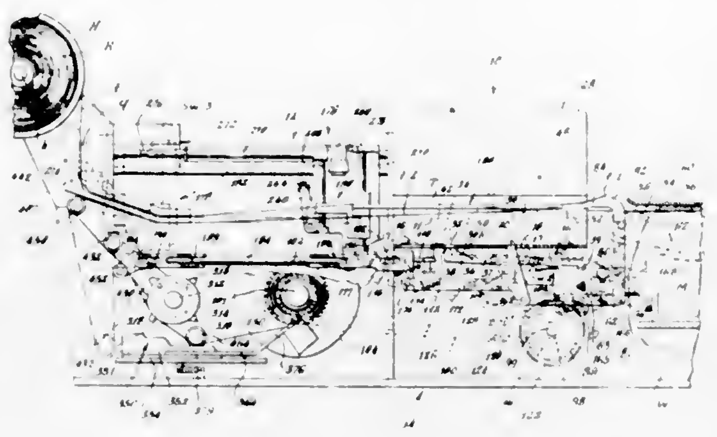
A low-cost type belt for a belt printer which includes non-extensible tensile members formed into a continuous loop and elastomeric character blocks secured thereto. The character blocks are equally spaced from one another and encapsulate the tensile members. Each block has a printing portion on which a character is formed and a driving portion enabling it to be driven by a complementary drive pulley.

3,791,293
PRINTING SELECTIVELY ON LETTERS OR ON TAPE WITH FLAT BED PRINTING MEANS

Andrew W. Rastorguyeff, Norwalk, and Frederick W. Uthenwoldt, Glenbrook, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.
Filed Mar. 18, 1971, Ser. No. 125,686
Int. Cl. B41f *13/24, 1/08*
U.S. Cl. 101—234 **18 Claims**

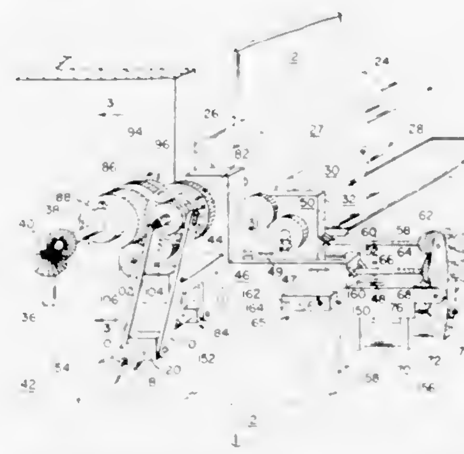
A machine for printing selectively on letters or on lengths of tape of the pressure sensitive adhesive type is provided by combining with a postage meter having flat bed printing means, tape supply and control means and a tape carrier

which is projectible into the throat of the postage meter to the printing station therein, and means responsive to the position of the tape carrier to condition the machine for ejecting printed letters or for advancing the printed end of a tape strip a predetermined distance to a position where it can be torn off, including means for taking up slack in the tape when the carrier is retracted in shifting from tape mode to letter mode operation.



3,791,294
PRINTING PRESS

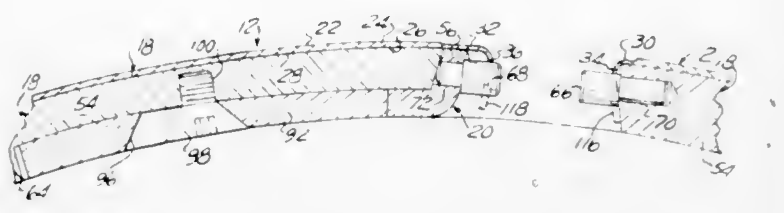
Geoffrey Harry Skelding, Old Swinford, England, and Wilbur G. Tracey, Beverly Farms, Mass., assignors to Gloucester Engineering Co., Inc., Gloucester, Mass.
Filed Jan. 17, 1972, Ser. No. 218,346
Int. Cl. B41f *13/24, 5/16;* **F16h** *3/10*
U.S. Cl. 101—248 **4 Claims**



Printing press improvements useful in flexographic printing. A register control device comprises first and second freely rotatable gears, separate clutches alternatively securing one or other of the gears to a drive and a bridging shaft having gears meshed with both free gears. With clutch associated with first free gear engaged, drive train from first gear to driven roll results; alternatively with that clutch disengaged and other engaged, drive train from second free gear, through bridge shaft to first free gear to driven roll results. One gear train produces 1 to 1 surface speed ratio between plate and impression rolls, the other produces a register correction speed, off e.g. by 0.5 percent. Also shown are drive shaft directly driving the impression roll with free gears coaxial and free thereon; first free gear directly driving plate roll; and both clutches disengaged for stoppage. A register control system using two alternate drive trains, with speeds as above, includes normally engaging clutch in the 1 to 1 gear train and means for disengaging that clutch and engaging a clutch in the other gear train for a short duration, and then back to the original gear train. Shown are automatic means, preferably a timer, for controlling this cycle. A roll separation system includes a lever with inking slide assembly connected to a point further from lever pivot than plate roll, and looped chain drive driving the rolls irrespective of position of the lever.

3,791,295
SELF-TENSIONING PRINTING PLATE SADDLE

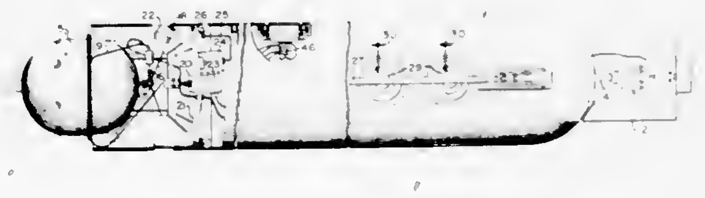
William H. Albright, 305 Ivanhoe Blvd., Orlando, Fla.
Filed Sept. 11, 1972, Ser. No. 287,965
Int. Cl. B41f *27/06*
U.S. Cl. 101—415.1 **4 Claims**



A semi-cylindrical adapter shell or "saddle," around which is bent a thin arcuate metal or plastic printing plate, and bolted in pairs to the cylinders of newspaper printing presses to replace the now obsolescent stereotypes, has transversely spaced pins on its opposite ends projecting through holes in the inwardly bent ends or flaps of the printing plate. The pins on the leading end are fixed whereas those on the trailing end are movable by being mounted on a transverse spring-loaded foot bar carried by arcuate guide arms slidable circumferentially in arcuate guide grooves in the saddle and urged circumferentially away from the saddle by springs which tightly stretch the printing plate circumferentially around the saddle in snugly fitting surface-to-surface engagement from end to end of the printing plate. A rotary cam tool insertable in a radial hole in the cylinder in the gap between the adjacent ends of a pair of saddles mounted on the cylinder enables the foot bar to be temporarily retracted during mounting of the printing plate on the saddle.

3,791,296
ICE DEMOLITION CHARGE

Charles C. Vogt, Bethesda; John W. Talcott, Decatur Heights; Donald M. Leslie, Silver Spring; Clark W. Dovell, Silver Spring, and Samuel J. Black, Silver Spring, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed July 27, 1960, Ser. No. 45,768
Int. Cl. F42b *22/00*
U.S. Cl. 102—10 **3 Claims**

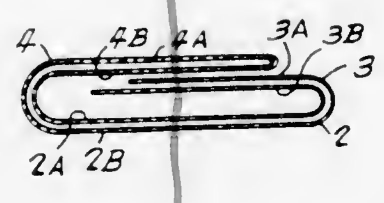


1. A surface seeking underwater demolition device capable of being ejected from a torpedo tube for blasting a passageway in an ice pack to allow an underwater craft to surface comprising a casing, a float removably attached to one end of said casing, said float causing the device to be buoyant so that it will rise to the underside of the ice pack, guide fins removably attached to the other end of said casing, a copious quantity of explosives located in said casing, a hydrostatically actuated switch in said casing, delay means actuated by said hydrostatic switch for delaying operation of said device a short period of time, a source of electrical power connected to one side of said delay means, an electro-responsive squib connected between the other side of said delay means and said source of electrical power, a releasing pistol located on said casing with said squib mounted therein, a connecting cable normally holding said float to said casing and passing through said releasing pistol, a cutter located in said releasing pistol for cutting said connecting cable when operated by said squib to release said

float, a standoff cable attached to said casing and said float for suspending said casing at a depth of several feet below said float, an electrical switch, pressure sensitive means for determining when the casing has been suspended below said float and for closing said electrical switch, and detonating means connected to said source of electrical power by said electrical switch for detonating the quantity of explosives.

3,791,297
EXPLOSIVE PACKAGE

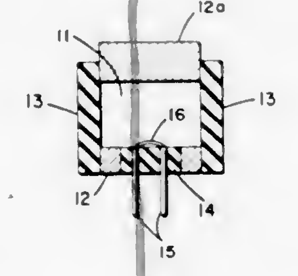
James Glen McKee, Chateauguay, Quebec, Canada, assignor to Canadian Industries, Limited, Montreal, Quebec, Canada
Filed Nov. 30, 1972, Ser. No. 310,887
Claims priority, application Canada, Dec. 15, 1971, 130230
Int. Cl. F42b *3/00*
U.S. Cl. 102—24 R **5 Claims**



A thermoplastic film package containing a blasting explosive is provided having particular utility in secondary blasting operations. The package is especially suitable for aqueous slurry blasting agents which are filled through a self-closing valved opening. The package is also provided in the form of a train of detachably connected side-by-side packages.

3,791,298
ELECTRICAL SWITCHING DEVICE EMPLOYING A VAPORIZABLE CONDUCTIVE ELEMENT

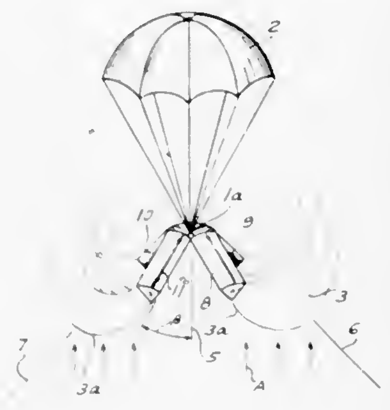
Philippe Paul Roger Armand Amberny, Bourges, France, assignor to Etat Francais, Paris, France
Filed Jan. 18, 1972, Ser. No. 218,847
Claims priority, application France, Jan. 18, 1971, 71.01517
Int. Cl. F42b *3/12*; **H01h** *37/76*
U.S. Cl. 102—28 EB **8 Claims**



An electrical switching device for causing a relatively large current to flow in response to a low voltage impulse comprising a cavity formed of two spaced electrodes surrounded by an insulating cylindrical member. At least one conductive element is located within the cavity and provided with leads extending through a removable insulating plug mounted within one of the electrodes. When a low voltage impulse is applied across the leads, the conductive element is vaporized forming an ionized gas within the cavity thereby permitting the flow of current between the electrodes.

3,791,299
DEVISIBLE PYROTECHNIC DEVICE

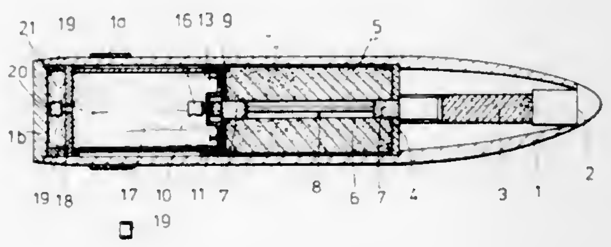
Bjorn Herman Olof Simmons, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden
Continuation-in-part of Ser. No. 93,995, Dec. 1, 1970, abandoned. This application July 31, 1972, Ser. No. 276,901
Int. Cl. C06d *1/10*
U.S. Cl. 102—35.4 **4 Claims**



An illuminating body which is attachable to a parachute is divided into a number of partial flares which slant outward from the axis of the body at given angles by virtue of the fact that an elongated body of pyrotechnic material is divided into a number of axial sections which fan out from a common connection at one end.

3,791,300
FLARE SHELL

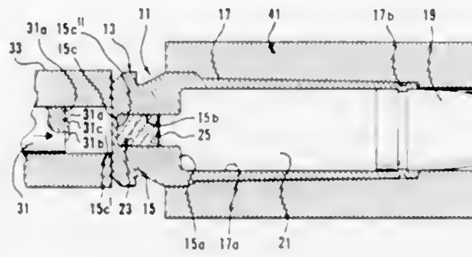
Jurgen Prochnow, Dusseldorf, and Walter Simon, Laurenberg/Aachen, both of Germany, assignors to Rheinmetall GmbH, Dusseldorf, Germany
Filed Sept. 5, 1972, Ser. No. 286,420
Claims priority, application Germany, Sept. 4, 1971, 2144400
Int. Cl. F42b *13/38*
U.S. Cl. 102—35.6 **5 Claims**



The invention concerns a flare shell, from the base of the case of which an internal appliance, consisting of a drogue parachute, a main parachute and a flare set, is ejected by means of an ejection charge which detonates the flare set, the internal appliance first being brought to a low speed of flight by the drogue parachute, whereupon the main parachute unfolds and floats to earth with the flare set.

3,791,301
INTEGRAL PRIMER CARTRIDGE

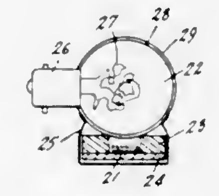
Nicholas J. La Costa, Phoenix, Md., assignor to AAI Corporation, Cockeysville, Md.
Continuation of Ser. No. 103,237, Dec. 31, 1970, abandoned. This application Feb. 20, 1973, Ser. No. 333,700
Int. Cl. F42b *5/28*
U.S. Cl. 102—45 **12 Claims**



A cartridge having a case with an anvil-less percussive ignition primer as an integral unitary part of the cartridge case, the case having a cup-shaped bore into which is compacted a primer mixture without an anvil.

3,791,302
METHOD AND APPARATUS FOR INDIRECT ELECTRICAL IGNITION OF COMBUSTIBLE POWDERS

Ian C. McLeod, 1950 Penobscot Dr., Okemos, Mich.
Filed Nov. 10, 1972, Ser. No. 305,374
Int. Cl. F42c *19/08*; **F23q** *7/00*; **F21k** *5/02*
U.S. Cl. 102—70.2 A **14 Claims**

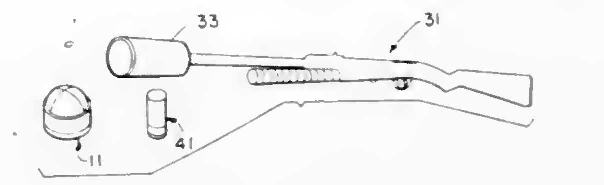


A method and apparatus for the ignition of combustible powders using transparently shielded sources of high intensity light pulses is described. Preferably, low actuating voltage, one shot or consumable photoflash lamps are used to generate a light pulse which is absorbed by the combustible powders and produces ignition. Particularly described is a flashbulb connected to a flashing circuit and a secondary circuit in the flashing circuit for intermittently or continuously conductively monitoring the firing status of the bulb prior to flashing. Particularly preferred combustible powders are nitrocellulose and/or black powders which because of their black color are particularly light absorptive. A photoflash igniter device for practicing the method is particularly described. The igniter and method are particularly useful for generating gas pressure waves which can be used for mass movement and/or forming.

3,791,303
DETERRENT AMMUNITION

Patrick E. Sweeney, Baltimore, and Robert W. Schneppe, Jr., Upperco, both of Md., assignors to AAI Corporation, Cockeysville, Md.
Filed Feb. 22, 1973, Ser. No. 334,808
Int. Cl. F42b *11/18, 11/36*
U.S. Cl. 102—92.7 **26 Claims**

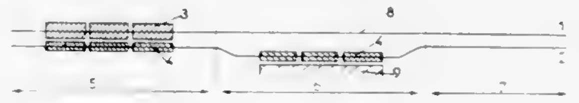
Deterrent ammunition, including a liquid-filled hollow ball of easily flexible plastic material, which is scored to form orange-peel-like rupture sections on impact with a target. The ball is releasably secured in cradled relation for launching in a



dual element sabot, including a cradle unit of low-density foam plastic with a rigid disc sabot backing element.

3,791,304
CONTINUOUS TRANSPORTATION INSTALLATION

Gerard Bardet, Paris; Jean Gayot, Meudon, and Vincent Bouee, Boulogne, all of France, assignors to Engins Matra, Paris, France
Filed Oct. 12, 1970, Ser. No. 79,759
Int. Cl. B61k *1/00*
U.S. Cl. 104—18 **14 Claims**



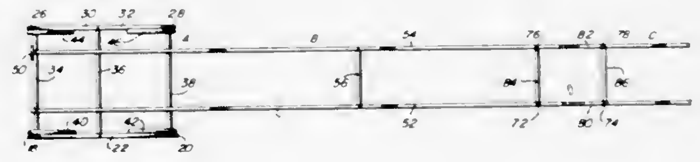
A continuous passenger transportation installation comprising conveyor trains circulating continuously, but not at uniform speed, and loader trains bringing passengers from platforms to the conveyors or from the conveyor trains to platforms.

Each conveyor is connected to a loader on at least one part of the journey between two stations to allow transfer of passengers between the two trains.

This installation also comprises driving means on board, and controls to ensure connection and separation of the two trains.

3,791,305
ROLLER COASTER

Edward M. Matelan, 3205 Eisenhower Dr., McKeesport, Pa.
Filed Dec. 29, 1971, Ser. No. 213,672
Int. Cl. A63g *21/04*
U.S. Cl. 104—69 **5 Claims**



An amusement device comprises a lightweight coaster adapted to move by gravitation along a track configuration having portions of varying inclination. The track is supported at its elevated end by an assembly which also serves as a mounting platform, and at a point intermediate its ends by another support structure. Spaced apart, substantially convex parallel rails, on which coaster wheels having a substantially concave circumferential groove therein are adapted to ride, form the track. The coaster is generally box-shaped, substantially enclosed at the top, and houses a compartment in which the occupant sits and which includes a handle-bar assembly and a coaster release handle to initiate coaster motion. The wheels of the coaster are adjustable to control their speed of rotation.

3,791,306
VEHICLE GUIDEWAY SWITCHING MECHANISM

3,791,308
MASS TRANSIT SYSTEM

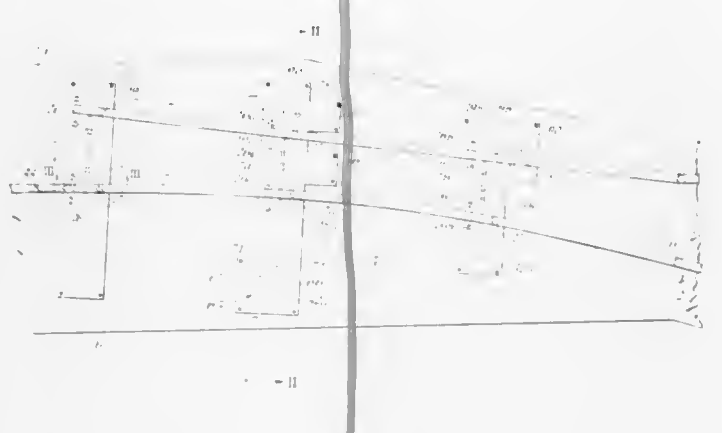
bility of the vehicle utilizing partial permanent magnetic forces and partial electromagnetic forces. The amount of vehi-

head suspended from an overhead transport carriage with the bulkhead supporting therefrom a lading engaging panel with

3,791,306
VEHICLE GUIDEWAY SWITCHING MECHANISM

Joseph F. Wagner, North Cape May, N.J., and Peter M. Noble, Valencia, Pa., assignors to Rohr Industries, Inc., Chula Vista, Calif.

Filed Oct. 18, 1971, Ser. No. 189,888
Int. Cl. B61b *13/04*
U.S. Cl. 104—130 **5 Claims**

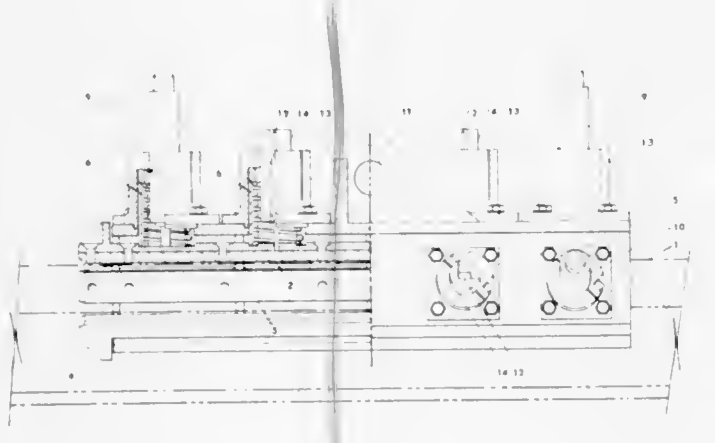


This disclosure relates to a guideway switch for self-guided vehicles having at least two selectable routes of travel The switch includes at least two movable guide beams each having one end pivotally connected with the stationary guide rails of a roadway having a horizontal supporting surface on each side of the guide rails. A plurality of wheeled carriers are disposed below the horizontal supporting surfaces and are guided by a trackway. Each wheeled carrier includes a vertically adjustable support which has one end rigidly connected to the movable guide beams and which has the other end rotatably and slidably connected to the wheeled carrier. An actuating means includes an electric motor which drives a ball bearing screw drive mechanism. The screw drive mechanism moves the wheeled carriers and, in turn, shifts the movable beams to selected positions to establish the desired route of travel over the roadway for the self-guided vehicles.

3,791,307
RAIL CAR SLIPPER

Lindsay M. Applegate, Paradise, Calif., assignor to Cushion Rail International, Inc., Roseville, Calif.

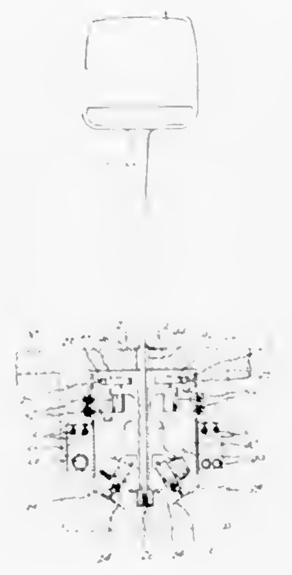
Filed Apr. 3, 1972, Ser. No. 240,744
Int. Cl. A63g *21/00*
U.S. Cl. 104—134 **2 Claims**



An assemblage of frame, sliding shoes, control springs and control elements for bearing the weight of a car sliding on rails and for guiding and stabilizing the car on the rails.

3,791,308
MASS TRANSIT SYSTEM

Billy J. Hartz, 4016 N. E. 110th, Seattle, Wash.
Continuation of Ser. No. 77,060, Oct. 1, 1970, abandoned. This application Mar. 23, 1973, Ser. No. 344,092
Int. Cl. B61d *5/00;* **B60v** *1/00*
U.S. Cl. 104—139 **17 Claims**



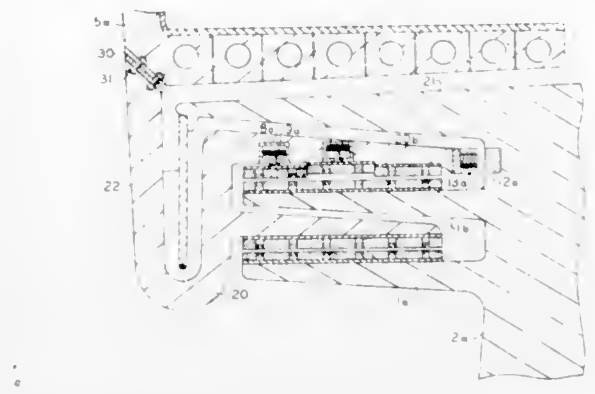
A mass transit system compatible with existing right-of-way usages is described. A self-propelled carriage mechanism supports the passenger compartment in both the vertical and horizontal planes by means of a vertical strut, with the passenger compartment positioned substantially above the running gear. The running gear travels within an entrenched passageway having a narrow slit at the top of the strut connecting the passenger compartment and the running gear. The top surface of this passageway is suitable for use by surface traffic and a flexible closure member may be utilized to close the slit prior to and subsequent to passage of the mass transit vehicle. The passenger compartment is positioned far enough above the running gear so as to clear surface traffic and to avoid collision of the passenger compartment with other vehicles occupying the right-of-way. The entrenched passageway in which the running gear operates may be positioned in the center of a roadway between the lanes of traffic, at the edge thereof or in other right-of-way locations, as desired. Switching mechanisms are provided so that the invention may be used in feeder and trunk line-type applications as well as loop-type and car reversal methods of use.

3,791,309
MEANS TO GUIDE AND SUSPEND A VEHICLE BY MAGNETIC FORCES

Max Baermann, 506 Bensberg, Germany

Filed Sept. 17, 1971, Ser. No. 181,523
Claims priority, application Germany, Jan. 19, 1971, 2100839
Int. Cl. B61b *13/08*
U.S. Cl. 104—148 MS **17 Claims**

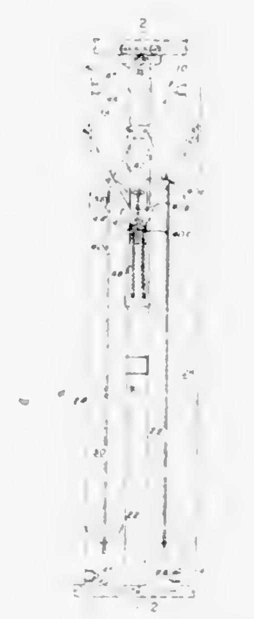
The invention relates to a structure to guide and support a vehicle by magnetic forces which utilizes the repulsive properties of permanent magnets attached to the vehicle and to the support in such a way that like poles are facing each other, which poles extend in the direction of motion, and are of alternating polarity transversely to the direction of motion. The relationship of the permanent magnets to achieve optimum suspension without generation of eddy currents and hysteresis losses is important. Further, the invention achieves lateral stability of the vehicle utilizing partial permanent magnetic forces and partial electromagnetic forces. The amount of vehicle support by the permanent magnets is mechanically controllable to compensate for environmental factors



3,791,310
PNEUMATIC SAFETY SYSTEM FOR VEHICLE LADING

Russell M. Loomis, Palos Heights; Samuel H. Enochian, Thornton, and Gerald R. McLaughlin, Chicago, all of Ill., assignors to Unarco Industries, Inc., Chicago, Ill.

Filed Oct. 28, 1971, Ser. No. 193,257
Int. Cl. B60p *7/14,* **B61d** *45/00*
U.S. Cl. 105—369 BA **12 Claims**



A pneumatic force-absorbing bulkhead system for use in freight carrying vehicles is provided by a central bulkhead with lading-engaging panels disposed on opposite sides of the bulkhead with inflatable envelope means positioned between the bulkhead and each of the panels. Y-shaped linkages between the bulkhead and each panel serve to both support the panel from the bulkhead and permit each panel to pitch independently relative to vertical planes, and means are provided on the bulkhead tending to bias each of the panels toward an inoperative position adjacent the bulkhead Only a single carriage assembly for the bulkhead supports the entire arrangement including the panels.

3,791,311
PNEUMATIC SAFETY SYSTEM FOR VEHICLE LADING

Russell M. Loomis, Palos Heights, Ill., assignor to Unarco Industries, Inc., Chicago, Ill.

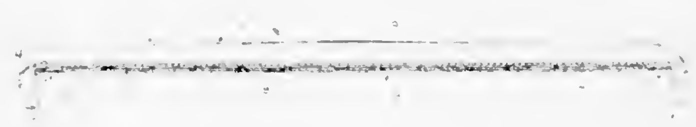
Filed Oct. 28, 1971, Ser. No. 193,384
Int. Cl. B60p *7/14;* **B61d** *45/00*
U.S. Cl. 105—369 BA **14 Claims**

A pneumatic force-absorbing bulkhead system for use in freight carrying vehicles is provided by a load-absorbing bulkhead suspended from an overhead transport carriage with the bulkhead supporting therefrom a lading-engaging panel with inflatable-envelope means carried by the bulkhead and disposed between the bulkhead and panel. Y-shaped linkages provide a simplified support and expanding linkage between the bulkhead and panel, and in one preferred form the linkage connects adjacent the upper edge of the panel and to the bulkhead to provide means for maintaining the upper edge of the panel substantially within a horizontal plane as the panel moves toward and away from the bulkhead while permitting the panel to pitch relative to a vertical plane, through the pivot connection of the linkage to the panel, to permit the panel to conform to the side of the lading being engaged by the panel.

3,791,312
FREIGHT CAR END CONSTRUCTION

Richard C. Snyder, Michigan City, and Donald C. Bodinger, Portage, both of Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Jan. 3, 1972, Ser. No. 214,992
Int. Cl. B61d *17/18*
U.S. Cl. 105—423 **7 Claims**



In a railroad freight car, an end lining on which corrugated sheet is mounted, the end lining comprising a plurality of upright transversely elongated tubular members filled with pulverant materials such as sand or the like, and wherein the adjustable closure member on each lateral side of the end lining being laterally adjustable for attachment to the corner posts of the car, such closure member also being filled with said pulverant material.

3,791,313
WINDBREAKERS ADJUSTABLE MIRROR FOR RAILWAY LOCOMOTIVES

Ralph A. Boudinot, 3002 Robinhood Rd., Houston, Tex.

Filed May 30, 1972, Ser. No. 257,856
Int. Cl. B61c *17/00,* **B61d** *49/00;* **B61k** *13/00*
U.S. Cl. 105—456 **7 Claims**

Windbreaker and adjustable mirror apparatus for the cabs of railway locomotives, mountable at the forward side of the cab window on either side of the cab, for preventing wind dust, rain, and snow from blowing into the cab and from blow-

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via emitted therefrom and includes as a part of the system

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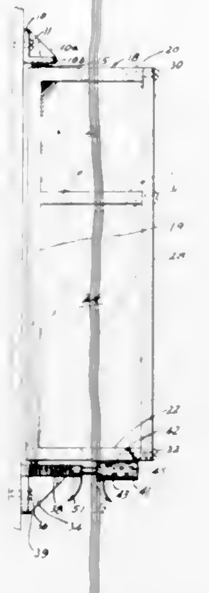
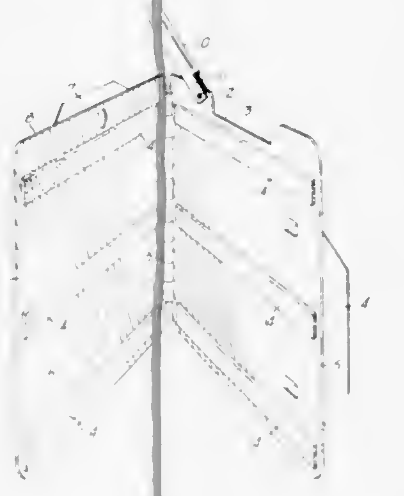
and an afterburner. Refuse is fed into the main combustion supported below the exhaust opening to divert upwardly moving on persons within the cab. The windbreakers have transparent glass at their lower portions, and have mirrors at their



upper portions to serve as rearview mirrors. In one form the rearview mirrors are angularly adjustable.

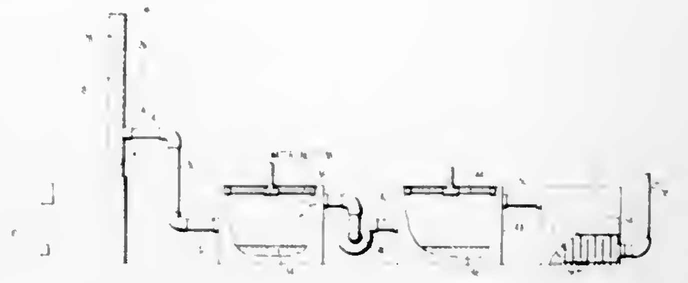
3,791,314
LAP BOARD FOR FLIGHT PERSONNEL
Philip L. Berretta, Castro Valley, Calif., assignor to Donald W. Stegeman, Santa Rosa, Calif.
Filed Feb. 22, 1972, Ser. No. 227,911
Int. Cl. A47b *37/00*
U.S. Cl. 108—43 **2 Claims**



A foldable lapboard which has on its outside a clip to hold flight charts and another clip to hold a tablet, which is so hinged that when unfolded it forms a single board exposing said chart clip and tablet clip for convenient use; means are provided to lock the board in open position, and friction pads of the inner surfaces are exposed on the bottom of the extended board to prevent the slipping of the board from the lap of the pilot.

3,791,315
ANTI-POLLUTION DEVICE
Vernie Curtis, Rt. 2, Beaver Dam, Ky.
Filed July 8, 1971, Ser. No. 160,700
Int. Cl. F23g *3/00*
U.S. Cl. 110—8 R **14 Claims**

The invention relates to an anti-pollution system for removing pollutants from the operation of a furnace and includes a power operation recovery and extraction system for the effluvia emitted therefrom and includes as a part of the system fluid treatment chambers and a plurality of filters which form



the precipitator-collector means, the various embodiments being combinable with a superheater construction

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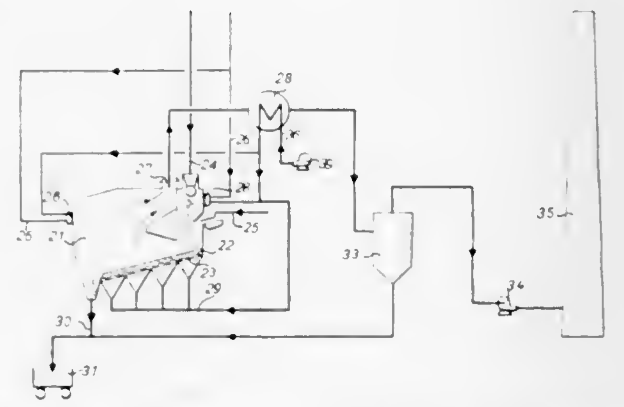
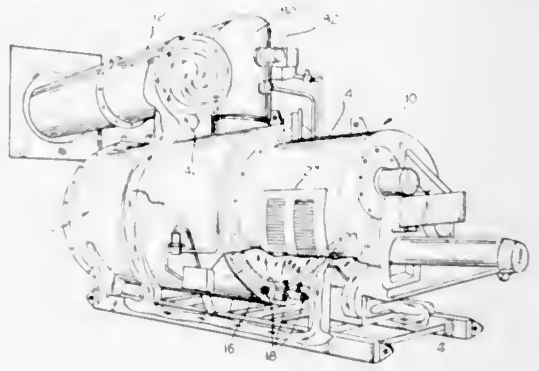
3,791,316
APPARATUS FOR BURNING WASTE MATTER
Conrad Sigg, Ackermannstrasse 22, Zurich, Switzerland
Filed Mar. 30, 1972, Ser. No. 239,418
Claims priority, application Switzerland, Apr. 29, 1971, 6300/71
Int. Cl. F23g *5/00*
U.S. Cl. 110—8 R **8 Claims**



Apparatus for burning waste matter in a combustion chamber comprising a feed bed with a plurality of stepped sections. Combustion air is introduced in the region of the transition from one stepped section to the next. The upper sides of the stepped sections are closed and the sections lie on an inclined frame which is connected to a vibrator.

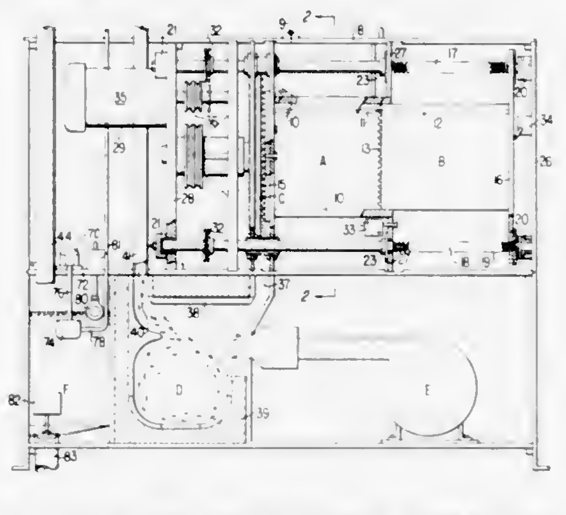
3,791,317
INCINERATOR
Donald J. Schrage, Germantown, and Edward G. Giery, Jr., Glendale, both of Wis., assignors to Aqua-Chem, Inc., Milwaukee, Wis.
Filed May 3, 1972, Ser. No. 249,945
Int. Cl. F23g *5/00*
U.S. Cl. 110—8 R **9 Claims**



An incinerator having a support assembly structure which also conducts combustion air to a main combustion chamber

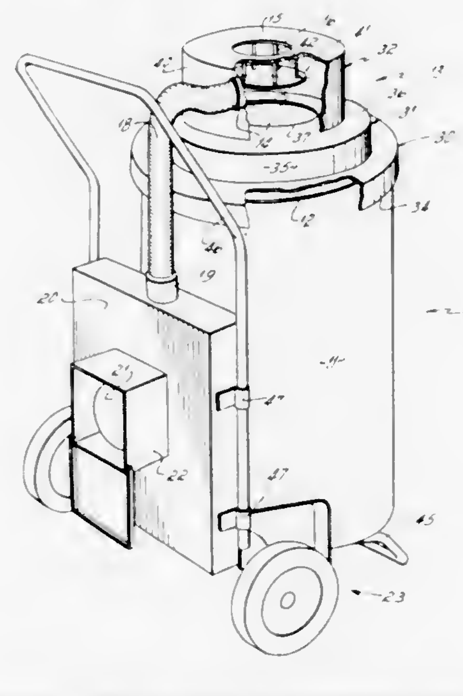
and an afterburner. Refuse is fed into the main combustion chamber by a compactor which includes a refuse receiving chute having a wall which pivots for refuse compaction. The afterburner air feed system includes a first tangential set of air passages for gas mixing, a venturi section to create a positive draft, and a combustion air feed system. A temperature control regulates the air feed and afterburner temperature by adjusting air feed and fuel.

3,791,318
APPARATUS FOR PULVERIZING AND INCINERATING HOUSEHOLD WASTE
Israel Oseroff, 6530 Northumberland St., Pittsburgh, Pa., and Rocco M. Yallum, 115 Tilford Rd., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 248,923, May 1, 1972, abandoned. This application Mar. 30, 1973, Ser. No. 346,620
Int. Cl. F23g *5/12*
U.S. Cl. 110—8 R **11 Claims**



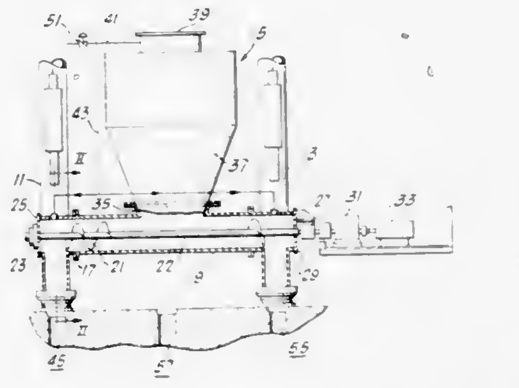
Apparatus for totally reducing refuse, such as paper, cardboard, plastics, tin cans and glass, into a granular state of such fine grit that it can then be explosively ignited and reduced further to a smokey remain. This smokey remain is then condensed by a chemical wash and directed to a liquid tank, from which the liquid is flushed away into the sewage system.

3,791,319
INCINERATOR
David H. Trott, Cincinnati, Ohio, assignor to Burns Investment Corp., Cincinnati, Ohio
Filed May 25, 1972, Ser. No. 256,825
Int. Cl. F23g *5/00*
U.S. Cl. 110—18 R **6 Claims**



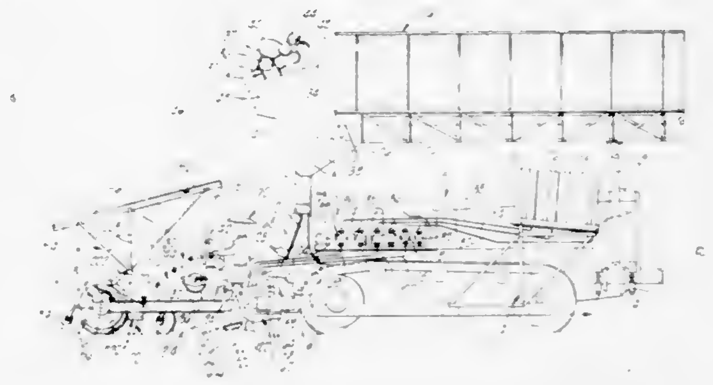
An incinerator whose top has a tangential inlet for combustion air and a central exhaust opening. A baffle plate is supported below the exhaust opening to divert upwardly moving particles to the perimeter of the top, thereby increasing their residence time and hence the completeness of their combustion. A blower is mounted on the outside wall of the plenum chamber adjacent the combustion chamber. The blower drives air through the plenum chamber to the inlet.

3,791,320
POLLUTION-FREE COAL CHARGING APPARATUS
Ward F. Gidick, West Newton, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.
Filed Dec. 20, 1972, Ser. No. 317,077
Int. Cl. F23k *3/00*
U.S. Cl. 110—101 R **6 Claims**



A coal charging larry car is provided with a combination lid lifting and drop sleeve apparatus that provides a gas-flow passageway from an oven to be charged with coal to another oven twice removed in which coal is coking. A reversible screw conveyor feeds coal into either oven as preferred.

3,791,321
AUTOMATIC PLANTING SYSTEM
Masato Tsutsumi, Kahului, Hawaii, assignor to Maui Land & Pineapple Company, Inc., Kahului, Maui, Hawaii
Filed Apr. 5, 1972, Ser. No. 241,349
Int. Cl. A01c *11/00*
U.S. Cl. 111—3 **24 Claims**



A system for automatically planting pineapple plants or the like combining into a single continuous operaton the steps of applying fertilizer and fumigants to the soil, laying mulch paper on the ground and planting the plants either as crowns, slips or suckers. The apparatus, which includes two independent planting machines, lays the plants in multiple rows having crowned beds separating the rows. Because the configuration of the machines, they can accommodate varying terrain and differing grades as well as curving the rows without difficulty. Pre-punched mulch paper is fed from a roll over a supporting deck where individual plants are inserted by hand through the hole in the paper. The deck is provided with channels to accommodate the stub ends of the plants. The deck is slanted toward the ground and the channels extend to form plow shares whereby the mulch paper with the plants inserted is fed

3,791,328

toward the ground off the back of the plowshares so that the point of plant insertion into the soil is located immediately behind the plow where the furrows are open. The apparatus is coupled to a prime mover at one end and supported by a number of drive wheels at the other, the wheels of each machine being differentially powered by an hydraulic system whereby the wheels are always driven at a ground speed equal to that of the prime mover. The wheels supporting the back end of the machines properly gauge the plows to give uniformly deep furrows regardless of any unevenness of the terrain and the wheels are so spaced as to engage the mulch paper strips along the edges thereof to drive out the paper at actual ground speed. The supporting wheels also form a tuck on the edge of the paper and compact the soil around the seeds. Tuck improves paper covering. A floating set of driven moon wheels mounted at the back end form the crowned beds between the rows and compact the soil around the plants. Presser wheels are also provided to assure proper insertion of the plants into the furrows.

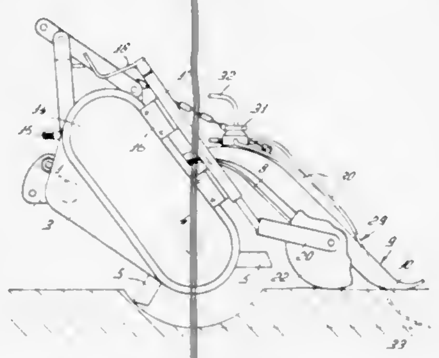
3,791,322
DEVICES FOR INTRODUCING PLANT GROWTH STIMULANTS, PARTICULARLY FERTILIZERS

Ary van der Lely, 10 Weverskade, Maasland, and Cornelis Johannes Gerardus Bom, 36 Esdoornlaan, Rozenburg, both of Netherlands

Division of Ser. No. 134, Jan. 2, 1970, abandoned. This application Feb. 8, 1972, Ser. No. 224,592

Int. Cl. A01c *23/02*

U.S. Cl. 111—7 **10 Claims**



A device for introducing substances, such as fertilizers in the soil includes a wheeled frame supporting a dispenser with a soil penetrating tube and a soil working member that subsequently agitates the soil to prevent the substances from escaping the soil.

3,791,323
LONG SEAM MACHINE

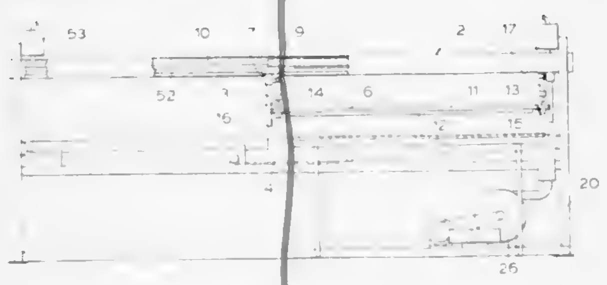
John Oliver Pierson, 25 Downs Park West, Bristol; Roger Douglas White, 36 Horse St., Chipping Sodbury, and Bertram Keith Brown, Myllendonk, Medway Dr., Keynsham, all of England

Filed Nov. 29, 1972, Ser. No. 310,456

Claims priority, application Great Britain, Dec. 1, 1971, 55828/71

Int. Cl. D05b *21/00*

U.S. Cl. 112—121.15 **10 Claims**



A long seam apparatus comprising loading and seaming stations for seaming sheet material, having a seaming device at the seaming station and a feeding device at the loading station. The feed device has a drive member and a driven member; the drive member being movable between an idle position in which the drive and driven members are out of contact, and a drive position in which the drive and driven members are in driving engagement with material supplied to the feed device gripped between the drive and driven members which are thereupon movable from the loading station to the sending station.

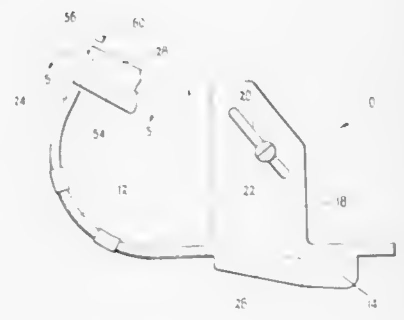
3,791,324
FOLDING MECHANISM

Charles R. Shulman, Swampscott, Mass., assignor to Randy Mfg. Co., Inc., Randolph, Mass.

Filed Sept. 8, 1972, Ser. No. 287,478

Int. Cl. D05b *35/06*

U.S. Cl. 112—138 **4 Claims**



A means for continuously folding a fabric band into a shape adapted for edging fabric material. The mechanism includes an elongated guide plate having a series of retaining means for securing the band against the guide plate as it moves lengthwise. A first fold means bends or folds opposite edges of the band towards one another and over a core element. A second fold means or former which is positioned at the end of the guide plate to receive the twice-folded band, includes a narrow channel adapted to receive a portion of the band intermediate the two first-formed folds to effect a third fold.

3,791,325
SEWING MACHINE

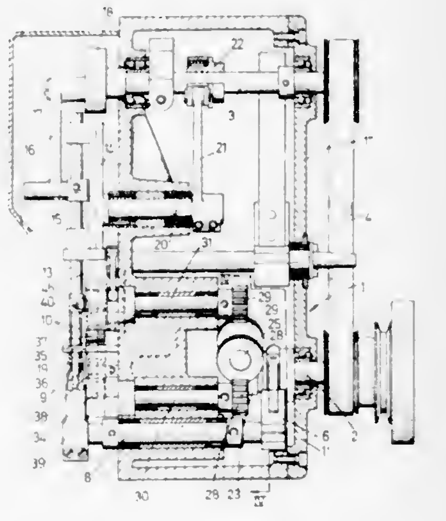
Alphose De Koninck, Avenue Sleeckx 84, Schaerbeek, Belgium

Filed May 9, 1972, Ser. No. 251,643

Claims priority, application Belgium, June 7, 1971, 104320

Int. Cl. D05b *27/10, 27/20*

U.S. Cl. 112—213 **4 Claims**



A sewing machine with a pair of wheels for conveying material layers to be joined by stitching. The conveying wheels are arranged in the stitch-forming area with each wheel associated with a member for driving said wheel continuously with the same peripheric speed. To the needle block are associated members driving said block alternately along the conveying direction. One of said wheels is retractable to allow feeding of the material layers to be joined by stitching

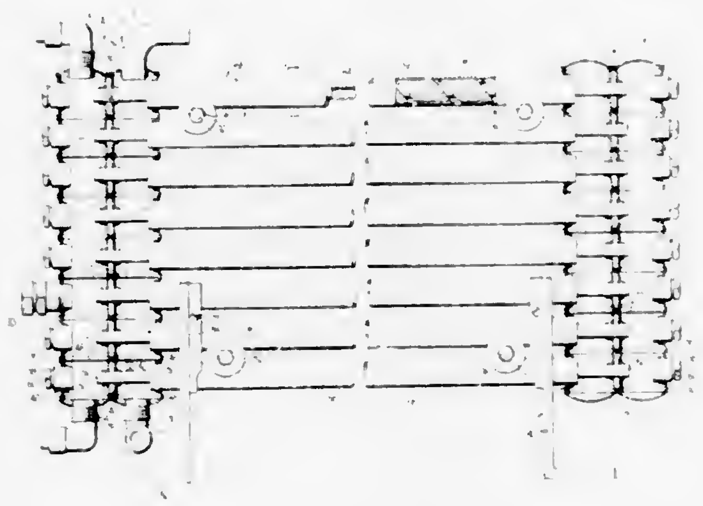
3,791,326
METHOD OF FORMING A MODULAR HEADER FOR A TUBE WITHIN A TUBE HEAT EXCHANGER

Leonard H. Schwarz, West Hartford, Conn., assignor to Dunham-Bush, Inc., West Hartford, Conn.

Division of Ser. No. 52,902, July 7, 1970, Pat. No. 3,705,622. This application Dec. 8, 1971, Ser. No. 205,986

Int. Cl. B21d *53/02*; **B23p** *15/26*

U.S. Cl. 113—118 R **2 Claims**



Inner and outer headers at both ends of a tube within a tube heat exchanger are formed of a plurality of axially stacked and brazed drawn metal tubular shell segments. Segments for all headers are identical and carry axially aligned large diameter and small diameter holes on opposite sides thereof for facilitating reception of the inner tube coupling the outer headers and the outer tube coupling the inner headers as well as bushings receiving removable plugs to facilitate cleaning of the interior of the inner tubes of the heat exchanger tube assemblies.

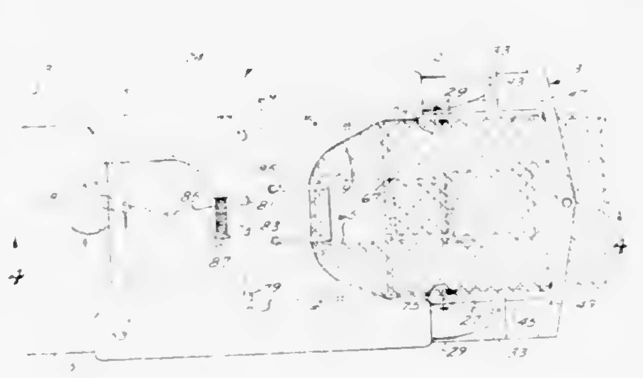
3,791,327
MARINE DIVER VESSEL

Frank P. Deveney, 5141 Carita, Long Beach, Calif.

Filed Mar. 29, 1972, Ser. No. 239,235

Int. Cl. B63g *8/00*

U.S. Cl. 114—16 R **6 Claims**



A marine diver vessel including a buoyed frame having a diver's well suspended therefrom for normal submersion beneath the surface of the water. A motor is mounted on the frame and a steering handle is accessible from the well so a diver can partially submerge in such well and perform such functions as strapping an aqua lung to his back while being protected from the surrounding environment and can also steer the vessel from such well.

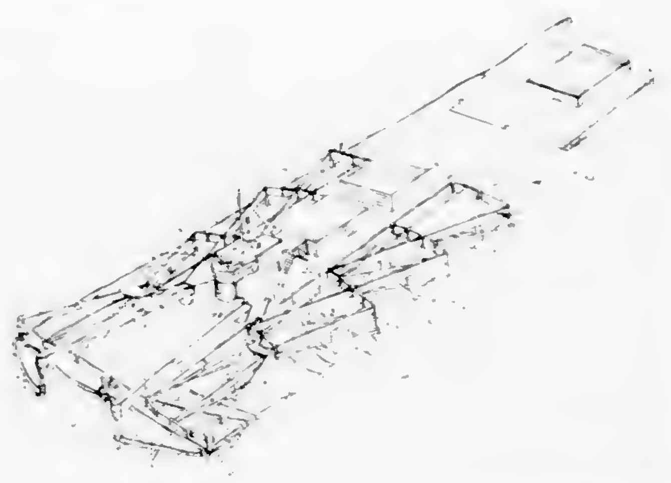
3,791,328
ICE REMOVAL TRACK

Joseph F. Schirtzinger, Pasadena, Calif., assignor to Air Logistics Corporation, Pasadena, Calif.

Filed June 19, 1972, Ser. No. 263,988

Int. Cl. B63b *35/12*

U.S. Cl. 114—42 **7 Claims**



There is provided a system for cutting thin ice ahead of a vessel into essentially triangular shaped blocks and moving the ice blocks under the surface of the ice. The system consists essentially of a centrally located ice cutter mounted on a vessel, two pivoting ice cutters which traverse a path between the central ice cutter and the extremities of an expanded framework mounted on port and starboard sides of the vessel. Each framework also contains a cutter which intersects the path cut by the traversing ice cutters. By their cooperative action, the ice is cut into a series of triangular shaped blocks which separate the blocks about the centerline of the vessel. The framework on the port and starboard sides of the vessel then acts to progressively move the blocks away from the vessel and under the surface of the ice providing an open water path through the ice which exceeds the width of the path provided.

3,791,329
LIFT STRUCTURE

Paul F. Bruning, Altadena, Calif., assignor to Electronic Machining Company, Pasadena, Calif.

Continuation-in-part of Ser. No. 4,796, Jan. 22, 1970, Pat. No. 3,653,609. This application July 12, 1971, Ser. No. 161,443

Int. Cl. B63b *1/20*

U.S. Cl. 114—66.5 R **17 Claims**

A lifting body in the general form of approximately a semicylinder is connected to the fuselage of an aircraft for providing lift during flight. The lifting surface is substantially free of camber and is concave on its lower face in a direction transverse to the flight direction so that with a small angle of attack a large volume of air is effectively trapped beneath the lifting body, and the side edges minimize loss of air laterally thereby providing lift over substantially all of the lifting surface. The lifting body has a length along the direction of flight greater than the width transverse to the direction of flight for providing a low aspect ratio. Conventional elevators and a rudder are provided for control. In another embodiment the lifting body is formed in a helical shape for acting in the manner of a propeller and in another embodiment a fuselage is integrally connected with the lifting body in an arrangement where the lifting body also has capacity for helium for lighter than air flight.

In another embodiment the lifting body is provided along each side edge of a boat so as to provide lift as the boat moves through the water. In such an arrangement the lifting body is substantially continuously wetted and only incidental entrained air may be present on the convace lower face. In still another embodiment, a propeller incorporating principles of this invention has several lifting bodies arranged in a circular path for high thrust.

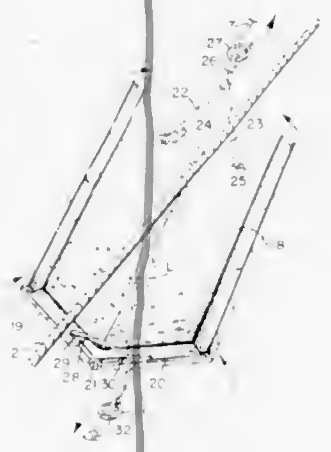
3,791,330
STAY CLEANING DEVICE HAVING A FOLDABLE SPONGE

Raymond E. Haddad, 18054 Bluesail Drive, Pacific Palisades, Calif.

Filed Dec. 6, 1972, Ser. No. 312,689

Int. Cl. B63b *59/00*

U.S. Cl. 114—221 **7 Claims**



A sponge is mounted on base members in such a manner that it may be folded into a V-shape. A sailboat stay or guy wire can be received between the opposing surfaces of the sponge when folded into a V shape so that movement of the sponge along the stay or guy wire will clean the same. The base members supporting the sponge are coupled to a halyard line at one end and a tether line at the other end in such a manner that pulling on the halyard tends to close the base members and sponge into the V-shape to apply a wiping force against the stay. By using the halyard to pull the device along the stay over the length of the stay, the necessity of a person climbing up the mast of the sailboat to clean the stay is avoided.

3,791,331
ELECTRIC OUTBOARD MOTOR

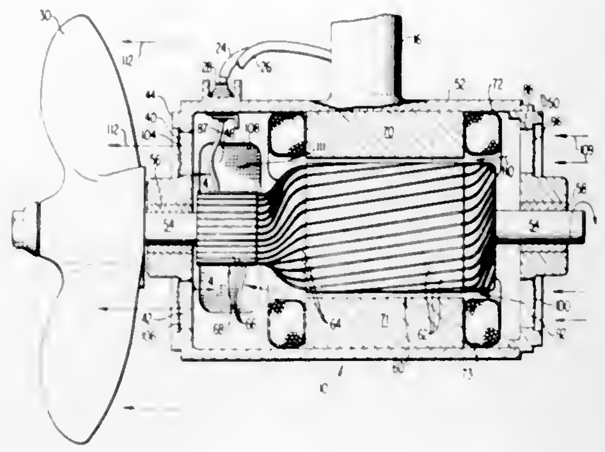
Earl H. Dilley, 5900 Chestnut Hill Rd., College Park, Md.

Continuation-in-part of Ser. No. 113,411, Feb. 8, 1971. This application May 5, 1972, Ser. No. 250,542

Int. Cl. B63h *21/26*

U.S. Cl. 115—17 **15 Claims**

A battery-operated submersible electric outboard motor having apertures in the motor housing which permit the environmental water in which the boat is floating to flow through the internal motor structure in direct contact with the field and rotor, and with the uninsulated commutator and brush assemblies.



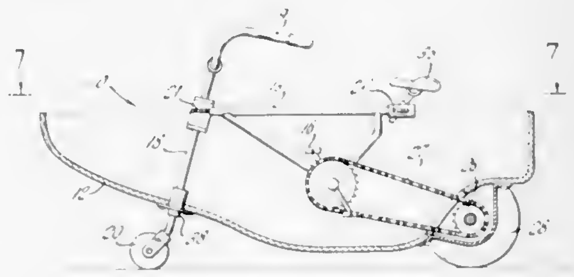
3,791,332
WATER BIKE

Mohammed S. Gof, 89 Haledon Ave., Paterson, N.J.

Filed June 1, 1971, Ser. No. 148,526

Int. Cl. B63h *16/00*

U.S. Cl. 115—27 **2 Claims**



A vehicle in the form of a water bicycle for use either over land or water, which comprises the combination of a pair of passenger-carrying side boats operably connected with a centrally disposed bicycle member that provides the necessary driving force to propel the vehicle over land and water and alternatively, a single passenger-carrying boat propelled by a bicycle centrally disposed therein.

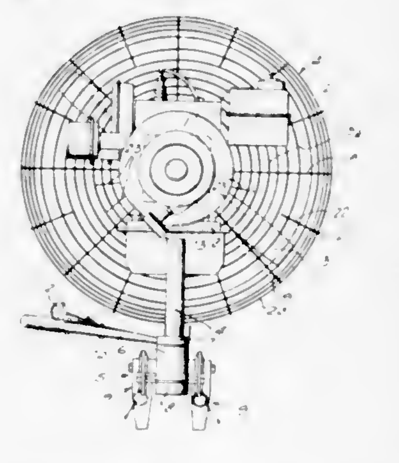
3,791,333
AIR MOTOR

Joseph D. Losch, Mechanicsburg, Pa., assignor to Susquehanna Air Motors, Inc., Mechanicsburg, Pa.

Filed June 5, 1972, Ser. No. 259,748

Int. Cl. B63h *7/02*

U.S. Cl. 115—34 R **12 Claims**



A guard structure for the air-moving propeller of a marine air motor for over-water propulsion utilizing a combustion engine operatively connected to such propeller for rotating the same, in which the guard structure is constructed from wire stock and provided with a configuration to operatively enclose the propeller at opposite sides and at the outer ends of the propeller as it rotates, the guard being constructed from wire stock formed into a plurality of convolutions connected by radially extending reinforcing ribs of wire stock, with the ribs being rigidly secured to the respective convolutions at their intersections therewith, the convolutions of the guard structure comprising at least two groups, each having a plurality of convolutions, with the convolutions of each group being formed from a respective single length of wire stock to form a vibration-resistant structure, the convolutions and ribs of the guard structure being provided with a coating of suitable material operable to protect the wire stock forming the structure from exposure to the elements and simultaneously therewith reduce noise resulting from the flow of air through the guard structure.

3,791,334
BOAT REVERSE

Richard E. Wetzel, 5301 University Ave., Lubbock, Tex.

Filed Feb. 5, 1973, Ser. No. 329,833

Int. Cl. B63h *25/48*

U.S. Cl. 115—35 **6 Claims**

A deflector is mounted for vertical reciprocation upon the transom of an inboard motor boat with fixed propeller. A vane within the deflector directs water to the port or starboard water course for steerage.

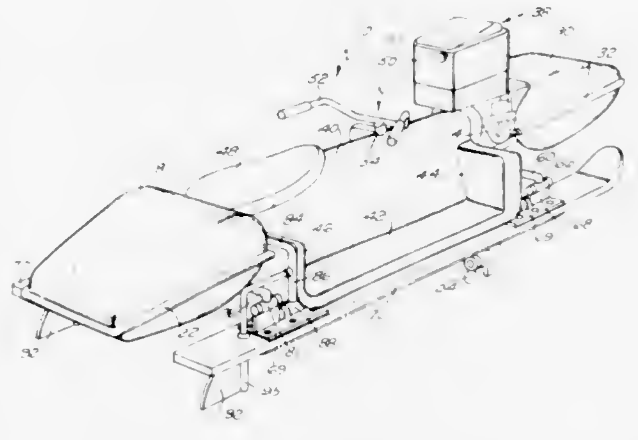
3,791,335
SELF-PROPELLED WATER RECREATIONAL VEHICLE

Michael Del Vecchio, 140 Regent Ave., Providence, R.I.

Filed July 12, 1972, Ser. No. 271,113

Int. Cl. B63b *35/00*

U.S. Cl. 115—70 **9 Claims**



A self-propelled recreational vehicle for use in water and including spaced skis that are interconnected for pivotal movement, the pivotal movement of the skis being accomplished by a steering mechanism interconnected thereto; and a motor assembly mounted on a support to which the skis are interconnected and extending between the skis to provide the propelling movement for the device.

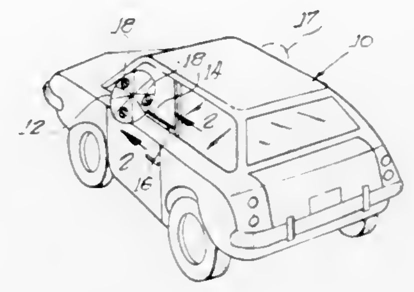
3,791,336
TRAFFIC SIGNALING DEVICE FOR VEHICLES

David M. Zdebski, 5416 S. Nordica Ave., Chicago, Ill.

Filed July 26, 1973, Ser. No. 382,774

Int. Cl. B60q

U.S. Cl. 116—28 R **16 Claims**



The embodiment of the invention disclosed herein is directed to a traffic signaling device for vehicles which includes a bracket having a first end arranged for connection to the upper free exposed edge portion of a partially opened side window of the vehicle. The bracket has the second end thereof arranged for connection in a simple and easy manner to the distress signaling reflective warning device. A collapsible distress signaling reflective warning element is formed of a plurality of triangularly shaped segments, each segment including a given apex thereof in common registry with other segments so that the plurality of triangularly shaped segments can be secured together at the given apex by means of a locking bolt or rivet. A mounting bar is also secured to the locking bolt or rivet and provides means for connection to the bracket which, in turn, provides a relatively small, collapsible and somewhat compact and easily partially disassemblable structure which can be stored when not in use in small places such as glove compartments, or the like, and which can be opened and placed in a signalling location on the window from inside the vehicle without the driver having to exit from the vehicle.

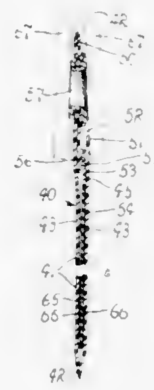
3,791,337
SIGNALING DEVICE

Charles H. Schamblin, 1714 South M St., Bakersfield, Calif.

Filed Feb. 26, 1973, Ser. No. 335,658

Int. Cl. B60q

U.S. Cl. 116—28 R **1 Claim**



A signaling device for a vehicle having a flexible envelope with transparent walls, a sheet of luminous material housed within the envelope in registry with the walls, and a bracket for fastening the envelope on a vehicle in a position to be fluttered by movement through the air.

3,791,338
BOOM ANGLE INDICATOR

3,791,340
METHOD OF DEPOSITING A METAL PATTERN ON A

3,791,342
SELECTIVE COATING

Lynn Forrest Boyer, Reading, and Anderson Forbes Johnson,

3,791,344
APPARATUS FOR LIQUID PHASE EPITAXY

Wolfgang Gramann, Gemunden, Germany, assignor to Licen-

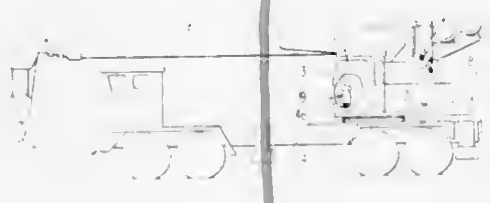
3,791,338
BOOM ANGLE INDICATOR

Joseph H. Keller, Jr., Hagerstown, Md., assignor to Walter Kidde & Company, Inc., Clifton, N.J.

Filed July 11, 1972, Ser. No. 270,671

Int. Cl. G09f *9/00*

U.S. Cl. 116—124 F **9 Claims**



A boom angle indicator for mobile construction cranes and the like embodies a sending unit mounted directly on the boom pivot shaft and a coacting boom angle display unit in the operator's cab. The two units are operatively coupled through a simple push-pull cable with substantially zero play or backlash. The indicator includes means to compensate for a non-level condition of the crane carrier, whereby the indicated boom angle is referenced to the horizontal.

3,791,339
CONTROL MECHANISMS FOR STEAM DRIVEN DIAPHRAGM VALVE SOUND TRANSMITTERS

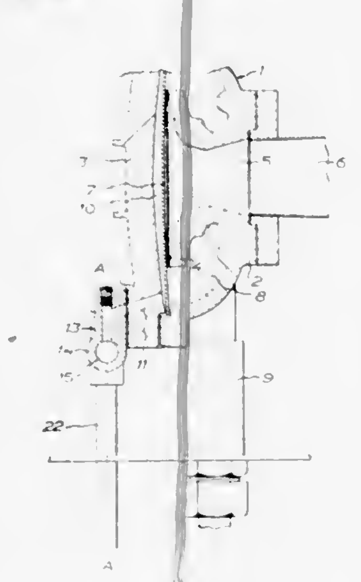
Nils Axel Viktor Dahlquist, Malmo, Sweden, assignor to Kockums Mekaniska Verkstads AB, Malmo, Sweden

Filed Sept. 26, 1972, Ser. No. 292,372

Claims priority, application Sweden, Sept. 27, 1971, 12168/71

Int. Cl. G10k *9/00*

U.S. Cl. 116—142 R **2 Claims**



A control mechanism for a steam driven sound transmitter of the type having a valve diaphragm which during signalling oscillates relative to a seat and periodically opens and closes the communication for the steam between an inlet chamber and an outlet passage opening into a resonance horn but which, when no signal is to be generated, is blocked against the seat by the action of the steam pressure in a back pressure chamber located behind the diaphragm, comprises a valve housing with a cavity, steam passages connecting the inlet chamber and the back pressure chamber with said cavity, a drain passage connecting said cavity with a drainage tank, and a valve-controlled relief passage connecting said cavity with the atmosphere, said passage between the inlet chamber and said cavity having a minimum cross-sectional area which is smaller than the minimum cross-sectional area of the relief passage but greater than the minimum cross-sectional area of the drain passage.

3,791,340
METHOD OF DEPOSITING A METAL PATTERN ON A SURFACE

Anne Marie Ferrara, Princeton, Mercer County, N.J., assignor to Western Electric Company Incorporated, New York, N.Y.

Filed May 15, 1972, Ser. No. 253,532

Int. Cl. B44d *1/50*

U.S. Cl. 117—47 A **11 Claims**

A method of depositing a metal pattern on a surface of a substrate is disclosed. A surface of the substrate is sensitized with a photosensitive palladium sensitizer. The sensitized surface is exposed to a source of ultraviolet radiation to delineate an unexposed pattern corresponding to the desired metal pattern. The selectively ultraviolet radiation-exposed surface is then immersed in a suitable electroless metal deposition solution wherein an electroless metal is catalytically reduced on the delineated unexposed pattern.

3,791,341
ELECTROSTATIC RESIN POWDER SPRAY SYSTEM

Harold G. Diamond, Wexford, and Floyd L. Gustine, Pittsburgh, both of Pa., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Continuation-in-part of Ser. No. 722,078, April 17, 1968, abandoned, and a continuation-in-part of Ser. No. 728,253, May 10, 1968, abandoned. This application May 28, 1970, Ser. No. 41,228

Int. Cl. B05b *5/02*

U.S. Cl. 118—7 **31 Claims**

An electrostatic spray resin coating system recirculates overspray resin particles which do not contact the workpiece and blends them with new resin powder in a supply hopper. A predetermined small volume of powder is maintained in the hopper which contains a distribution of resin powder particle sizes that will not suffer elutriative separation, assures uniform coating, and prevents obstructions caused by compaction of the powder. Means for detecting the workpiece opposite the spray nozzle controls the supply of powder to the nozzle and minimizes the amount of overspray which contains a high proportion of coarse particles, and powder level detecting means responsive to the volume of new and recirculated powder in the supply hopper controls the supply of new powder mixed with the overspray in the supply hopper.

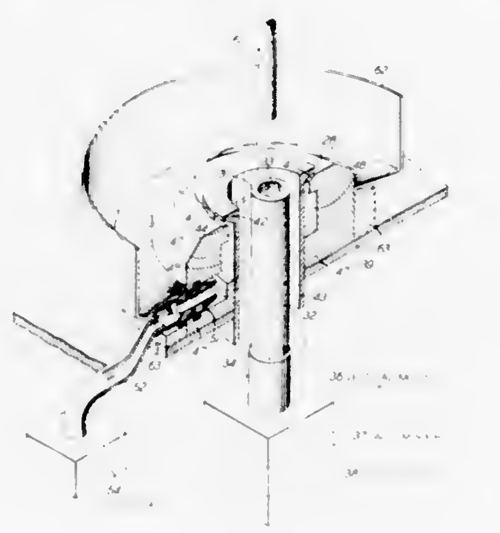
3,791,342
SELECTIVE COATING

Lynn Forrest Boyer, Reading, and Anderson Forbes Johnson, Jr., Sinking Spring, both of Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 95,821, Dec. 7, 1970, Pat. No. 3,695,928. This application June 6, 1972, Ser. No. 260,087

Int. Cl. B05c *11/08*

U.S. Cl. 118—52 **7 Claims**



A rotatable vacuum spindle supports a substrate thereon. Means coat the substrate on the non-supported face. Means rotate the spindle and substrate thereon at a speed whereby to distribute the coating material. Means disposed about the spindle direct an annular fluid stream outwardly and against the supported face of the substrate whereby to prevent creep of the coating material onto said supported face.

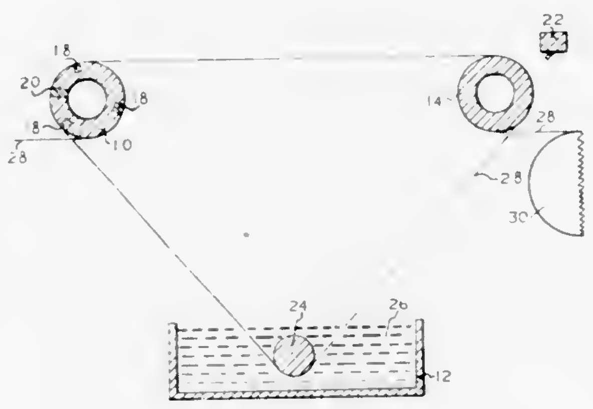
3,791,343
WIRE PLATING APPARATUS

Charles M. Starks, and Larry H. Hood, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Division of Ser. No. 815,690, April 14, 1969. This application Oct. 14, 1971, Ser. No. 189,326

Int. Cl. B05c *11/12*

U.S. Cl. 118—60 **3 Claims**



Wire plating apparatus includes a heating drum to which the wire to be coated is continuously passed, and from which it is passed continuously through an alkyl aluminum plating solution. From the plating solution, the wire is placed around a rinsing drum where it is rinsed with a hydrocarbon spray. The wire from the rinsing drum is then passed back around the heating drum, and back through the same path as during the previous cycle. Thus, the number of wraps around the heating drum is determinative of the number of heating, plating and rinsing cycles carried out, and these cycles are carried out automatically in the described apparatus.

3,791,344
APPARATUS FOR LIQUID PHASE EPITAXY

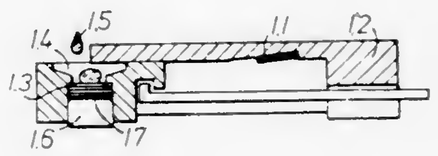
Wolfgang Gramann, Gemunden, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Division of Ser. No. 67,534, Aug. 27, 1970, abandoned. This application Aug. 14, 1972, Ser. No. 280,268

Claims priority, application Germany, Sept. 11, 1969, 1946049; Sept. 11, 1969, 6935720

Int. Cl. H01l *7/00*

U.S. Cl. 118—421 **5 Claims**



Apparatus for liquid phase exitaxy includes a refractory tubular vessel rotatable about it longitudinal axis and supportive of a substrate on an upper wall. A crucible is longitudinally movable from a position external to a confining wall of the vessel, whereby to be charged, to a position whereby to be sealed by said wall. Means rotate the vessel 180° and effect further inward movement of the crucible whereby to effect contact between the substrate and growth material

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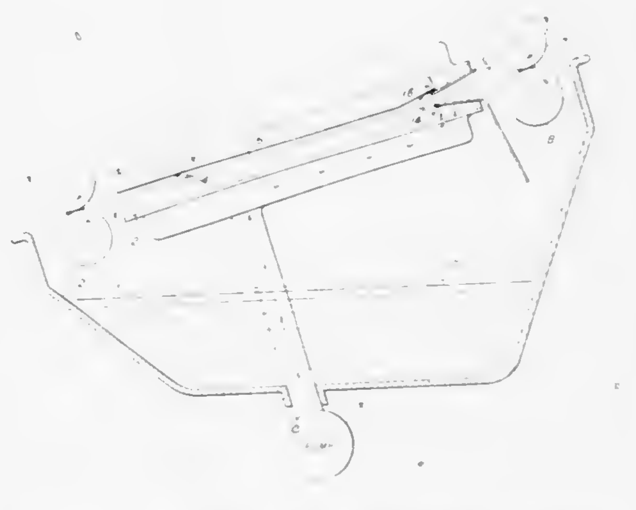
3,791,345
LIQUID TONER APPLICATOR

James T. McCutcheon, Rochester, N.Y., assignor to Itek Corporation, Lexington, Mass.

Filed May 9, 1972, Ser. No. 251,670

Int. Cl. G03g *13/10*

U.S. Cl. 118—637 **15 Claims**



A developer apparatus is disclosed which comprises a pair of electrically conductive fluid applicators which are separated from one another by a very narrow passageway. A charge-image bearing member passes through the passageway while relatively rapid moving bodies of liquid toner passes over both upper and lower surfaces of the charge-image bearing member. The flow rate of the liquid toner is relatively high so that a very small gap may be employed between the applicators and yet the imaging member will not contact the opposed surfaces of the passageway due to the effect of the moving liquid. The velocity of the liquid toner is also high in order to supply large amounts of toner for developing large solid black areas even though the applicator itself is not very long. Electrical connections are made between the pair of fluid applicators so that they act as development electrodes in eliminating the fringing effect.

3,791,346

3,791,348

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distended body of water. The created shock waves are in the

amount of air being bypassed from the outlet to recycle being

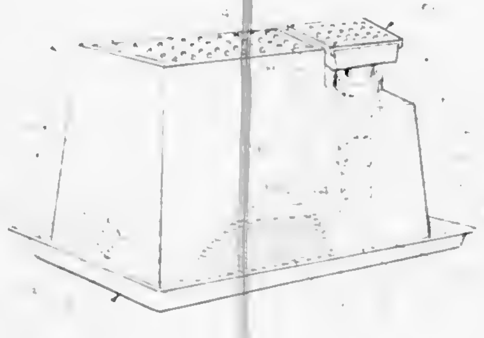
3,791,346
RODENT HABITAT

Allan H. Willinger, New Rochelle, and Albert J. Dinnerstein, Far Rockaway, both of N.Y., assignors to Metaframe Corporation, Maywood, N.J.

Filed Jan. 21, 1972, Ser. No. 219,767

Int. Cl. A01k *1/00*

U.S. Cl. 119—17 **39 Claims**



A rodent habitat comprising a transparent plastic housing which includes an open bottom portion. A screen is connected across the open bottom portion of the housing, whereas a shallow tray is provided for receiving the open bottom portion of the housing in detachable relation. An arrangement of adjustable tubes and sub-housing structures are provided for detachable association with the transparent housing and mutual communication with one another.

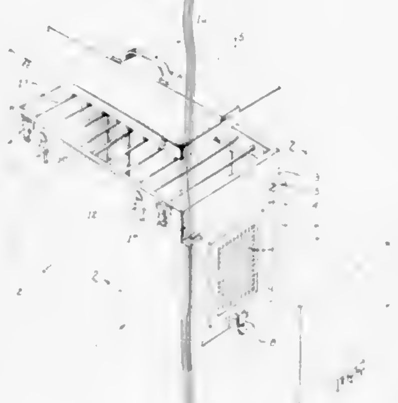
3,791,347
ANIMAL HANDLER

Melvin V. Lovell, 12433 N. 70th St., Scottsdale, Ariz.

Filed Apr. 30, 1973, Ser. No. 355,771

Int. Cl. A01k *01/02*

U.S. Cl. 119—19 **7 Claims**



A plurality of bars are mounted within a pivotable frame across the top of an animal carrier to provide ventilation and light. By pivoting the frame, the animal can be taken out of the carrier and the interior of the carrier is readily accessible for cleaning purposes. A cover, including a handle, is releasably attached to the frame to darken the interior of the carrier and protect the animal while it is being transported. One end of the carrier includes a laterally sliding panel through which food and water can be supplied to the animal. The entire floor of the carrier is slidably movable toward the bars and is properly aligned by guide means. With the cover removed and the carrier laid on its side, the animal can be immobilized against the bars by moving the floor toward the bars. Thus, medication or medical treatment can be administered to the animal without removing it from the carrier or attaching restraining devices to the animal.

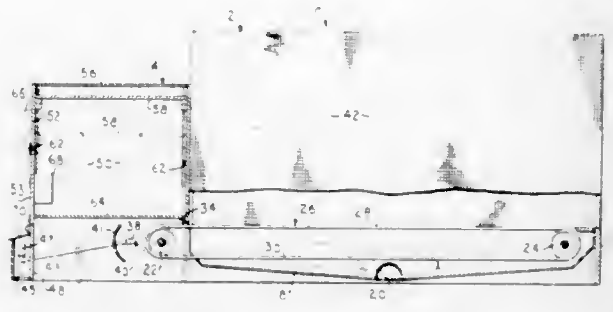
3,791,348
AUTOMATED DOG KENNEL

Paul J. Marnett, 457 N. 17th St., Kansas City, Mo.

Filed Nov. 24, 1972, Ser. No. 309,230

Int. Cl. A01k *01/00*

U.S. Cl. 119—19 **6 Claims**



An automated dog kennel utilizes a rotatable belt for the floor of an enclosed structure. The belt is movable to exercise the animal and also to carry waste material into a drain beneath the belt. A plurality of nozzles coupled with a water source are positioned at the forward end of the belt as the latter rotates in one direction toward this end. The nozzles are placed to spray water in the direction of an animal on the belt to discourage the animal from approaching the end and thus prevent the animal from getting a leg caught between the moving belt and supporting framework. These nozzles may also serve to pre-soak the belt to facilitate removal of waste material. A second set of nozzles is positioned adjacent the belt to spray the belt with additional cleaning liquid subsequent to the spray of the first set of nozzles as the belt rotates. An enclosed housing for protecting the animal from the elements is disposed adjacent the belt and in communication with the enclosed structure. The housing includes a bottom, sidewalls, and a movable roof which is positioned at a height sufficient to accommodate the animal beneath it when the animal is in a lying position while preventing the animal from assuming a standing position. This forces the animal to leave the housing and stand on the rotatable belt for defecation or urination.

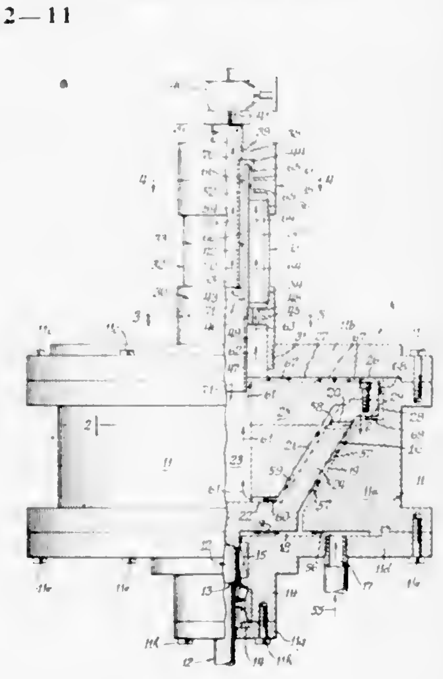
3,791,349
STEAM GENERATOR

Carl D. Schaefer, Chicago, Ill., assignor to Sonaqua Inc., Chicago, Ill.

Filed Jan. 29, 1973, Ser. No. 327,430

Int. Cl. F22b *3/06*

U.S. Cl. 122—11 **15 Claims**



An apparatus and method for the production of steam and pressure by the intentional creation of shock waves in a

distended body of water. The created shock waves are in the nature of water hammer and it is this water hammer which is repeated and intensified to such an extent the heat and pressure developed in the water converts the water into usable steam.

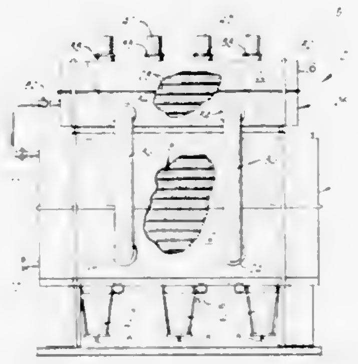
3,791,350
APPARATUS FOR HEATING FLUIDS

Harold O. Ebeling, and Richard A. Beets, both of Oklahoma City, Okla., assignors to Black, Sivalls & Bryson, Inc., Oklahoma City, Okla.

Filed Aug. 3, 1972, Ser. No. 277,682

Int. Cl. F22b *21/24*

U.S. Cl. 122—356 **7 Claims**



The present invention relates to an improved fluid heater apparatus of the type having walls defining a furnace space, a plurality of heating tubes passing through the furnace space and one or more high intensity combustion burners attached to and positioned with respect to the furnace space so that combustion gases are directed under super-atmospheric pressure into the furnace space and circulated around the heating tubes thereby causing the transfer of heat to the fluid being heated. By the present invention walls defining a secondary furnace space, a second plurality of heating tubes and means connecting between the primary and secondary furnace spaces are provided so that spent combustion gases from the primary furnace space flow through the secondary furnace space under super-atmospheric pressure and additional heat is transferred from the spent combustion gases to the fluid being heated.

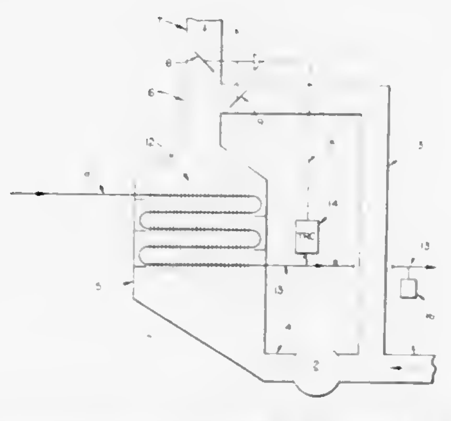
3,791,351
DESUPERHEATER

Harry S. Kent, Levittown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed June 30, 1972, Ser. No. 267,765

Int. Cl. F22g *5/00*

U.S. Cl. 122—479 D **5 Claims**



A fluid desuperheater including a housing for a heat-exchanger having a tube, conduit or pipe for the passage of superheated fluid, such as steam, therethrough, an air inlet duct, air feeding means, and air outlet duct and a by-pass duct, the amount of air being bypassed from the outlet to recycle being controlled by interconnected valves controlled by outlet fluid temperature.

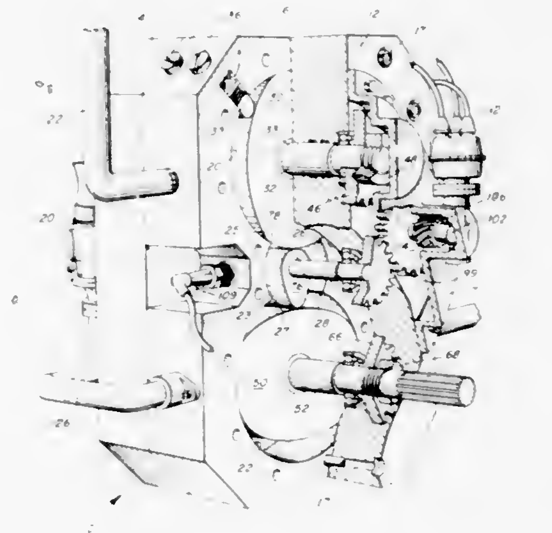
3,791,352
ROTARY EXPANSIBLE CHAMBER DEVICE

Andrew Takacs, 99 Farm Road Cir., Brunswick, N.J.

Continuation of Ser. No. 106,351, Jan. 14, 1971, abandoned, which is a continuation-in-part of Ser. No. 854,328, Aug. 28, 1969. This application Oct. 25, 1972, Ser. No. 300,652

Int. Cl. F02b *53/00*

U.S. Cl. 123—8.25 **33 Claims**



A rotary engine comprises a block, a plurality of longitudinally extending cylindrical chambers formed in the block, the longitudinal axes of which are in parallel spaced relation, a rotor disposed in each of the longitudinally extending chambers, each of the rotors having a peripheral surface in substantial surface-to-surface contact with the peripheral surface of at least one other of the rotors, intake and exhaust ports formed in the block for communicating the longitudinally extending chambers with sources of combustible materials and an exhaust system, the intake and exhaust ports of each chamber being covered and uncovered by the rotation of the rotor mounted in the respective chamber, means for interengaging the rotors to control the rotation of each relative to the others, ignition means, means for attaching at least one of the rotors to a means to be driven, and relieved portions formed on each of the rotors for cooperating with the longitudinally extending chambers to define working volumes which are displaceable from being in communication with the inlet ports to being in communication with the ignition means and thereafter to being in communication with the exhaust ports during each combustion cycle of the engine.

3,791,353
ROTARY ENGINE

Herbert C. Catherwood, Hamilton, Ontario, Canada, assignor to William N. Histed, Hamilton, Ontario, Canada, a part interest

Filed June 16, 1972, Ser. No. 263,463

Int. Cl. F02b *53/00*

U.S. Cl. 123—8.33 **13 Claims**

A rotary engine of the vane type is designed to achieve smooth efficient power output with minimum wear of vanes

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and casing walls. This is achieved by transferring compressed

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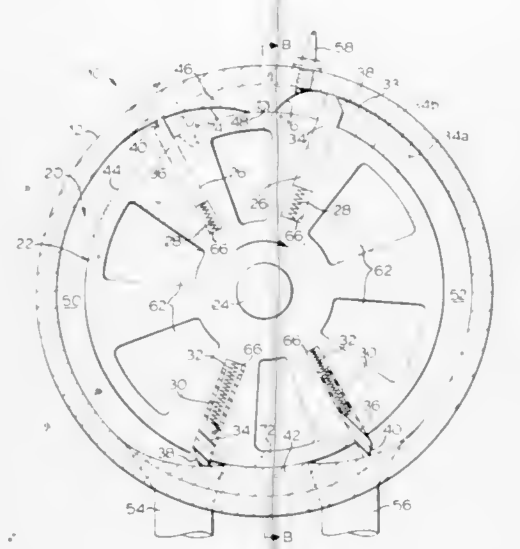
3,791,357

sive actuator which is responsive to vacuum prevailing in the intake manifold to automatically open a choke valve, and a and casing walls. This is achieved by transferring compressed air-fuel mixture from one zone to an ignition zone and provid-

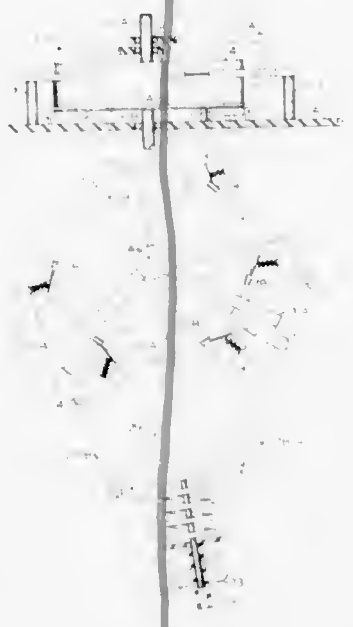


ing an expansion zone which increases in volume in regular manner during rotation of the rotor after ignition.

3,791,354

ENGINE CHARGE TIMING SYSTEM

Connie Wayne Lorentz, c/o E. J. Lorentz, Coleman Country Club, Gouldsbrook Rt., Coleman, Tex.
Filed Dec. 12, 1972, Ser. No. 314,421
Int. Cl. F01l *9/02, 1/34, 9/04*
U.S. Cl. 123—90.12 **9 Claims**

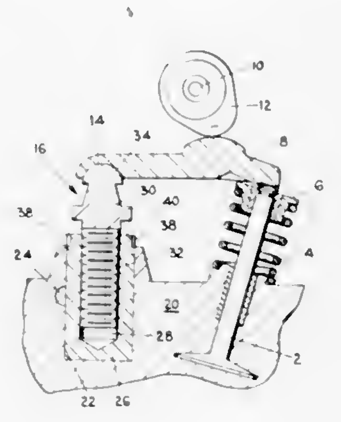


In a system for opening and closing poppet valves in an internal combustion engine, a pulser rotates at one-quarter engine speed to excite magnetic pickups which control the opening and closing of poppet valves through bistable multivibrators, amplifiers and solenoids which control hydraulic pilot valves to selectively open hydraulic lines for driving the poppet valve open or closed and holding the poppet valve in that condition for a predetermined time. Four pickups are associated with a pulser station for one cylinder. Two pickups control the exhaust poppet valve, and two pickups control the intake valve. The exhaust opening pickup and the intake valve closing pickup respectively are advanced and retarded with increased speed. The hydraulic pilot valve system may be cascaded to provide sufficient power to drive the poppet valves.

3,791,355

MECHANICAL LASH ADJUSTER FOR OVERHEAD CAM ENGINES

Paul F. Bergmann, North Muskegon, and David L. Coates, Muskegon, both of Mich., assignors to Johnson Products, Inc., Muskegon, Mich.
Filed Feb. 24, 1972, Ser. No. 229,119
Int. Cl. F01l *1/18, 1/20*
U.S. Cl. 123—90.27 **5 Claims**



Mechanical lash adjustment mechanism for use as a direct replacement for a hydraulic lash adjuster in overhead cam engines and the like. The lash adjuster includes a stud threaded into an insert and having means at one end for supporting a rocker arm. The insert is designed to fit directly into an opening provided in a conventional engine head which opening normally accommodates a hydraulic lash adjuster.

3,791,356

DEVICE FOR CONTROLLING IGNITION TIMES FOR INTERNAL COMBUSTION ENGINE

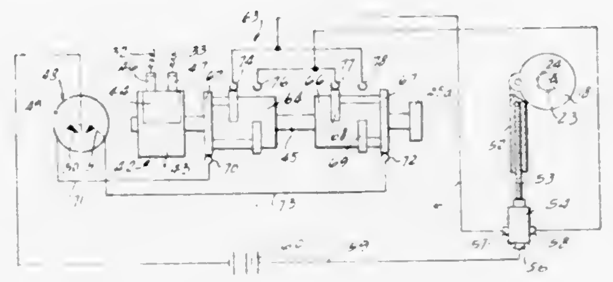
Toshikazu Saita, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 27, 1971, Ser. No. 183,960
Claims priority, application Japan, Sept. 28, 1970, 45-84908
Int. Cl. F02p *5/04, 1/00*
U.S. Cl. 123—117 R **3 Claims**

In the normal operation of an engine, the opening of breaker's contacts causes a gating diode and therefore an ignition transistor to become conducting to induce an ignition voltage across an ignition coil. In the idling and low speed operations, a monostable multivibrator is enabled to respond to the opening of the breaker's contacts to conduct another gating diode after a time interval for which the multivibrator is in its semistable state resulting in the generation of an ignition voltage. In the semistable state a capacitor included in the multivibrator discharges through a transistor serving to maintain the discharge current constant.

3,791,357

ELECTRICAL MEANS FOR VARYING SPARK TIMING OF AN INTERNAL COMBUSTION ENGINE

Harvey A. Cook, Cleveland, Ohio, assignor to TRW Inc., Cleveland, Ohio
Filed Dec. 15, 1971, Ser. No. 208,144
Int. Cl. F02p *5/04*
U.S. Cl. 123—117 R **11 Claims**



An ignition system for an internal combustion engine including a multi-breaker point distributor in which the respective sets of points are arranged at mutually offset and overlapping dwell angles. Electric circuitry is provided to selectively connect and disconnect the various sets of points to vary the total length of dwell and thus the ignition timing. A commutator can be used to alternately connect and disconnect the various sets of points, thereby continuously and relatively advancing and retarding the ignition timing between predetermined limits from a variable zero position. A sensing device can be employed to sense variations in an engine operating condition and relatively advance or retard the zero position of the ignition timing to maintain a predetermined value of the operating condition.

3,791,358

CARBURETOR CONTROL MECHANISM FOR AN AUTOMOTIVE GASOLINE POWERED INTERNAL COMBUSTION ENGINE

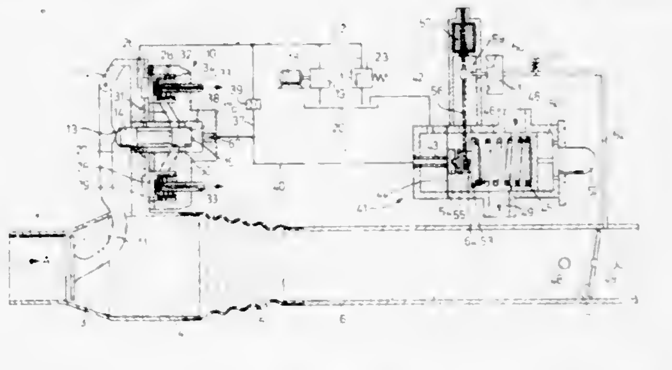
Kenji Masaki, and Hiroyuki Maruoka, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan
Filed Nov. 21, 1972, Ser. No. 308,561
Claims priority, application Japan, Dec. 8, 1971, 46-99152
Int. Cl. F02m *1/10, 3/06;* **F02p** *5/08*
U.S. Cl. 123—117 R **4 Claims**

A carburetor control mechanism adapted for minimizing noxious and harmful components in exhaust gases of an automotive gasoline powered internal combustion engine. The carburetor control mechanism comprises a first vacuum responsive actuator which is responsive to vacuum prevailing in an intake manifold of the engine tp automatically open a carburetor throttle valve during the warming-up period of the engine after the engine is started, a solenoid valve for providing communication between the first vacuum responsive actuator and the intake manifold during the warming-up period of the engine, an electric control device for controlling the solenoid valve and for retarding the ignition timing of the engine during the warming-up period, a second vacuum responsive actuator which is responsive to vacuum prevailing in the intake manifold to automatically open a choke valve, and a thermostat controlled device for controlling the level of vacuum acting on the second vacuum responsive actuator in accordance with the engine temperature.

3,791,359

FUEL INJECTION APPARATUS FOR EXTERNALLY IGNITED INTERNAL COMBUSTION ENGINES OPERATING ON CONTINUOUSLY INJECTED FUEL

Konrad Eckert, Stuttgart, and Heinrich Knapp, Leonberg-Silberberg, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Nov. 24, 1972, Ser. No. 308,986
Claims priority, application Germany, Nov. 24, 1971, 2158093
Int. Cl. F02m *69/00*
U.S. Cl. 123—119 R **4 Claims**



In a fuel injection apparatus the air-fuel ratio is controlled by an air sensor as a function of the air quantities passing through the suction tube. Said ratio is varied by altering a liquid pressure which serves as a return force for the air sensor. The liquid pressure is varied by a valve loaded in the closing direction by a spring, the bias of which is affected, among others, during the warm-up run of the engine, by the pressure that prevails in the suction tube immediately downstream of an arbitrarily operable butterfly valve

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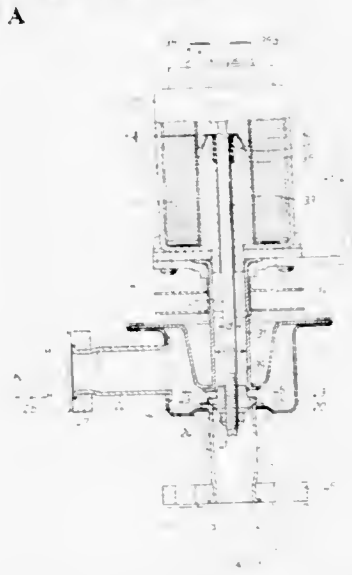
3,791,360

SOLENOID VALVE FOR RECYCLING EXHAUST GASES IN INTERNAL COMBUSTION ENGINES

Franz Rieger, Wasseralfingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Feb. 3, 1972, Ser. No. 223,253
Claims priority, application Germany, Feb. 6, 1971, 2105583
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A **6 Claims**



In an internal combustion engine including a return conduit connecting the exhaust pipe with the intake manifold to recycle one part of the exhaust gases, there is provided in said return conduit a solenoid valve which has a housing, a movable valve head for opening and closing said return conduit, an electromagnet held externally spaced from said housing by a spacer tube affixed to said housing and a valve rod passing through said spacer tube and carrying at one end said valve head and being secured, at its other end, to the movable armature of said electromagnet.

3,791,361

RPM REGULATOR FOR A FUEL INJECTION PUMP SERVING AN INTERNAL COMBUSTION ENGINE

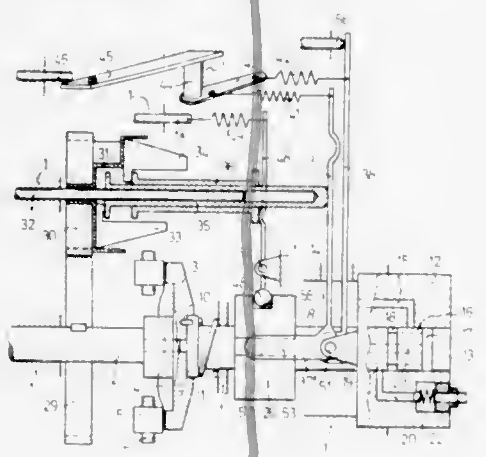
Karl Hofmann, Aldingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 15, 1972, Ser. No. 280,867

Claims priority, application Germany, Sept. 9, 1971, 2145036

Int. Cl. F02m *59/20*

U.S. Cl. 123—139 AP **4 Claims**



In a fuel injection pump associated with an internal combustion engine, the fuel quantities injected during each pressure stroke on the one hand and the injection start on the other hand are separately regulated as a function of the engine-rpm by two groups of centrifugal weights, each group displacing a separate governor member moving independently from the other.

3,791,362

GOVERNOR FOR CONTROLLING THE FUEL DELIVERY OF A FUEL INJECTION PUMP FOR AN INTERNAL COMBUSTION ENGINE

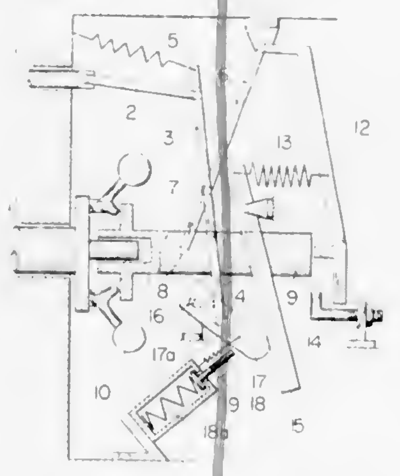
Yoshiatsu Nakamura, Oomiya, and Susumi Odashima, Oyama, both of Japan, assignors to Kahushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Dec. 21, 1972, Ser. No. 317,703

Claims priority, application Japan, Dec. 23, 1971, 46-104891

Int. Cl. F02d *1/04, 1/06*

U.S. Cl. 123—140 R **3 Claims**



A governor for controlling the fuel delivery of a fuel injection pump for an internal combustion engine which has a control rack for controlling the fuel delivery of a fuel injection pump, a link pivotally connected at one end to one end of the control rack, a floating lever pivotally connected at one side thereof to the other end of the link, a start spring fixed at one end thereof to a housing and secured at the other end thereof to one side end of the floating lever, a guide lever pivotally secured at one end thereof to the housing by a first fulcrum and engaged through a first shaft at the intermediate thereof with the intermediate of the floating lever, pivotally mounted centrifugal weights pivotally secured to the drive shaft of the fuel injection pump, a shifter axially slidably engaged with the drive shaft and the centrifugal weights at one end thereof and pivotally secured at the intermediate thereof to the other end of the guide lever, a regulator lever pivotally secured at one end thereof to the first fulcrum and slidably contacted at the other side with the other end of the shifter, a spring secured at one end thereof to the intermediate of the regulator lever, a stopper for stopping the regulator lever at the other end in full load of the fuel injection pump, and a throttle lever secured at one end thereof to the other end of the spring and pivotally secured at the same side thereof to the housing by a second fulcrum and manually operable at the other end thereof, the improvement in the governor having cam means having an axially long hole slidably engaging the other end of the floating lever through a movable fulcrum for controlling the control rack so that the control rack does not move abruptly when the throttle lever is quickly operated, and stopper means contacted with the cam means for stopping the cam means so that the control rack is not pushed to the maximum fuel injection position of the fuel injection pump when the engine is in no load and at minimum speed.

3,791,363

ELECTRONICALLY CONTROLLED REVERSAL-PROOF MAGNETO IGNITION SYSTEM

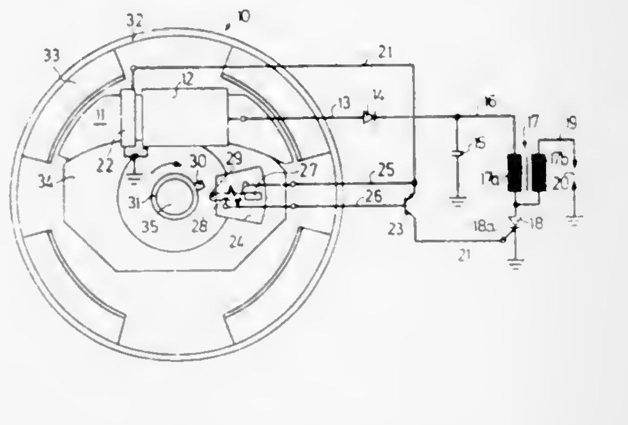
Peter Schmaldienst, and Georg Gemander, both of Nurnberg, Germany, assignors to Robert Rosch GmbH, Gerlingen-Schillerhohe, Germany

Filed Nov. 24, 1972, Ser. No. 309,429

Claims priority, application Germany, Feb. 8, 1972, 2205722

Int. Cl. F02p *1/17*

U.S. Cl. 123—148 E **10 Claims**



A transistor operating as an AND gate permits a semiconductor controlled rectifier to discharge a condenser through the primary of an ignition coil when the magneto and the motor to which it is coupled are turning in the normal direction but does not allow the SCR to be fired when the motor turns in the other direction. A pulse transmitter is mounted on the armature plate of the magneto so as to provide properly timed pulses in cooperation with a projection revolving on the hub of the device. The disposition of these elements relative to the armature which provides the alternating current to the switching path of the transistor assures the appropriate polarity of the voltages applied to the transistor.

3,791,364

IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINE

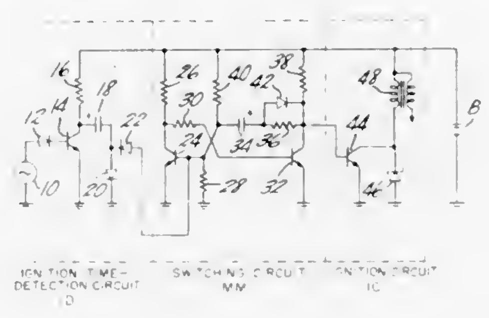
Toshikazu Safta, Himeji, Japan, assignor to Mitsuhishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 26, 1971, Ser. No. 146,934

Claims priority, application Japan, June 3, 1970, 45/54605

Int. Cl. F02p *3/02*

U.S. Cl. 123—148 E **4 Claims**



The disclosed ingition system includes a monostable multivibrator passing into its semistable state each time the associated engine is to be ignited to put a normally conducting switching transistor in its nonconducting state. This causes the interruption of a current flowing through an ignition coil to generate an ignition voltage across it. In the monostable multivibrator a capacitor is serially connected to a resistor high in magnitude of resistance to increase a time constant for charging and a semiconductor diode is connected across the resistor to decrease a time constant for discharging.

3,791,365

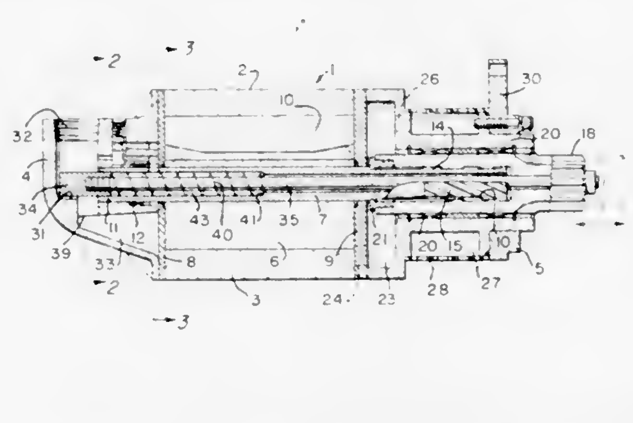
AIR STARTER

Robert S. Pharr, and Robert H. Broyden, both of Roanoke, Va., assignors to Ingersol-Rand Company, Woodcliff Lake, N.J.

Filed Mar. 20, 1972, Ser. No. 236,026

Int. Cl. F02h *7/08*

U.S. Cl. 123—179 F **15 Claims**



A pneumatically operated starter having a combination piston-valve, located in a first chamber downstream of the usual on-off valve, that throttles the starter to a low speed initially in its closed position and as air is supplied opens in response to the air pressure and simultaneously engages the starter pinion with the engine ring gear and upon further engagement of the starter pinion allows air to freely pass and accelerate the starter. Upon the starting of the engine, the piston-valve is automatically returned to its initial position by a combination of mechanical helical pinion throwout, spring return and latching pressurization of a second chamber behind the piston-valve. Latching pressurization is accomplished by a second valve admitting air pressure behind the piston-valve in response to a pressure signal developed in the starting cycle. The air supply may then be shut off manually to stop the throttled rotation of the starter and to reset the second valve controlling the latching pressurization of the chamber behind the piston-valve to ready the starter for the next starting cycle.

3,791,366

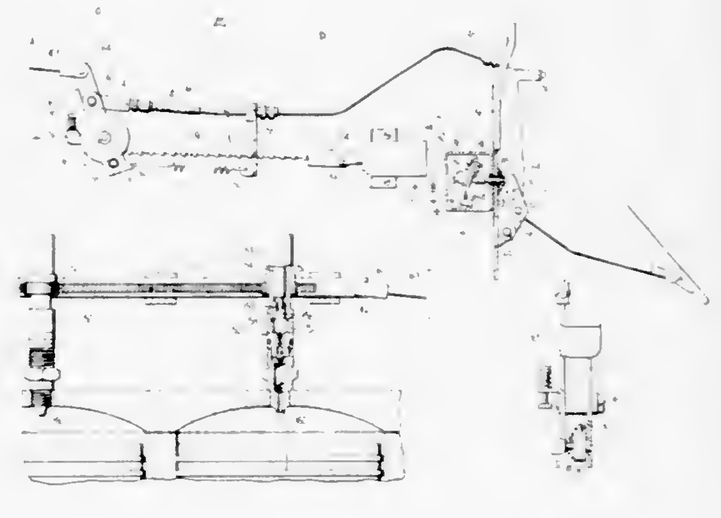
FAIL-SAFE THROTTLE CONTROL

Charles W. MacMillan, 3400 20th St. Ct., Rock Island, Ill.

Continuation-in-part of Ser. Nos. 88,450, Nov. 10, 1970, Pat. No. 3,626,919, and Ser. No. 153,330, June 15, 1971, Pat. No. 3,731,667. This application Dec. 10, 1971, Ser. No. 206,656. The portion of the term of this patent subsequent to Dec. 28, 1988, has been disclaimed.

Int. Cl. F02h *77/08, 11/04,* **B60k** *27/08*

U.S. Cl. 123—198 DB **9 Claims**



The invention relates to a fail-safe throttle control mechanism which is positioned between an accelerator pedal of a motor vehicle engine incorporating a fuel injection system and includes a linkage assembly which extends from the accelerator pedal to the fuel injection control system and has combined therewith a sensing mechanism for disengaging the accelerator pedal from the fuel injection control system so that the engine of the motor vehicle can instantly return to an idle condition irrespective of any impairment in the control linkage or blockage of the accelerator pedal. There are disclosed various embodiments for achieving this fail-safe operation of fuel injection control mechanisms

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3,791,367

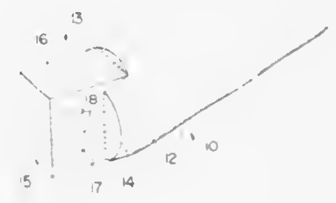
TOOL FOR DRESSING GRINDING WHEELS AND THE LIKE

Rudy J. Cirell, 1100 W. 38th St., Lorain, Ohio, and Nance J. Scardena, RD No. 1, Vermilion Rd., Amherst, Ohio

Filed Jan. 19, 1972, Ser. No. 219,015

Int. Cl. B24h *53/12*

U.S. Cl. 125—11 R **1 Claim**



A tool for dressing and trueing abrasive grinding wheels. The tool includes a matrix in the shape of a rectangular prism formed of fused powdered metal removably held in a holder, and a plurality of diamond macles imbedded in the matrix. The matrix has a rectangular front face with end edges that en-

gage the grinding wheel, the top face being progressively

fixed therein. As the rotor assembly rotates the gas is raised to

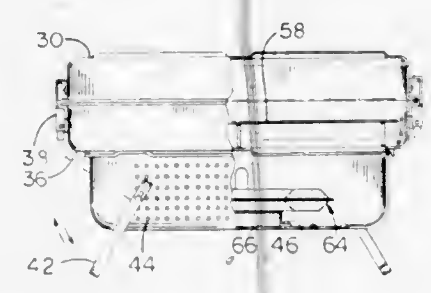
covering the side walls. The runners may be on the side walls

magnitude signal of fixed, preset frequency with relatively gage the grinding wheel, the top face being progressively eroded during the dressing operation. The macles are located with their faces perpendicular to the direction of movement of the grinding wheel surface and with one point thereof at an end edge of the front face of the matrix, so that even though the matrix and macles are eroded during the dressing operation, a diamond point is always maintained at each end edge of the front face.

3,791,368
MULTIPURPOSE COOKING ASSEMBLY

William C. Hunt, 15488 Issaquah Hohart Rd., Issaquah, Wash.

Filed Jan. 24, 1972, Ser. No. 220,313
Int. Cl. A47j *37/00;* **F24b** *3/00;* **F24c** *1/16*
U.S. Cl. 126—25 A **3 Claims**



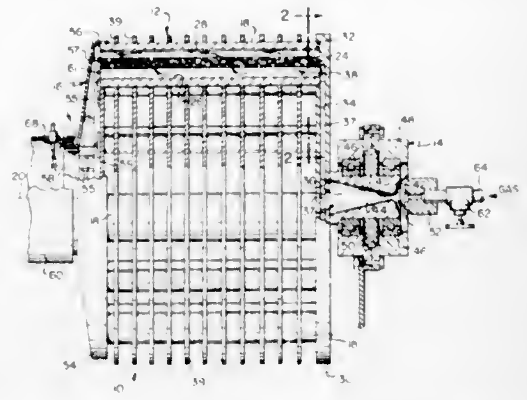
A portable multipurpose cooking assembly for outdoor cooking is used as a stove, griddle, toaster, pressure cooker, and charcoal broiler. It is contained in a single portable small carrying case weighing only a few pounds, inclusive of cooking fuel and accessories. The components are: a top cover and a bottom cover of the small carrying case which also serves as a pressurized cooker or oven; a base with pivotal supporting legs used during all cooking operations as a housing for heating units and support for other components; a solid griddle to provide a cooking surface placed on top of the base during cooking and placed inside the bottom cover when packed away; an open grill placeable either over the base or inside the bottom cover; a briquet carrier placed inside the base to hold charcoal and serve as a charcoal broiler tray; a propane burner assembly removably housed inside the base having a metal tube leading to a propane fuel source outside the base to provide the overall heating unit when cooking; a removable handle attachable to the side of the top cover when carrying the cooking assembly and also attachable to the griddle to easily transport prepared food to the table or other place of serving; and other accessories, such as: a wooden cutting board, insulated mitts, small spears and smoke chips, all placed within the multipurpose cooking assembly when transported.

3,791,369
ROTARY HEAT EXCHANGER

Nicholas Howard Des Champs, Whippany, N.J., assignor to Donbar Development Corporation, New York, N.Y.

Filed Aug. 8, 1972, Ser. No. 278,723
Int. Cl. F24h *3/08*
U.S. Cl. 126—116 R **20 Claims**

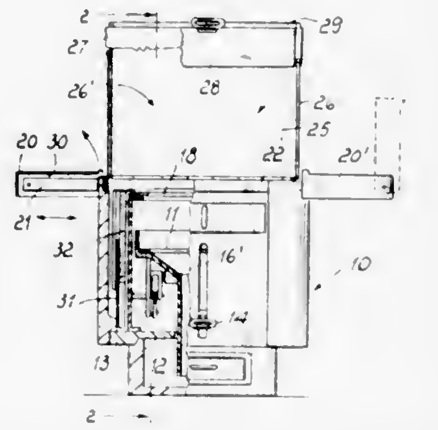
A rotary heater including a rotor assembly mounted for rotation about an axis, the assembly having a plurality of parallel hollow blades. Combustible gas is supplied to the interior of the blades where it interacts with a catalytic element fixed therein. As the rotor assembly rotates the gas is raised to the ignition temperature whereupon combustion occurs within the interior of each blade. The rotating blades draw ambient air over their exterior thereby heating it.



3,791,370
DEVICE FOR COOKING FOODS

Hans Fauser, Flamatt-Friburg, Switzerland, assignor to Societa'Italiana Superior S.r.L., Milan, Italy

Filed Apr. 7, 1972, Ser. No. 242,011
Claims priority, application Italy, Apr. 13, 1971, 23087A/71
Int. Cl. F24b *3/00*
U.S. Cl. 126—25 A **8 Claims**



A device for cooking foods, and in particular for preparing foods by grilling, spit roasting, oven roasting, and the like provided with a collapsible hood structure for protecting the cooking zone, for evacuating fumes and for ensuring maximum overall efficiency. The device comprises a grill and a collapsible food cooking assembly arranged above the cooking zone and including cooking plates and the collapsible hood structure has not only rear and side walls but also plate members removably arranged between the side walls at the front and the top of the device so as to define a hood space having an outflow opening for the fumes variable in size by displacing the plate members for adjusting the air draught through the device according to the food preparing requirementes.

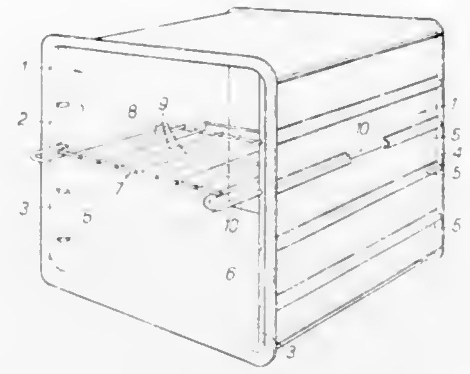
3,791,371
COOKING OVENS

Gerald Arthur Oatley, Palma Lodge, Mill Ln., Codsall, England

Filed Aug. 8, 1972, Ser. No. 278,825
Claims priority, application Great Britain, Aug. 10, 1971, 37,414/71; June 9, 1972, 26,923/72
Int. Cl. F24c *15/16*
U.S. Cl. 126—339 **12 Claims**

The shelf of a domestic cooking oven, instead of resting directly on runners at the side walls of the oven, has outriggers cantilevered from the front corners of the shelf extending rearwards alongside the ends of the shelf and engaging runners hidden behind the side walls of the oven or behind liners

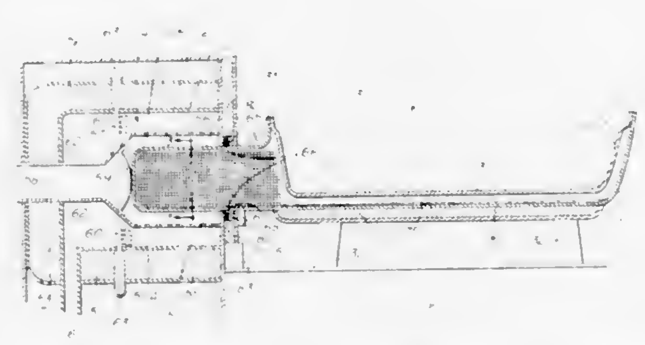
covering the side walls. The runners may be on the side walls or on the liners and the liners may have a heat-clean finish or be readily detachable and have a vitreous enamel or other easily cleaned finish.



3,791,372
HEAT PIPE COOKING APPLIANCE

George N. Hatsopoulos; Lazaros J. Lazaridis, both of Lincoln, and Edward F. Searight, Harvard, all of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Filed July 12, 1972, Ser. No 270,932
Int. Cl. A47j *27/24*
U.S. Cl. 126—390 **11 Claims**



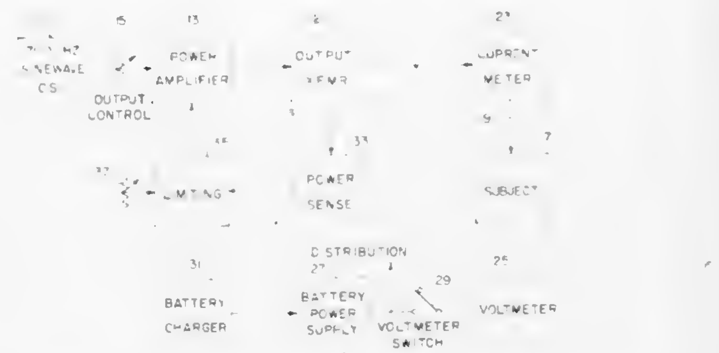
Cooking utensils incorporating heat-pipe heat transfer units in a unitary hand-portable structure are constructed in the form of a pot or a pan having a heat-receiving member extending therefrom and a food heating zone in the pot or pan. Each utensil has a sealed enclosure containing a working fluid which in operation is vaporized in the heat receiving zone and condenses under the pan to yield heat of vaporization for cooking purposes. A cooking station has a table or counter top that is clear, and a back-wall supporting one or more heat-sources behind apertures provided for passage of the projecting heat-receiving members of the utensils therethrough into thermal-transfer relation with the heat sources. A utensil is engaged with a heat source by resting it on the counter top and pushing its projecting heat-receiving member through the back wall into engagement with a heat source, and is taken out of use by simply pulling it away from the back wall. The utensils are completely sealed and may be handled and cleaned like ordinary pots and pans. Thermal monitoring may be done by sensing temperature at the heat receiving member of a utensil outside the heat source being used.

3,791,373
PORTABLE ELECTROANESTHESIA DEVICE WITH AUTOMATIC POWER CONTROL

Edward R. Winkler, Carbondale, and Edward J. McGowan, Jr., Villa Park, both of Ill., assignors to Southern Illinois University Foundation, Carbondale, Ill.

Filed Mar. 2, 1972, Ser. No. 231,161
Int. Cl. A61n *1/34*
U.S. Cl. 128—1 C **7 Claims**

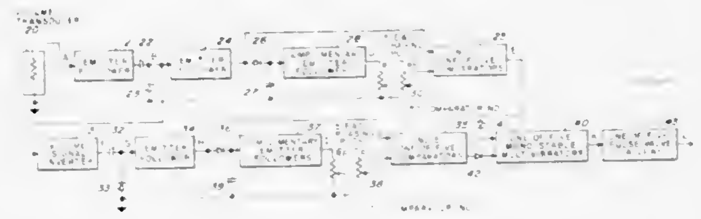
A portable, battery-powered, self-contained electroanesthesia device. A signal generator provides a sinusoidal, constant magnitude signal of fixed, preset frequency with relatively high accuracy and without recalibration each time the device is energized. The preset frequency characteristically produces electroanesthetic induction in a live subject with relatively high efficiency. An amplifier increases the power level sufficiently for producing electroanesthetic induction of the subject. Electrodes supply the amplified signal to tissue of the subject, there being provision for matching the impedance of said tissue of the subject to the amplifier for maximizing transfer of the amplified signal to said tissue. Circuitry is provided also for monitoring and limiting the power level of the signal supplied by said electrodes to the tissue.



3,791,374
PROGRAMMER FOR SEGMENTED BALLOON PUMP

Henry R. Guarino, Revere, Mass., assignor to The United States of America as represented by the Secretary, Department of Health, Education and Welfare, Washington, D.C.

Filed Aug. 9, 1971, Ser. No. 169,936
Int. Cl. A61m *1/00*
U.S. Cl. 128—1 D **5 Claims**



A circuit for programming the inflation and deflation of a five segmented balloon pump as used in circulatory assist blood pump systems is disclosed. The rising and falling edges of wave pulses are used by a volume transducer to create a volume signal corresponding thereto. Means are provided to produce a plurality of signals corresponding to the rising edge of the waveform and a plurality of signals corresponding to the falling edge thereof. These signals are used to activate the various valves of the balloon pump and thereby inflate and deflate the segments.

3,791,375
DEVICE FOR SENSING AND WARNING OF EXCESSIVE AMBULATION FORCE

Erich A. Pfeiffer, 8730 Orion Ave., Los Angeles, Calif.

Filed Sept. 29, 1971, Ser. No. 184,662
Int. Cl. A61b *5/10*
U.S. Cl. 128—2 S **10 Claims**

Warning of excessive ambulation force, for limiting the application of weight on a lower extremity, usually in the recovery from orthopedic surgery of the lower extremity, is accomplished by a fluid-containing load cell which deflects and changes its volume in accordance with the amount of load thereon. A tubular connector connects the load cell fluid with a displacement-measuring device, for example, a bellows. A particular displacement limit, conveniently signaled with an

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electrical alarm indicates when predetermined load on the cell

One or more fibrous plugs form an electrical connection

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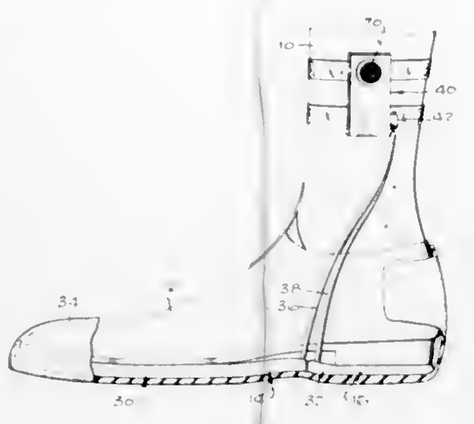
rotatable between a first position permitting entry of the fluid

3,791,382

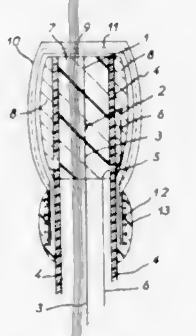
electrical alarm indicates when predetermined load on the cell is reached.



The United States Government is licensed under this patent to make, use or sell this invention for Government purposes.

3,791,376
MICROSONDE FOR CATHETER USE, FOR THE CONTINUOUS MEASUREMENT OF PARTIAL OXYGEN PRESSURE

Boris Rybak, 35, Avenue du 6 Juin, Caen, Calvados, France
Filed Dec. 14, 1970, Ser. No. 97,948
Int. Cl. A61b *5/00*
U.S. Cl. 128—2 E **7 Claims**

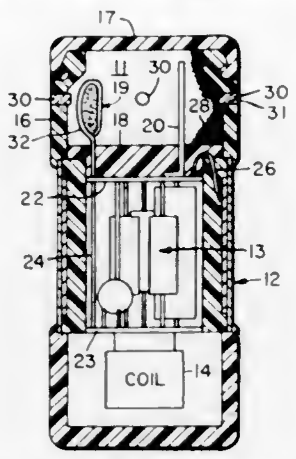


Microsonde for catheter use, operating under the principle of oxygen polarography, namely intended for continuous and instantaneous determination of oxygen partial pressure in blood vessels. The measurement head of said sonde has a diameter of 0.6 mm, comprises a platinum wire as a cathode and a paste containing powdered silver as anode. The head is covered with a first membrane of collodion against said anode, an electrolyte-impregnated support and a selectively gas-permeable thin membrane.

3,791,377
RADIO CAPSULE BATTERY

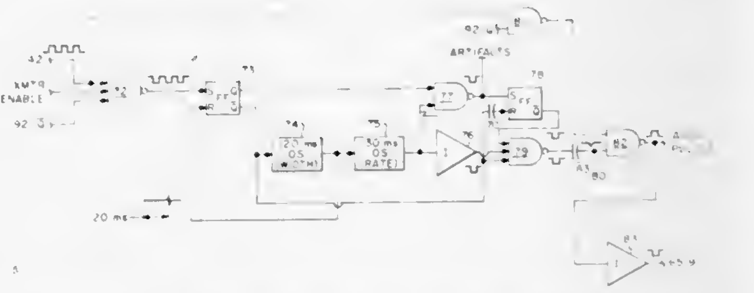
Thomas E. Norby, 3617 Allendale Dr., and Charles H. Rogers, 3724 Arrowhead Dr., both of Raleigh, N.C.
Filed June 30, 1971, Ser. No. 158,294
Int. Cl. A61b *5/07*
U.S. Cl. 128—2 P **14 Claims**

A battery for an active radio capsule wherein one of the electrodes, a silver-silver chloride electrode, functions as the reference electrode for a sensor by means of an electrolytic path from the battery chamber to the solution external to the capsule. The reference electrode, which is stable and insensitive to foreign ions, is disposed in a closed chamber filled with an electrolyte which is immobilized by an absorptive powder. One or more fibrous plugs form an electrical connection between the chamber and the surrounding medium. The reference electrode is designed to have a low, stable internal impedance and has a high current capability.



3,791,378
BLOOD PRESSURE MONITOR WITH RATE SENSING ARTIFACT REJECTION PROCESSING CIRCUITRY

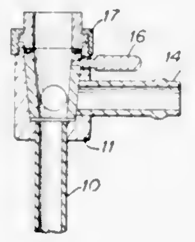
Howard Martin Hochberg, E. Windsor, and Harold Lee Massie, Hightstown, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Apr. 1, 1971, Ser. No. 130,148
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 M **5 Claims**



Apparatus for automatically implementing indirect blood pressure measurement with transducer means for deriving and developing electrical signals in response to the interaction of blood pressure and cuff pressure under a varying external pressure capable of occluding an artery, detector means for analyzing the electrical signals in terms of pulse rate for detection and rejection of artifact signals, and means for evaluating artifact signals in terms of their number and duration to provide an alarm indication when artifacts become significant.

3,791,379
VALVE FOR ENDOSCOPES

Karl Storz, Hermannstrasse 14, Tuttlingen, Germany
Filed Sept. 2, 1971, Ser. No. 177,350
Claims priority, application Germany, Mar. 2, 1971, G 71 07 645.4
Int. Cl. A61b *1/12, 17/32;* **F16k** *11/02*
U.S. Cl. 128—4 **5 Claims**

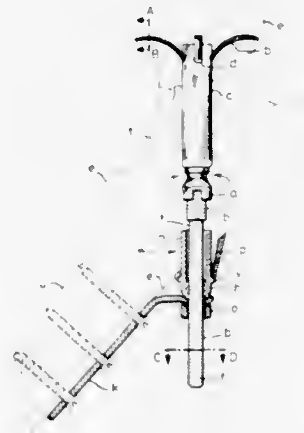


Endoscopes having a shaft and a head at the proximal end. The head has ducts connected to a source and drain of fluid for irrigating the body and a valve member located in the head

rotatable between a first position permitting entry of the fluid and a second position allowing removal of the fluid.

3,791,380
METHOD AND APPARATUS OF IMMOBILIZING A FRACTURED FEMUR

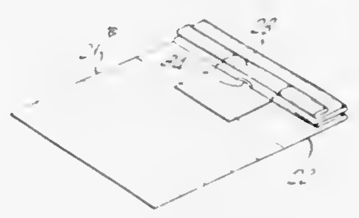
Gerhard Dawidowski, Schutzenstrasse 15, Bad Tolz, Germany
Continuation-in-part of Ser. No. 883,255, April 13, 1970, abandoned. This application Dec. 13, 1971, Ser. No. 207,594
Int. Cl. A61f *5/04*
U.S. Cl. 128—92 BB **9 Claims**



The invention relates to a method and apparatus for immobilizing the fractured neck of a femur with the head portion of the femur by first aligning the head and neck through a guide wire and thereafter telescoping over the guide wire, a tubular body containing means for entry into the spongy portion of the head of the femur and thereafter applying pressure to the neck of a femur until re-ossification is attained.

3,791,381
UNIVERSAL SURGICAL DRAPE

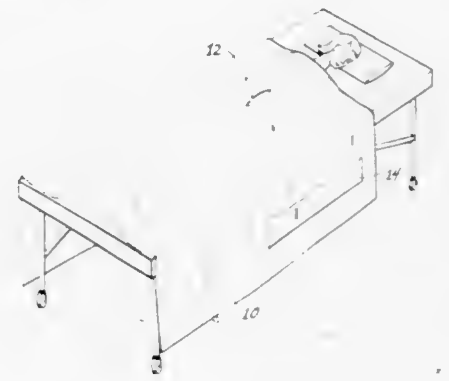
Henrietta K. Krzewinski, Old Bridge, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.
Filed Sept. 29, 1971, Ser. No. 184,737
Int. Cl. A61f *13/00;* **A61b** *19/06*
U.S. Cl. 128—132 D **7 Claims**



There is disclosed a multipurpose surgical drape that has utility in different types of surgical procedures. The drape is composed of a nonwoven fabric and has on its upper surface adjacent one edge a reinforced panel having an absorbent surface and an impervious film between the absorbent surface and the main body of the drape. The drape is folded in such a manner that that portion of the drape having the reinforced panel may be cut to form functional drapes for different surgical procedures.

3,791,382
WATERPROOF BODY COVERINGS WITH FLUID RECEIVING POCKETS

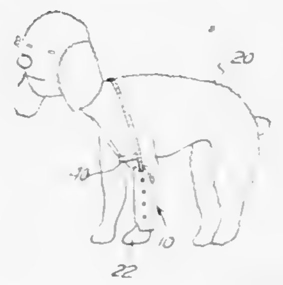
Robert F. Collins, Barrington, Ill., assignor to The Kendall Company, Walpole, Mass.
Continuation-in-part of Ser. No. 37,637, May 15, 1970, abandoned. This application Apr. 4, 1972, Ser. No. 240,914
Int. Cl. A61f *13/00, 13/18;* **A61l** *15/00*
U.S. Cl. 128—132 D **30 Claims**



A surgical drape having a main sheet for placement on a patient's body for performing a surgical procedure. The drape has at least one pocket on the outer surface of the main sheet to receive fluid runoff from the site of surgical procedure.

3,791,383
ANIMAL SHIELD

Sanford J. Friedman, 15260 Kenton, Oak Park, Mich.
Filed Dec. 23, 1971, Ser. No. 211,529
Int. Cl. A61f *13/00*
U.S. Cl. 128—154 **6 Claims**



A shield for enveloping a leg-sustained injury on four-legged animals includes a tubular member having cut-out sections and harnessing means such that the movement of the animal is unimpaired.

3,791,384
ARTIFICIAL INSEMINATION OF SOWS

Ludwig Richter, Trappenkamp, and Albert Liedicke, Wahlstedt, both of Germany, assignors to H. Wilhelm Schaumann, Hamburg, Germany
Filed May 11, 1972, Ser. No. 252,272
Claims priority, application Germany, July 15, 1971, 2135318; Oct. 30, 1971, 2154260
Int. Cl. A61d *7/02*
U.S. Cl. 128—260 **13 Claims**

A method of preserving boar sperm by deep-freezing thawing and introduction into the uterus of the sow, in which method the ejaculate after being collected is centrifuged, and the sediment is diluted, frozen to a temperature of −180° to −200°C, at the time of use is thawed by being placed in such a quantity of diluent warmed to 40° to 50° C that a dilution of the sperm which is appropriate for effective bathing of the uterus is achieved, and the diluted fluid is introduced into the uterus. The ejaculate is inactivated after being collected and before being centrifuged, and after being thawed the sperm solution has added to it a solution which mobilizes the spermatozoa.

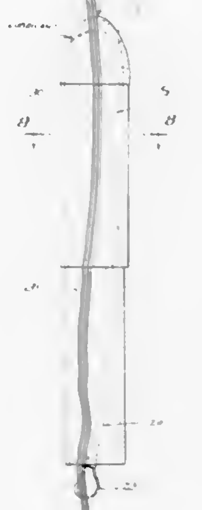
3,791,385
CATAMENIAL DEVICE AND APPLICATOR THEREOF

Alwyn K. Davis, 483 Massey St., Thousand Oaks, Calif., and Ward A. St. John, 58 Farland Dr., Newbury Park, Calif.

Filed Oct. 16, 1972, Ser. No. 297,881

Int. Cl. A61f *13/20*

U.S. Cl. 128—263 **39 Claims**



An expendible menses collector for insertion into the vagina and comprised of a collapsible monocoque shell of ovular form having a perforated upper hemisphere and an imperforate lower hemisphere and within which there is a chamber filled with resilient and absorbent material. The shell of the device is pliant and supple and has a circumferential seal at its major diameter that effectively engages with the vagina wall. Insertion is effected by collapse of the pliant shell and aided by lubrication released from a frangible or water soluable cell, and is implemented by a cylinder and piston applicator.

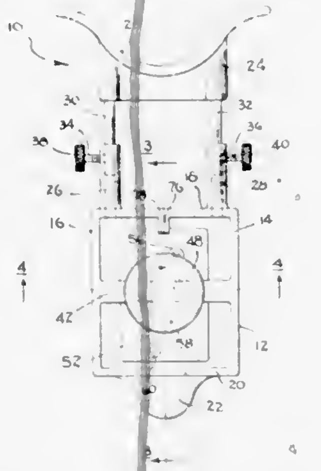
3,791,386
TRACHEOTOMY METHOD AND MEANS

Bernard McDonald, Malibu, Calif., assignor to McDonald Medical Laboratories and Instrument Company, Huntington Park, Calif.

Filed Sept. 27, 1971, Ser. No. 184,030

Int. Cl. A61b *17/32,* **A61m** *16/00, 25/00*

U.S. Cl. 128—305 **11 Claims**



A device and technique are disclosed for enabling a tracheotomy to be performed by those lacking medical training or skills, and under emergency conditions. An indexing frame with chinrest is secured to the patient's neck, and rotation of a knob on the frame causes three hollow air tubes to penetrate the windpipe. The frame is thereafter removed, leaving the tubes in place for attachment of oxygen hoses.

3,791,387
FORCEPS

Mitsuto Itoh, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Division of Ser. No. 203,633, Dec. 1, 1971, Pat. No. 3,739,784. This application Mar. 5, 1973, Ser. No. 338,174

Claims priority, application Japan, Dec. 5, 1970, 45/107833; Dec. 5, 1970, 45/107834

Int. Cl. A01b *1/06, 17/00, 1/72*

U.S. Cl. 128—320 **4 Claims**

A forceps for use with an endoscope has a first or cutting wire which extends in a loop from the distal end of the flexible endoscope tube, whereas the two proximal ends may be shifted in the tube by means of a control mechanism on the proximal tube end so as to expand and contract the loop. A second wire has a distal end pivotally attached to the loop, while its main portion passes through the endoscope tube to a control device at the proximal end of the tube which permits the second wire to be shifted longitudinally in the tube, and thereby to be bulged out from the loop for receiving a polyp or the like, and to be tightened about the severed polyp for safely retracting the severed piece together with the forceps.

3,791,388
COVERED SUTURE

Alastair Wilson Hunter, Somerville, and Neil Howard Rosen, Willingboro, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Sept. 22, 1971, Ser. No. 182,792

Int. Cl. A61l *17/00*

U.S. Cl. 128—335.5 **10 Claims**

Surgical sutures having an improved knot strength are constructed with a central core of multifilament yarn that has been impregnated with an adhesive binder. The adhesive binder coated core yarn is covered with a ribbon-like helical winding of multifilament yarn and the composite structure is hot stretched whereby the binder secures the external winding to itself and the central core.

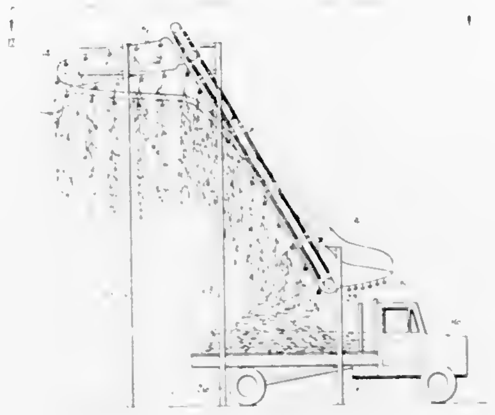
3,791,389
MECHANICAL VINE TRANSFER AND CARRIER

Florian F. Dauenhauer, 111-121 Fifth St., Santa Rosa, Calif.

Filed Oct. 16, 1972, Ser. No. 297,896

Int. Cl. A01g *19/00*

U.S. Cl. 130—30 D **14 Claims**



Mechanically operable means for automatically transferring hanging hop vines from at rest positions at a station in an upright hop picking machine into the jaws of vine grippers on moving vine carriers which transport the hanging vines through the hop picking unit of the machine.

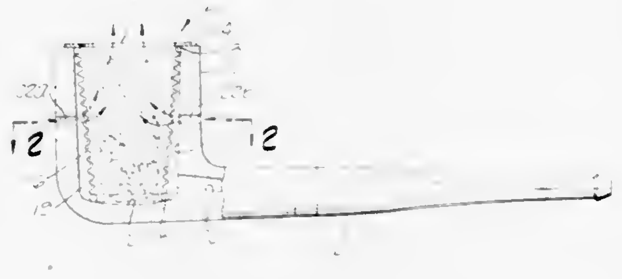
3,791,390
SMOKING PIPE

Victor P. Hendricks, 1776 Wright St., Pomona, Calif.

Filed Aug. 14, 1972, Ser. No. 280,505

Int. Cl. A24f *1/22, 1/18*

U.S. Cl. 131—196 **4 Claims**



A smoking pipe having a foraminous bowl insert which serves as a grate for the burning tobacco, the insert coacting with the inner wall of the bowl cavity to provide a surrounding air chamber having a communication with a smoking stem passage, and an auxiliary passage between the air chamber and the bowl exterior adapted for finger control by the smoker so as to be closable during conventional smoking, and opened for short inactive smoking periods to provide combustion air to the air chamber to maintain combustion and continued burning of the tobacco.

3,791,391
HAIR CURLER APPARATUS

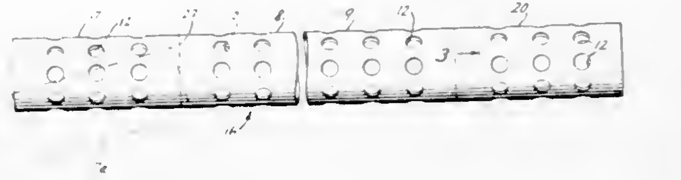
Zodell W. Prince, P.O. Box 94111, Houston, Tex.; Dallas D. Weatherholt, 13207 Buxley, Houston, Tex., and Adelene Trombatore Reistino, 1002 San Jose, Hearne, Tex.

Continuation-in-part of Ser. No. 66,217, Aug. 24, 1970, abandoned. This application June 20, 1972, Ser. No. 264,444

Int. Cl. A45d *2/02*

U.S. Cl. 132—39 **5 Claims**

Disposable hair curlers, made of plastic-coated paper, and intended to be disposed of after only one use. In a preferred embodiment, the curlers are supplied plurally in stick form, one curler at a time being broken from the stick of curlers for use.



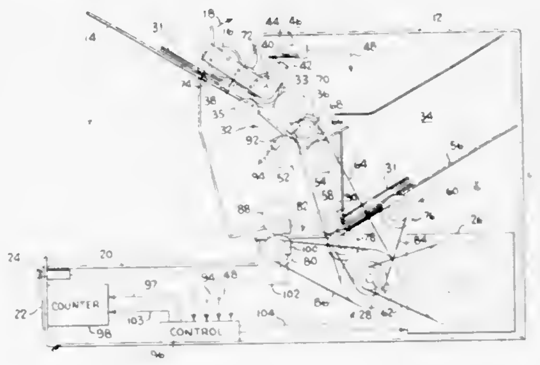
3,791,392
CURRENCY DISPENSER

Walter J. Hanson, Greenwich, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Sept. 28, 1972, Ser. No. 292,921

Int. Cl. G06m *7/06*

U.S. Cl. 133—1 R **1 Claim**



A paper currency dispenser is described for rapidly dispensing a number of notes or bills. The dispenser has an automatic in-feed as well as an automatic out-feed drive with bill detectors suitably located to sense the passage of separated bills. Signals from the detectors may be used to update a counter to indicate how many bills are stored or have been dispensed or to dispense a specific quantity demanded by an operator. The dispenser employs modularized units which dispense bills of different denominations and are driven by a common motor. A practical structure with rapidly acting belt driving elements is obtained to dispense bills successively and controllably at high speeds.

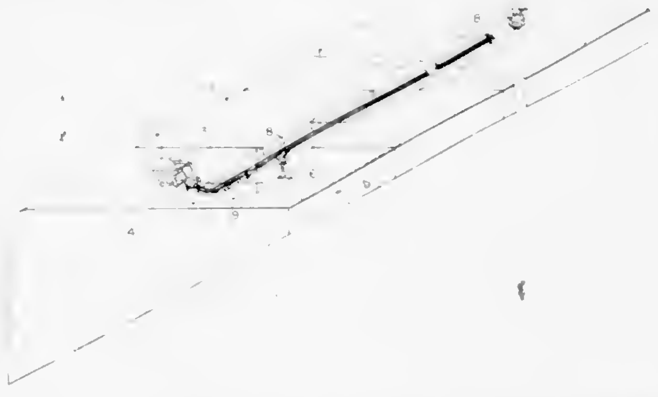
3,791,393
TANK CLEANING APPARATUS

David John Baldwin, London, England, assignor to Sybron Corporation, Rochester, N.Y.

Filed Mar. 6, 1972, Ser. No. 232,073

Int. Cl. B08b *3/02, 9/08*

U.S. Cl. 134—167 R **8 Claims**



Device for cleaning the interior of elongated tanks or tanks where access to the interior is limited consisting of a tank

3,791,396

3,791,398

actuated by the pressure sensing element and adapted to open cleaning machine attached to a source of cleaning liquid. The tank cleaning machine is movably affixed to a track and drives along the track during the cleaning operation, the track extending through the area of the tank to be cleaned so that the cleaning operation extends to portions of tank interior where access from the outside is limited. An externally mounted gas tight winch is preferred as the drive means. A flexible hose provides connection between the tank cleaning machine and the source of cleaning liquid and the hose may be calibrated so that the position of the tank cleaning machine within the tank can be determined. Entry to the tank interior for mounting and dismounting the tank cleaning machine on the track is through an entry port located adjacent one end of the track.

3,791,394

APPARATUS FOR CLEANING VESSELS HAVING AN INLET

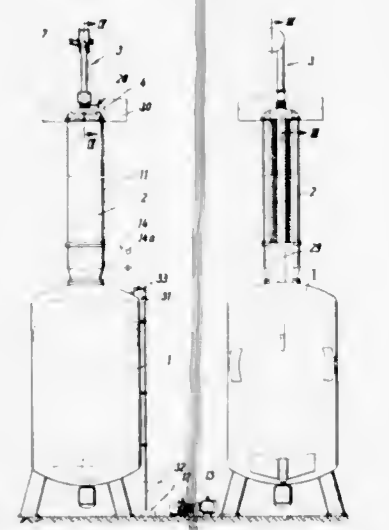
Paul Hammelmann, Zum Sunderm 17, Oelde/Westfalen, Germany

Filed Aug. 22, 1972, Ser. No. 282,626

Claims priority, application Germany, Aug. 27, 1971, 2142978

Int. Cl. B08b *9/08*

U.S. Cl. 134—167 R **9 Claims**



A housing has an outlet and can be mounted on a vessel so that the outlet communicates with the inlet opening of the vessel. The housing accommodates a reel on which a hose is mounted and the hose carries one or more hydrodynamic cleaning devices which can be lowered into and withdrawn out of the vessel by turning of the reel. A valve can close the outlet when the cleaning device is not to be used.

3,791,395

RESTARTING FLOW OF GELLED OIL

Henry F. Dunlap, and Ralph E. Styring, Jr., both of Dallas, Tex., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Dec. 15, 1972, Ser. No. 315,687

Int. Cl. F17d *1/10*

U.S. Cl. 137—13 **20 Claims**

The startup yield pressure of a segment of standing oil which has cooled below its pour point is reduced by applying reoccurring pressure pulses or cycles to the gelled oil at a pressure such that portions of the gelled oil are progressively shear degraded. The pressure pulses are continued until the flow resistance of the gelled oil has been degraded enough to enable renewal of oil flow at a higher continuous startup pump flow rate for a given pressure than could otherwise be obtained.

3,791,396

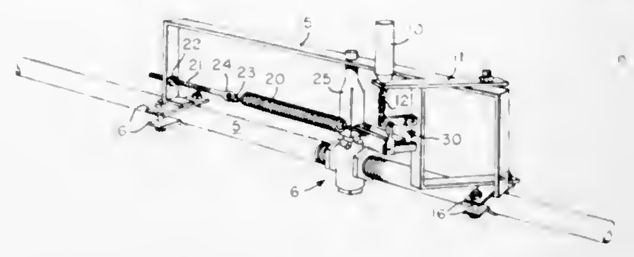
VALVE SHUTOFF DEVICE

Wesley C. Nelson, 698 S. 8th St., No. 2, San Jose, Calif.

Filed Sept. 15, 1972, Ser. No. 289,758

Int. Cl. F16k *17/36*

U.S. Cl. 137—38 **6 Claims**



A device for shutting off a valve in a supply line carrying combustible gas or liquid which is actuated when subjected to the influence of significant earth tremors or vibratory exitation. A valve stem extension is connected with the stem of an existing valve. The valve stem extension has a lever arm which is normally held in a position at which the connected valve is open. The lever arm is spring biased in a direction in which the lever would travel if the valve were closed; the bias is created by a spring positioned between said lever and one side of a frame attached to said supply line. A latch holds the lever arm in the normal position until and unless the device is subjected to significant earth tremors or vibratory excitation. Under the influence of significant earth tremors or vibratory excitation a weight, balanced on the other side of said frame, will topple, thereby pulling a chain attached to the latch and opening the latch. The spring bias causes the lever arm to move so the valve stem extension and valve stem turn to close the valve.

3,791,397

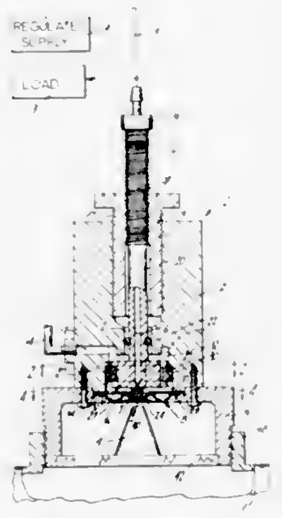
DIAPHRAGM PRESSURE SENSOR

George J. Janu, Milwaukee, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Aug. 30, 1972, Ser. No. 284,725

Int. Cl. F15b *5/00;* **G05d** *16/00*

U.S. Cl. 137—82 **12 Claims**



A pressure sensor includes a diaphragm mounted in relatively fixed relationship with respect to an orifice unit interconnected to the end of a threaded pipe. A threaded adjustment nut is provided with an internal thread to receive the pipe member and includes an outer threaded portion which is threaded into a housing. The inner and outer threads of the adjustment nut are of a very slightly different pitch. The threaded pipe is mounted to prevent rotation of the threaded support member while permitting axial movement thereof. Rotation of the adjustment nut results in axial displacement of the threaded pipe and orifice unit with respect to the diaphragm.

3,791,398

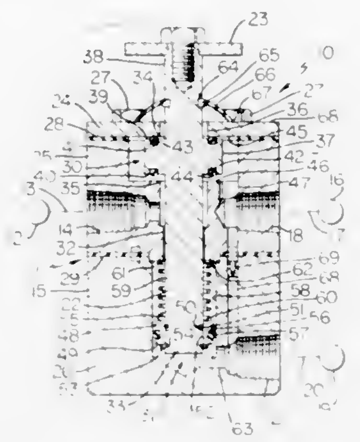
VALVE CONSTRUCTION AND CONTROL SYSTEM UTILIZING THE SAME

Arthur V. Vickery, Manzville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 6, 1972, Ser. No. 304,361

Int. Cl. F16k *17/00*

U.S. Cl. 137—625.66 **12 Claims**



A valve construction having a housing provided with a pair of chambers therein. The housing has first and second valve seats respectively leading to one of the chambers. A valve member is movably carried by the housing and has a pair of valve means for respectively cooperating with the first and second valve seats in an alternate manner. The valve member has a piston part thereof slideably disposed in the other of the chambers and cooperating therewith as a piston in a cylinder whereby fluid pressure in the chamber is adapted to act on one side of the piston part and tend to move the valve member from a position thereof closing one of the valve seats to a position thereof closing the other of the valve seats.

3,791,399

PRESSURE REGULATORS FOR COMPRESSED-AIR CIRCUITS

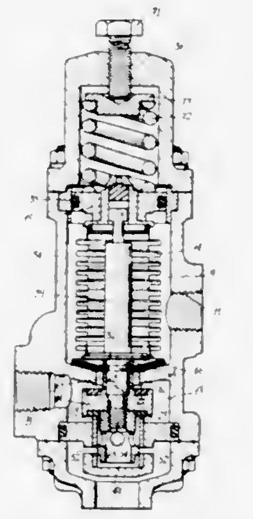
Jean Cachot, 179 Avenue de la Division Leclerc, Enghien-les-Bains, France

Filed Mar. 7, 1972, Ser. No. 232,538

Claims priority, application France, Mar. 16, 1971, 71.09088

Int. Cl. F16k *31/36*

U.S. Cl. 137—116 **1 Claim**



The invention relates to improvements in a pressure regulator for a compressed air circuit. The regulator comprises a measuring chamber connected to the circuit and containing a pressure sensing element, and a regulating chamber connected to a compressor and having an orifice for admission to the measuring chamber, a discharge orifice and an obturator actuated by the pressure sensing element and adapted to open or shut off the discharge orifice according to whether the circuit pressure is higher or lower than predetermined values. According to the invention the regulator comprises a resilient check-valve capable of being applied against the admission orifice to the measuring chamber to prevent backflow of air during the displacement of the obturator.

3,791,400

METHOD AND ARRANGEMENT FOR SEGMENTATION OF A STREAM OF A LIQUID MEDIUM CONVEYED BY A PERISTALTIC PUMP

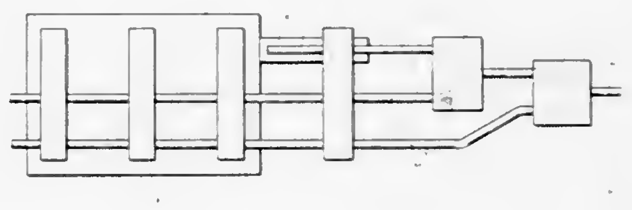
Jiri Hrdina, Prague, Czechoslovakia, assignor to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed Feb. 18, 1972, Ser. No. 227,382

Claims priority, application Czechoslovakia, Feb. 22, 1971, 1309/71

Int. Cl. F02b *43/12*

U.S. Cl. 137—154 **9 Claims**



A programmed discharge of a liquid medium conveyed by a peristaltic pump and segmented by segmentation pistons of a segmentation medium introduced into the stream of this liquid medium is achieved by connection of a blinded hose filled with auxiliary medium to the tubing conveying the segmentation medium, with means for periodically compressing and releasing said blinded hose, thus periodically increasing and decreasing the pressure of the segmentation medium according to a preselected programm.

3,791,401

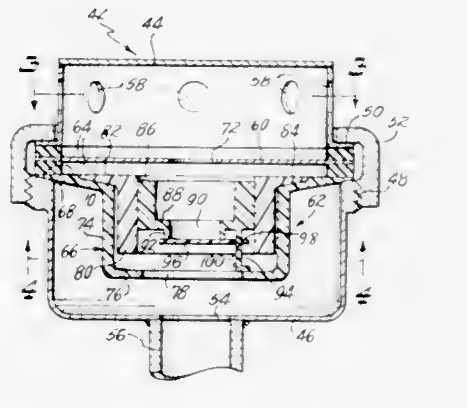
VENTED SANITARY TRAP UNIT

John P. Gorman, Simi Valley, Calif., assignor to Cast Iron Soil Pipe Institute, Washington, D.C.

Filed June 14, 1971, Ser. No. 152,560

Int. Cl. F16k *45/00*

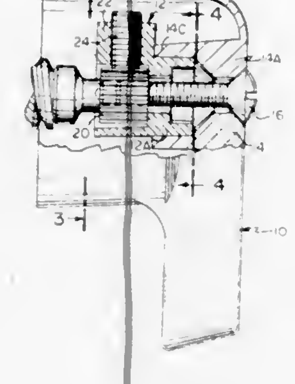
U.S. Cl. 137—216.2 **9 Claims**



A trap unit for installation into a sanitary drainage system, including a generally U-shaped trap body having a vent element mounted on the inlet leg. The vent element has a check valve to prevent overflows, and the trap unit functions to prevent self siphonage of its liquid seal.

3,791,402
HANDLE REPLACEMENT APPARATUS

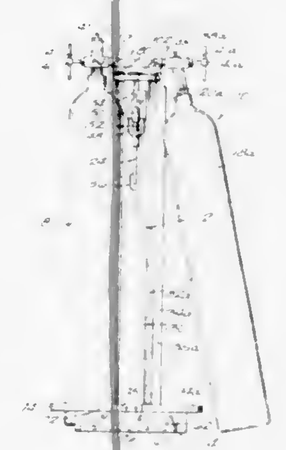
James F. Shuler, Grand Rapids, Mich., assignor to Park Electrochemical Corp., Great Neck, N.Y.
Filed Oct. 24, 1972, Ser. No. 300,210
Int. Cl. F16k *43/00*
U.S. Cl. 137—315 **7 Claims**



Handle replacement apparatus which is particularly adapted for plumbing fixtures is described. The apparatus consists of a replacement handle and a separate insert. The insert fits onto a valve stem and is locked in place at three points. The handle fits onto the insert.

3,791,403
GAS CYLINDER HOLDER

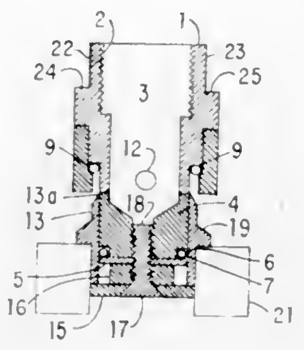
Ilden R. Folkerth, Sparta, Mich., assignor to Michigan Instruments Inc., Grand Rapids, Mich.
Filed Aug. 3, 1972, Ser. No. 277,683
Int. Cl. F16l *5/00*
U.S. Cl. 137—343 **13 Claims**



A support column includes a base at one end and a yoke assembly at the other for receiving and holding a pair of gas cylinders side-by-side. The base includes two pockets which open in opposite directions to permit rotation of the bottom of each cylinder outwardly of the base for independent removal. The pocket depth facilitates handling cylinders of varying lengths, and a spring clamp is provided for each bottle to hold it in the base. The support column includes a hose receiving cavity and openings for quick extension and removal of the hose. In addition, openings in the support column permit quick and easy mounting to a special mating support bracket fixture, the latter having guides for indexing the support column relative to the bracket.

3,791,404
FLOAT VALVE

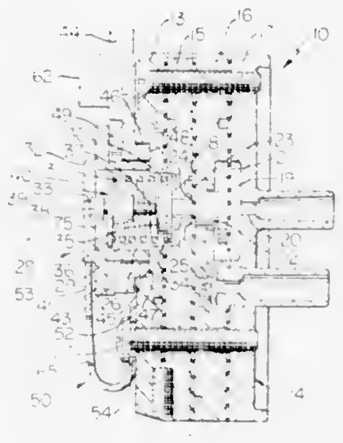
Elbert M. Stevens, 1000 N. Alamo St., San Antonio, Tex.
Filed Apr. 27, 1972, Ser. No. 248,258
Int. Cl. F16k *31/22*
U.S. Cl. 137—433 **6 Claims**



A float-controlled valve for maintenance of liquid levels in tanks without sensitivity to the supply pressure. It includes an apertured, inner-tube for connection to the liquid supply and a float-actuated, outer-skirt closing flow by closing against gaskets on longitudinally-opposite sides of the apertures and opening flow by motion away from one of the gaskets.

3,791,405
PRESSURE REGULATOR CONSTRUCTION AND METHOD OF MAKING THE SAME

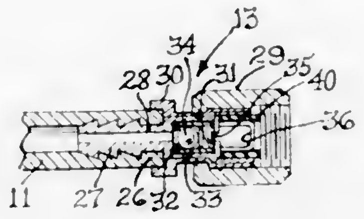
Harold G. Brakebill; Jay L. Lewis, both of Concord, and Walter J. Berleyoung, Knoxville, all of Tenn., assignors to Robertshaw Controls Company, Richmond, Va.
Filed Nov. 20, 1972, Ser. No. 308,118
Int. Cl. F16k *17/04*
U.S. Cl. 137—494 **15 Claims**



A pressure regulator construction having a housing provided with a control chamber interconnected to an exhaust chamber by a valve seat controlled by a movable valve member. A compression spring acts on the valve member to tend to move the valve member in one direction relative to the valve seat. A spring retainer is movably carried by the housing and has the other end of the spring effectively acting against the same. A movable cam is carried by the housing and is operatively associated with the spring retainer to adjust the same relative to the housing and thus vary the force of the spring whereby the set point of the pressure regulator construction can be selectively set. A mounting arrangement is provided and includes a single fastening member securing the spring retainer and the cam to the housing while permitting movement therebetween.

3,791,406
CHARGING HOSE ASSEMBLY

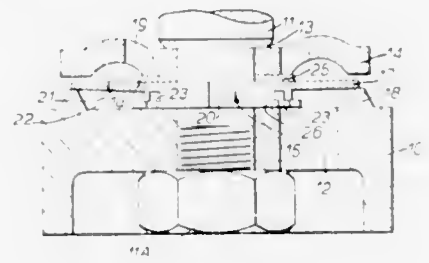
Virgil J. Philipps, Chicago, Ill., assignor to Everco Industries Inc., Chicago, Ill.
Filed Sept. 8, 1972, Ser. No. 287,289
Int. Cl. F16k *15/04*
U.S. Cl. 137—515.5 **3 Claims**



A charging hose assembly including a ball check valve mechanism disposed within the passageway of an end connector for the hose assembly to prevent pressurized reverse flow of material therethrough.

3,791,407
FLUID FLOW CONTROL VALVES

Lawrence George Nicholls, Tysoley, England, assignor to Girling Limited, Birmingham, England
Filed Sept. 8, 1971, Ser. No. 178,767
Claims priority, application Great Britain, Sept. 8, 1970, 42921/70
Int. Cl. F16k *17/26*
U.S. Cl. 137—512.15 **4 Claims**

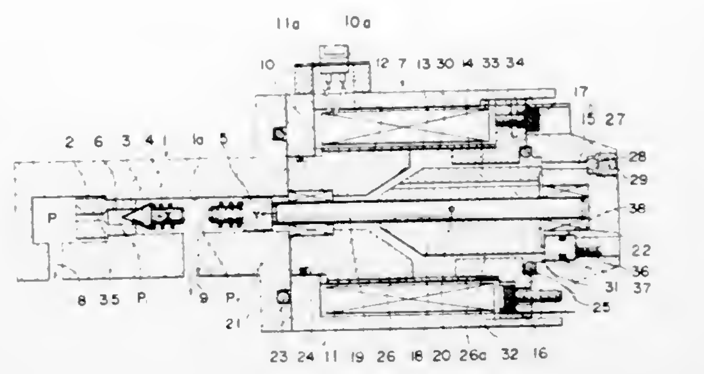


A control valve for use in a shock absorber or the like and including a flexible annular valve element engaging inner and outer valve seats; a unitary valve guide and stop is provided having ducts therethrough, the guide being capable of being moulded of inexpensive plastic material thereby eliminating expensive machining, the inner valve seat being an annular member engaging one end of the guide but being entirely separate therefrom.

3,791,408
ELECTROMAGNETIC PRESSURE-TELECONTROLLING VALVE

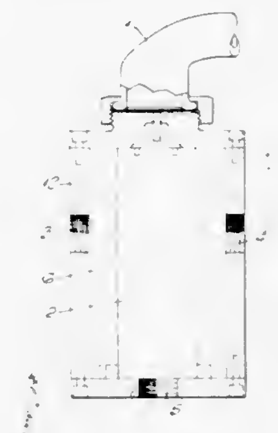
Kouji Saitou, Yokosuka, and Hisakazu Ichioka, Yokohama, both of Japan, assignors to Yuken Kogyo Company Limited, Kanagawa-ken, Japan
Filed May 31, 1972, Ser. No. 258,400
Int. Cl. F16k *17/06*
U.S. Cl. 137—529 **6 Claims**

This invention provides an electromagnetic pressure-telecontrolling valve characterized in that the valve inserted in a valve port is pressed by a pressure-controlling spring in the influence of a solenoid applied with a current, and that the hollow interior of said solenoid is filled with a damping oil so as to give a damping effect to an induced iron core.



3,791,409
TEMPERATURE ADJUSTING WATER FAUCET DEVICE

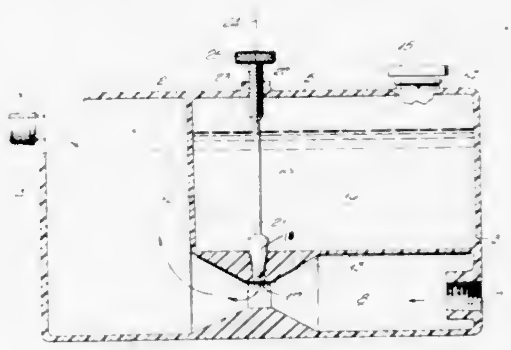
James M. Rush, Laurens, S.C., assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed July 7, 1972, Ser. No. 269,514
Int. Cl. F16k *19/00*
U.S. Cl. 137—597 **6 Claims**



A swivel spout provides water at different water temperatures solely in accordance with the position of the swivel spout. A cylindrical rotary valve has an axially rotatable inner core affixed to and rotatable with the spout for directing water from hot and cold water conduits through the spout.

3,791,410
LIQUID MIXING DEVICE

John Sapiano, Warren, Mich., assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed July 14, 1972, Ser. No. 271,750
Int. Cl. F16k *19/00*
U.S. Cl. 137—604 **3 Claims**

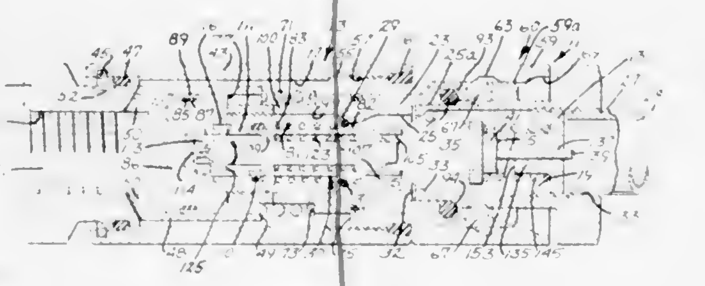


An outer container has an inlet in one wall for admitting a first liquid into the outer container under pressure and an outlet in another wall for releasing liquid from the outer container. An inner container formed in the outer container has some walls in common with walls of the outer container and some walls in the outer container. The inner container has an inlet in a common wall for admitting a second liquid into the inner container and an outlet in a wall in the outer container for releasing the second liquid from the inner container into the outer container. A regulatable valve in the outlet of the inner container controls the volume of the second liquid released from the inner container into the outer container.

3,791,411
HYDRAULIC COUPLER

Bernard E. Bogeskov, 1895 Meadowview Rd., and Ronald D. Boyum, 9524 Pleasant Ave. South, both of Minneapolis, Minn.

Filed Aug. 18, 1972, Ser. No. 281,930
Int. Cl. F16l *29/00, 37/28*
U.S. Cl. 137—614.02 **11 Claims**



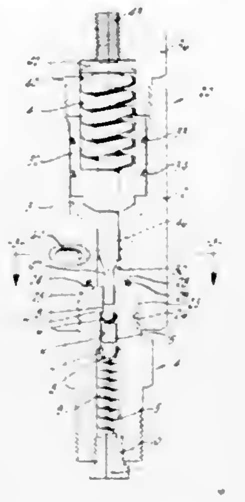
A female coupler for coupling and uncoupling a source of hydraulic fluid under pressure with a male coupler which leads to an implement to receive fluid is disclosed. The female coupler has a main body with a bore therein adapted to receive the source of hydraulic fluid and a cartridge assembly which includes a housing, a sleeve which is movable interior of and with respect to the housing, and a check valve. The cartridge assembly is attachable to the body bore. The sleeve and housing are biased with respect to each other to a normal position and they have a detent ball mechanism cooperating with them so that a male coupler can be insertably held within the sleeve by pushing the male coupler inwardly under force, and the male coupler can be uncoupled by pulling the male coupler out of the sleeve with force. The sleeve has a bore with a seat therein which cooperates with the check valve which is urged within the bore to a position against the seat for blocking flow. The check valve is movable away from the seat for allowing flow. The check valve contains a detent ball mechanism for locking the check valve with respect to the sleeve in a position away from the seat during normal operational flow of the female coupler.

3,791,412
REDUCING VALVE FOR HIGH PRESSURE FLUIDS AND CONNECTING MEANS THEREFOR

Hal N. Mays, 23 Manor Veiw, Fairfax, Calif.

Filed June 5, 1972, Ser. No. 259,438
Int. Cl. F16k *17/06*
U.S. Cl. 137—614.11 **6 Claims**

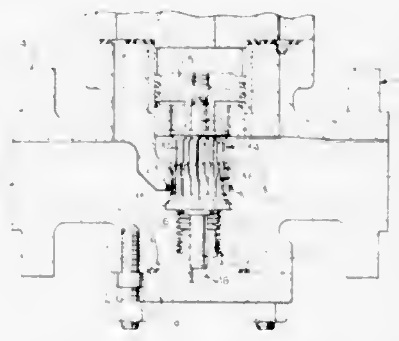
A pressure reducing assembly adapted to be connected to a source of high pressure fluid such as oxygen, including a fitting adapted to be secured to such source to provide a discharge means and a pressure controller secured to the fitting and provided with means for opening the fitting to the flow of high pressure fluid therethrough. The novel controller and fitting are sufficiently simple and inexpensive to manufacture that, when used with a high pressure oxygen cylinder for example, the entire assembly or the fitting may be economically discarded with the cylinder if the latter is not to be refilled. The high pressure fitting is provided with a valve which is adapted to be opened by the controller when low pressure throttled fluid is withdrawn from the latter.



3,791,413
PRESSURE REDUCING VALVE SPOOL

John T. Muller, Morris Plains, and James H. Cooper, Glen Rock, both of N.J., assignors to Leslie Co., Parsippany, N.J.

Continuation of Ser. No. 150,807, June 7, 1971, abandoned, which is a continuation of Ser. No. 829,612, June 2, 1969, abandoned. This application Mar. 23, 1972, Ser. No. 237,565
Int. Cl. F16k *1/08, 31/12*
U.S. Cl. 137—625.3 **4 Claims**

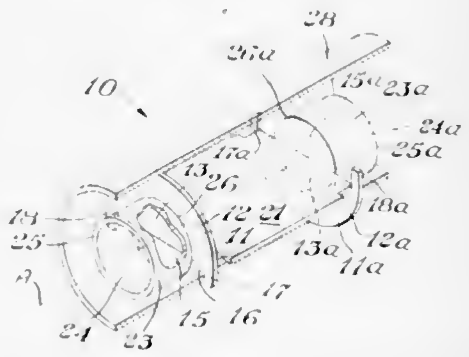


Several embodiments are disclosed of various spool configurations for controlling the flow of an expandable fluid from a high pressure zone to a zone of lesser pressure. The spools structurally conform to a novel principle of controlling the expansion of the fluid from a point of initial throttling throughout the entire expansion profile provided by the valve in such a way that overexpansion of the fluid at any given point is substantially reduced or entirely eliminated.

3,791,414
FLOW INVERTER

Joginder N. Anand, Midland, and Arthur F. Roche, Freeland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 23, 1971, Ser. No. 211,415
Int. Cl. F15d *1/02, 1/06*
U.S. Cl. 138—37 **7 Claims**

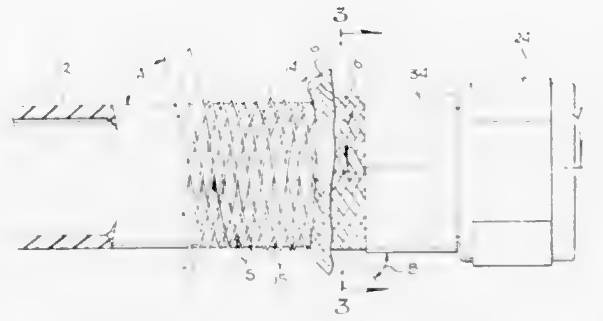


A flow inverter is provided which is readily prepared from sheet- or plate-like elements.

3,791,415
RESILIENT FLEXIBLE HOSE

Glen D. Lawless, Fountain Valley, and Leonard E. Ullrich, Fullerton, both of Calif., assignors to Hydraflow Supply, Inc., Los Angeles, Calif.

Filed May 15, 1972, Ser. No. 253,295
Int. Cl. F16l *11/00*
U.S. Cl. 138—127 **7 Claims**

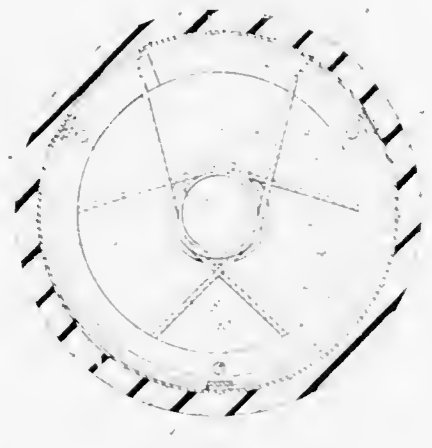


A longitudinally resilient flexible hose having an inner elastomeric tube wrapped on its exterior with an open wire braid at a pitch of approximately 70°, which wire braid is in turn sheathed with a sheath of fiber yarn braided at a pitch of approximately 55°.

3,791,416
SPACER ASSEMBLY FOR CONCENTRIC TUBULAR SYSTEMS

Gerhard Ziemek, Hannover; August Beck, Langenhagen; Ewald Gunia, Hannover; Friedrich Schatz, Langenhagen, and Hans-Joachim Arntz, Berenbostel, all of Germany, assignors to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Filed June 8, 1972, Ser. No. 261,047
Claims priority, application Germany, June 15, 1971, 2129556; July 20, 1971, 2136176
Int. Cl. F16l *7/00*
U.S. Cl. 138—112 **13 Claims**

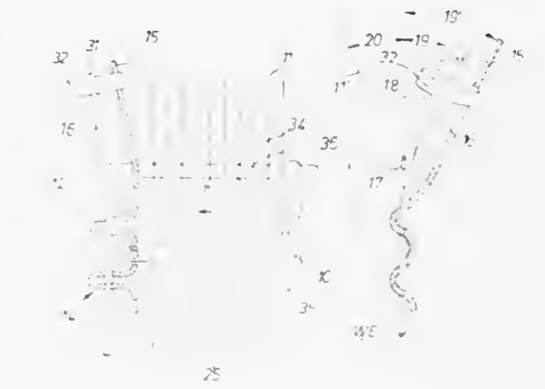


A spacer assembly for a concentric tube system having at least two tubes, to be placed in thermally insulative, concentric relation. An annular arrangement of ring elements with large and small gaps, bolted together and traversed by the inner one of the two tubes; the ring elements are preferably hinged together. A plurality of loops extend inwardly from the annular arrangement for suspending the inner tube in the annular arrangement from at least three different radial directions; the loops are established by thread, wire or ribbon.

3,791,417
METHOD AND APPARATUS FOR PRODUCTION OF A ZIPPER BY WEAVING

Friedrich Glindmeyer, Stolberg; Wilhelm Hennenberg, Alsdorf, and Karl Limpens, Stolberg, all of Germany, assignors to William Prym-Werke KG, Stolberg Rhld, Germany

Filed May 12, 1971, Ser. No. 142,633
Claims priority, application Germany, May 12, 1970, 2023005
Int. Cl. D03d *1/00*
U.S. Cl. 139—11 **9 Claims**

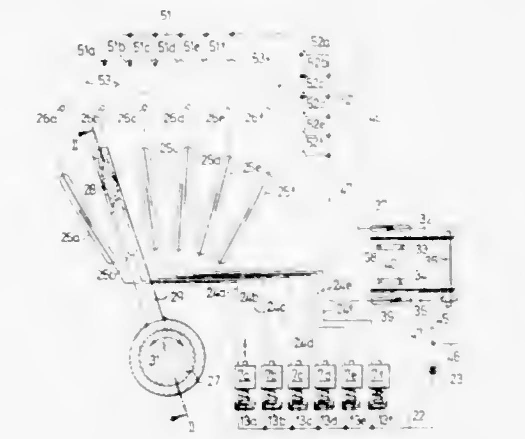


A method of production of a zip fastener by weaving, whereby within the range of the weaving station for the formation of the series of coupling members a continuous profile tape of synthetic material is turned around about a mandrel forming a loop and is bound up in the tape web, which comprises the steps of guiding back and forth the member-forming profile tape as a warp thread shed forming through the web plane feeding thereby in a cycle continuously the profile cord about said loop-forming mandrel and binding it up by at least one weft thread.

3,791,418
MULTIPLE WEFT MECHANISM FOR A WEAVING MACHINE

Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed June 22, 1971, Ser. No. 155,523
Claims priority, application Switzerland, June 30, 1970, 9863/70
Int. Cl. D03d *47/34*
U.S. Cl. 139—122 W **14 Claims**



The weft brake is released in programmed sequence to the weaving machine to allow picking of a selected weft and is reengaged in response to the lapse of a predetermined time interval. The time interval is determined by means of an adjustable gap formed by a pair of adjustable cam plates run off the main shaft wherein the gap serves to close the circuit to the weft brake. The time interval can also be terminated by an electronic or pneumatic means independently of the operation of the weaving machine.

3,791,419

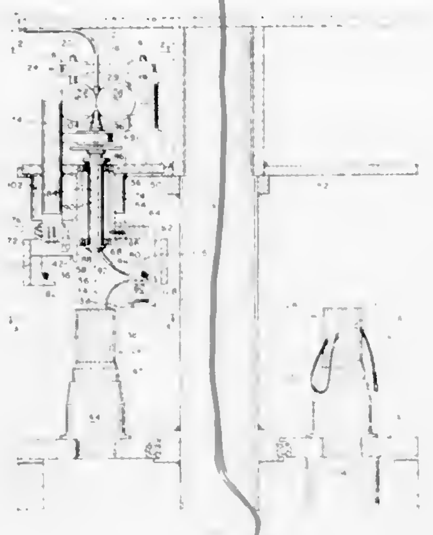
APPARATUS AND METHOD FOR FORMING WAVE WINDING FOR DYNAMOELECTRIC MACHINE

Robert E. Arick, Fort Wayne, Ind., and Ralph A. Vogel, Three Rivers, Mich.; assignors to Essex International, Inc., Fort Wayne, Ind.

Filed Oct. 16, 1972, Ser. No. 297,654

Int. Cl. B21f *3/00*

U.S. Cl. 140—92.1 **21 Claims**



An apparatus and method for forming and placing a skein of wire on a circular array of blades of coil insertion apparatus for subsequent transfer thereby to the slots of a dynamoelectric machine stator core member to form a wave winding. A generally circular skein of wire is generated and is then initially formed into an undulating configuration having at least two convexly curved loop sections respectively joined by connecting portions to intermediate, concavely curved sections. The thus-formed skein is thereafter transferred onto the blades of the coil insertion apparatus with the loop sections being disposed on the exterior of the array and respectively spanning first groups of the blades, the intermediate sections being disposed on the interior of the array and respectively spanning second groups of the blades, and the connecting portions respectively passing between respective pairs of blades at the ends of adjacent first and second groups.

3,791,420

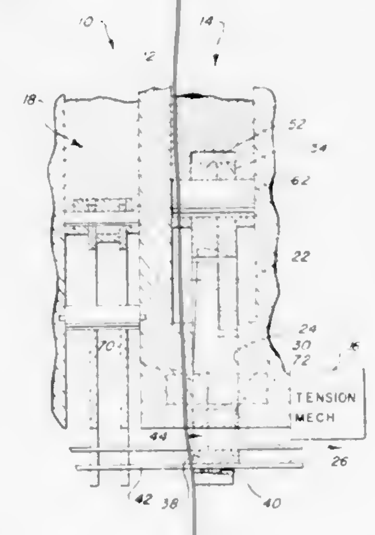
GRIPPING MECHANISM FOR STRAPPING MACHINE

John R. Beach, Elmhurst, Ill., assignor to Signode Corporation, Glenview, Ill.

Filed Aug. 16, 1972, Ser. No. 281,054

Int. Cl. B21f *9/02*

U.S. Cl. 140—93.2 **18 Claims**



A gripping device for holding the free end of a strap that is being tensioned about an article is disclosed in this application. The gripping device is designed so that the gripping action on the strap is directly proportional to the tension on the strap which results in a self-energizing gripping device. The gripping device consists of a pair of gripping jaws that are pivoted around openings receiving pins that define spaced parallel axes extending longitudinally of the strap. The openings that receive the pins defining the pivot axes are tapered from the opposite sides of the gripping jaws towards the center so that the gripping jaws may pivot between extreme positions about an axis extending generally normal to the length of the strap when tension is applied to the strap. The surfaces which engage the strap also have notches that define teeth and the teeth are configured so that the engaging surface is generally parallel to the parallel axes defined by the pins.

3,791,421

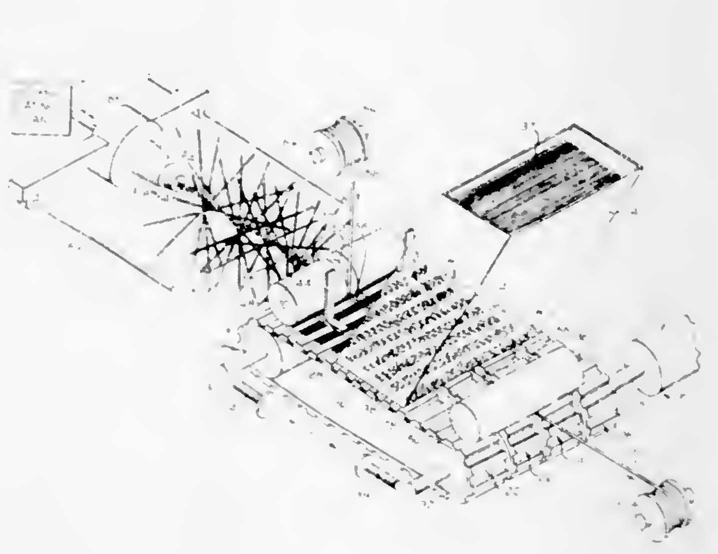
APPARATUS FOR MAKING ARTIFICIAL BRANCHES, BRUSHES, AND THE LIKE

Robert Barrett, Beacon, N.Y., assignor to Gordon Industries, Inc., Newburgh, N.Y.

Filed Aug. 7, 1972, Ser. No. 278,397

Int. Cl. B21f *7/00*

U.S. Cl. 140—149 **7 Claims**



Apparatus for making artificial branches, brushes, etc., from a plurality of filaments held between a pair of twisted wires. Comprises a picker device, the peripheral surface of which is advanceable in a predetermined direction. The picker device is adapted to pick up and contain a plurality of separate bundles of filaments, the filaments being disposed transversely of the direction of movement of the surface. The peripheral surface has a continuous slot or space therein, this slot being parallel to the direction of advancement of the peripheral surface. The slot or space is adapted to receive the lower of the pair of wires, which wire extends outwardly from the exit end of the peripheral surface under the filaments. The apparatus further comprises means for feeding a plurality of filaments to the picker device, drive means for advancing the peripheral surface, means for guiding the second or upper wire into position above the lower wire at the exit end of the picker device, independent drive means for advancing these wires, and means for twisting the wires together.

3,791,422

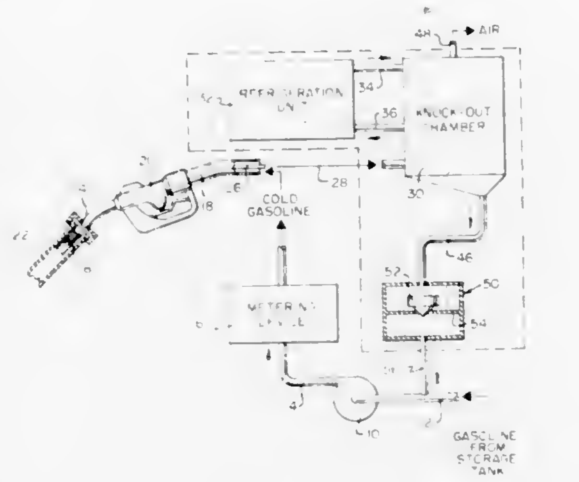
SERVICE STATION GASOLINE VAPOR RECOVERY SYSTEM

Everette M. Johnson, Fishkill; Herbert E. Vermillion, Wappingers Falls, and Robert S. Wetmiller, Fishkill, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Nov. 11, 1971, Ser. No. 197,747

Int. Cl. B65h *3/04*

U.S. Cl. 141—11 **11 Claims**



The invention relates to apparatus and method to avoid pollution of the atmosphere due to the passage of gasoline fumes into the latter. The system functions in conjunction with a service station which in its operation transfers gasoline from a storage tank to a motor vehicle. The apparatus includes means to collect fumes from the vehicle tank simultaneous with the injection of liquid fuel to the latter. Thereafter the fumes are vaporized and separated from the air such that only the latter is passed to the atmosphere.

3,791,423

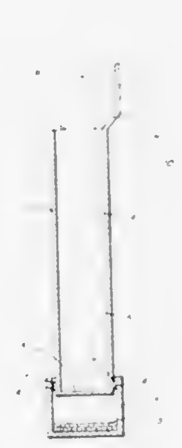
HYDROMETER HOLDER

Wilmarth A. Hildreth, 2005 N. El Dorado St., Stockton, Calif.

Filed Aug. 24, 1972, Ser. No. 283,513

Int. Cl. A47f *5/08*, **H01m** *31/04*

U.S. Cl. 141—86 **2 Claims**



A vertically disposed tubular holder adapted to receive and support a storage battery testing hydrometer in a readily manually accessible position, but at the same time well protected; the holder being arranged with a cup--containing a neutralizing material—to catch and neutralize any battery acid which may drip from the hydrometer after use and upon placement thereof in the holder.

3,791,424

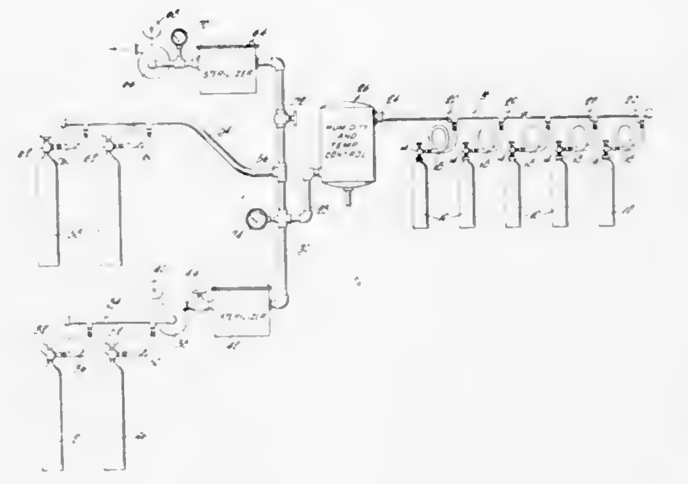
APPARATUS FOR STERILIZING GAS CONTAINERS AND FILLING SAME WITH A STERILE GAS

Gordon N. Strople, Cherry Hill, and Junstin W. Mills, Jr., Cinnaminson, both of N.J., assignors to Lif-O-Gen, Inc., Cambridge, Md.

Division of Ser. No. 53,394, July 9, 1970, Pat. No. 3,620,265, which is a continuation-in-part of Ser. No. 765,044, Oct. 4, 1968, abandoned. This application May 26, 1971, Ser. No. 147,211

Int. Cl. B65b *55/10*

U.S. Cl. 141—92 **7 Claims**



One or more gas containers connected by a conduit means to a feed source are sterilized and sterilely filled by the evacuation of the containers and conduit means to a low pressure, the introduction of a sterilizing agent into the containers and conduit means for a suitable holding period, the removal of the sterilizing agent by a further evacuation of the containers and conduit means, and the introduction of a gaseous feed stock to the containers through a sterilizing unit in the conduit means.

3,791,425

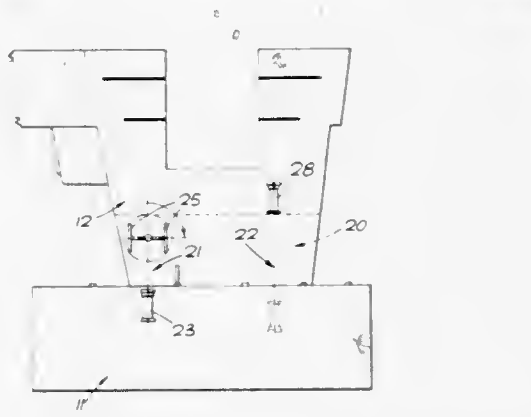
WASHING AND FILLING MACHINES

David John Bowring, Wolverhampton, England, assignor to GKN Sankey Limited, Bilston, Staffordshire, England

Filed Mar. 23, 1972, Ser. No. 237,410

Int. Cl. B08b *3/02*

U.S. Cl. 141—92 **9 Claims**



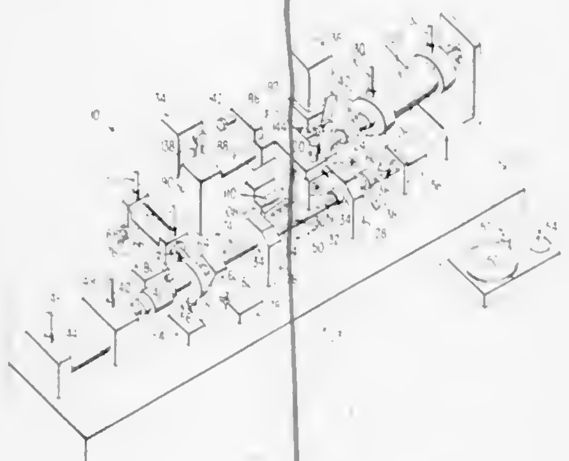
A machine for washing and/or filling containers for liquids comprising conveying means for conveying a succession of containers along a path through the machine, washing and/or filling means positioned along the path for carrying out a plurality of washing and/or filling operations, and control apparatus for the machine, the apparatus including a timer for controlling the duration of each of a sequence of operations, the timer comprising an electronic pulse generator arrangeable to emit timing pulses, a pulse counter arranged to count pulses emitted by the generator, and a plurality of selector means, each selector means being arrangeable to emit a signal

ing across the full thickness of the blade, the blade being sup-

the intermediate wall. The wheel includes a suitable mounting to initiate stoppage of an operation when the number of timing pulses received by the counter reaches a number preset on the selector means.

3,791,426
REED CUTTING MACHINE

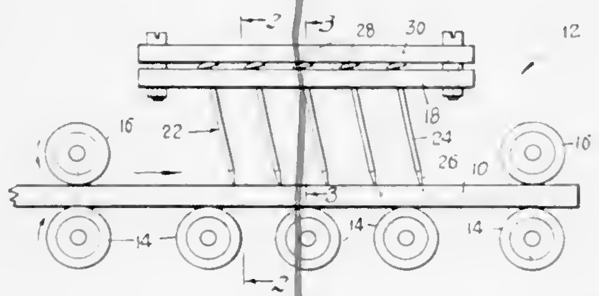
William A. Roscoe, Rockville, Md., assignor to M. M. Meason, Inc., Rockville, Md.
Filed Nov. 8, 1972, Ser. No. 304,881
Int. Cl. B27m *3/00;* **B23d** *3/06*
U.S. Cl. 144—2 R **5 Claims**



A curved reed is held on a hollow perforated mandrel having a radius complementary to the radius of the reed by means of a vacuum applied through the interior of the mandrel The tubular mandrel is shifted axially in one direction while being rotated about its axis through an angle subtended by half the width of the reed and is then shifted axially in the opposite direction to the starting point while being rotated about its axis in the same direction through an angle subtended by half the width of the reed. During the foregoing motion of the reed on the mandrel, a cutter is reciprocated rapidly on the surface of the reed adjacent the middle thereof at an angle to the axis of the mandrel to provide a crescent shaped beveled cut. The cutter is then lifted off the reed and the mandrel is rotated in the opposite direction to its initial starting point for a subsequent cutting operation.

3,791,427
APPARATUS FOR SIMULATING BARN WOOD

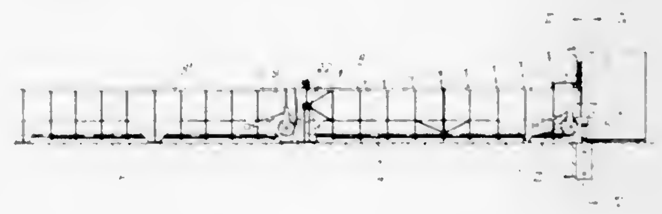
Lincoln W. Haynes, c/o Haynes Bros. Inc., Wilmington, Vt.
Filed Nov. 30, 1972, Ser. No. 310,933
Int. Cl. B27c *9/00*
U.S. Cl. 144—2 R **8 Claims**



A method of and apparatus for imparting random elongate furrows to the surfaces of wooden panels so as to simulate weathered barn wood. The apparatus comprises means for supporting the panels, a tool carrier member adjacent to and movable with respect to the supporting means, a plurality of resilient spikes mounted on said carrier member and extending toward the supporting means for engagement with the surface of the wooden panel, and a power actuated means for effecting relative movement between the member and the panel. The spikes are loosely carried in apertures of the carrier member such that they can undergo limited swiveling movement with respect thereto. As the spikes engage the surface of the panel, they forcibly dig into the same and simultaneously undergo random limited swiveling movement, thus creating unique, non-parallel furrows therein. The method of the invention comprises engaging the surface of the panel by the spikes carried on the carrier member with respect to the panel, such that the spikes forcibly dig into the surface and undergo a random swiveling movement to thereby cut a series of age-simulating furrows therein.

3,791,428
WOOD SHAVING MACHINE

Karl Schaefer, Neu-Bamberg, Germany, assignor to Machinenfabrik B. Maier K.G., Brackwede, Germany
Filed Nov. 30, 1971, Ser. No. 203,317
Claims priority, application Germany, Nov. 30, 1970, 2058821
Int. Cl. B27l *11/02*
U.S. Cl. 144—172 **9 Claims**



In a wood shaving machine there are provided two juxtaposed, axially parallel shaving heads and two vertically swingable feed troughs, one associated with each shaving head. The pivotal axis of each trough is associated with the trough end that is remote from the shaving heads. During operation, the feed troughs are swung in opposite phase; cutting takes place during the upward swing as the wood logs in the feed trough is urged against the associated shaving head

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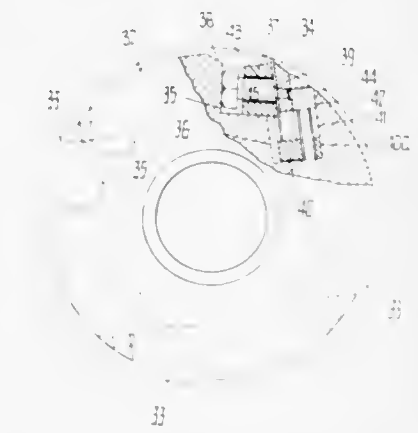
3,791,429
ROTARY CUTTER FOR WOODWORKING AND SIMILAR MACHINES

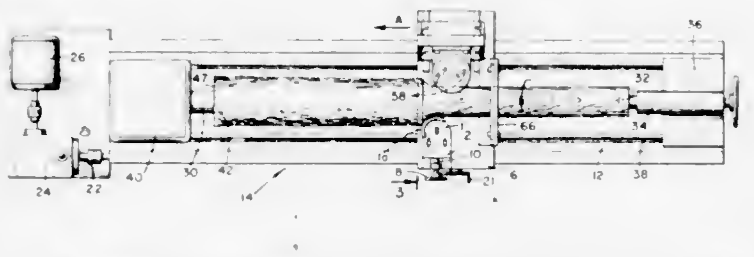
Philip Henry Morris, Evington, England, assignor to Wadkin Limited, Leicester, England
Filed June 7, 1971, Ser. No. 150,629
Claims priority, application Great Britain, June 9, 1970, 27757/70
Int. Cl. B27g *13/00;* **B26d** *1/12*
U.S. Cl. 144—218 **7 Claims**



A rotary cutter for woodworking and similar machines in which a single cutter blade or each of a plurality of circumferentially spaced cutter blades is of such thin construction that the "heel" formed on it by jointing (i.e., a rotary sharpening procedure) is kept within acceptable limits whilst extending across the full thickness of the blade, the blade being supported by a separate backing piece close to its cutting edge. Thereby the need for regrinding of a cutter blade to reduce the width of its heel is avoided.

3,791,430
METHOD AND APPARATUS FOR SIMULTANEOUSLY STRIPPING AND FINISHING LOGS

James A. Hood, P.O. Box 7-70744, Holden, La., and Roy H. Barksdale, 219 E. Roberts St., Hammond, La.
Division of Ser. No. 142,186, May 11, 1971. This application Dec. 6, 1972, Ser. No. 312,753
Int. Cl. B27m *3/00;* **B27l** *1/00;* **B27f** *1/02*
U.S. Cl. 144—326 **3 Claims**



An apparatus and method for stripping and finishing logs, including an arcuately shaped cutting member for simultaneously stripping and finishing the logs, a second cutter member for cutting a longitudinal groove in the thus finished log and a third cutter member for cutting a transverse groove in the thus finished log, both said grooves having an arcuate shape, the radius of which is approximately equal to the radius of the thus finished log.

3,791,431
PROCESS FOR COATING METALS

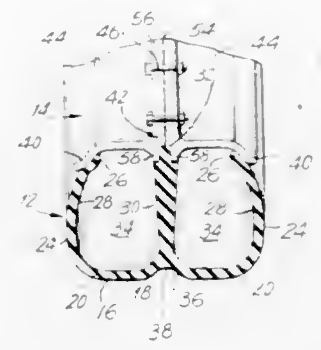
Lester Steinbrecher, Southampton, and Wilbur S. Hall, Plymouth Meeting, both of Pa., assignors to Amchem Products, Inc., Ambler, Pa.
Continuation-in-part of Ser. No. 113,685, Feb. 8, 1971, which is a division of Ser. No. 791,801, Jan. 16, 1969, Pat. No. 3,585,084, which is a continuation-in-part of Ser. No. 554,336, June 1, 1966, abandoned. This application May 26, 1972, Ser. No. 257,295
Int. Cl. C23f *7/00;* **B44d** *1/36*
U.S. Cl. 148—6.2 **27 Claims**

Acidic aqueous coating compositions containing an organic coating-forming material form coatings on metallic surfaces which are immersed therein. The coating composition tends to become unstable as a result of the buildup of metallic ions in the composition. The coating composition is stabilized by removing the metallic ions from the composition or rendering them ineffective for causing the composition to become unstable.

3,791,432
WHEEL AND TIRE THEREFOR

Maximo Calullerovich, Ipiranga Ave. 81, Sao Paulo, Brazil
Filed June 8, 1972, Ser. No. 260,896
Claims priority, application Brazil, June 14, 1971, 0363171
Int. Cl. B60c *5/06*
U.S. Cl. 152—339 **5 Claims**

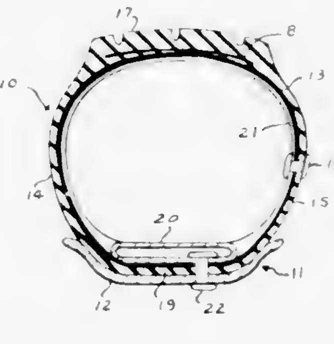
A wheel having an inflatable tire and designed to be used on automobiles, airplanes, trucks, and the like. The tire has an outer wall provided with an outer tread surface and surrounding a predetermined axis, this outer wall having a pair of opposed side edge regions from which a pair of side walls extend integrally from the outer wall inwardly toward the axis and terminate in inner peripheral edges which surround the axis. An intermediate wall is integral with the outer wall and is situated between and spaced from the side walls, also extending inwardly toward the axis so as to define with the outer walls a pair of air chambers which are separated from each other by the intermediate wall. The wheel includes a suitable mounting structure on which the tire is mounted in such a way that fluid-tight seals are provided at the inner peripheral edges of the side and intermediate walls. In this way if the tire should



become punctured or lose air pressure for any reason at one of its chambers it will still be capable of providing fully operative service as a result of the air pressure in the other of its chambers.

3,791,433
FILAMENT-WOUND, TOROIDAL TIRE WITH PNEUMATIC RIM-LOCKING TUBE

Howell K. Brewer, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed July 13, 1972, Ser. No. 271,467
Int. Cl. B60c *5/00, 15/02*
U.S. Cl. 152—339 **7 Claims**



A closed membrane, toroidal tire having a cord reinforced rubber tube positioned within the tire casing, and inflatable for automatically urging the inner casing portion in locking relation against the rim of an aircraft or other, vehicular wheel on which it is mounted.

3,791,434
DEVICE FOR FITTING AND REMOVING OF TIRE WHICH EQUIP THE WHEELS OF MOTOR VEHICLES

Victor Duquesne, Quellinstraat 42-44, Antwerpen, Belgium
Filed Mar. 16, 1972, Ser. No. 235,353
Claims priority, application Belgium, Mar. 30, 1971, 59.915
Int. Cl. B60c *25/06*
U.S. Cl. 157—1.24 **5 Claims**

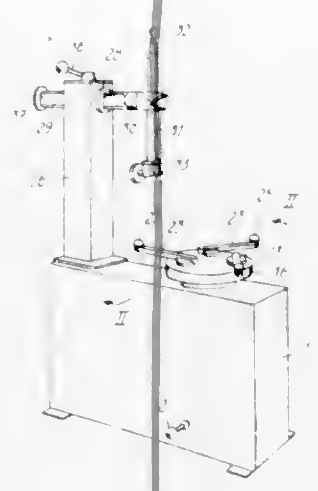
A device for removing or mounting vehicle tires relative to a wheel therefore and having driven means for clamping and rotating the wheel in opposite directions and an arm having

tire removing and mounting tools at opposite ends which arm

3,791,436

operation; wherein the final exciting voltage of said electro-

metal feed mechanism includes a sprue and runner complex tire removing and mounting tools at opposite ends which arm can be positioned and held with either tool against the tire for



the intended purpose whereby rotation of the wheel will remove or mount the tire on the wheel.

3,791,435

CONTINUOUS DEHYDRATION APPARATUS

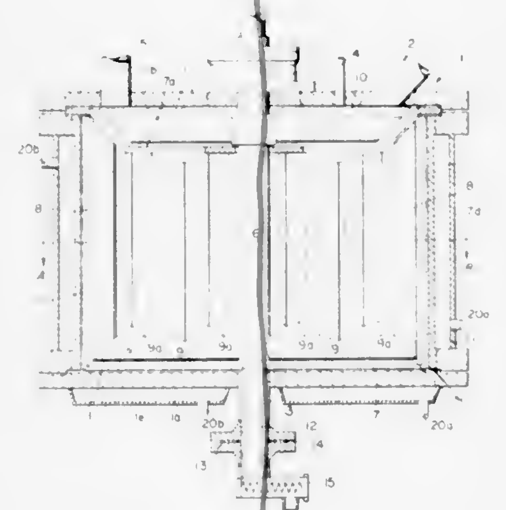
Horst Grasemann, Marl, and Hermann Rose, Essen, both of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed Dec. 17, 1971, Ser. No. 209,133

Claims priority, application Germany, Dec. 18, 1970, 2062452

Int. Cl. B01d *1/30;* **B01j** *1/00*

U.S. Cl. 159—25 A **10 Claims**



Improved drying apparatus for the continuous dehydration of wet orthoboric acid to metaboric acid comprising a vessel fitted with product feed and discharge lines; with gas inlet and vapor outlet lines; and a vertically mounted agitator close fitted to the bottom and wall of the vessel; wherein the agitator has a vane perpendicularly mounted on the agitator shaft in scraping relationship to opposite sides of the vessel wall, on which vane is vertically mounted scraper elements; positioned at the ends of the vane in scraping relationship to the vessel wall, and elongate paddles, positioned intermediate the agitator shaft and the scraper elements at an angle of incidence to the axis of the vane.

3,791,436

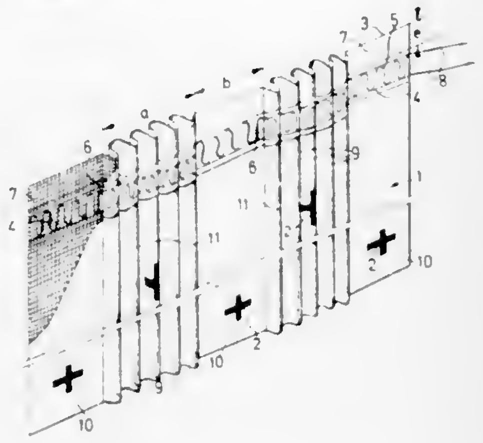
PATTERNED CURTAIN

Ilse Weckbrodt, Michelau, Germany

Continuation of Ser. No. 75,336, Sept. 25, 1970, abandoned. This application Sept. 13, 1972, Ser. No. 288,535

Int. Cl. A47h *13/14*

U.S. Cl. 160—348 **3 Claims**



A patterned curtain panel is lengthwise pleated in symmetry with a pattern on the panel by providing hooking holes disposed symmetrically with the pattern in a heading strip along the top edge of the panel. Crosswise contraction of the panel automatically forms pleats in the same. By placing the hooking holes so that alternate wide and narrow lengthwise sections or strips of the panels are defined, crosswise contraction of the panel, for instance, by means of a pull string, causes the wide sections to be pleated while the narrow sections remain flat.

3,791,437

METHOD OF CONTROLLING AN ELECTRO-MAGNETIC MOLTEN METAL POURING DEVICE

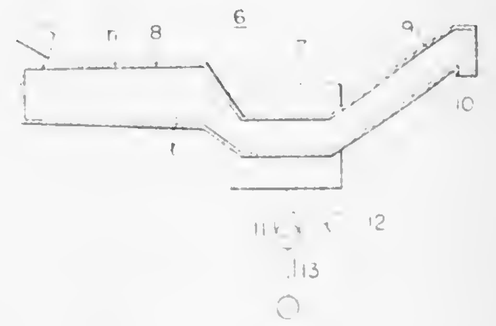
Akira Yamada; Hirohiko Shibutami, and Koichi Hirano, all of Kitakyushu, Japan, assignors to Kabushiki Kaisha Yaskawa Denki Seisakusho, Fukuoka-ken, Japan

Filed Dec. 14, 1970, Ser. No. 97,752

Claims priority, application Japan, Dec. 13, 1969, 44-100329; Feb. 23, 1970, 45-15686

Int. Cl. B22d *27/02, 37/00*

U.S. Cl. 164—49 **2 Claims**



Described is a method of controlling an electro-magnetic molten metal pouring device which comprises an electro-magnetic pump which is adapted to generate a traveling magnetic field by a.c. excitation thereby to impart impellent force to molten metal present inside the pump, a molten metal reservoir located on one side of the pump, and a nozzle positioned on the other side of the pump; wherein supplying of molten metal to the molten metal reservoir is started and stopped respectively by detecting the lower limit level and the upper limit level of molten metal present in the molten metal reservoir, and pouring of the molten metal into a mold is started and stopped respectively by detecting the arrival of the mold and the molten metal fullness in the mold. In addition, disclosed is a method of controlling a molten metal pouring operation; wherein the final exciting voltage of said electromagnetic pump in the preceding molten metal pouring operation is memorized, and the exciting voltage thereof is gradually raised up for a subsequent molten metal pouring operation, said memorized final exciting voltage in the preceding molten metal pouring operation being regarded as the initial exciting voltage for the subsequent molten metal pouring operation.

3,791,438

PROCESS FOR MANUFACTURING A WEAR-RESISTANT CAST METAL PRODUCT

Kazunori Ikeda, Saitama-ken; Takeo Arai, Tokyo; Takuo Yamamura, and Taichiro Kayama, both of Saitama-ken, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1972, Ser. No. 238,614

Claims priority, application Japan, Mar. 27, 1971, 46-17606

Int. Cl. B22d *27/20*

U.S. Cl. 164—55 **9 Claims**

A cast metal product, such as a bearing, having improved wear resistance and lubricating properties is obtained using the die casting process, wherein a molten metal, such as aluminum, is supplied under pressure into a mold cavity through a conduit by the pushing action of a plunger, by adding to the molten metal in the conduit a thermoplastic resin, such as polyethylene, or a mixture of such resin with a powdered lubricant, such as graphite or a powdered wear-resistant material, such as silicon.

3,791,439

CENTRIFUGAL CASTING APPARATUS

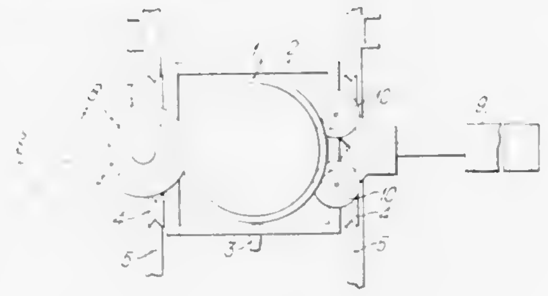
Roland Philip Chapman, 9 Harrison Rd., Headless Cross, Redditch, England

Filed Sept. 25, 1972, Ser. No. 291,551

Claims priority, application Great Britain, Oct. 2, 1972, 45976/72

Int. Cl. B22d *13/10*

U.S. Cl. 164—292 **3 Claims**



A mould is supported in a fluidised bed within a tank which is rotatable to centrifugally cast molten metal introduced into it

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3,791,440

DIE CASTING METHOD

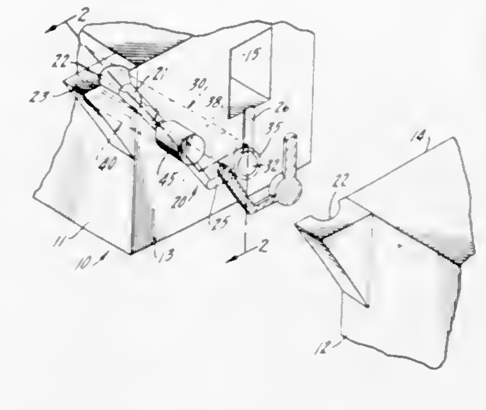
Raymond E. Cross, 2222 N. Elston Ave., Lake Forest, Ill.

Division of Ser. No. 865,397, Oct. 10, 1969. This application Dec. 7, 1970, Ser. No. 95,440

Int. Cl. B22d *13/00, 27/10*

U.S. Cl. 164—113 **5 Claims**

A method of casting high temperature melting point metals and a die arrangement and molten metal feed mechanism for a die casting machine. The method includes gravity filling a shot cylinder with molten metal, cutting off the inlet to the shot cylinder when it is full and then forcing the molten metal in the air-free cylinder into the mold cavity. The machine includes die elements adapted to mate and define a mold cavity at a parting line defined by parting surfaces between the opposed faces of the elements. The die arrangement and molten metal feed mechanism includes a sprue and runner complex also disposed at a parting line, and a molten metal injection or shot cylinder which extends into the parting line or lines. The metal shot cylinder is filled through the sprue with the dies



closed. In one aspect of the invention, a molten metal injection plunger acts to seal off the sprue from the shot cylinder during a casting operation, while in another aspect of the invention a separate sprue plunger is utilized to perform this function.

3,791,441

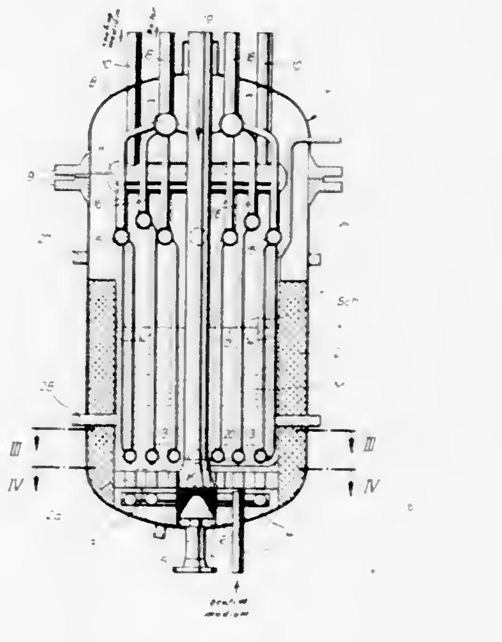
METHOD OF COOLING CRACKED GAS, SYNTHESIS GAS AND SIMILAR GASES

Frohmut Vollhardt, Siegen-Buerbach; Harald John, Ludwigshafen; Wilhelm Rittinger, Schifferstadt; Walter Saum, Ludwigshafen; Artur Sliwka, Kirchheim, and Friedrich Wodtke, Ludwigshafen, all of Germany, assignors to Badische Anilin & Soda Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Continuation-in-part of Ser. No. 811,746, April 1, 1969, abandoned. This application May 3, 1971, Ser. No. 139,878

Int. Cl. F28d *13/00*

U.S. Cl. 165—1 **12 Claims**



A method of cooling gases, especially cracked gas or synthesis gas from hydrocarbons, in which the gas to be cooled is passed under pressure through a metal bath for transferring heat from said gas to said metal bath, said gas being in direct contact with the molten metal, while the temperature of said metal bath is maintained substantially constant by a cooling medium which is variable as to heat absorption.

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permafrost condition typically prevails, is provided by a con-

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sion on the wireline to permit the valve element to move to

removing sand bridges from wells. The tubing is introduced

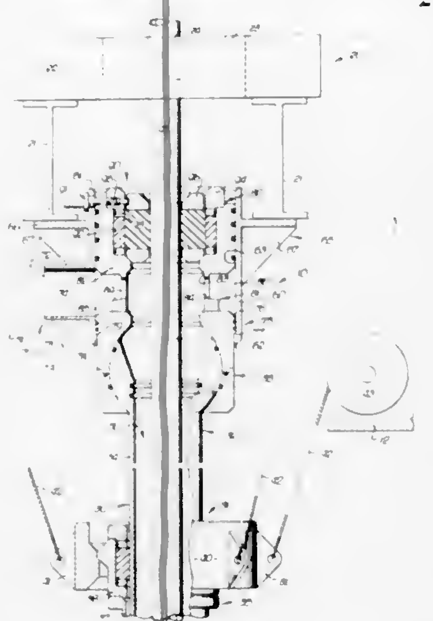
3,791,442
COUPLING MEANS FOR A RISER STRING RUN FROM A FLOATING VESSEL TO A SUBSEA WELL

Bruce J. Watkins, Palos Verdes Estates, Calif., assignor to Regan Forge and Engineering Company, San Pedro, Calif.

Filed Sept. 28, 1971, Ser. No. 184,444

Int. Cl. E21b *7/12*

U.S. Cl. 166—.5 **25 Claims**



A coupling means connects a riser string of tubing to a floating vessel over a subsea well to which the string is run by a support member, which in one version is a housing mounted beneath the rotary table on the vessel with a tubing hanger support means provided in the housing, and in another version is a support ring mounted in the sea beneath the vessel by constant tension cables run from the vessel. A string of tubing is run through the bore of the rotary table and a central bore through the support member to the subsea well. The tubing hanger supporting the riser string is also run through the table bore and is landed in the support member positioned beneath the table. The support member also in one version has a fluid line coupling means provided integrally thereof for automatically connecting the interior of the riser string of tubing to a vessel associated fluid line upon the landing of the tubing string in the support member. The support member, in the latter version, is also provided with a diverter insert, a blowout-preventer insert, and a packer insert to provide radial passages and a collector passage within the support member to conduct well fluids from a space between an operating string and the surrounding riser string while closing the upper end of the support member to prevent the escape of fluids therefrom.

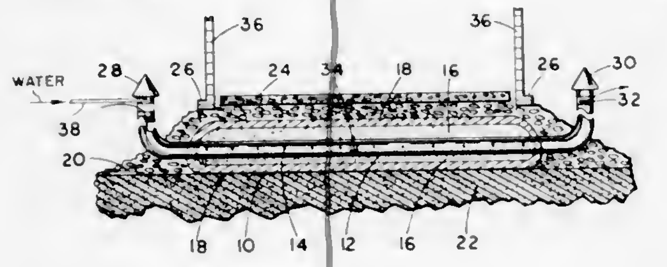
3,791,443
FOUNDATION FOR CONSTRUCTION ON FROZEN SUBSTRATA

Glenn R. Burt, Deer Park, Tex.; Albert C. Condo, Newtown Square, Pa.; Richard L. Odsather, Fairbanks, Alaska, and Kay E. Eliason, Fort Madison, Iowa, assignors to Atlantic Richfield Company, New York, N.Y.

Filed Dec. 13, 1971, Ser. No. 207,379

Int. Cl. E02d *3/00*

U.S. Cl. 165—45 **19 Claims**



A foundation construction, particularly useful for buildings and other supported structures in Arctic regions wherein a permafrost condition typically prevails, is provided by a construction pad having at least one or more perforated and ventilated conduits positioned within a cushion of air-permeable particulate material, said cushion containing the perforated conduit being substantially thermally isolated from the supported structure by means such as encapsulating with an insulating material. Generally, the pad is overburdened with, or imbedded in, a suitable gravel fill material. The pad can substantially reduce, and in certain instances eliminate, the necessity of providing piling supports in Arctic regions and furthermore provides both a thermal barrier restricting heat flowing downward from the building to the frozen substrata and a type of thermal shunt blocking heat from the structure while admitting a certain amount of geothermal heat flowing upward from the ground to an ambient air heat sink.

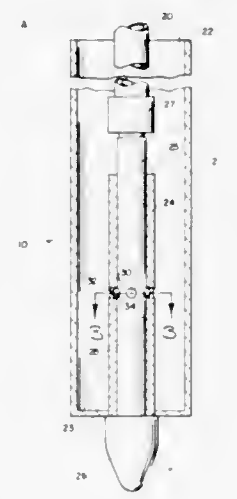
3,791,444
LIQUID GAS SEPARATOR

Weldon W. Hickey, Box N, Salmon, Idaho

Filed Jan. 29, 1973, Ser. No. 327,673

Int. Cl. E21b *43/00*

U.S. Cl. 166—54 **8 Claims**



A float operated separator valve attached at the bottom of an oil-gas well including a delivery pipe with ports therein, a valve sleeve slidable on the pipe with openings therethrough which when the valve is open align with the ports in the pipe, the sleeve being positioned inside and connected to a cylindrical float with its top open for receipt of fluid. The ports and openings being in alignment to provide a passage up the delivery pipe when the float is full of fluid, but as the fluid in the float drains the float lifts due to buoyancy, thereby closing off the passage.

3,791,445
WIRELINE OPERATED SAFETY VALVE SYSTEM

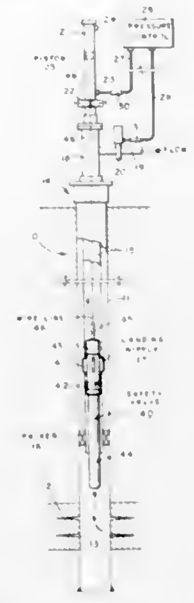
Martin E. True, Houston, Tex., assignor to Esso Production Research Company, Houston, Tex.

Filed May 22, 1972, Ser. No. 255,631

Int. Cl. E21b *43/12*

U.S. Cl. 166—72 **12 Claims**

A subsurface safety valve system for controlling the flow of oil and/or gas production fluids through a well pipe. A valve assembly is installed in the well pipe a predetermined depth below the surface. A wire-line connects the valve assembly to surface facilities which include apparatus for maintaining sufficient tension on the wireline to hold a movable valve element in the valve assembly in open position and for releasing tension on the wireline to permit the valve element to move to closed position to prevent flow of fluids through the valve assembly. A spring exerts a downward force to move the valve element to its closed position.



3,791,446
METHOD FOR STIMULATING WELL PRODUCTION

Jack F. Tate, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 82,182, Oct. 19, 1970, abandoned. This application June 25, 1971, Ser. No. 157,051

Int. Cl. E21b *43/27*

U.S. Cl. 166—307 **6 Claims**

The production of hydrocarbons from a subterranean hydrocarbon-bearing formation containing acid-soluble components, such as one composed at least in part of dolomite or limestone, is stimulated by injecting into the formation a composition comprising an aqueous solution of a mineral acid having dissolved therein a vinylpyrrolidone polymer. The increase in the permeability and porosity of the formation achieved utilizing the method of invention results in a substantial improvement in hydrocarbon recovery.

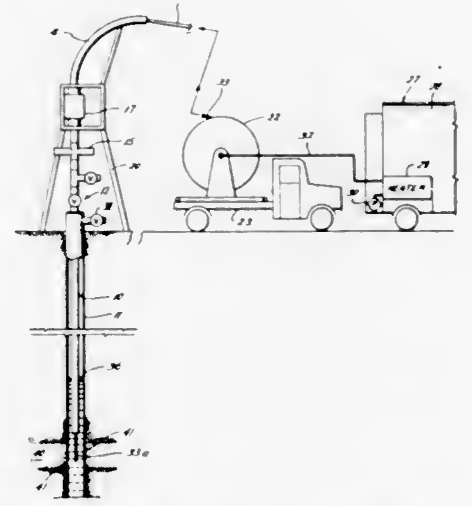
3,791,447
WELL METHODS FOR SAND BRIDGE REMOVAL USING SMALL DIAMETER TUBING

Arthur W. Smith; Ray A. Plummer, and Charles Wayne Johnson, all of P.O. Box 3047, Houston, Tex.

Division of Ser. No. 873,932, Nov. 4, 1969, abandoned. This application Apr. 28, 1971, Ser. No. 138,066

Int. Cl. E21b *21/00, 37/00*

U.S. Cl. 166—311 **4 Claims**



Well methods using small diameter tubing introduced into and withdrawn from the well by an injector apparatus, for removing sand bridges from wells. The tubing is introduced into and withdrawn from the well by the injector from a tubing-holding reel and introduction of an inert gas such as nitrogen through the small diameter tubing breaks up the sand bridge and carries the sand out of the well in gasified suspension. Other gases may also be introduced through the small diameter tubing for sand bridge removal. The methods are especially suitable for use in petroleum wells, but may if suitable be used in water wells.

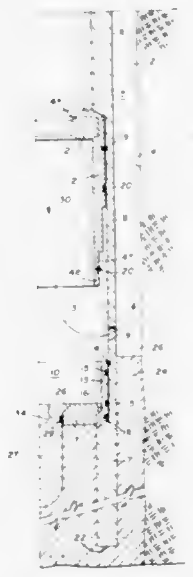
3,791,448
WELL COMPLETION METHOD

Frank J. Schuh, Dallas, Tex., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Dec. 11, 1972, Ser. No. 313,991

Int. Cl. E21b *33/16, 21/00*

U.S. Cl. 166—291 **9 Claims**



A downhole well tool having at least one aperture therein for communication between the interior and exterior thereof and means for sealably opening and closing said aperture, the means for opening said aperture having means for receiving an opening plug, the opening plug being adapted to receive a bypass wiper, and the means for closing the aperture being adapted to receive a shutoff plug. A well completion method utilizing the tool above-described wherein residual liquid outside the tool is removed by passing a second liquid into the interior of the tool, through the aperture of the tool, and up the annulus between the tool and the wellbore. The second liquid is followed by a third liquid. The third liquid is displaced into said annulus through said aperture by cement, after which the tool is closed.

3,791,449
TELESCOPING DISPLACEMENT JOINT

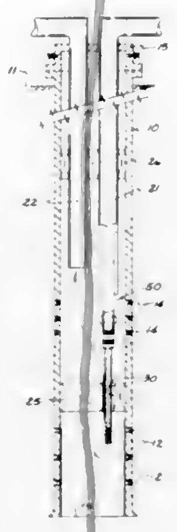
Chudleigh B. Cochran, Houston, Tex., assignor to Brown Oil Tools, Inc., Houston, Tex.

Filed Oct. 13, 1971, Ser. No. 188,878

Int. Cl. E21b *23/00, 37/00*

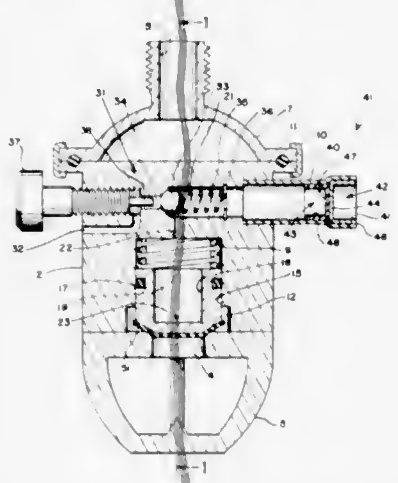
U.S. Cl. 166—312 **16 Claims**

Method and apparatus for displacing drilling fluids from between axially spaced well packers in a multiple string well. A telescoping displacement joint may be attached at the lower end of the string which passes through both packers. The joint is initially in a retracted position leaving an annular space btween the joint and the lower packer. After a second string is run, circulating fluid is pumped down the first string, out of the joint, up through the annular space, into the area between packers and out the second string to displace drilling fluids accumulated between packers. Then pressure is applied to the joint, causing a seal carrying portion thereof to extend into sealing engagement with the lower packer. The joint comprises an inner tubular member telescopically engaging an outer tubular member and adapted for limited axial movement from a retracted to an extended position. The joint carries a first seal assembly between the inner and outer tubular members and a second seal assembly on the inner tubular member for sealing engagement with the lower packer.



3,791,450
ON-OFF FIRE SPRINKLER

Edward J. Poitras, 198 Highland St., Holliston, Mass.
Filed Apr. 3, 1972, Ser. No. 240,575
Int. Cl. A62c *37/08*
U.S. Cl. 169—37 **14 Claims**

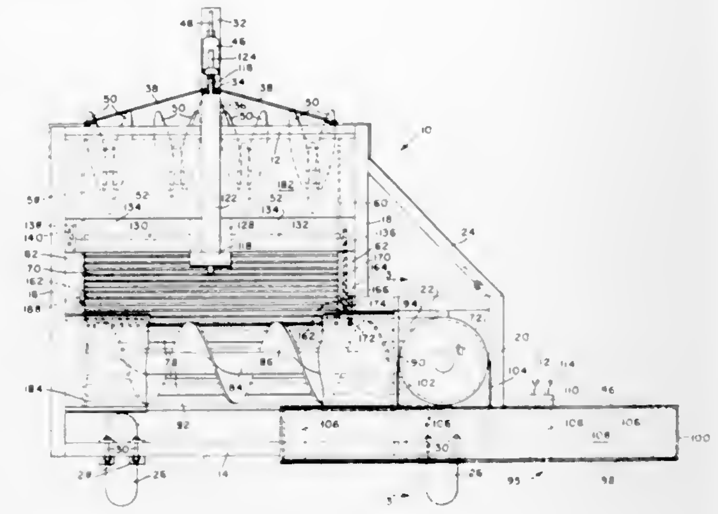


Disclosed in a fire sprinkler having a valve body that defines inlet and outlet openings joined by a flow passage possessing a valve seat. A valve head is movable relative to the valve seat between open and closed positions by either a primary condition responsive actuator or an auxiliary condition responsive actuator. In response to a given condition associated with the generation of combustion products, for example, a given ambient temperature, the primary actuator first causes an operator mechanism to open the valve and then after cessation of the given condition induces reclosing thereof. The auxiliary actuator causes the operator mechanism to permanently open the valve in response to a different, more serious condition such as a higher ambient temperature.

3,791,451
ROOT CROP HARVESTING IMPLEMENT

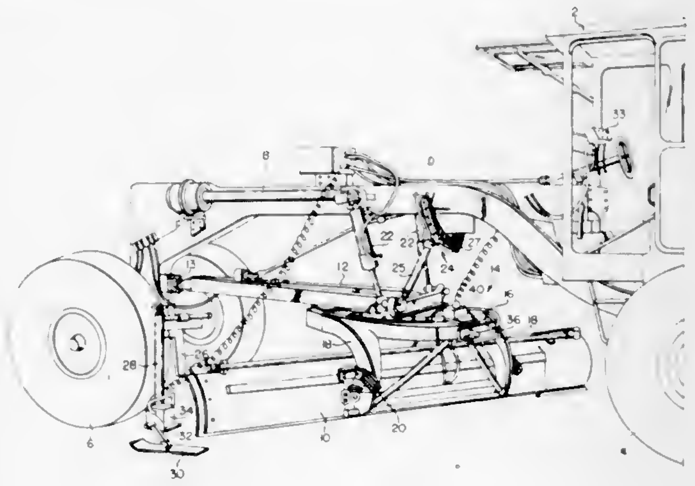
Richard David Zaun, and Richard Wayne Hook, both of Des Moines, Iowa, assignors to Deere & Company, Moline, Ill.
Filed Dec. 17, 1971, Ser. No. 209,124
Int. Cl. A01d *17/00*
U.S. Cl. 171—58 **12 Claims**

A root crop harvester includes a main frame, a plurality of digger wheels on the front of the main frame, conveyor means supported on the frame to receive roots from the digger wheels and deliver the same to a transversely extending auger conveyor which moves the roots to a vertical auger conveyor. An additional conveyor mounted on the upper end of the vertical auger conveyor in root-receiving relationship therewith moves the roots laterally outwardly to a deposit area In one embodiment of the invention, a plurality of grab rolls are associated with the transverse auger conveyor to clean the roots as they are moved to the vertical auger conveyor.



3,791,452
CONTROL SYSTEM FOR ROAD GRADER

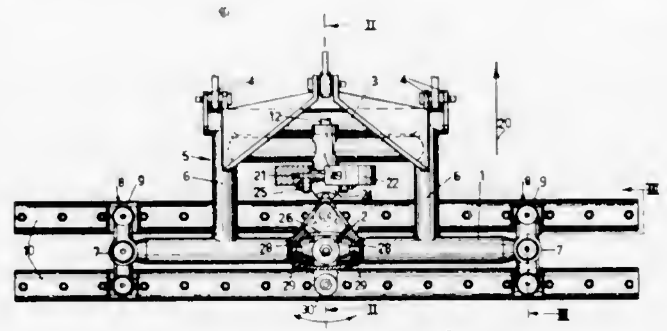
George E. Long, Monroe; Floyd C. Johnson, Seattle, and Dennis L. Reese, Kirkland, all of Wash., assignors to Grad-Line Inc., Woodinville, Wash.
Filed Mar. 17, 1971, Ser. No. 125,293
Int. Cl. E02f *3/76*
U.S. Cl. 172—4.5 **8 Claims**



A control system for a road grader adapted to maintain the working edge of the grader blade in a preset datum plane so as to establish a uniform graded condition of the surface worked by the blade, regardless of the inclination assumed by the motor grader or the relative angular position of the blade itself. The system includes grade sensor means mounted adjacent one end of the blade to follow a pre-selected grade datum, slope sensing means mounted in fixed relation with the blade for keeping the blade at a predetermined slope with rotation sensing means mounted on the blade supporting ring or circle to detect the relative angular position of the blade. The rotation sensing means provides a correction signal for maintaining the slope angle of the blade at a value which will keep the "cross slope" of the surface established at a predetermined value regardless of the rotary position of the blade relative to the direction of travel.

3,791,453
HARROW

Pieter Adriaan Oosterling, Nieuw-Vennep, Netherlands, assignor to H. Vissers N.V., Nieuw-Vennep, Netherlands
Filed Dec. 1, 1971, Ser. No. 203,607
Claims priority, application Netherlands, Dec. 2, 1970, 70,17581
Int. Cl. A01b *35/00*
U.S. Cl. 172—53 **4 Claims**

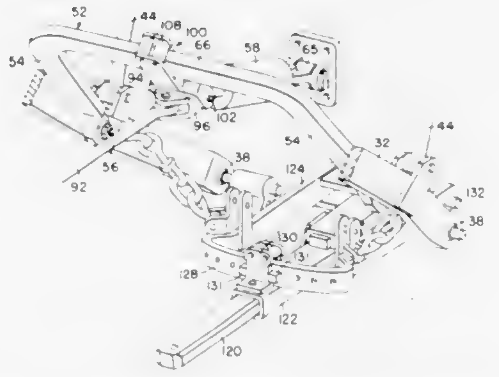


In a harrow comprising reciprocating driven harrow beams directed transversely to a forward movement of its frame, said harrow beams are connected to each other and to the frame by means of parallel levers swingably beared on the frame and to the harrow beams.

In order to compensate differences in the distances between the engaging points of the levers on the harrow beams and/or differences in the lengthes of these levers, the levers consist each of two lever parts which are beared round a common axis swingably with respect to each other on the frame.

3,791,454
MULTI-LOAD TRACTOR HITCH SYSTEM

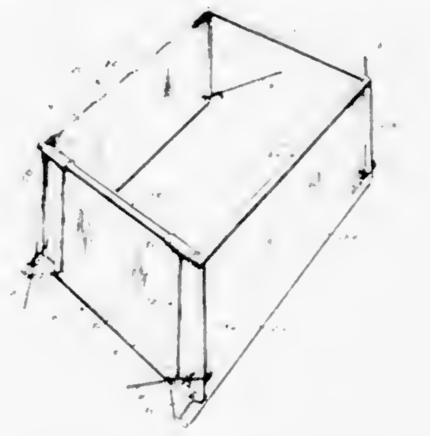
James Allan Koch, Hudson, and Donald Leroy Henderson, Waterloo, both of Iowa, assignors to Deere & Company, Moline, Ill.
Division of Ser. No. 293,436, Sept. 29, 1972. This application May 16, 1973, Ser. No. 360,707
Int. Cl. A01b *63/110*
U.S. Cl. 172—7 **3 Claims**



A tractor includes a hitch system comprising spaced lower draft links carrying draft hooks at their distal ends and an upper center link in the form of an extensible and retractable hydraulic actuator and a drawbar. An inverted U-shaped arch member has opposite legs respectively pivotally connected to the draft links at locations intermediate the ends thereof by means establishing a horizontal transverse axis about which the arch member is swingable fore and aft. A swivel bracket including rollers is mounted for rolling movement along the transverse bight portion of the arch member between a stored position on one of the legs of the arch member and an operative position on the transverse bight portion of the arch member. The hitch structure may be arranged in a three-point hitch mode by suspending the center link-forming hydraulic actuator from the bight portion of the arch member by spring means and by connecting a draft hook to the end of the piston rod of the center link-forming actuator. The hitch structure may be arranged in a weight transfer mode by placing the swivel bracket in its operative position, by connecting the end of the piston rod of the center link-forming actuator to the bracket and by connecting a force transmitting member or link between the swivel bracket and the implement to be towed. The hitch structure includes draft responsive means for initiating automatic draft and weight transfer control, the draft responsive means being, in one embodiment, responsive to forces imposed on the lower draft links or on the drawbar and being responsive in a second embodiment to draft forces imposed on the center link-forming actuator.

3,791,455
SCRAPING DEVICE HAVING A SWINGABLE GATE

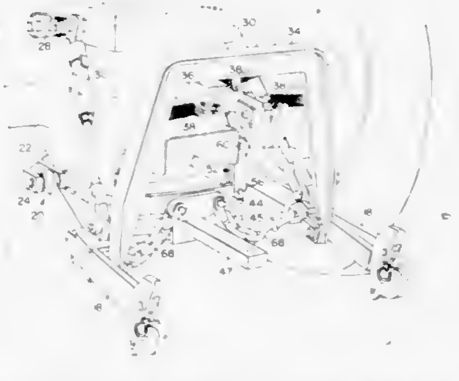
Jack L. Stout, 1008 W. California St., and Jimmy Stout, Rt. 2, both of Seymour, Tex.
Filed Sept. 17, 1971, Ser. No. 181,326
Int. Cl. E02f *3/60*
U.S. Cl. 172—26.5 **4 Claims**



A scraping device adapted to be drawn back and forth across the silt or mud loaded bottom of a stock tank or pond for example, being drawn in one direction by a towing vehicle to position the device for loading, and being drawn in the opposite direction to remove and discharge the load over the pond dam. The device includes a rectangular frame having side walls with the bottom edges of the side walls forming runners or skids. A swingable gate defines a rear end wall, and is swingable inwardly of the device about a horizontal axis at the top of the frame with outward movement being limited to a substantially vertical position to define the closed end wall position.

3,791,456
TRACTOR HITCH SYSTEM INCLUDING A VERTICALLY SWINGABLE DRAWBAR POWERED BY A DRAFT LINK ACTUATOR

James Allan Koch, Hudson, Iowa, assignor to Deere & Company, Moline, Ill.
Filed Oct. 21, 1971, Ser. No. 191,316
Int. Cl. A01b *59/06, 59/043*
U.S. Cl. 172—450 **10 Claims**

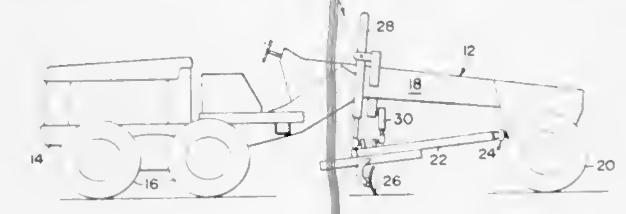


A tractor includes a hitch system comprising a three-point hitch and a vertically swingable drawbar. Sway chains are associated with the lower draft links of the three-point hitch and have one of their ends optionally connectible either to a collar pivotable about the axis of swinging of the draft links to substantially prohibit the links from swaying throughout their paths of movement, or to a bracket fixed to a swingable frame carrying the drawbar to prohibit sway only when the links are in a raised transport position. The drawbar frame is releasably latched to the chassis of the tractor in a horizontal transport position and when the latch is released and the sway chain ends are connected to the bracket, the drawbar may be raised and lowered by actuation of the lift cylinder for raising and lowering the draft links.

3,791,457
UNIVERSAL CONNECTION FOR BLADE-SUPPORTING DRAFT FRAME OF A MOTOR GRADER

Paul Edmund Hanser, Moline, Ill., and Thomas Edward Gebauer, Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Dec. 1, 1972, Ser. No. 311,156
Int. Cl. E02f *3/12*
U.S. Cl. 172—781 **8 Claims**

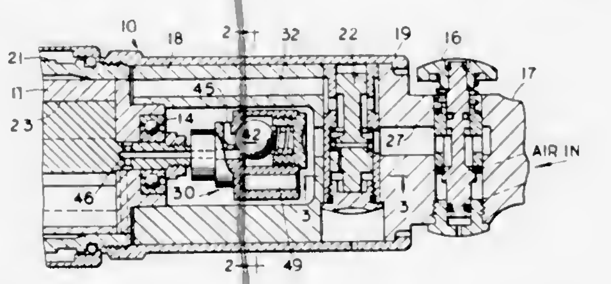


A motor grader is provided with a wheel-supported main frame to which the forward end of a blade-supporting draft frame is universally connected by means of a ball and socket connection.

3,791,458
STALL TORQUE AIR SHUT-OFF CONTROL FOR PNEUMATIC NUT RUNNERS

William K. Wallace, Barneveld, N.Y., assignor to Chicago Pneumatic Tool Company, New York, N.Y.

Filed Oct. 30, 1972, Ser. No. 301,942
Int. Cl. B25b *23/14*
U.S. Cl. 173—12 **5 Claims**



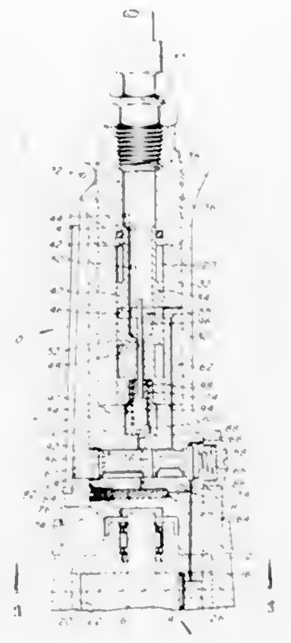
A pneumatic nut runner having an air vane stall torque motor to which a centrifugally operable ball valve pressure air relief unit is connected to control pneumatic shifting to a closed condition of an air shut-off valve in the motor air-feed passage upon stalling of the motor.

3,791,459
MOTOR REVERSING CONTROL FOR FLUID OPERATED TOOL

William Workman, Jr., Spring Lake, Mich., assignor to Gardner-Denver Company, Quincey, Ill.

Filed Sept. 5, 1972, Ser. No. 286,385
Int. Cl. B25b *23/14*
U.S. Cl. 173—12 V **9 Claims**

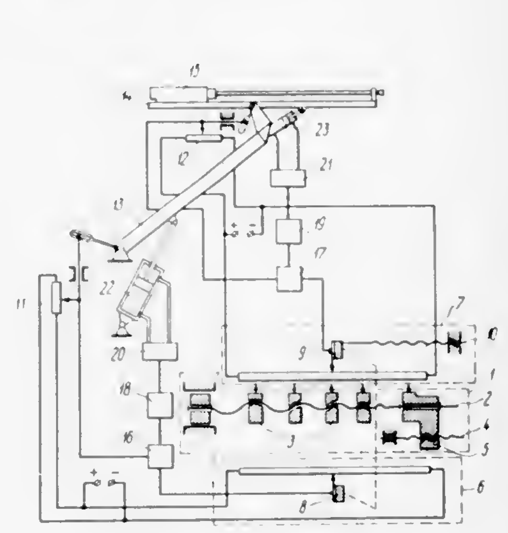
An automatic reversing control for fluid operated rotary tools which is responsive to a fluid pressure increase in a motor inlet passage to cause a reversal of the direction of motor rotation. A shiftable spool valve is biased to reverse the motor by pressure fluid acting on the valve spool. A spring biased check valve is operable to valve biasing fluid to actuate the spool valve in response to sensing a predetermined fluid pressure in the motor inlet passage. An operator actuated start valve is disposed between the reversing valve and the motor to initiate and control the operating cycle of the tool.



3,791,460
PROGRAM CONTROL OF THE BOOM POSITIONER AND THE FEEDER OF THE DRILLING TOOL OF A SELF-PROPELLED DRILLING

Artem Mikhailovich Tkachenko, 11 linia, 198, kv. 20; Karl Batyrbekovich Mustafin, 1 Mikroraion, 54, kv. 46, and Gennady Alexeevich Starodubov, ulitsa Khaliulina, 22, all of Alma-Ata, U.S.S.R.

Filed Oct. 12, 1972, Ser. No. 296,818
Int. Cl. E21c *11/00*
U.S. Cl. 173—43 **2 Claims**

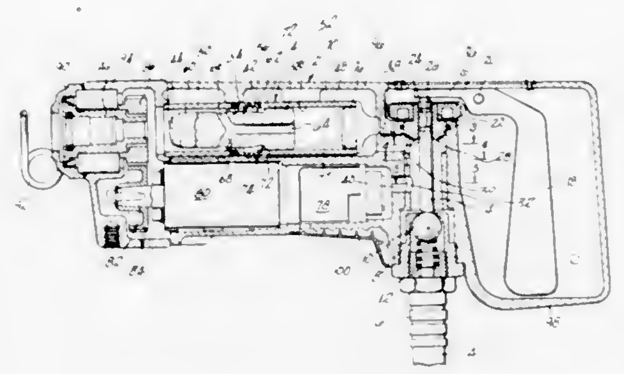


A program controller of the boom positioner and the feeder of a drilling tool, which comprises a program carrier fashioned as a variable pitch screw and nuts mounted on said screw with the possibility of longitudinal travelling, the number of said nuts not corresponding to the programmed number of holes, plus a drive for insuring the reciprocating motion of the screw.

3,791,461
ROTARY-IMPACT TOOLS

Claude Rosselet, Founex near Nyon, Switzerland, assignor to Olin Authier S.A., Biere (Vaud), Switzerland

Filed Mar. 13, 1972, Ser. No. 233,915
Claims priority, application Switzerland, Mar. 16, 1971, 003807/71
Int. Cl. B25f *1/00*; B25d *9/00*
U.S. Cl. 173—48 **5 Claims**

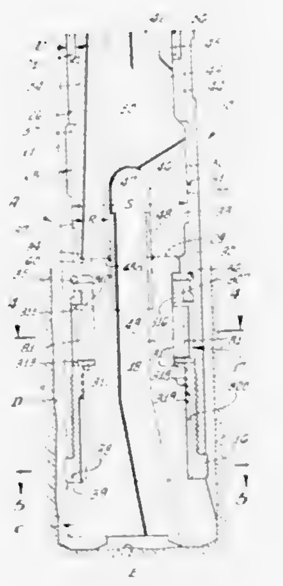


A pneumatic tool capable of imparting rotary and axial movement to a bit, either singly or together. A single adjustable member selectively provides communication between a pneumatic inlet and only the rotating portion of the tool, between the inlet and the impacting portion of the tool, or between the inlet and both the rotating and impacting portions. Additionally, the adjustable member can be used to provide a blast of pneumatic fluid from the tool.

3,791,462
PERCUSSION ANVIL BITS

Alfred R. Curington, 9418 Opelika St., Houston, Tex., and Archer W. Kammerer, Jr., 1900 Yucca Ave., Fullerton, Calif.

Filed Mar. 29, 1972, Ser. No. 239,046
Int. Cl. E21c *3/00*
U.S. Cl. 173—104 **14 Claims**

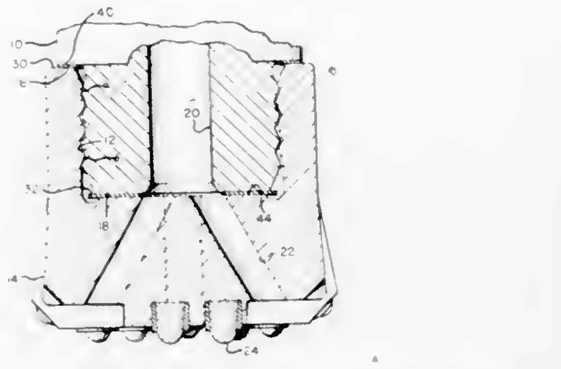


Anvil bits for use in drilling a formation under the impact action of a hammer piston reciprocable in a rotatable housing, the anvil portion of the bit having generally chordal surfaces engageable by driving members connected to the housing for transmitting rotary motion and torque from the housing to the bit.

3,791,463
DRILL HEAD ASSEMBLY

Bernard A. Pearson, Bothell, Wash., assignor to Smith-Williston, Inc., Seattle, Wash.

Filed Nov. 3, 1972, Ser. No. 303,328
Int. Cl. E21c *13/06*
U.S. Cl. 173—80 **5 Claims**

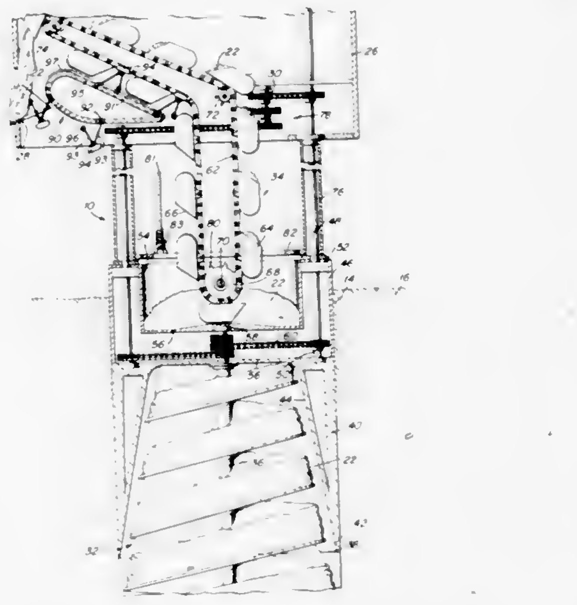


An impact rock drilling tool is provided with a removable head assembly and an anvil which receives percussive and rotational loads. The anvil and head assembly are threaded together to hold the head assembly on the anvil. The anvil has a radially outer shoulder surface which opposes a radially outer impact surface on the head assembly. The anvil also has an end surface which opposes a radially inner impact surface on the head assembly. Deformable washers are interposed between the impact surfaces of the head assembly and the opposed surfaces on the shoulder and end of the anvil respectively. The deformable members uniformly distribute the load across the entire surfaces and thus increase the effective bearing surfaces for transmitting the load between the anvil and the head assembly.

3,791,464
AUGER DRILL AND CONVEYOR

Felix I. Stewart, 1309 O'Shaughnessey Ave., Huntsville, Ala.

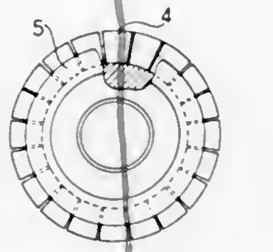
Filed Mar. 26, 1973, Ser. No. 344,503
Int. Cl. E21b *3/02*
U.S. Cl. 175—88 **8 Claims**



A drill for earth boring incorporating an auger combined with a bucket-type elevator or conveyor associated in such a manner that rotation of the auger and downward movement in a vertical direction will bore a hole into the earth with the soil being escavated by the conveyor thereby facilitating continuous boring of a hole without requiring that the auger be periodically removed from the bore hole and cleaned by high speed rotation.

3,791,465
BORING TOOL

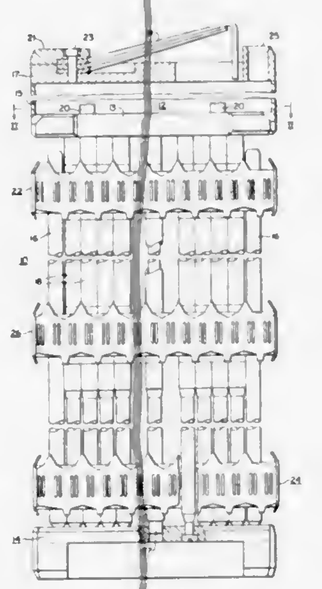
Emile Metge, Paris, France, assignor to Union Industrielle Blanzy-Quest, Paris, France
Filed Nov. 2, 1972, Ser. No. 303,155
Claims priority, application France, Nov. 10, 1971, 7140324
Int. Cl. E21c *13/01*
U.S. Cl. 175—373 **7 Claims**



Boring tool comprising a wheel in the form of a disk, formed by a substantially circular metal support provided at its periphery with elements made of a hard substance, said elements being plates arranged in a substantially contiguous configuration, the plane of said plates coinciding substantially with the plane of symmetry of said wheel perpendicular to the axis of rotation so as to produce a continuous crown.

3,791,466
LOW PARASITIC CAPTURE FUEL ASSEMBLY STRUCTURE

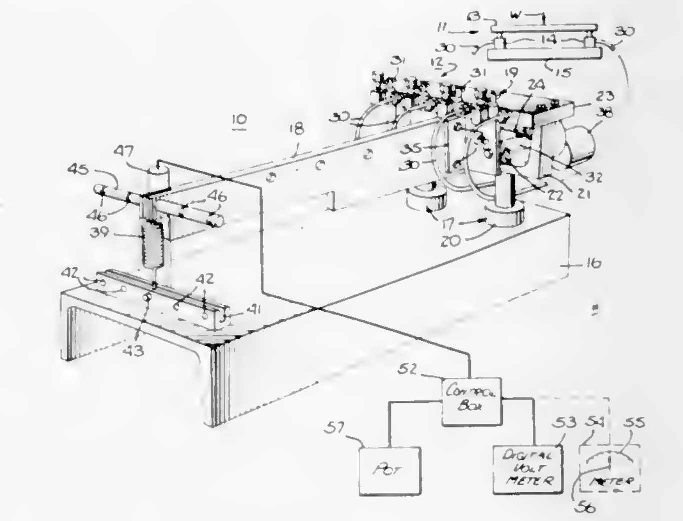
John F. Patterson, Murrysville; Elmer A. Bassler, Jr., and Edward J. Choby, both of Irwin, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Continuation of Ser. No. 825,889, May 19, 1969. This application Mar. 21, 1972, Ser. No. 236,780
Int. Cl. G21c *3/34, 3/30*
U.S. Cl. 176—78 **17 Claims**



The basic fuel assembly structure for a nuclear reactor comprises a skeleton made up of individual hollow tubes composed of a zirconium base alloy, such as Zircaloy, and held in place by Inconel or stainless steel grids disposed between stainless steel end nozzles at the top and the bottom of the structure. The tubes serve as guide thimbles for cylindrical control elements strategically located in a square array of fuel rods held in place by spring fingers on the "egg-crate" grids. The guide thimbles are attached to the top and bottom nozzles and the grids by mechanical joints without welding dissimilar metals.

3,791,467
SCALE HAVING A RESTRAINED MOVABLE BALANCING MEMBER

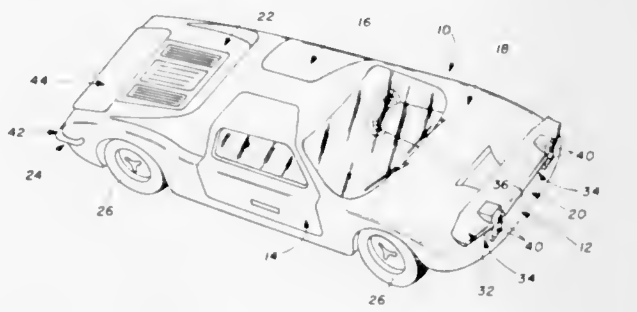
Burt L. Swersey, 313 W. Hartsdale Ave., Hartsdale, N.Y., and Peter I. Fried, 61 Old Knollwood Rd., White Plains, N.Y.
Continuation-in-part of Ser. No. 89,233, Nov. 13, 1970, abandoned. This application Nov. 12, 1971, Ser. No. 198,133
Int. Cl. G01g *23/02, 23/14, 3/14*
U.S. Cl. 177—157 **32 Claims**



The balance beam of the scale is provided with a flexure member such as a spring at one end which serves to react against the pivoting force exerted on the beam at the opposite end. A transformer is also mounted on the end of the beam to emit a signal proportional to the displacement of the beam from a zero-position. The flexure member is calibrated so that the signal of the transformer is proportioned to a measurement of weight of the mass being weighed on the scale.

3,791,468
DYNAMIC LOAD INCREASING AUTOMOBILE BUMPER

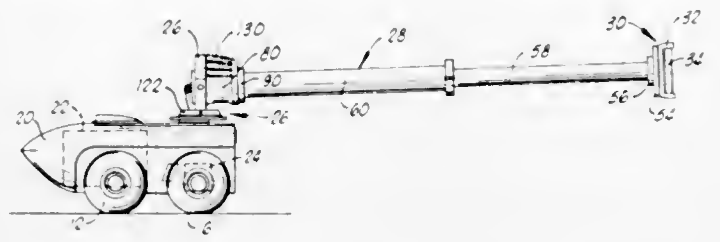
John F. Bryan, Jr., 3212 Mapleleaf Cir., Dallas, Tex.
Filed Sept. 16, 1971, Ser. No. 181,112
Int. Cl. B60r *19/02;* **B61f** *19/04;* **B62d** *37/02*
U.S. Cl. 180—1 FV **11 Claims**



In an automobile bumper configuration, a front bumper is supported above the low front end of an automobile body at the height required by Federal regulations. The bumper has a thin cross section so as not to impede vision and is shaped as an airfoil which is oriented to force the front end of the automobile downwardly in response to air flowing rearwardly relative to the front of the automobile. The bumper is supported on the body by structure which also encloses the headlights of the automobile.

3,791,469
APPARATUS FOR TOWING SKIERS

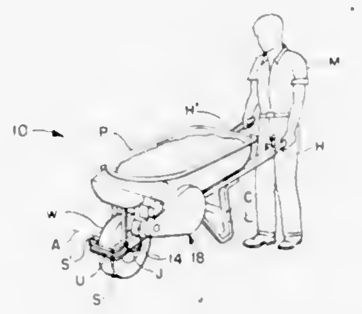
Forrest A. Prosser, Rt.1, Chanute, Kans., and Leroy E. Everitt, Box 273, Girard, Kans.
Filed Mar. 2, 1972, Ser. No. 231,224
Int. Cl. B62d *51/04;* **B62m** *27/02*
U.S. Cl. 180—6 R **10 Claims**



Apparatus for towing skiers including a wheeled, engine-driven vehicle having a telescoping boom extending rearwardly therefrom, the boom carrying throttle and brake controls for controlling the speed of the vehicle, and connected to steering control means for steering the vehicle upon rotation of the boom about its longitudinal axis. At its end opposite the vehicle, the telescoping boom carries hand controls connected to the throttle and brake controls to permit a skier towed behind the vehicle to remotely control the speed of the engine.

3,791,470
MOTORIZED WHEELBARROW

William A. Baddore, and Paul E. Baddore, both of Dillsburg, Pa., assignors to Baddorf & Sons, Inc., Dillsburg, Pa.
Filed Oct. 26, 1971, Ser. No. 192,541
Int. Cl. B62d *51/04*
U.S. Cl. 180—19 R **8 Claims**

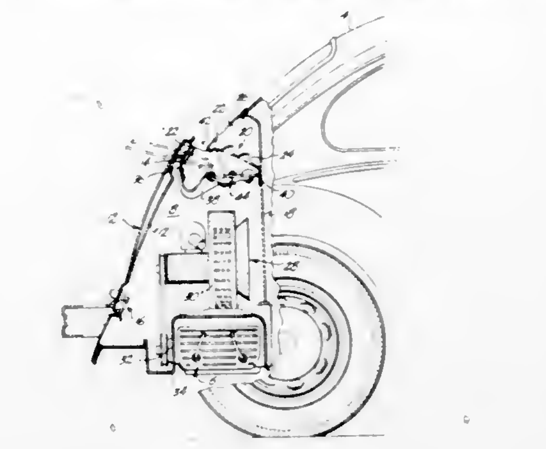


A motorized wheelbarrow having engine and associated drive parts mounted adjacent the wheel axle under the body overhang; the gas tank is mounted on the opposite side of the wheel from the motor and at a special angle to provide fuel output from an end of the tank at all normal operating angles; the wheel is dog driven and all parts of the drive mechanism and motor are adapted for easy access and quick installation on common wheelbarrows using only a brace and bit plus the holes ordinarily found; an embodiment is disclosed in which the wheel is laterally shifted and provided with a cylindrical tread for counter-balancing purposes.

3,791,471
SLOTTED CANOPY ARRANGEMENT FOR VOLKSWAGEN ENGINE COMPARTMENTS

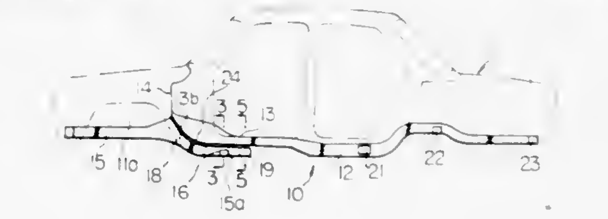
Warren H. Buser, 3067 Beacon Ave. So., Seattle, Wash.
Filed Oct. 27, 1972, Ser. No. 301,455
Int. Cl. B60k *11/08;* **B62d** *25/10*
U.S. Cl. 180—54 A **9 Claims**

Present-day Volkswagen engine compartments tend to overheat, but the condition is relieved by providing a slot in the body of the automobile, between the air intake means in the overhanging edge portion of the body, and the hinged end portion of the hood, while at the same time assuring that the hood can be closed and latched adjacent the lower end thereof, as well as raised to the full extent necessary for access to the compartment.



3,791,472
VEHICLE BODY CONSTRUCTION

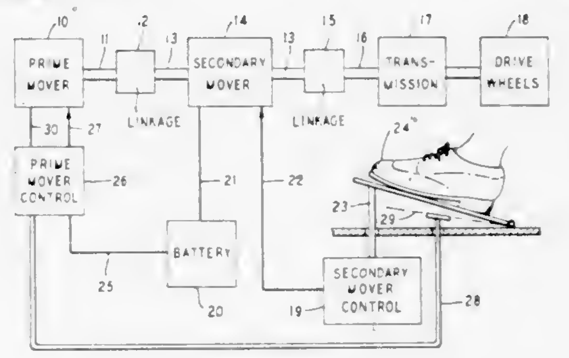
Hiroshi Tatsumi, Tokyo, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan
Filed Sept. 13, 1971, Ser. No. 179,807
Int. Cl. B60k *5/12;* **B62d** *21/00*
U.S. Cl. 180—64 R **10 Claims**



An underbody structure including a pair of transversely spaced, longitudinally extending side sills, a floor panel connected at its lateral edges to the side sills, a pair of transversely spaced, longitudinally extending side rails having longitudinally rearwardly extending extensions, an engine rear mount member transversely extending between and rigidly connected to the extensions of the side rails, and a pair of bridges rigidly connecting rear end portions of the extensions to the adjacent portions of the side sills. The extensions, the engine rear mount member, torque boxes and the connecting bridges are vertically separated from the floor panel.

3,791,473
HYBRID POWER TRAIN

Charles L. Rosen, Teaneck, N.J., assignor to Petro-Electric Motors Ltd., New York, N.Y.
Filed Sept. 21, 1972, Ser. No. 290,784
Int. Cl. B60k *1/00*
U.S. Cl. 180—65 A **9 Claims**



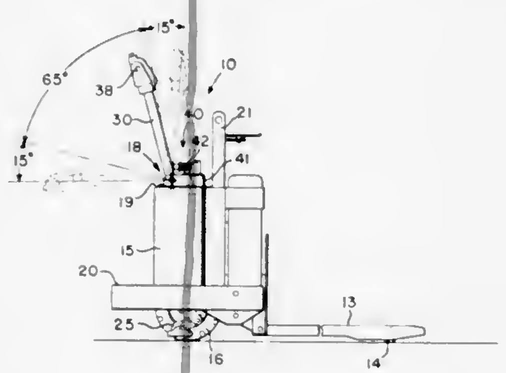
The disclosed hybrid power train for a self-propelled vehicle is designed to reduce the emission of atmospheric pollutants.

The chemically fueled prime mover and the secondary-battery powered electric dynamotor are joined together and joined to the output shaft by fixed ratio rotating linkage. The prime mover is operated as a quasi-constant -torque device, with its torque able to be varied in response to the state of charge of the battery or to operator torque demands in excess of certain predetermined amounts. The instantaneous torque output of the combined combustion engine/electric motor power train is controlled by a mechanical accelerator control which causes the dynamotor to either add to or subtract from the torque produced by the prime mover. When added torque is required by the vehicle, the dynamotor takes energy from the storage battery. When less torque is required, the extra energy produced by the prime mover is fed by the dynamotor into the storage battery. The low pollution qualities of this power train are realized, in part, by the uncoupling of the prime mover throttle from the rapid variations of the accelerator control typical of urban driving.

3,791,474
MOTION SELECTOR DEVICE FOR A LIFT TRUCK

Harold A. Stammen, New Bremen, and Eugene G. Bruns, Maria Stein, both of Ohio, assignors to Crown Controls Corporation, New Bremen, Ohio

Filed Apr. 2, 1971, Ser. No. 130,654
Int. Cl. B60k *29/02*
U.S. Cl. 180—77 H **15 Claims**



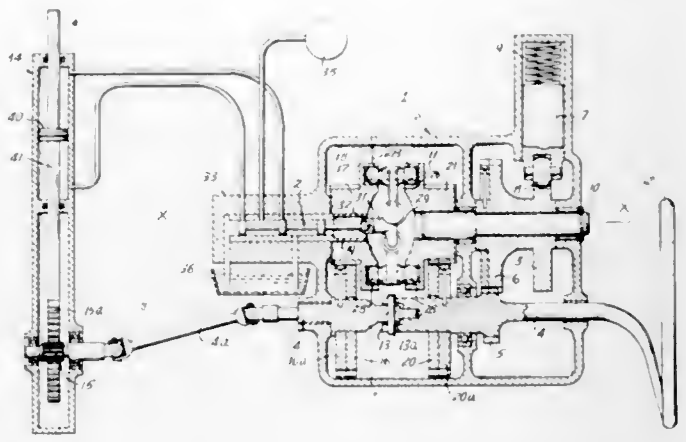
A control device for a lift truck of the type having a drive and brake control mechanism, such as a tiller, spring loaded into either a braking or driving arc includes a support mounted on the truck adjacent the tiller and means mounted on the support for restraining the tiller upon its release from entering one of the arcs and for maintaining the mechanism within the other arc to effect the motion control determined by that other arc. In its non-braking mode, the restraining means prevents the tiller from positioning itself in the braking arc and permits the truck to coast. In its braking mode, it prevents the tiller from positioning itself in the driving arc and causes the truck to stop. The restraining means is sufficiently resilient to be overpowered by physically moving the tiller into the other arc to engage the brake (non-braking mode) or to disengage the brake (braking mode) to thereby stop or start the truck.

3,791,475
POWER STEERING APPARATUS

Jean Georges Cadiou, St. Cloud, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed Mar. 28, 1972, Ser. No. 238,845
Claims priroity, application France, Apr. 2, 1971, 71.11672
Int. Cl. B62d *5/06*
U.S. Cl. 180—79.2 R **12 Claims**

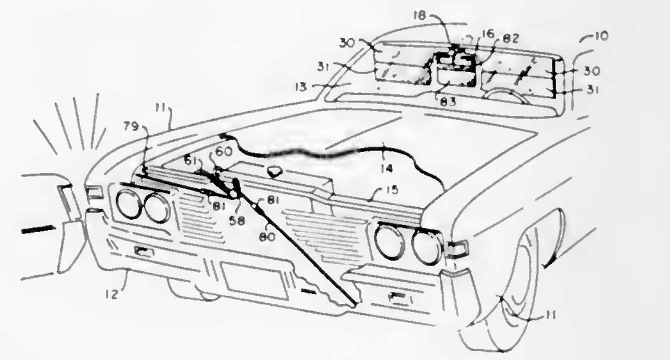
Power steering apparatus comprises a steering shaft, an intermediate shaft connected to actuate the steering linkage and connected to the steering shaft through a lost motion connection, fluid-operated means for actuating the steering linkage, and a distributor for controlling said actuating means. The distributor is actuated in response to relative angular displacement between the steering and intermediate shafts and means are provided for amplifying the effect of said displacement on the distributor. The power steering apparatus is associated in a single casing with means for automatically straightening the steered wheels of the vehicle.



3,791,476
PROTECTIVE SHIELD FOR MOTOR VEHICLE OCCUPANT

James H. Wernig, General Delivery, Kennebunkport, Maine

Filed Oct. 27, 1969, Ser. No. 869,697
Int. Cl. B60r *21/08*
U.S. Cl. 180—91 **9 Claims**



Shields for minimizing head injuries to front seat occupants of propelled vehicles as a result of being thrown against the windshield of the vehicle by a collision which are automatically moved from a stored position to a position between the occupants and the windshield in advance of significant deceleration of the vehicle. The shields are constructed and disposed so that they afford more complete protection to all of such occupants and interfere to the minimum extent with their vision when the shields are in operative position.

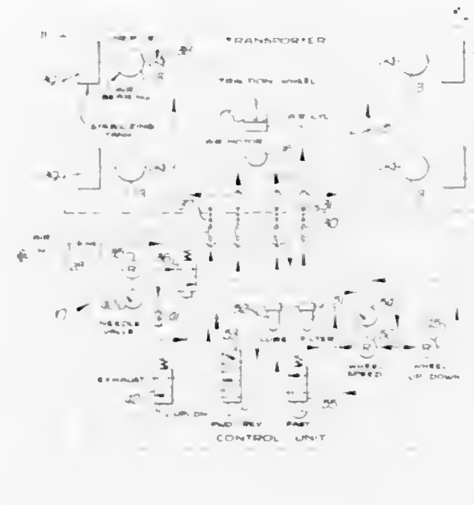
The shields normally serve as the sun visors of the vehicle and are made of two panels which are normally held in overlying positions but are moved to side by side position when the shields are automatically interposed between the front seat occupants and the windshield so that they cover a greater area of the windshield and afford more protection.

The shields can, however, be moved manually in the same manner as conventional sun visors from their stored position to a position in which they serve to shade the front seat occupants' eyes from glare and back to stored position without disabling the mechanism which automatically operates them in the event of a collision or extending the shields.

3,791,477
CONTROL UNIT FOR AIR CUSHION SYSTEMS

Robert E. Burdick, Santa Barbara, Calif., assignor to Rolair Systems, Inc., Santa Barbara, Calif.

Filed Sept. 13, 1972, Ser. No. 288,599
Int. Cl. B60v *1/00*
U.S. Cl. 180—117 **4 Claims**

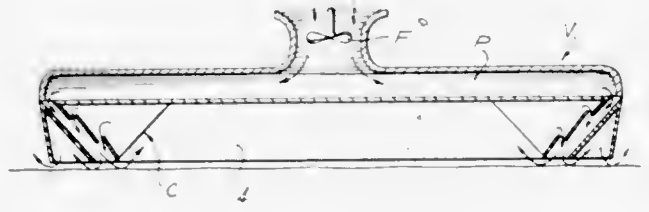


A control unit for an air cushion transporter having air bearings and an air powered drive motor. A control column connectible to the transporter mechanically and pneumatically, and including an air bearing on-off control, a drive motor forward-reverse control, and a high pressure start control for the drive motor to reduce starting time when moving heavy loads with large inertia.

3,791,478
APPARATUS FOR CONFINEMENT OF AN AIR CUSHION OF A VEHICLE RIDING ON SAME

Philippe Marie Remon-Beauvais, Ris-Orangis; Jean-Luc Barbot, Drancy, and Michel Gravelle, Marcoussis, all of France, assignors to Etat Francais represente par le Ministere d'Etat charge de la Defense Nationale-Delagation Ministerielle pour l'Armement, Paris, France

Filed Mar. 29, 1972, Ser. No. 239,163
Claims priority, application France, Mar. 31, 1971, 71.11229
Int. Cl. B60v *1/16*
U.S. Cl. 180—121 **10 Claims**

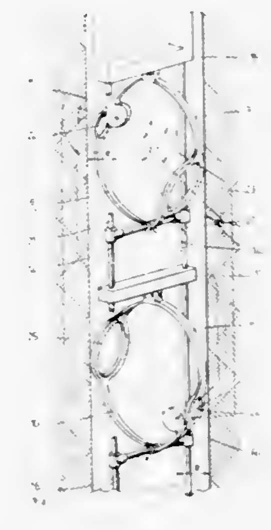


A gas cushion for a vehicle which rides thereon is formed by introducing gas downwardly under pressure through a plurality of peripheral passages at an angle of 30 to 45° relative to the vertical, the gas passing into a central cushion. Arrayed externally of the passages are one or more plenum chambers fed at the bottom with leakage gas from the central cushion to form an auxiliary cushion. The plenum chambers may also be supplied directly at their upper ends with gas. The gas passages are formed by an inclined outer wall and a plurality of wall elements facing the outer wall and which are spaced and overlapped to permit gas within the central cushion to recirculate into the gas flowing in the passages.

3,791,479
DEVICE FOR EMITTING AND RECEIVING SIGNALS IN A BORE HOLE, ELIMINATING THE INFLUENCE ON THE INTENSITY OF THE SIGNALS BEING RECEIVED OF THE SHAPE OF THE HOLE AND OF A CENTERING DEFECT OF THE DEVICE IN THE LATTER

Francisque Lebreton, Paris; Jean-Paul Sarda, Rueil-Malmaison, and Pierre Morlier, Paris, all of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants 1 & 4, Rueil-Malmaison, France

Filed Oct. 1, 1971, Ser. No. 185,712
Claims priority, application France, Oct. 1, 1970, 7035618
Int. Cl. G01v
U.S. Cl. 181—.5 BE **10 Claims**

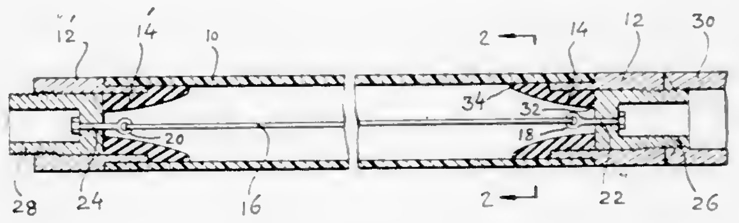


A device for emitting and receiving signals in a bore hole with a view toward determining the characteristics of the geological formations surrounding the hole including at least one emitter and one receiver, and a support arrangement for the emitter and receiver formed by interconnected elastic support elements having a ring-shaped configuration which is capable of supporting the emitter and receiver one below the other essentially in the same diametrical plane of the hole on respective sides of the axis of the hole and in proximity to the wall of the hole at essentially predetermined equal distances from that wall.

3,791,480
STRESS RELIEF INSERT FOR FLEXIBLE TOWED ARRAY

Walter L. Clearwaters, Quaker Hill, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 13, 1972, Ser. No. 297,579
Int. Cl. G01v *1/16*
U.S. Cl. 181—.5 A **5 Claims**



A stress relief insert of a generally cylindrical shape having a small inner diameter at one end and tapering out to a larger inner diameter at the other end. The insert is made of a flexible material and is positioned between one end of a flexible boot and a rigid end piece in a flexible towed array. The end having the smallest inner diameter is in contact with the rigid end piece of the towed array and the other end of the insert is in contact with the flexible boot over a length of the inner wall of the boot.

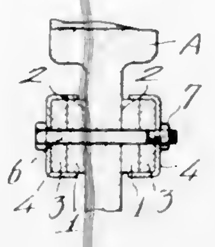
3,791,481
ECHO-NOISE ABSORPTION DEVICE

Hitoshi Yazaki, 12-6 Minami Aoyama 4-chome, Minato-ku, Tokyo, Japan

Filed July 25, 1973, Ser. No. 382,594

Int. Cl. E04b *1/84*

U.S. Cl. 181—33 R **14 Claims**



An echo-noise absorption device for absorbing echo-noise which is generated from a moving metal machine part or transmitted from said moving machine metal part through another stationary machine metal part comprising at least one echo noise absorption unit which includes a soft metal echo-noise absorption element having one face to be applied to the adjacent surface of said moving machine metal part or stationary metal machine part; a non-metal anti-noise transmission element in contact with the face of said soft metal element opposite to said machine part contact face; a cup-shaped cover surrounding the entire periphery and the face of said non-metal element opposite to said soft metal element and portion of the periphery of said metal element, and a fastening means extending through said soft metal and non-metal elements and cover so as to fixedly secure the elements and cover together to said moving or stationary machine part.

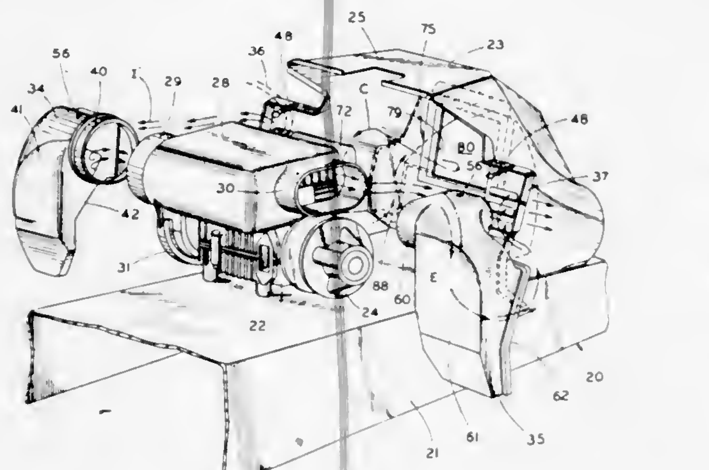
3,791,482
NOISE SUPRESSION AIR DUCT ASSEMBLY FOR AIR COOLED INTERNAL COMBUSTION ENGINES IN VEHICLE INSTALLATIONS

Hans Werner Sykora, Drummondville, Quebec, Canada, assignor to The Coleman Company, Inc., Wichita, Kans.

Filed May 14, 1973, Ser. No. 360,337

Int. Cl. F01m *1/00*

U.S. Cl. 181—35 R **12 Claims**



The noise emitted by an air cooled internal combustion engine in a vehicle installation is suppressed by an air duct assembly which is light weight and easily removable to permit access to the engine and related components for routine adjustments and servicing. The duct assembly includes relatively rigid air intake and air exhaust ducts, each of which is integrally molded from plastic with sound absorbing qualities. For axial fan cooled engines, the fan and cylinder cooling fins are enclosed by a shroud provided with air intake and exhaust openings. The cowl of the vehicle which encloses the engine is also provided with air intake and exhaust openings. The intake duct extends between the air intake opening of the vehicle cowl and the air intake opening in the engine shroud, and the exhaust duct extends between the exhaust opening of the engine shroud and the exhaust opening in the vehicle cowl. Each duct provides a baffled or tortuous air passage so that noise cannot escape through the duct without being reflected from the walls of the duct, and each duct is removably secured to either the engine shroud or the cowl by spring latches which permit quick removal of the ducts when desired. The duct assembly also supplies combustion air through a baffled path to a carburetor plenum chamber.

3,791,483
SOUND ABSORBER

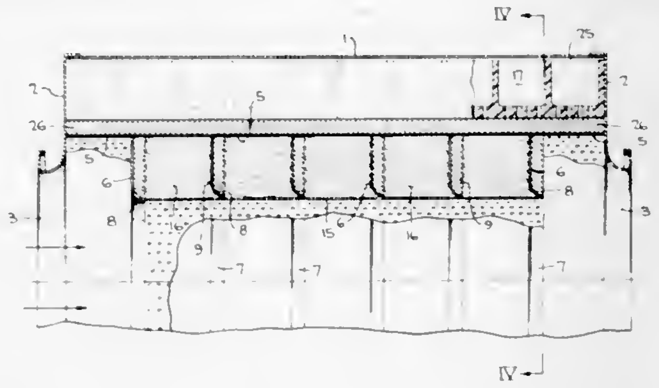
Costa Silard Vasiljevic, Hausserstrasse 114, Tubingen, Germany

Filed June 19, 1972, Ser. No. 264,209

Claims priority, application Germany, June 24, 1971, 2131410

Int. Cl. F01n *1/04*

U.S. Cl. 181—42 **16 Claims**



A sound absorber, especially for aerodynamic installations, comprising a tubular-like housing closed at each end by a cover member, each said cover member leaving free a central throughpassage opening. Two dampening systems are housed within the housing, one such dampening system extending as a longitudinal dampening device over the housing inner wall, the other dampening system being formed by partition walls located perpendicular to the throughflow direction and distributed over the length of the housing. These partition walls only cover a part of the internal compartment of the housing left free by the longitudinal dampening device.

3,791,484
MOBILE PLATFORM CARRYING MACHINE

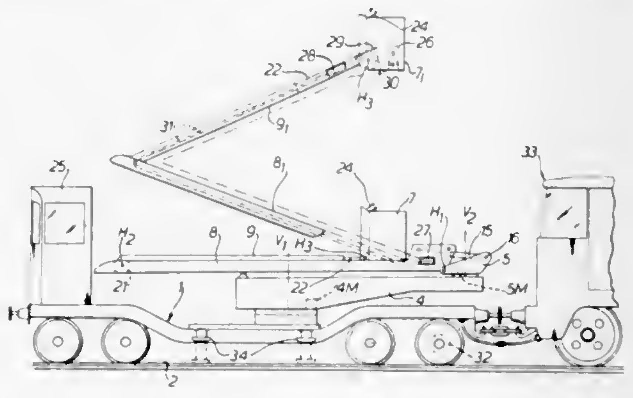
John M. Harrison, Corner Cottage, Gwithian, Hayle, Cornwall, England

Filed Sept. 14, 1971, Ser. No. 180,393

Claims priority, application Great Britain, Sept. 15, 1970, 43,920/70

Int. Cl. B66f *11/04*

U.S. Cl. 182—2 **14 Claims**



A platform carrying machine, particularly useful for viaduct inspection, is mounted on a carriage and includes a platform-carrying boom structure mounted on the end of a horizontal support arm which can be swung laterally outwardly from the carriage. The boom structure is arranged to elevate and/or depress the platform relative to the carriage to inspect areas above and below the level of the carriage, the platform having a range of horizontal movement allowing the platform to enter, for example, a viaduct arch beneath the carriage. The entire boom structure can in addition be slewed about a vertical axis at the end of the lateral support arm to further increase the range of positions of the platform.

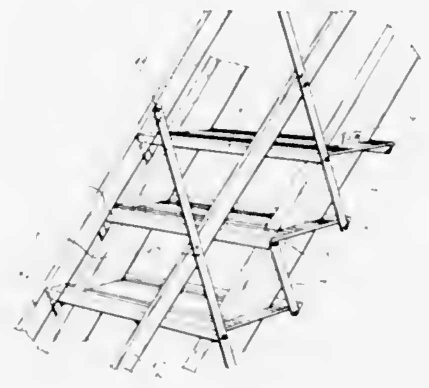
3,791,485
MOUNTABLE STAIRCASE, LADDER OR THE LIKE

Lars Ake Wilhelm Norlander, 9 Skogsliden, Stocksund, Sweden

Filed Oct. 20, 1971, Ser. No. 190,707

Int. Cl. E06c *1/38*

U.S. Cl. 182—106 **6 Claims**



A mountable staircase or ladder comprises at least two elongated beams and a plurality of treads, which are pivotally connected to each other by means of links, adapted at the ends of the treads and connecting the front portion of one tread with the rear portion of an adjacent tread, at least some of said links having extended portions, serving as support posts for arm rests and said treads being also provided near their ends with openings for the beams, said openings having a dimension in the length direction of the tread, which is approximately equal to the corresponding dimension of the beam, its dimension prependicular thereto however exceeding the corresponding dimension of the beam. At least the extended link portions are preferably removable and may be shifted from one side of the ladder to the other.

3,791,486
SCAFFOLDING

Robert Haldane Marnoch, P.O. Box 270, Mobeni, Natal, Westville, South Africa

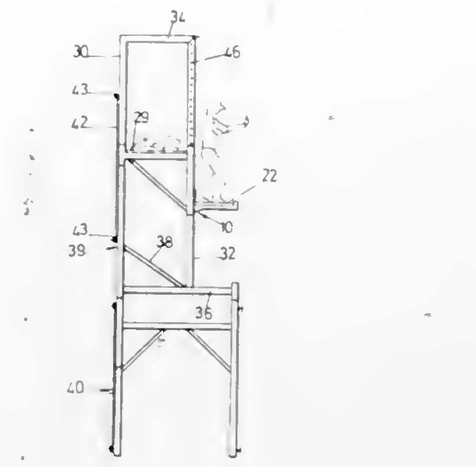
Filed Apr. 24, 1972, Ser. No. 246,816

Claims priority, application South Africa, Apr. 28, 1971, 71/2740

Int. Cl. E04g *1/18*

U.S. Cl. 182—132 **2 Claims**

The invention relates to a scaffold arrangement having stepped elements, the horizontal portions of which constitute supports for a work platform and a materials platform, the vertical portions of the stepped elements being pipes slidable over and releasably securable to one of a pair of vertical poles, the rears of the materials platform supports having sleeves slidable on the other of the pair of vertical poles, the vertical poles being included in a framework.



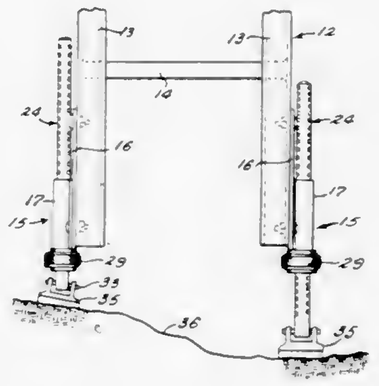
3,791,487
RAIL EXTENSION DEVICE FOR LADDERS

Arthur V. Baumann, 1410 Wynneburne Dr., Cincinnati, Ohio

Filed Apr. 20, 1973, Ser. No. 353,206

Int. Cl. E06c *7/44*

U.S. Cl. 182—201 **5 Claims**



An extension device attachable to the side rails of ladders that is adjustable to maintain the ladders in vertical positions upon uneven supporting surfaces, said device being readily manipulated to the desired rail extended condition and adapted to retain that condition when the ladder is set up or when the ladder is moved from one place to another.

3,791,488
LUBRICANT AND CLEANING COMPOSITION FOR PRECISION INSTRUMENTS

Charles S. Rowe, deceased, late of Lake Park, Fla. (by Doris D. Rowe, executrix), and Alvin C. Pyles, North Palm Beach, Fla., assignors to Doris D. Rowe, Lake Park, Fla., a part interest

Continuation-in-part of Ser. No. 34,597, May 4, 1970, abandoned. This application Aug. 2, 1972, Ser. No. 277,257

Int. Cl. F16n *1/00*

U.S. Cl. 184—1 E **17 Claims**

Complex-mechanisms, such as timepieces, can be lubricated in their assembled condition according to a process which comprises immersing the mechanism in a first solution comprising a solvent and a highly refined mineral oil, subjecting the solution and the mechanism to agitation, removing the mechanism and spinning-off excess solution therefrom, immersing the mechanism in a second composition comprising a solvent, a highly refined mineral oil and a siloxane polymer having a viscosity from 500–1,500 centistokes, subjecting the composition and the mechanism to agitation, removing the

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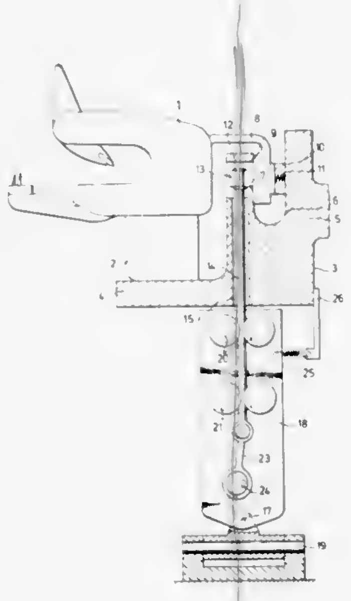
decrease in pressure will cause the pad to engage the disk thus

ing the inner end of the axial bore and the other end thereof mechanism from the composition, spinning-off excess composition therefrom and thoroughly drying same.

3,791,489
DEVICE FOR THE CONTINUOUS DETERMINATION OF THE LUBRICANT REQUIREMENT OF A MOVABLE SLIDING SURFACE

Julius Vernazza, and Oskar Marx, both of Aachen, Germany, assignors to H. Krantz, Aachen, Germany
Filed Oct. 24, 1972, Ser. No. 300,194
Claims priority, application Germany, Oct. 26, 1971, 2153173
Int. Cl. F16n *1/00*
U.S. Cl. 184—5 **11 Claims**

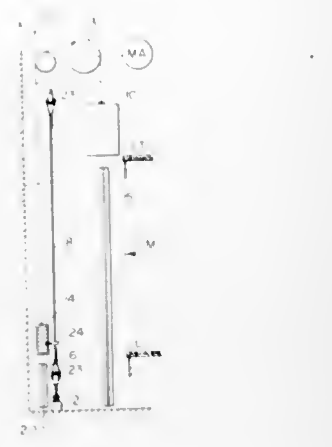


This invention relates to a device for the continuous determination of the lubricant requirement of a sliding surface movable against a fixed sliding surface by measuring the force for overcoming the friction between the movable sliding surface and a reciprocating sensor member urged against the sliding surface with the constant contact pressure, said device comprising a supporting bar slidably mounted on a support plate, said supporting bar mounting a sensor member at one end and having its other end connected by a crank rod to an eccentric drive, the plate carrying a motor to actuate the eccentric drive to reciprocate the supporting bar. The end of the plate adjacent the eccentric is pivotally mounted on a first axis parallel to the movable sliding surface and on a second axis perpendicular to the movable sliding surface, a first resilient means reacting against the plate to urge said sensor member against the movable sliding surface and a second resilient means reacting against the plate to urge said sensor member in direction opposed to the direction of movement of the movable sliding member, means being provided actuated by movement of the sensor a predetermined amount in the direction of movement of the movable sliding surface to actuate lubricating means for such movable sliding surface.

3,791,490
ELEVATOR CONTROL SYSTEM FOR INDICATING DAMAGE TO AN ELEVATOR STRUCTURE

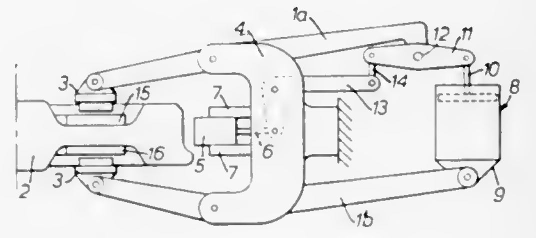
Don Francis Smith, Novato, Calif., assignor to Otis Elevator Company, New York, N.Y.
Filed Feb. 22, 1973, Ser. No. 334,538
Int. Cl. B66b *5/02*
U.S. Cl. 187—29 R **10 Claims**

An elevator control arrangement for detecting the physical displacement of one of the system's movable components from its normal operating position and thereafter restraining further movement of the car to a direction in which such movement increases the physical separation of the car from its counterweight.



3,791,491
RAILWAY BRAKES

Colin John Frederick Tickle, Tyseley, England, assignor to Girling Limited, Birmingham, England
Filed July 14, 1972, Ser. No. 271,663
Claims priority, application Great Britain, July 16, 1971, 33,511/71
Int. Cl. B61h *11/14*
U.S. Cl. 188—70 R **7 Claims**

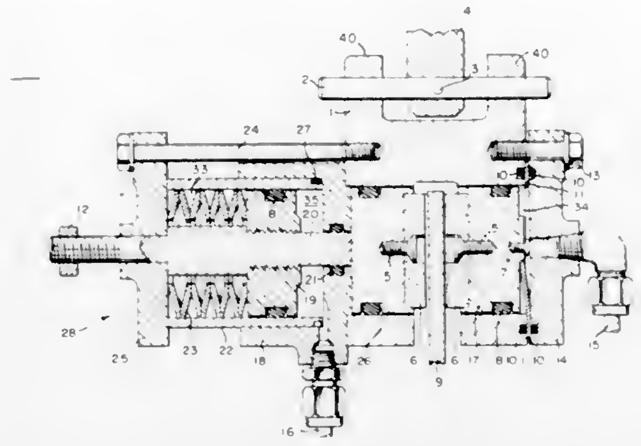


A railway vehicle brake arrangement comprises a disc brake and a tread brake, both associated with one and the same wheel and axle set, and a power actuator. Tee disc brake has a pair of caliper levers carrying respective brake shoes, and the actuator is operative to actuate the caliper levers to apply the brakes shoes. The actuator is mechanically coupled indirectly to one of the caliper levers through an equalizing lever which forms part of the transmission to the tread brake.

3,791,492
CALIPER BRAKE

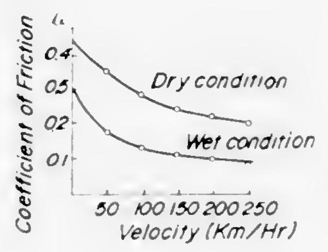
William Neilsen, Seattle, Wash., assignor to Hydrostatic Technology, Inc., Seattle, Wash.
Filed May 30, 1972, Ser. No. 257,922
Int. Cl. F16d *65/24*
U.S. Cl. 188—170 **5 Claims**

A brake mechanism for use in conjunction with a rotatable disk including a pad adapted to selectively contact each side of the disk during the braking operation. The pads are independently controlled and one pad is caused to frictionally engage the disk to selective application of a fluid pressure whereas the second pad is adapted to frictionally contact the disk by means of spring pressure which is enacted upon the happening of the predetermined condition. The mechanism is mounted relative to the disk such that the engagement of either of the pads causes the brake mechanism to move axially of the disk such that the disk is engaged from both sides. The fluid operated pad is retained in a non-engaging position by a spring means whereas the spring operated pad is retained in the non-engaging position by a fluid pressure such that a decrease in pressure will cause the pad to engage the disk thus stopping the disk. The mechanism further includes a manual means for compressing the spring in the absence of fluid pressure.



3,791,493
FRICTION ELEMENTS FOR BRAKING ROTARY BODIES

Motosaburo Yamaguchi, and Matsuo Takahashi, both of Yokohama, Japan, assignors to Nippon Carbon Company, Limited, Tokyo, Japan
Filed Nov. 29, 1971, Ser. No. 202,857
Claims priority, application Japan, Dec. 5, 1970, 45-107190; Dec. 25, 1970, 45-118141
Int. Cl. F16d *69/02*
U.S. Cl. 188—251 M **10 Claims**

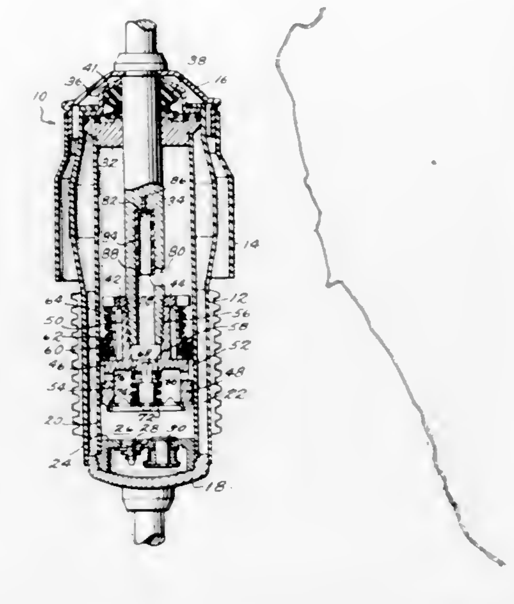


Friction elements for braking rotary bodies, such as wheels in railway cars, electric cars and motorcars, contains 50 – 100% by weight of aluminum and said elements may be aluminum alloys or aluminum compositions. These elements may be used alone by directly sliding on a wheel or together with a conventional brake, or for a brake shoe in a disc brake.

3,791,494
TEMPERATURE COMPENSATING MEANS FOR A HYDRAULIC SHOCK ABSORBER

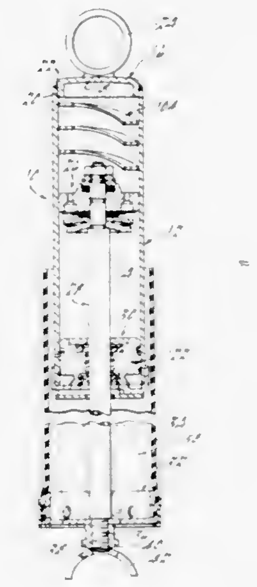
Sellers B. McNally, Homewood, Ill., assignor to Maremont Corporation, Chicago, Ill.
Filed Mar. 11, 1971, Ser. No. 123,330
Int. Cl. F16f *9/52*
U.S. Cl. 188—277 **7 Claims**

A hydraulic shock absorber having a working chamber, a piston slidably disposed in the working chamber and having a piston rod attached thereto extending outwardly of the chamber; a fluid passage is formed through the piston and is in fluid communication with an axial bore formed in the piston rod; a radial bore is provided in the piston rod to establish fluid communication with the axial bore so that, when the piston moves through a rebound stroke hydraulic fluid may flow from one side of the piston to the other through the radial bore and axial bore of the piston rod and through the fluid passage formed in the piston; an elongated element made of a material having a coefficient of thermal expansion that is greater than the material from which the piston rod is made is disposed in the axial bore of the piston rod and has one end thereof fixedly attached to the portion of the piston rod defining the inner end of the axial bore and the other end thereof disposed in a flow restricting relation with respect to the radial bore which varies in response to temperature changes of the hydraulic fluid whereby substantially constant damping effect is provided over a range of temperature variations.



3,791,495
SHOCK ABSORBER WITH PISTON ROD GUIDE AND SEAL MEANS

Johan H. Keijzer, Hasselt, and Roland H. C. Beets, Truiden, both of Belgium, assignors to Monroe Belgium N.V., St. Truiden, Belgium
Continuation-in-part of Ser. No. 45,867, June 12, 1970, abandoned. This application Apr. 21, 1971, Ser. No. 136,061
Int. Cl. F16f *9/36*
U.S. Cl. 188—322 **3 Claims**

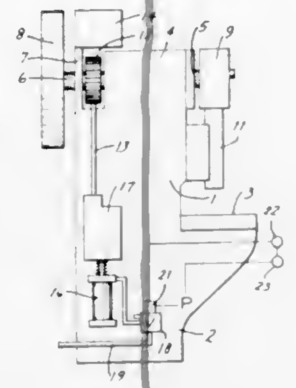


A shock absorber comprising an elongated cylindrical pressure cylinder having a piston reciprocally disposed therewithin and connected to a piston rod extending outwardly from one end thereof. The pressure cylinder is adapted to be filled with preselected quantities of a hydraulic damping fluid and a pressurized gas for damping reciprocal movement of the piston therewithin. One end of the pressure cylinder is provided with a novel rod guide assembly which is designed so as to permit the use of extremely economical materials without any sacrificing of sealing efficiency.

3,791,496
DUAL CONTROL ADAPTER FOR PRESS

Homer R. Emrick, Kalamazoo, Mich., assignor to Emrick, Inc., Kalamazoo, Mich.

Filed Aug. 17, 1972, Ser. No. 281,491
Int. Cl. F16p *3/18*
U.S. Cl. 192—22 7 Claims

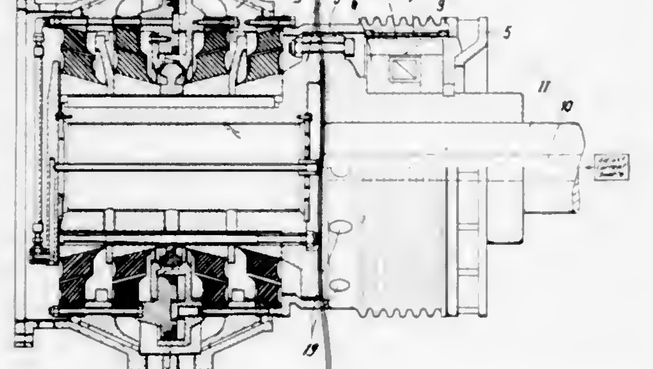


Safety actuating device for a press. In a press, as a punch press, having a one-way clutch and a rod responsive to actuating means for operating said clutch to control the press, there is provided means interposed between actuating means and said rod to insure that the press will operate only in response to a force occurring in a predetermined manner and place. The rod is connected to a pivotally mounted lever whose operation is first resisted and then effected by successive operation of two linkages responding to energizing of a pressure cylinder. One linkage first, and normally, provides support means under said lever for positively preventing it from effecting movement of said rod. A pair of hand switches are each connected to a valve for energizing the cylinder when both of the operator's hands are on the respective switches. With the device of the invention in place and the actuating cylinder energized, the first operation is to pull the support means out of locking position and thereby to permit downward movement of said lever. This is followed immediately by engagement of said lever by said second linkage which draws the ever downward sufficiently to effect such movement of said pull rod as to energize the clutch and initiate one operation of the press.

3,791,497
ELASTIC SHAFT CLUTCH

Erwin Fleischmann, and Karlheinz Watzlawek, both of Witten, Germany, assignors to Lohmann & Stolterfoht Aktiengesellschaft, Witten, Germany

Filed July 28, 1972, Ser. No. 275,917
Int. Cl. H02k *5/24*; F16d *13/26, 3/68*
U.S. Cl. 192—30 V 5 Claims

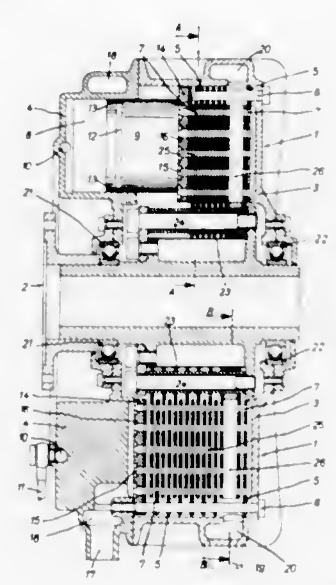


Elastic clutches and couplings are disclosed in which the elastic components are bridged by a concentric coil-armature arrangement for attenuating oscillations between these parts which should rotate in unison.

3,791,498
DEVICE FOR THE FRICTIONAL INTERCONNECTION OF TWO STRUCTURAL PARTS

Hans Wassermann, Sonnenhugelstrasse 62, Arbon, Switzerland

Filed May 23, 1972, Ser. No. 256,181
Claims priority, application Switzerland, June 7, 1971, 8302
Int. Cl. F16d *25/00*
U.S. Cl. 192—57 5 Claims

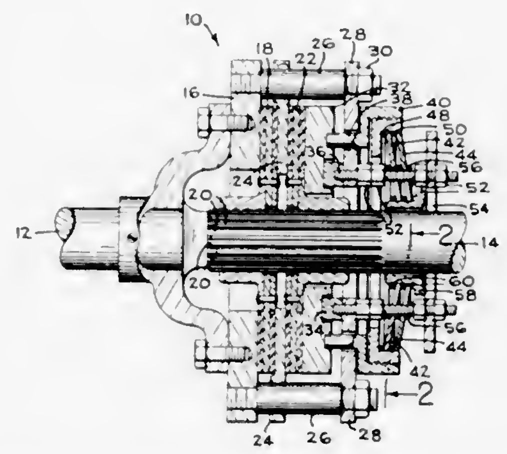


The device is used for the frictional interconnection of two structural parts at least one of which is rotatable about an axis, and includes a plurality of substantially parallel disks coaxial with this axis and connected non-rotatably and in alternation to the respective structural parts and displaceable axially to effect engagement and disengagement of axially adjacent disks with each other. The disks have openings therethrough so arranged that at least a part of the openings in all the disks coincide at least partly in certain relative angular positions of the parts to form passages extending through the assembly of disks. An impeller is connected to rotate with a rotatable part, and circulates a working fluid, such as a cooling fluid, through these passages so that a hydrodynamic interconnection and a frictional interconnection of the two parts may be effected. The device is usable either as a truck brake or as a clutch.

3,791,499
CLUTCH

Joseph J. Ryan, 15325 Norton Rd., Saratoga, Calif.

Filed Jan. 3, 1972, Ser. No. 214,557
Int. Cl. F16d *13/56*
U.S. Cl. 192—70.27 2 Claims

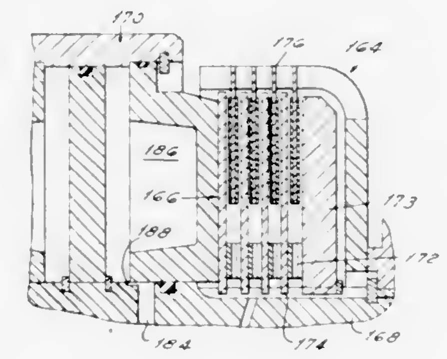


A clutch for transferring torque from an input to an output shaft which includes input and output clutch elements connected respectively to said shafts for rotation therewith and spring means for urging said clutch elements together including a pair of spring diaphragms arranged in adjacent relation whereby the summation of their resilient forces is realized.

3,791,500
FLUID ACTIVATED DOUBLE-ACTING CLUTCH WITH FLUID METERING MEANS

Oscar E. Stefanutti, Bloomfield Hills, Mich., assignor to D.A.B. Industries, Inc., Detroit, Mich.

Filed Apr. 5, 1972, Ser. No. 241,335
Int. Cl. F16d *25/10*
U.S. Cl. 192—87.17 3 Claims

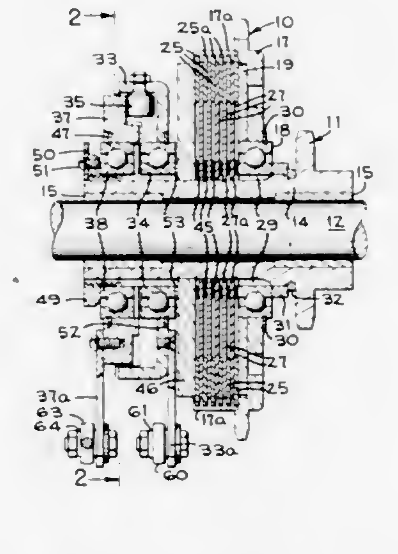


The clutch is a double-acting device which includes a shaft having a pair of spaced apart first clutch plate assemblies carried thereon. A second pair of clutch plate assemblies are carried by a pair of drive members which are rotatably mounted on the shaft. The second pair of clutch plate assemblies are placed in operative relationship to the first pair of clutch plate assemblies. Hydraulic power means are provided between the pairs of clutch plate assemblies to compress one or the other to cause frictional engagement of the plates to thereby provide a driving connection therebetween. Spring means are provided to urge either the clutch plates or the hydraulic power means to a neutral position upon relief of hydraulic pressure.

3,791,501
CAM OPERATED CLUTCH

George W. Culbertson, Oconomowoc, Wis., assignor to FMC Corporation, San Jose, Calif.

Filed Mar. 14, 1972, Ser. No. 234,558
Int. Cl. F16d *23/12*
U.S. Cl. 192—93 A 2 Claims

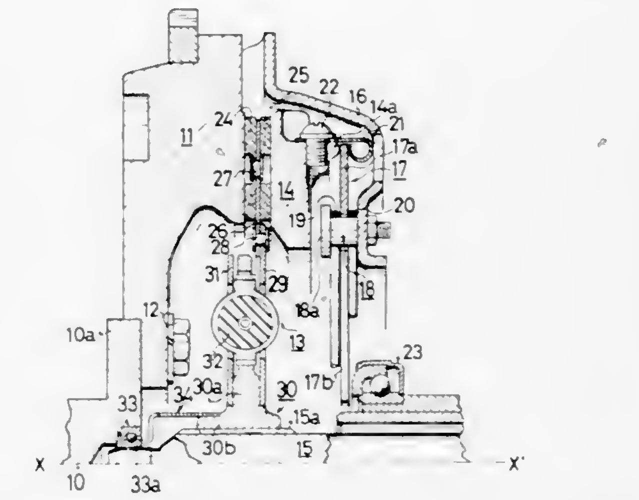


The clutch of the present invention is of the type wherein friction rings associated with a drive member are forced into face-to-face engagement with friction-discs splined to a driven member. The engagement of the friction member is effected by a cam and cam follower mechanism.

3,791,502
CLUTCH WITH WEAR COMPENSATING RELEASING SPRING

Mototaka Nakane, Hekinan, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Karuja, Aichi pref., Japan

Filed Feb. 23, 1972, Ser. No. 228,665
Claims priority, application Japan, Feb. 23, 1971, 46/008782
Int. Cl. F16d *13/75*
U.S. Cl. 192—111 A 5 Claims

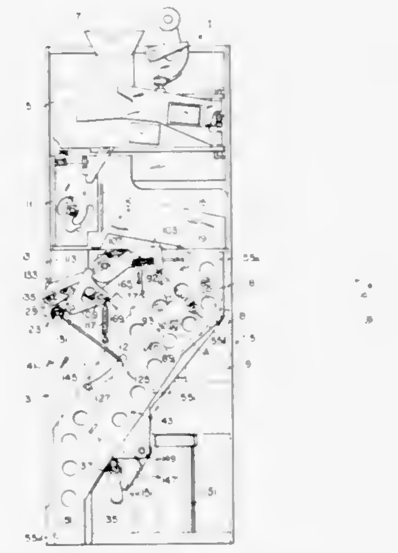


The invention relates to a vehicle clutch releasing mechanism including a releasing means made of ductile material having both ranges of elastic and plastic deformation and being assembled resiliently and immovably in an axial direction in the clutch engaging state and adapted for positively serving as a pusher of the clutch disc assembly during clutch releasing operation and for compensating wearing amount of clutch facing elements of the clutch disc assembly by its plastic deformation when clutch facing elements wear and for keeping its elastic thrust energy constant, and for limiting the returning of the clutch disc assembly to a constant amount.

3,791,503
COIN APPARATUS

Harry C. Haeusser, St. Louis County, and Barry L. Smith, Florissant, both of Mo., assignors to UMC Industries, Inc., St. Louis, Mo.

Filed July 1, 1970, Ser. No. 51,570
Int. Cl. G07f *15/08*
U.S. Cl. 194—1 G 4 Claims



Conversion of a coin mechanism which, per se, is limited to handling nickels, dimes and quarters, and limited to controlling vending at 5-cent prices (i.e., 10, 15, 20 cents etc.), so that it may handle pennies and control vending at 1-cent prices (i.e., 11, 12, 13, 14, 16, 17 cents etc.). The conversion involves the provision of means for actuating the credit register of the coin mechanism through its basic 5-cent interval in response to deposit of a number of pennies corresponding to a predetermined 1-cent price minus the five-cent price next below (e.g., two pennies in the case of a price of 12 cents, three pennies in the case of a price of 13 cents), so that, by setting the coin mechanism at the 5-cent price next above (e.g., 15 cents in the case of a price of 12 or 13 cents), items may be vended at the predetermined penny price due to the registration of 5 cents by the credit register in response to the deposit of an amount equal to the 5-cent price next below (e.g., 10 cents) plus said number of pennies.

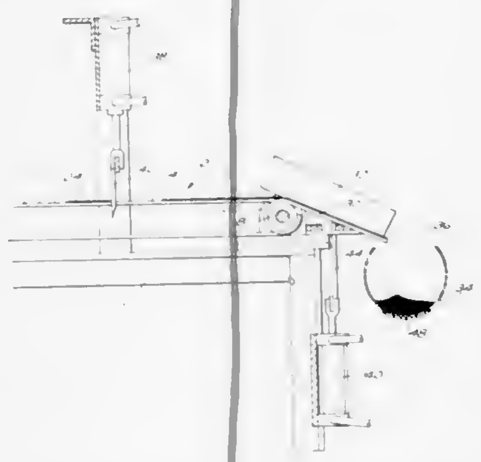
3,791,504
APPARATUS FOR HANDLING AND DRYING PENCIL LEADS

Verlon E. Wiser, Shelbyville, and Charles W. McCallie, Bell Buckle, both of Tenn., assignors to Hasbro Industries, Inc., Pawtucket, R.I.

Division of Ser. No. 879,381, Nov. 24, 1969, Pat. No. 3,586,298. This application Mar. 15, 1971, Ser. No. 124,536

Int. Cl. B65g *35/00*

U.S. Cl. 198—1 **7 Claims**



Apparatus for handling and drying pencil leads comprising means for receiving the leads after extrusion and cutting thereof but while the leads are still moisture laden and hence limp and easily deformable, said means maintaining the leads in straightened condition while loading the leads into cylindrical cans, the loaded can being rotatable about their own axes to maintain the leads therein in straightened condition, the apparatus further comprising a rotary furnace for receiving the loaded cylindrical cans to effect drying of the leads, said rotary furnace comprising a rotor that slowly moves the loaded cans through an annular heating chamber, the loaded cans being mounted on discs which are rotatably mounted on the rotor, and drive means for simultaneously imparting rotation to the rotor and to the discs, the rotation of the latter being at a substantially greater rate than the rotation of the former, whereby as the rotor slowly carries the loaded cans through the heating chamber, the discs are simultaneously rotating about their own axes.

3,791,505
SOLID STATE VEND CONTROL MEANS AND PROCESS OF OPERATION

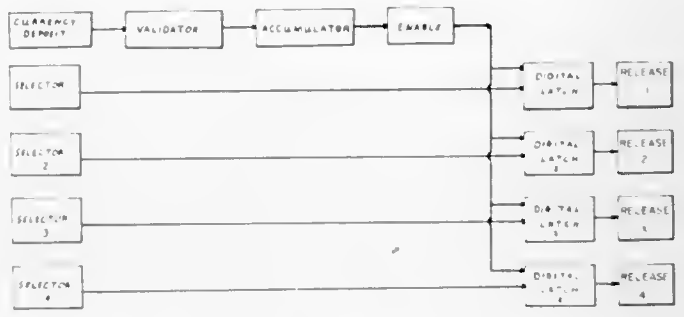
Darla R. Mandell, Houston, Tex., assignor to Marrick Industries Inc., Houston, Tex.

Filed June 14, 1972, Ser. No. 262,500

Int. Cl. G07f *11/00*

U.S. Cl. 194—10 **13 Claims**

This apparatus is a modular solid state system for operating vending machines, which will contribute little to the bulk of the machines and allow either more space for the vended goods in the machine or allow design of smaller and more compact vending machines than contemplated in the prior art. Other advantages of the present invention are lower cost of manufacture than the cumbersome mechanical equivalents of the prior art and simple repair. Repair should be less frequent by the use of the solid state system described. Basically, the apparatus has a currency desposit, currency evaluator, a solid state accumulator to keep track of the currency deposit, an enable means, a solid state release control means and a release means. An additional aspect of the present invention lies in a release means which uses an electric motor having an extended armature which rotates and releases items to be vended.



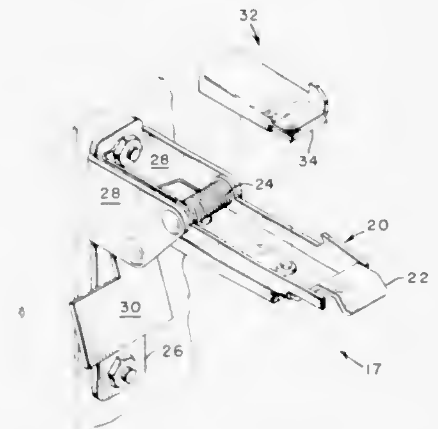
3,791,506
COIN ADJUSTING MECHANISM FOR NEWSPAPER DISPENSERS

Robert F. Wise, 4518 Colby St., Everett, Wash.

Filed Nov. 29, 1971, Ser. No. 202,780

Int. Cl. G07f *17/14*

U.S. Cl. 194—71 **6 Claims**



A latch adjusting mechanism for use in a coin operated vending machine which changes the distance between the latch operating mechanism and the coin detecting mechanism. The denomination, which measured by the combination of coins, is necessary to operate the latch may be quickly and easily altered by adding or removing the mechanism which may be stored within the vending machine.

3,791,507
APPARATUS FOR MANIPULATING FILTER ROD SECTIONS OF MULTIPLE UNIT LENGTH

Heinz Kaeding; Heinz Fick, both of Geesthacht, and Rolf Dahlgruen, Tornesch, all of Germany, assignors to Hauni Werke Korber & Co., Hamburg, Germany

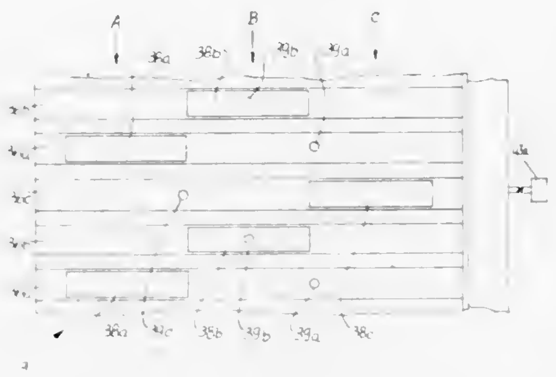
Filed Nov. 2, 1972, Ser. No. 303,217

Claims priority, application Germany, Nov. 26, 1971, P 21 58 686.7; May 17, 1972, P 22 23 883.1

Int. Cl. B65g *47/26*

U.S. Cl. 198—32 **16 Claims**

A filter cigarette making machine wherein the shuffling conveyor which converts three discrete files of filter rod sections of double unit length into a single file while the filter rod sections move sideways has a drum-shaped body with axially parallel peripheral flutes for reception of discrete files of filter rod sections from a staggering conveyor in such a way that each flute receives a single filter rod section. At least some of the flutes are in communication with suction ports which draw from the flutes currents of air in such a way that the filter rod sections in the respective flutes move axially into register with the remaining filter rod sections. The pneumatic axial shifting of filter rod sections is particularly desirable in connection with moist filter rod sections which offer considerable resistance to sliding movement under the action of cams, rollers or belts. The staggering conveyor has circumferentially extending recesses of different width which receive discrete filter rod sections of successive rows of axially parallel sections and which cooperate with a stationary rolling device to roll selected filter rod sections of each row rearwardly during sidewise movement of filter rod sections so that the rows of filter rod sections are converted into discrete files which are ready to be transferred onto the shuffling conveyor.



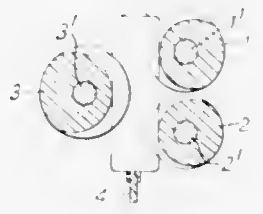
3,791,508
WORM CONVEYORS

Michael Bryon Osborne, and Allan James Birch, both of Hull, England, assignors to Kingston Conveyors Limited, Hull, England

Filed Nov. 20, 1972, Ser. No. 307,992

Int. Cl. B65g *47/26*

U.S. Cl. 198—34 A **2 Claims**



A conveyor for moving articles along on a rail or other smooth surface comprising two superposed worms with a third worm with its axis symmetrically spaced from the axes of the other two worms, the worms being formed as helical grooves with like root diameters in rubber or plastics material on metal shafts which in use are driven at the same speed.

3,791,509
MAGNETIC HOPPER SYSTEM FOR LOADING AND UNLOADING A CONVEYOR

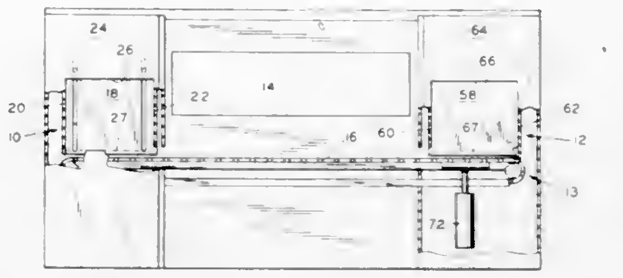
Alan Richardson Jones, Miami, Fla., assignor to Coulter Chemistry, Inc., Maunabo, P.R.

Filed Nov. 3, 1971, Ser. No. 195,363

Int. Cl. B65g *17/46, 57/30, 59/06*

U.S. Cl. 198—41 **25 Claims**

The system includes a first magnetic plate mounted in a generally upright position at a first location adjacent a conveyor and adapted to hold thereagainst a plurality of objects each having a magnetizable material therein. The plate has two slots therein and a movable finger in each slot which is adapted to engage the top side of the object for sequentially moving objects downwardly onto the conveyor. A second magnetic plate is mounted in a generally upright position at a second location downstream from the first location and adjacent the conveyor. A vertically reciprocal ram powered by a pneumatic cylinder is situated at the second location and is adapted to move upwardly to sequentially move objects from the conveyor onto the second plate as each object reaches the second location.



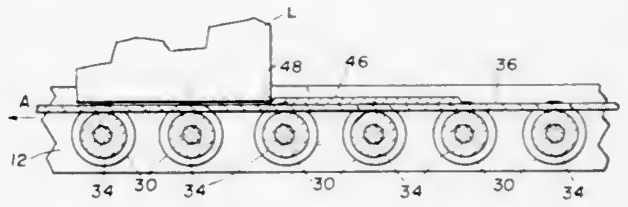
3,791,510
ACCUMULATING CONVEYOR

Carl J. Milazzo, Tonawanda, and Frank J. Hohl, Snyder, both of N.Y., assignors to Hohl Machine & Conveyor Co., Inc., Buffalo, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,351

Int. Cl. B65g *13/02*

U.S. Cl. 198—127 R **7 Claims**



A series of live rollers have reduced diameter portions centrally thereof forming grooves receiving and guiding an endless drive member having one side in frictional contact therewith. The drive member thickness is less than the roller groove depth and spaced pads on the drive member project slightly above the article engaging surfaces of the rollers to engage the trailing edge of a stationary load and initiate forward movement thereof.

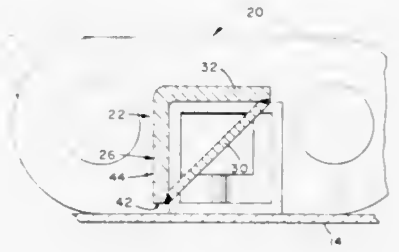
3,791,511
CONVEYOR SYSTEM

John H. Holland, Cleveland, Okla., assignor to Arkansas Rock and Gravel Co., Mufreesboro, Ark.

Continuation-in-part of Ser. No. 81,794, Oct. 19, 1970, abandoned. This application Dec. 10, 1971, Ser. No. 206,634

Int. Cl. B65g *19/10, 45/00*

U.S. Cl. 198—172 **18 Claims**



A conveyor system for asphalt, concrete, aggregate and similar materials includes a plurality of conveyor flights and a pair of chains for moving the flights along a material supporting floor. Each flight includes end portions which attach the flight to the chains and a central portion having a hollow triangular cross section that extends substantially across the floor

chutes. Feed paddle wheels are located at the top of the eleva-

least two detectors spaced to read information along the length of the ticket regardless of end-for-end orientation.

trolled by some particular property of the articles such as weight, size, or color, sensed in a known manner. The plaques gular cross section that extends substantially across the floor to define a narrow edge at the lower leading portion of the flight. The end portions support each flight with the narrow edge of the central portion facing and spaced from the floor. By this means the narrow edge and the spaced positioning of the edge relative to the floor prevent stones from accumulating between the flight and the floor.

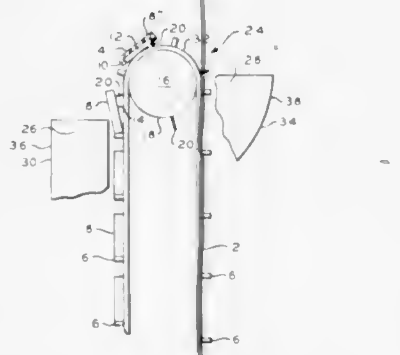
3,791,512
METHOD AND APPARATUS FOR ORIENTING ELEMENTS

Alfred W. Kinney, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 15, 1971, Ser. No. 198,646

Int. Cl. B65g *47/24*

U.S. Cl. 198—33 AA **14 Claims**



A method and apparatus for positioning concave articles on an upwardly moving elevator with the articles resting on a side portion thereof, moving the articles upwardly with the elevator, contacting a portion of the articles with a rotating protrusion extending through the elevator, moving the articles from the elevator to one of first or second locations, and commonly orienting the articles at one of first or second locations.

3,791,513
DELIVERY APPARATUS

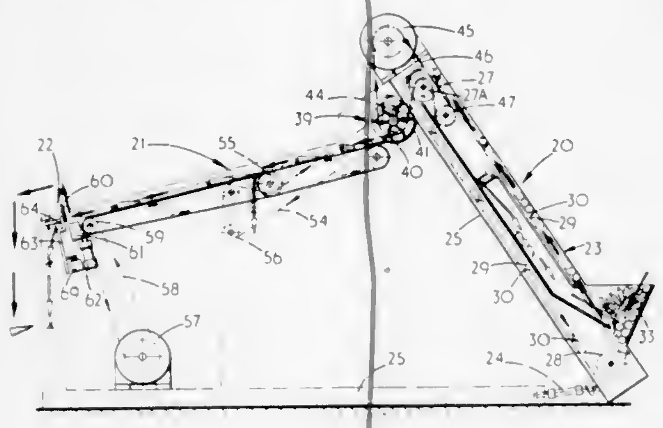
Colin Barlow, Radcliffe, England, assignor to Mather & Platt Limited, Lancashire, England

Filed July 21, 1972, Ser. No. 273,909

Claims priority, application Great Britain, July 21, 1971, 34,139/71

Int. Cl. B65g *47/24*

U.S. Cl. 198—33 AA **3 Claims**



A carrot topping machine in which carrots are delivered to an orientating apparatus by an upwardly-inclined elevator. The elevator has a box-like casing over which runs carrot-conveying flights carried by bars connected between conveying chains. A supply hopper is located adjacent the bottom of the elevator, the hopper permitting passage of the bars and flights to pick up carrots. Adjacent the top of the casing is an opening over which the flights pass so that excess carrots fall into the casing from which they are re-directed back to the hopper by chutes. Feed paddle wheels are located at the top of the elevator to receive the carrots and roll them on to the orientating apparatus.

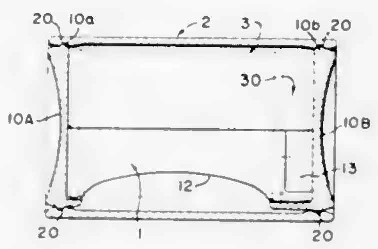
3,791,514
CONTAINER FOR FILM MAGAZINE

Riki Watanabe, Tokyo, Japan, assignor to Q Designers Inc., Tokyo, Japan

Filed Jan. 24, 1972, Ser. No. 220,166

Int. Cl. B65d *85/67*

U.S. Cl. 206—52 F **4 Claims**



A film magazine container is composed of a single hollow member having opposed open ends and a slidable member inserted thereinto having opposed end plates fixed at the opposite ends thereof for serving as end covers of the hollow member. The slidable member is provided with an opening at the intermediate portion thereof and an abutment projection at an end thereof.

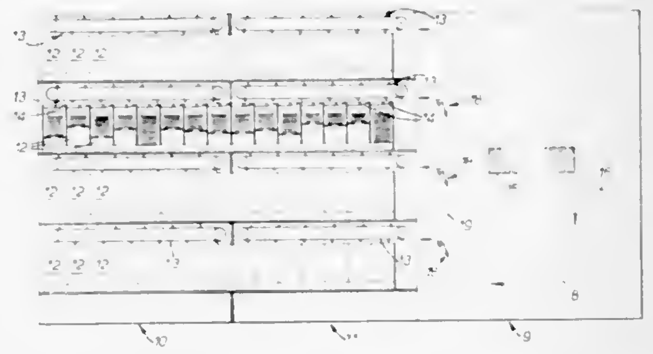
3,791,515
DOCUMENT SORTING AND HANDLING MACHINES

David Wood, Clevedon, England, assignor to Masson Scott Thrissell Engineering Limited, Bristol, England

Filed Nov. 6, 1972, Ser. No. 303,941

Int. Cl. B07c *3/06*

U.S. Cl. 209—73 **6 Claims**



A conveyor for carrying documents or envelopes comprising an endless flexible belt provided with spaced carriers in the form of metal rods with multiple bends moving along ribbed or grooved supporting surfaces, the belts being also formed with spaced teeth to engage toothed driving sprockets, so that the positions of the conveyed articles are accurately determined. Below the supporting surface sorting boxes are located each with a diverter gate movable into the path of the travelling articles, and a number of such conveyors are positioned end-to-end to transfer mail from one to the next.

3,791,516
BATCH TICKET READER

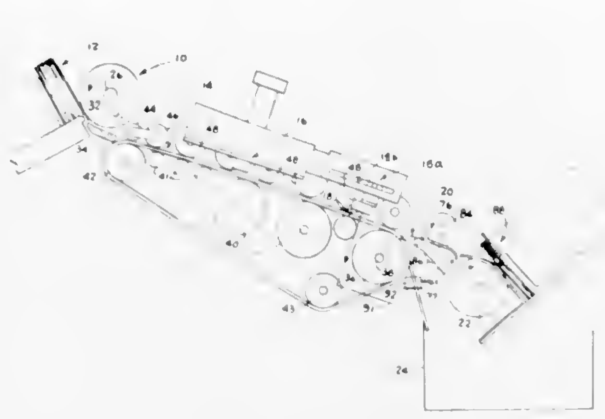
Herbert Tramposch, Riverside, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Jan. 10, 1972, Ser. No. 216,536

Int. Cl. B07c *3/00*

U.S. Cl. 209—74 **12 Claims**

Ticket reading apparatus is disclosed having a moving grooved belt for transporting tickets fed singly thereto by separator rollers controlled by a clutch and brake in relation to information recording speed. Reading is accomplished by at least two detectors spaced to read information along the length of the ticket regardless of end-for-end orientation. Each detector comprises a light source and photocell detector having a narrow rhombic aperture for optimum reading of tickets oriented longitudinally on the belt or only slightly skewed There is also provided a ticket routing gate assembly operated by a switch enabled by the information recorder to divert tickets to one of two routes and to stack tickets which have not been properly read.



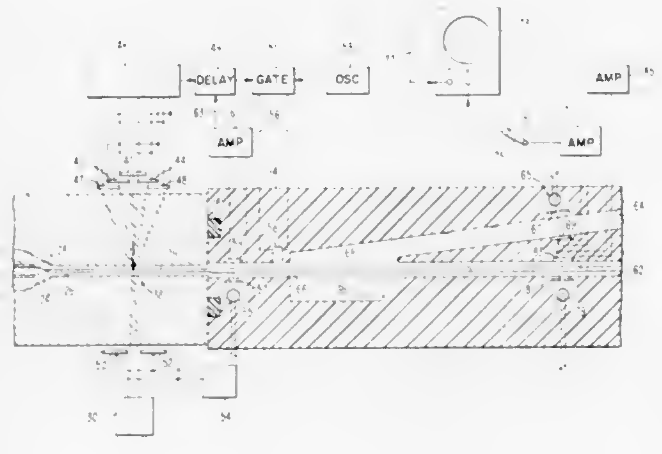
3,791,517
DIGITAL FLUIDIC AMPLIFIER PARTICLE SORTER

Mitchell Friedman, Yorktown Heights, N.Y., assignor to Bio/Physics Systems, Inc., Mahopac, N.Y.

Filed Mar. 5, 1973, Ser. No. 338,216

Int. Cl. B07c *5/00*

U.S. Cl. 209—74 R **20 Claims**



Differences in small particles entrained in a stream of liquid are detected and the resultant difference signals are used to control a fluidic amplifier located downstream to switch the liquid particle carrying stream to different outlet ports determined by the detection of particle differences.

3,791,518
SIDE TRANSFER SORTING CONVEYOR

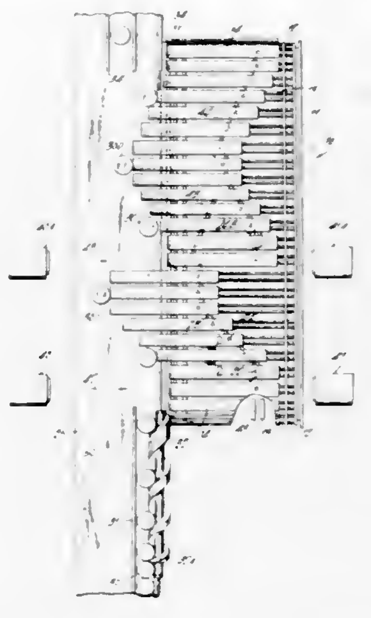
Frank B. Vanderhoof, Lake Forest, N.J., assignor to Metramatic Corp., Landing, N.J.

Filed Apr. 27, 1973, Ser. No. 355,000

Int. Cl. B07c *3/06*

U.S. Cl. 209—74 R **8 Claims**

A sorting conveyor having a plurality of movable plaques on one conveyor base arranged to sort merchandise or similar articles carried on another conveyor positioned at one side of the sorting conveyor. The separation of articles may be controlled by some particular property of the articles such as weight, size, or color, sensed in a known manner. The plaques on the sorting conveyor are activated to engage the articles carried by the adjoining conveyor and change their relative position so that a series of fences can direct the reoriented articles into predetermined paths.



3,791,519
STORAGE APPARATUS

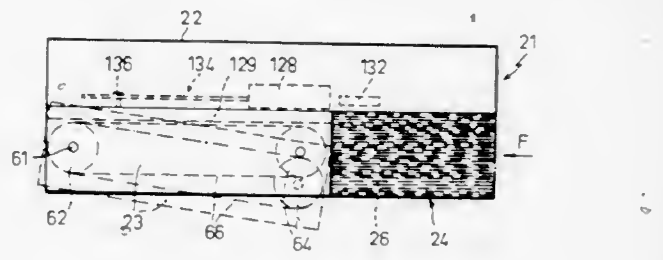
Herbert Weidanz, Odenthal-Globusch, and Gerhardt Sandt, Cologne, both of Germany, assignors to Datagraph A.G., Zug, Switzerland

Filed Sept. 29, 1972, Ser. No. 293,513

Claims priority, application Germany, Oct. 18, 1971, 2151752

Int. Cl. B07c

U.S. Cl. 209—80.5 **10 Claims**



Storage apparatus for the cycled selection of a sheet-like records carrier supported with other carriers in a cassette, in which means are provided to bring a chosen carrier in a protruding position in which it can be gripped and pulled out of the cassette by a first frame which transports the carrier to a fixed position. With the carrier in this fixed position reader stations can be positioned to read certain tracks on the carrier, while the carrier can be transported into the cassette from this fixed position.

3,791,520
PROCESS FOR TREATING WATER CONTAMINATED WITH HEXAVALENT CHROMIUM

Garmt J. Nieuwenhuls, 3601 197th Place S.E., Issaquah, Wash.

Filed Feb. 17, 1972, Ser. No. 227,099

Int. Cl. C02b *1/16*

U.S. Cl. 210—36 **9 Claims**

Water containing chromium anions in the parts per million range are removed by contacting the water-laden chromium solution with a water insoluble lead compound, such as lead oxide, lead carbonate or lead hydroxide, adsorbed in the pores

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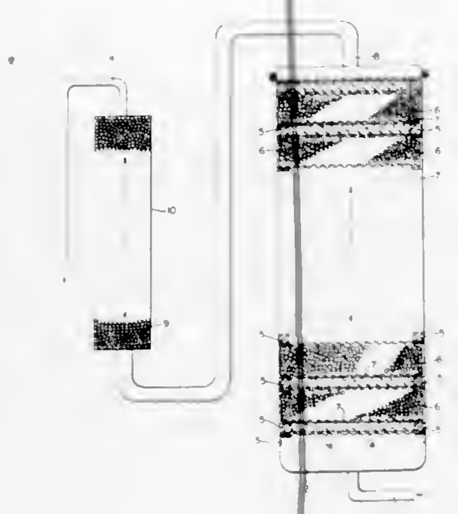
of an essentially inert, porous, particulate matrix such as ver-

3,791,522

3,791,524
TISSUE COLLECTOR

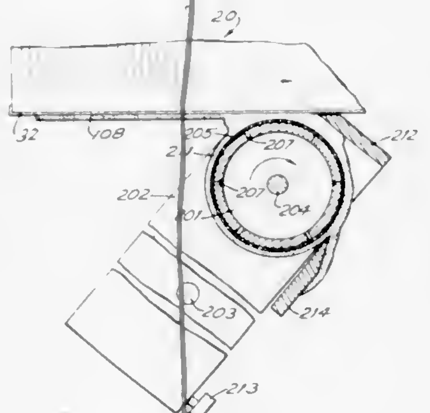
3,791,526
SOLVENT WELD ADHESIVE FOR REVERSE OSMOSIS

of an essentially inert, porous, particulate matrix such as vermiculite. The lead compound reacts with the chromium in the water to form insoluble lead chromate. The effluent may be passed through an ion exchange column containing an acidic cation exchanger in the hydrogen form for removing any lead ion solubilized during passage through the bed of adsorbed lead compound.



3,791,521
APPARATUS AND METHOD FOR CONTINUOUS FILTERING

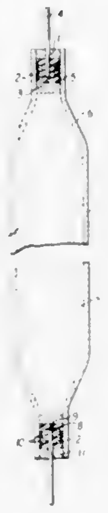
William S. Eakins, St. Andrews Ln., Glen Cove, N.Y.
Continuation-in-part of Ser. No. 845,984, July 30, 1969, Pat. No. 3,615,011, Continuation-in-part of Ser. No. 613,691, Dec. 21, 1966, Pat. No. 3,460,674, and a continuation-in-part of Ser. No. 578,361, Sept. 9, 1966, abandoned. This application July 8, 1971, Ser. No. 160,746
Int. Cl. B01d *33/04*
U.S. Cl. 210—67 **6 Claims**



A traveling filter comprising a plurality of trays disposed to travel along a path, a plurality of frames adapted to travel along a second path and through a portion of said path mate with the trays to confine material thereon, and a plurality of conduit means adapted to travel along a third path and adapted to be advanced and retracted to establish communication with and discharge liquid from said trays.

3,791,522
CHROMATOGRAPHIC READY-FOR-USE COLUMNS

Friedhelm Eisenbeiss, and Susanne Ehlerding, both of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany
Filed June 20, 1972, Ser. No. 264,607
Claims priority, application Germany, July 1, 1971, 2132686
Int. Cl. B01d *15/08*
U.S. Cl. 210—198 C **10 Claims**



A ready-to-use chromatographic column packed with an adsorbent and both ends of which narrow into a shorter column having a smaller diameter into which is fitted a distributing filter, which is tightly packed against the adsorbent; a bored stopper, which is positioned against the distributing filter; and a capillary tube fitted in the bore of the stopper, one end of which extends beyond the end of the shorter column and the other in the interior of the bored stopper. These columns are convenient devices for adsorption and partition chromatography.

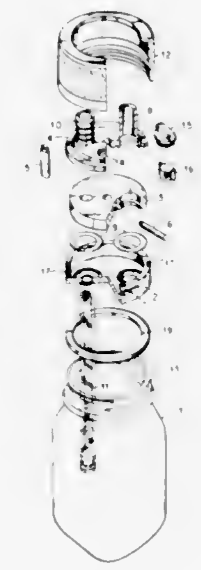
3,791,523
SINTERED CHROMATOGRAPHIC PLATE AND METHOD FOR PRODUCING THE SAME

Tamotsu Okumura, and Tetsuro Kadono, both of Osaka, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan
Filed Nov. 30, 1972, Ser. No. 310,686
Claims priority, application Japan, Dec. 17, 1971, 46-102940
Int. Cl. B01d *15/08*
U.S. Cl. 210—198 C **14 Claims**

A plate or thin-layer chromatographic element made by coating a refractory and chemically-stable support with a dispersion of fine particles of chromagtographically-active inorganic adsorbent, fine particles of a refractory and acid-resistant fluorescent pigment of red luminescence and powdered fluorescent glasses of blue and green luminescences in a liquid dispersing medium, the mixing ratio of said fluorescent glasses and fluorescent pigment is so determined that the obtained mixture may have a blend of the luminescences of the three fundamental colors, that is, a pure-white luminescence upon excitation by means of an ultraviolet irradiation, removing the dispersing medium, and heating the coated layer to make it adherent and thereby to form a continuous, coherent and porous sintered-layer. Particles of the powdered glass contained in said sintered-layer hold a uniform distribution of the adsorbent particles and fluorescent pigment particles, and form firm bondings between each other and with the surface of the support without any detriment to the activity of the spots The element enables the discrimination between two contiguous spots of a chromatogram of colorless compounds to be discriminated, each of which has at least one absorption band in the ultraviolet region and the corresponding quenched emission on the thin-layer capable of emitting a pure-white luminescence in the absence of the chromatogram.

3,791,524
TISSUE COLLECTOR

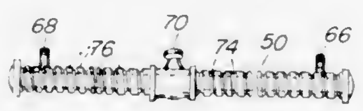
Nakwon Cho, Knoxville, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed Apr. 13, 1972, Ser. No. 243,786
Int. Cl. B01d *35/02*
U.S. Cl. 210—232 **1 Claim**



A tissue collector is provided which is designed especially for obtaining a fetus in a sterile condition while permitting the removal of a specimen for pathological study. The collector is economical, compact and lends itself to transit The collector can readily be cleaned and sterilized for reuse.

3,791,525
DEWAXING AND DEOILING APPARATUS

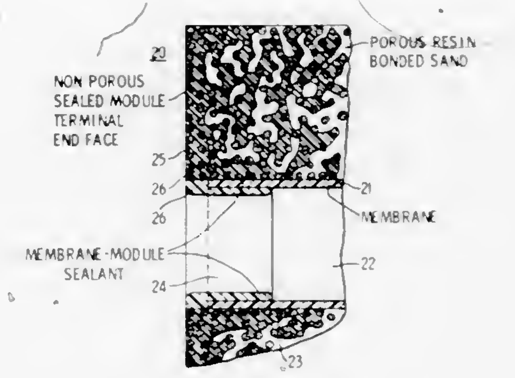
Robert E. Harris, and William R. Moseley, both of Beaumont, Tex., assignors to Mobil Oil Corporation, New York, N.Y.
Division of Ser. No. 171,930, Aug. 16, 1971, Pat. No. 3,729,414. This application Dec. 22, 1972, Ser. No. 317,882
Int. Cl. B01d *33/02*
U.S. Cl. 210—217 **3 Claims**



In a rotary filter dewaxing-deoiling process, the apparatus for improving the deoiling of the wax cake is described, characterized by utilizing a plurality of transverse solvent distributor pipes each of which dispense a relatively dense transverse curtain of solvent droplets on the wax cake thereby providing areas of solvent flooding interspaced with areas of considerably reduced solvent concentration.

3,791,526
SOLVENT WELD ADHESIVE FOR REVERSE OSMOSIS MEMBRANES

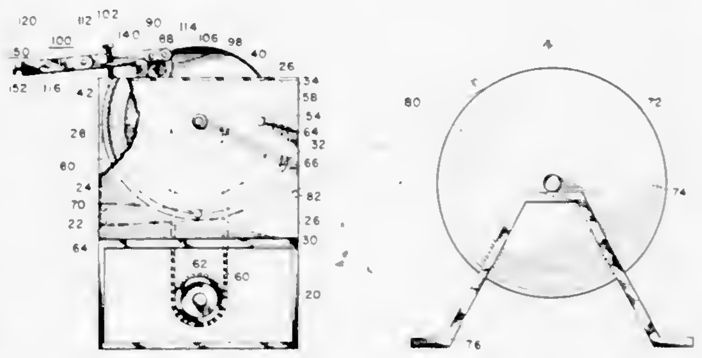
Regis R. Stana, Murrysville; Edward Mitchell, Wilkinsburg, and John B. Coffay, Media, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Aug. 10, 1971, Ser. No. 170,598
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 **4 Claims**



A method of sealing a reverse osmosis membrane to a contacting porous support comprises applying a sealant composition, comprising a cellulose ester, an organic solvent and an alcohol to the membrane and its contacting support.

3,791,527
ROTARY FILTER APPARATUS

Harry Ball, Piscataway, and Henry A. Steward, Califon, both of N.J., assignors to Technical Fabricators, Inc., Nutley, N.J.
Filed Oct. 21, 1971, Ser. No. 191,507. The portion of the term of this patent subsequent to Mar. 28, 1989, has been disclaimed.
Int. Cl. B01d *33/12*
U.S. Cl. 210—387 **16 Claims**



Rotary filter apparatus is provided with a rotary drum having a perforated peripheral wall extending into a tank containing slurry to be filtered. A sheet of filter paper is continuously fed from a source of supply to be wrapped around the drum with suction within the drum to draw the liquid from the slurry therethrough so that solids are filtered onto the paper. Between the paper and the drum a flexible endless screen is wrapped around with part of the screen being fed from the drum with the paper sheet attached thereto onto a guide device. This guide device acts to strip off the mesh screen and attached paper sheet with the solids thereon to carry the paper sheet away from the machine for disposal. The guide device includes stripping means with part thereof covering an exposed part of the peripheral wall to provide a seal for the suction.

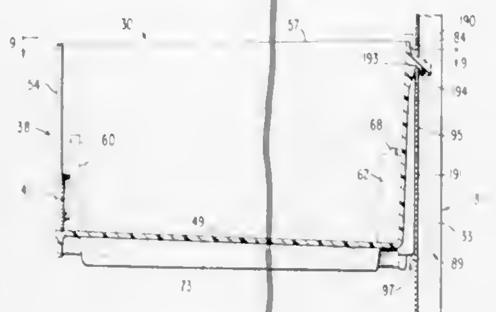
3,791,528
ENCLOSURE STRUCTURE FOR MODULAR SYSTEM

Thomas Brendgord, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed Aug. 7, 1972, Ser. No. 278,362

Int. Cl. A47h *87/00;* **A47f** *5/08*

U.S. Cl. 211—88 **22 Claims**



Unitary construction easy-access enclosure for handling, storing, transporting, and distributing articles throughout a modular system with self-seating and stabilizing interconnecting means for suspending the enclosure on an upright support, means for supporting the enclosure horizontally, and means for interlocked stable stacking of such enclosures. Means for dividing the enclosure internally and retaining carried articles, and dust cover means, are removably positioned by structural elements of the unitary-construction enclosures.

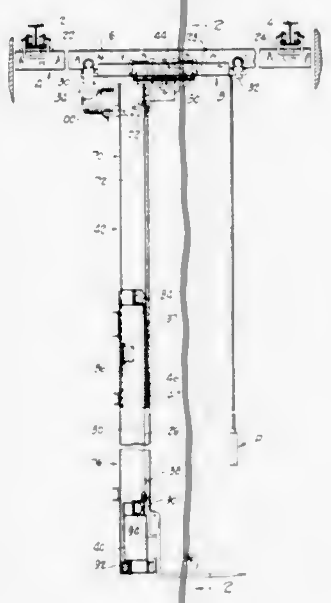
3,791,529
CRANE-TYPE STACKER

Roger V. Thomas, Willoughby Hills, Ohio, assignor to McNeil Corporation, Akron, Ohio

Continuation of Ser. No. 9,637, Feb. 9, 1970, abandoned. This application Oct. 26, 1971, Ser. No. 192,579

Int. Cl. B66c *19/00*

U.S. Cl. 212—124 **8 Claims**



A material handling apparatus comprising a telescopic mast secured at its upper end to a movable overhead support and having a load carriage vertically movable along the lower movable mast section and interengaging means between the load carriage and the mast preventing movement of the load carriage upwardly along the lower mast section until the load carriage is raised to a position adjacent to or above the lower end of the upper fixed mast section.

3,791,530
ADJUSTABLE WIDTH CRANE SUPPORTING STRUCTURE

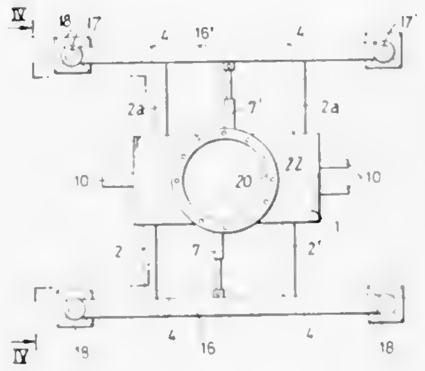
Richard Gorl, and Helmut Blase, both of Dortmund, Germany, assignors to Rheinstahl AG, Essen, Germany

Filed July 25, 1972, Ser. No. 274,904

Claims priority, application Germany, July 31, 1971, P 21 38 468.9

Int. Cl. B66c *23/62*

U.S. Cl. 212—145 **13 Claims**



A device for supporting a crane comprises a crane mounting base which is supported on longitudinal support beams arranged on each side of the base. Each longitudinal support means carries at least one, and preferably two, longitudinally spaced transverse members which are in telescopic engagement with tubular portions of the mounting base and each longitudinal support beam includes an opening to permit the outer end of the transverse member which is secured to the opposite longitudinal support beam to pass therethrough in order to permit the two longitudinal support beams to be moved to a minimum width position in close proximity to the supporting base. The longitudinal support beams are movable inwardly and outwardly in respect to the support base by fluid pressure operated drive motors in the form of a fluid pressure cylinder and piston combination arranged on each side of the mounting base.

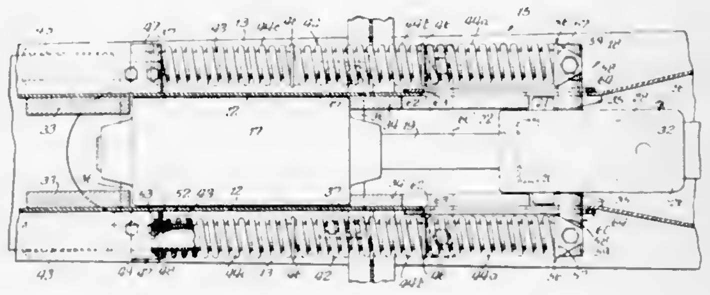
3,791,531
MOUNTING ARRANGEMENT FOR THE CUSHIONING UNIT RETURN SPRING ASSEMBLY OF AN END-OF-CAR RAILWAY CUSHIONING DEVICE

Vaughn T. Hawthorne, Mechanicsburg, Pa., assignor to Keystone Industries Inc., Chicago, Ill.

Filed May 22, 1972, Ser. No. 255,600

Int. Cl. B61g *9/16*

U.S. Cl. 213—8 **10 Claims**



A mounting arrangement for the return spring assembly for the cushioning unit of an end-of-car railway cushioning device, wherein the return spring assembly includes a pair of elongated spring units respectively mounted adjacent the lateral side walls of the center sill of the associated railway car so that the spring units extend parallel to the longitudinal axis of the sill The longitudinally inner ends of the spring units are connected to brackets mounted on the side walls of the sill and the longitudinally outer or forward ends of the spring units are respectively connected to the ends of a horizontally arranged key which extends laterally through the sill and through a pair of aligned openings in the central portion of the yoke of the cushioning device. The key is separate from the coupler pin which connects the yoke to the coupler.

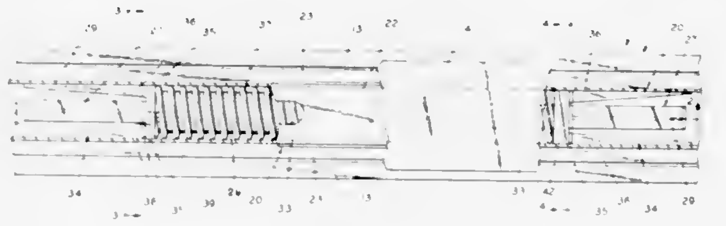
3,791,532
CUSHIONED UNDERFRAME ARRANGEMENT FOR RAILWAY CARS

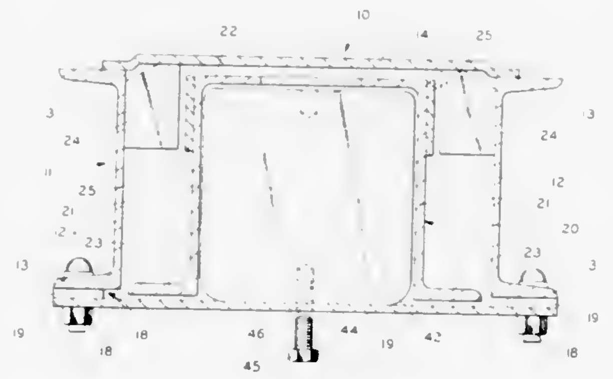
William H. Peterson, Homewood, Ill., and George L. Rousseau, Munster, Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Oct. 16, 1972, Ser. No. 298,112

Int. Cl. B61g *9/08*

U.S. Cl. 213—8 **6 Claims**





A cushioned underframe of the stationary and sliding sill type includes a cushion pocket within which a hydraulic cushion is supported. The cushion is connected to a carrier plate which provides for installation of the cushion and cover as an integral unit with the cover secured to the stationary sill

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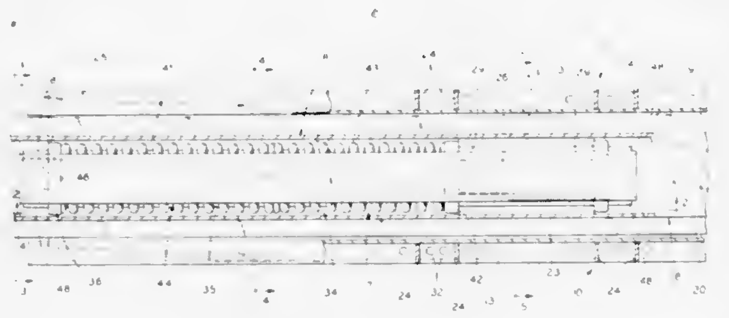
3,791,533
RAILWAY CAR CUSHIONING UNDERFRAME

Robert S. Tamborski, Griffith, Ind., and Joe B. Raidt, Calumet City, Ill., assignors to Pullman Incorporated, Chicago, Ill.

Filed Oct. 16, 1972, Ser. No. 298,113

Int. Cl. B61g *9/08*

U.S. Cl. 213—8 **7 Claims**



A railway car cushioned underframe includes a stationary and a sliding sill providing a pocket in which a cushioning device is supported. The cushioning device is removable and replaceable with a cover plate connected to the stationary sill. The cushion device includes a cylinder and piston arrangement with a return spring normally urging the device to a neutral position, with the spring and associated elements supported by a tension strap assembly supported within the sliding sill.

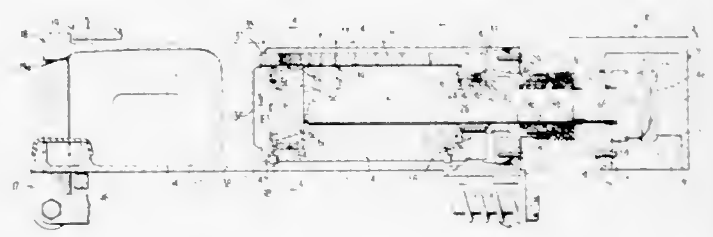
3,791,534
VALVE APPARATUS FOR CONTROLLING TRAIN ACTION

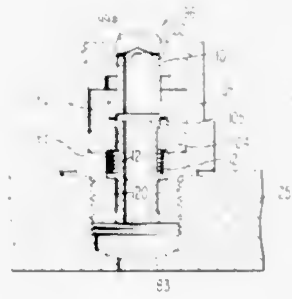
Jack G. Stephenson, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 752,649, Aug. 14, 1968, Pat. No. 3,589,528. This application June 25, 1971, Ser. No. 156,853. The portion of the term of this patent subsequent to June 29, 1988, has been disclaimed.

Int. Cl. B61g *9/16*

U.S. Cl. 213—43 **6 Claims**





A valve apparatus for controlling "run-in" train action events. The valve is characterized by a valve member which is normally open to provide a low impedance level in an hydraulic cushioning device capable of effectively absorbing buff coupling shock. Fluid reaction surface means associated with the valve member enables the valve member to move to a relatively closed position to provide a high impedance level and thus enable the cushioning device to control "run-in" train action events. A disabling device obviates the function of the reaction surface means, when buff coupling forces act on the cushioning device, so as to cause the valve member to remain open. A biasing means determines the condition of the valve during restoration of the cushioning device from a buff condition.

3,791,535
FURNACE MOVING SYSTEM

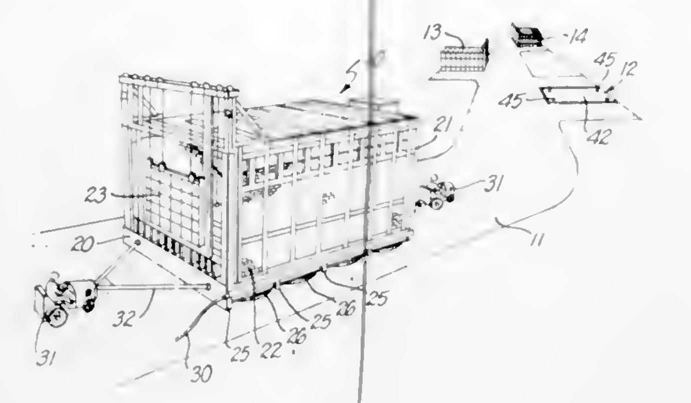
Terry M. Baker; Robert B. Kieding; Henry W. Huthsing, and Robert E. Burdick, all of Santa Barbara, Calif., assignors to Rolair Systems, Inc., Santa Barbara, Calif.

Filed Jan. 2, 1973, Ser. No. 320,141

Int. Cl. B60v *1/00*

U.S. Cl. 214—1 R **3 Claims**

A system for moving 40-ton melting furnaces from the furnace pit to the rebuilding shop and return. A furnace with base and superstructure, with a plurality of air bearings in the base for moving the furnace on an air film to a pit platform, with a first lifting unit for raising and lowering the platform and furnace, and a second lifting unit for raising the furnace from the platform for inserting and removing air bearings.



3,791,536

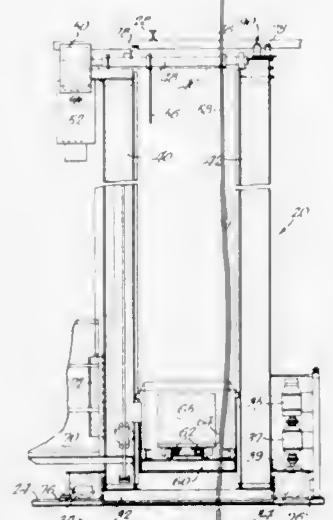
WAREHOUSING SYSTEM USING A STACKER CRANE WITH AN IMPROVED BRAKE MECHANISM

Ronald P. Moeller, Mendota, Ill., assignor to Conco Inc., Mendota, Ill.

Filed June 7, 1971, Ser. No. 150,291

Int. Cl. B65g *1/06*

U.S. Cl. 214—16.4 A **8 Claims**



A self-propelled stacker crane has a tall hoist column captured between a floor mounted horizontal guide rail and a ceiling located horizontal guide tube. A crane carriage is driven along the floor guide rail by a horizontal motor and brake in order to position the crane adjacent horizontally spaced and vertically stacked bins. To eliminate vertical sway and misalignment of the hoist column when the floor driven carriage is braked, a caliper brake mounted at the top of the hoist column is actuated to clamp the ceiling guide tube. The caliper brake is hydraulically actuated under control of a compression spring which is released by deenergization of a solenoid. After a short time delay, the caliper brake may be released by energizing the solenoid in order to correct for any vertical offset in the hoist column.

3,791,537

APPARATUS FOR ORIENTATING AND STACKING CUP-LIKE ARTICLES

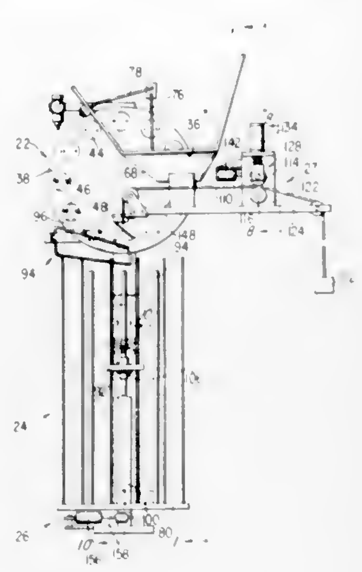
Clayton E. Conklin, 4203 Hookheath, El Paso, Tex.

Filed Oct. 16, 1972, Ser. No. 297,680

Int. Cl. B65g *57/20*

U.S. Cl. 214—6.5 **19 Claims**

Apparatus in which cup-like articles are received within a hopper in random orientation, agitated, and picked up singularly from the hopper by a rotating disc provided with means to orient and transport them to a turntable where they are guided and dropped into vertical stacks in nested relation. An indexing mechanism responsive to the number of articles stacked will cause the turntable to rotate 90° when a predetermined number of articles are present in the stack so that an identical stack of articles can be started.



3,791,538

METHOD OF AND APPARATUS FOR HANDLING FIBERBOARD

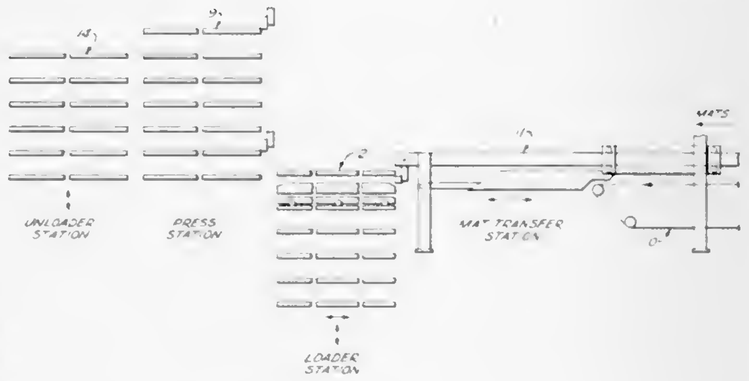
Joseph Irwin Greenberger, Pittsburgh, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

Filed Feb. 10, 1972, Ser. No. 225,235

Claims priority, application Great Britain, Mar. 23, 1971, 7851/71

Int. Cl. B65g *47/02*

U.S. Cl. 214—16.6 **23 Claims**



The disclosure of the present invention relates to a method of and apparatus for efficiently and rapidly handling mat particles of wood, for example, fir or hemlock particles used to manufacture fiberboards.

3,791,539

HOIST PANS AND HOIST PAN HANDLING APPARATUS

Bernard S. Reckseit, Cincinnati, and George A. Burgess, Fairfield, both of Ohio, assignors to Sweco, Inc., Los Angeles, Calif.

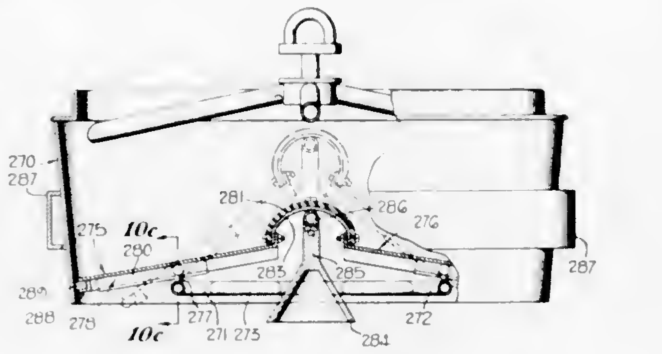
Division of Ser. No. 825,862, May 19, 1969, Pat. No. 3,697,006. This application Dec. 9, 1971, Ser. No. 206,568

Int. Cl. B65g *65/32*

U.S. Cl. 214—17 C **6 Claims**

A material handling system for vibratory finishing or grinding mills into which are placed materials and abrasive media and wherein the materials are operated upon. In a finishing mill the materials are parts which are finished, polished, or deburred, and in a grinding mill the materials usually are chemicals which are reduced in size. The system includes a

vibratory mill into which such materials and media are placed, a vibratory screen separator for separating the materials from media after completion of the operation thereon, a hoist pan for handling the media or material and media, and a jib hoist system for moving and positioning the pan. Media or material and media are loaded into the pan, and same is lowered to the top of the finishing machine causing the load to be evenly dumped into the finishing machine. After the finishing operation, the material may be moved or transported in any suitable manner to any further operation stage, and the media is returned to the hoist pan. A pan driving mechanism is provided for rotating the pan as the media is supplied thereto from the separator or mill such that the pan is evenly loaded. Several bottom-dumping pan configurations are disclosed which provide a relatively even discharge of the media into the mill when the pan engages the mill.



3,791,540

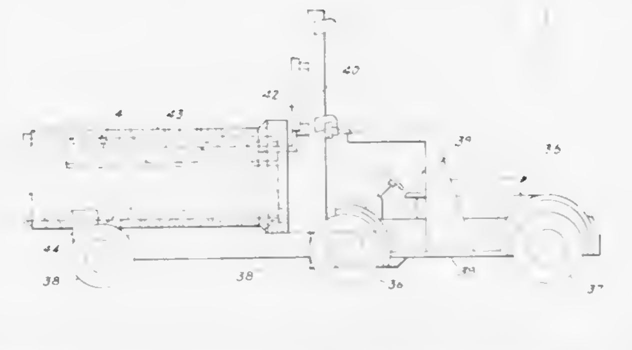
TRANSPORT VEHICLE HAVING LIFT MECHANISM AND ASSOCIATED EXTENDIBLE AND RETRACTABLE MOBILE OBJECT SUPPORT

Thomas K. Breitfuss, Tustin, Calif., assignor to Hydro Conduit Corporation, Orange, Calif.

Division of Ser. No. 875,743, Nov. 12, 1969, Pat. No. 3,682,334. This application Sept. 29, 1971, Ser. No. 184,665

Int. Cl. B60p *1/44*

U.S. Cl. 214—75 R **3 Claims**



A wheeled vehicle is disclosed for loading, transporting and unloading heavy objects, including concrete pipe, which has an extendible and retractable mobile object support which travels in an extended position as part of the vehicle when supporting a load and retracts within the vehicle assembly when traveling with the vehicle in unloaded operation. Vehicle assembly is adapted for off and on highway uses.

3,791,541

CARGO PLATFORM

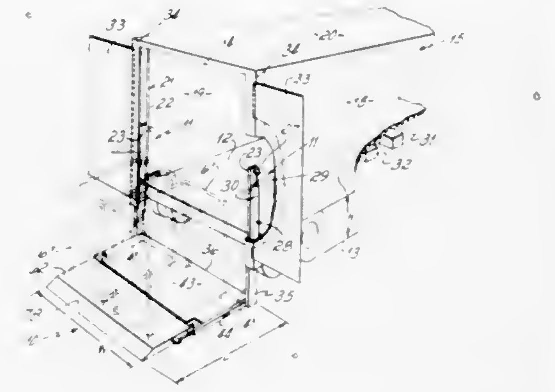
William H. Himes, Dayton, Ohio, assignor to Leyman Manufacturing Corporation, Cincinnati, Ohio

Continuation of Ser. No. 872,108, Oct. 29, 1969, abandoned. This application Feb. 16, 1971, Ser. No. 115,837

Int. Cl. B60p *1/44*

U.S. Cl. 214—75 T **4 Claims**

A cargo platform of the type mounted on the rear of trailer trucks that is particularly adapted for use with a combined elevating and storing mechanism for such platforms. The cargo platform includes, in the preferred embodiment, a first section of the platform mounted along the front edge thereof to be combined elevating and storing mechanism by a first pivotal joint, a second section of the cargo platform mounted to the first section adjacent the rear edge of the first section by a second pivotal joint, supports associated with the two sections for holding the sections in platform configuration when desired, locks associated with the two sections for holding the two sections in sandwich configuration when desired, the sections being pivotable between platform configuration and sandwich configuration by means of the second pivotal joint, and at least one wheel fixed to one of the sections adjacent that edge where the sections are pivotally joined, the wheel providing a rolling surface that maintains contact with the ground as the platform, when in sandwich configuration, is lifted at the first pivotal joint from a horizontal attitude whereat it rests on the ground and extends outwardly of the first pivotal joint to a vertical attitude whereat it hangs in the same plane as the vertical plane incorporating the first pivotal joint.



3,791,542

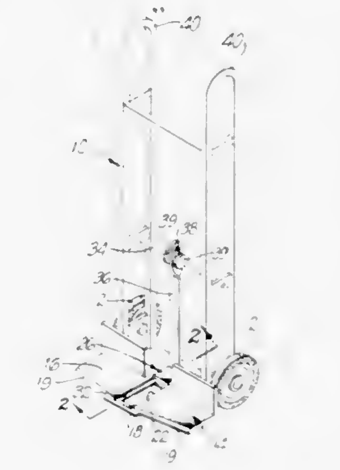
LIFTING APPARATUS

Floyd Mauch, 935 N. Fairfax, Los Angeles, Calif.

Filed May 30, 1972, Ser. No. 257,677

Int. Cl. B62b *1/06*

U.S. Cl. 214—370 **3 Claims**



A hand truck having a blade provided with a slot extending toward the leading edge of the blade. A support having a reduced portion slidable in the slot is carried by the blade. The frame of the hand truck carries a pivoted member engageable with the support to slide same toward the leading edge of the blade. In use, the leading edge of the blade is inserted under one side of a load, and the hand truck is then tilted to lift such side of the load. The operator then uses his foot to displace the pivoted member forwardly, thereby sliding the support to a position close to the leading edge of the blade. The operator then lowers the load onto the support, which holds the load while the operator inserts the blade of the hand truck all the way under. The load is then handled in the usual way.

3,791,543

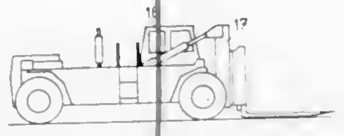
LIFTING CARRIAGE ON A CARRIER

Lahja Arvid Peltonen, Tampere, Finland, assignor to Valmet Oy, Helsinki, Finland

Filed May 24, 1972, Ser. No. 256,593

Int. Cl. B66f *9/14*

U.S. Cl. 214—730 **3 Claims**



A lifting carriage is mounted upon a carrier which includes a lifting attachment for raising and lowering the lifting carriage upon guides. The lifting carriage consists of a primary lifting carriage to which two frames are attached. Roller tracks are provided between the frames. The frames carry load lifting or gripping means. The first frame is pivotally connected to the primary lifting carriage in the central plane of the carrier by a ball joint or the like. Turning cylinders are located on both sides of this central plane and act between the primary lifting carriage and the first frame. At least one tilting cylinder also acts between the primary lifting carriage and the first frame. Thus the turning and tilting movements of the lifting and gripping means are carried out with reference to the primary lifting carriage.

3,791,544

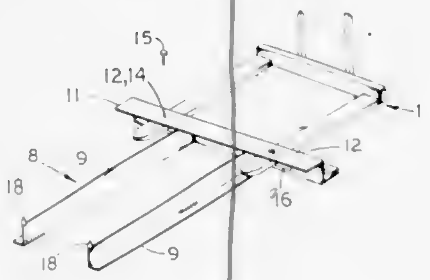
PULLING ATTACHMENT FOR FORK LIFT TRUCKS

Daniel H. Moses, Fairfield, Ohio, assignor to Champion International Corporation, Hamilton, Ohio

Filed Jan. 27, 1972, Ser. No. 221,219

Int. Cl. B66f *9/12*

U.S. Cl. 214—620 **5 Claims**



A means for handling material with a lift truck is disclosed wherein palletized loads can be reached and positioned for lifting on the forks by use of a probe having a pallet engaging point. The probe is mounted on the forks and extends to a position considerably in advance of the forks where it can engage a remotely located pallet. Once engaged by the probe, the pallet can be moved to a fork engaging position merely by applying a pulling force with the lift fork. The probe is of light weight (in fact too light to support a loaded pallet) construction so that the operator can readily attach and remove it from the fork.

3,791,545

MOISTURE-PROOF SEAL FOR CONTAINERS

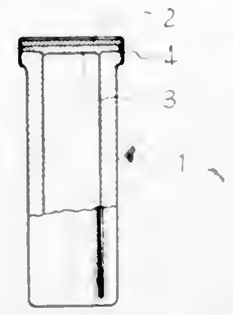
Shozo Narusawa; Norit Oshi Iizuka, and Jiro Kawasaki, all of Tokyo, Japan, assignors to Yurin Tokushu Kogyo Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 789,144, Jan. 6, 1969, abandoned. This application Oct. 5, 1971, Ser. No. 186,378

Int. Cl. B65d *23/00, 53/00*

U.S. Cl. 215—274 **3 Claims**

By first applying, either to the entire top peripheral surface of the mouth of a container or to the under-side of its cap member, a packing material having the properties that it will not undergo plastic deformation when subjected to a compression force of the order of 1 kg/cm² but will exhibit plastic flow when subjected to a compression force of about 2 kg/cm² or more and that it exhibits adhesiveness, air-tightness, waterproofness, non-toxicity and resistance to chemicals at normal temperature, and thereafter applying a pressure of about 2 kg/cm² or more to said packing material through the cap member, an ideal moisture-proof sealing which also permits the contents to be held under reduced pressure in the container is obtained for such contents as will be liable to being spoiled upon their exposure to heat and/or moisture.



3,791,546

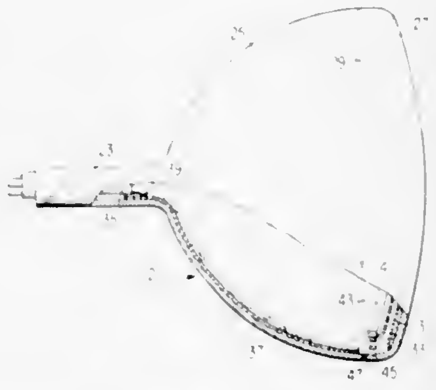
CATHODE-RAY TUBE HAVING CONDUCTIVE INTERNAL COATING COMPRISED OF IRON OXIDE AND GRAPHITE

James John Maley, Lancaster, and Donald Walter Bartch, Columbia, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 26, 1971, Ser. No. 202,428

Int. Cl. H05b *33/23*, **C09c** *1/44*

U.S. Cl. 220—2.1 A **7 Claims**



A cathode-ray tube having a conductive internal coating comprised of iron oxide, graphite, and an alkali silicate on the interior walls of the tube.

3,791,547

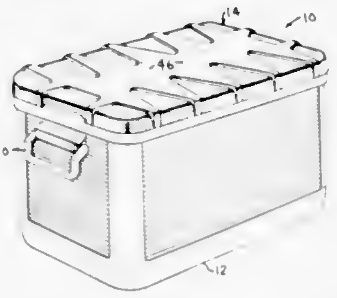
ICE CHEST CONSTRUCTION

Tony E. Branscum, Winfield, Kans., assignor to Gott Manufacturing Co., Inc., Winfield, Kans.

Filed Feb. 25, 1972, Ser. No. 229,522

Int. Cl. B65d *25/14*

U.S. Cl. 220—17 **6 Claims**



An insulated container has superior insulating qualities and greater strength as a result of a novel lid and receptacle construction. The receptacle is a box-like structure the sidewalls

of which terminate in a curved, generally convex surface. A lid is adapted to be received on the receptacle to close the opening. The lid has an arcuate, generally concave face which is complemental to the surface of the receptacle and provides a substantial area of contact between the lid and receptacle. The area of contact between the lid and receptacle is further increased by a rib which extends around the lid on the inside of the latter and is adapted to engage the receptacle. The aforementioned rib is disposed in parallel relationship to an overhanging lip which comprises the terminal edge of the lid and cooperates with the walls of the receptacle to present a relatively flush side of the container. The rib is so disposed relative to the lip to provide reinforcing which increases the strength of the lip. The construction also minimizes the width of the thin lip and thus facilitates molding from a high-strength material such as polyethylene.

3,791,548

AUTOMATIC ASHTRAY

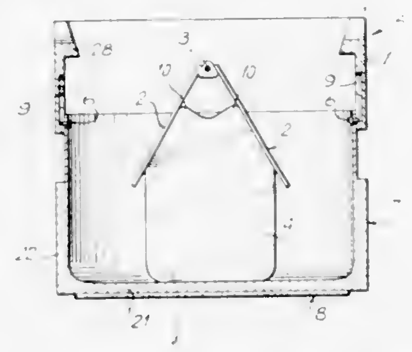
Ricardo Aguirre Gili, Barcelona, Spain, assignor to Flamagas, S.A., Barcelona, Spain

Filed Mar. 6, 1972, Ser. No. 231,906

Claims priority, application Spain, Mar. 17, 1971, 167060

Int. Cl. A24f *19/00;* **B65d** *7/00, 1/24*

U.S. Cl. 220—20.5 **9 Claims**



A mechanical ashtray including a refuse receptacle and a lid; when the lid is closed, it supports ashes and when it is open, it permits the ashes to disappear into the receptacle; the lid includes two pivotally supported lid elements which pivot from closed to open position; the ashtray comprises a base receptacle and an upper body interlocked with the base by a notch and pin interconnection; a support element carried by the base receptacle supports the lid elements in the closed position and permits the lid elements to pivot open when the upper body is pulled away from the base receptacle.

3,791,549

TRANSPORTATION CRATE FOR PLASTIC CUPS AND CONTAINERS

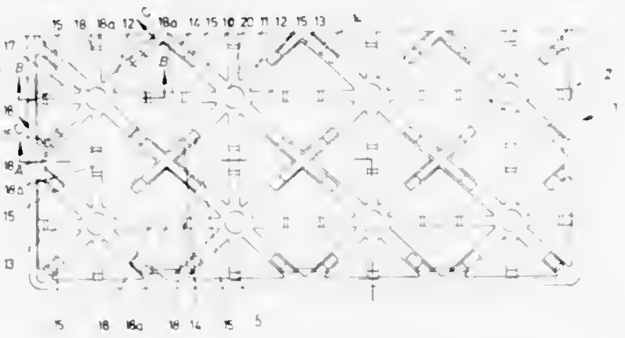
Franz Delbrouck, Bergisch-Gladhach, and Wilfried Nickel, Menden, both of Germany, assignors to Freya-Plastic & Franz Delbrousk, Bieberkamp, Germany

Filed July 13, 1971, Ser. No. 163,539

Claims priority, application Germany, July 17, 1970, 2035487

Int. Cl. B65d *1/24, 1/38*

U.S. Cl. 220—21 **8 Claims**



A plastic, stackable transportation crate for carrying plastic cups and containers. The crate has conical side walls and a base formed of intersecting strips. The intersections of the strips support the cups, and at least two of the strips are bent upwardly at an angle parallel to the side walls of the cups carried therein to provide lateral support. Alternate embodiments are considered.

3,791,550

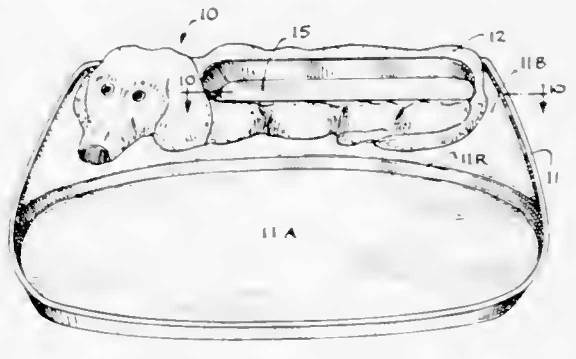
TABLE SERVICE

Alfred D. Duncan, Elmhurst, Ill., assignor to Duncanlite Laboratory, Inc., Villa Park, Ill.

Continuation-in-part of Ser. No. 36,879, May 13, 1970, abandoned. This application Dec. 28, 1970, Ser. No. 101,947

Int. Cl. A63h *7/00*, **A47g** *19/00*, **B65d** *21/02*

U.S. Cl. 220—23.86 **2 Claims**



A table service assembly includes a food receptacle and a member presenting an animal caricature coupled thereto. The animal caricature may have a recess in its back for holding a food item; the receptacle may be a tray or a basket, but it may be otherwise.

The caricature is detachably presented by the assembly and may be converted into a wheeled toy.

3,791,551

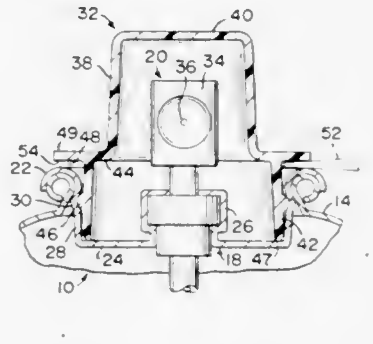
TAMPER-PROOF CLOSURE FOR SPRAY CANS

John W. Madeira, Akron, Ohio, assignor to Plasti-Kote Company (a div. of Consolidated Foods, Inc.), Medina, Ohio

Contineation of Ser. No. 99,593, Dec. 18, 1970, abandoned. This application Sept. 29, 1972, Ser. No. 292,973

Int. Cl. B65d *41/62*

U.S. Cl. 220—60 **1 Claim**



A tamper-proof closure for enclosing and sealing the valve structure of a spray can. The closure is adapted to be held in position on the can by engagement of an external circumferential snap-in flange of the closure with an annular wall of the can and valve assembly. The closure comprises a tubular skirt section having an external circumferential snap-in flange formed at its lower edge. A valve covering body section is interconnected with the skirt section. A radially extending flange projects from the skirt section. The axial distance between the flange and the lower edge of the skirt section is such that with the closure in place on the can a clearance is defined between the flange and the bead of the can. Such clearance defines a tool access opening or recess. The closure is removed from the spray can as by inserting the end of a tool

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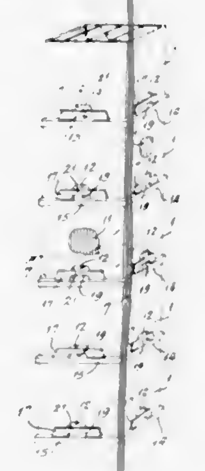
engage a preselected part having a preselected number ahead from the expansible member. The container construction is in the tool access opening and thereafter lifting a portion of the closure from the can.

3,791,552
HANDLING PERISHABLE PRODUCT

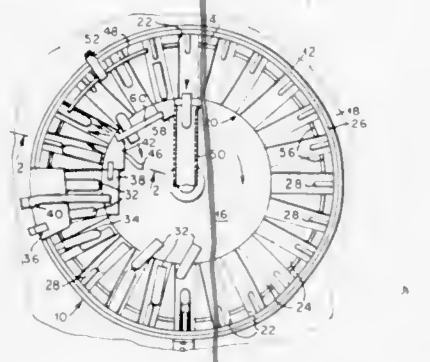
William H. Hayes, Overland, Kans., assignor to Alton Box Board Company, Alton, Ill.
Division of Ser. No. 846,385, July 31, 1969, Pat. No. 3,635,361. This application June 7, 1971, Ser. No. 150,765
Int. Cl. B65d *21/00*
U.S. Cl. 206—501 **2 Claims**



Packaging and handling of perishable products in stacks of articulated disposable containers, in which the disposable containers are intervened and articulated by a rebated ring having a major perimeter and a minor perimeter with an intermediate ledge, and the respective perimeters being proportioned so that the minor perimeter embraces the outside of an articulated container, above, and the major perimeter embraces the outside of another articulated container below, the ring.

3,791,553
HOPPER-TYPE APPARATUS FOR ORIENTING AND FEEDING TUBULAR CONTAINERS OR LIKE ARTICLES

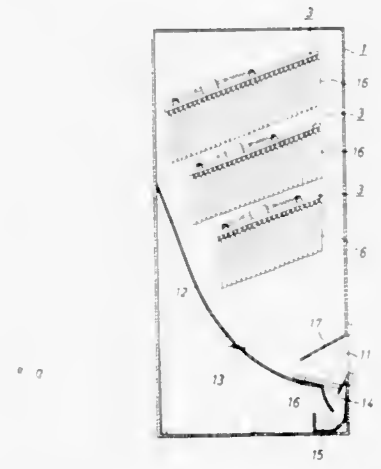
Samuel S. Aidlin, New York; Stephen H. Aidlin, Valley Stream, and David Rich, Merrick, all of N.Y., assignors to Aidlin Automation, Inc., Brooklyn, N.Y.
Filed Mar. 6, 1972, Ser. No. 232,049
Int. Cl. B65h *9/10*
U.S. Cl. 221—156 **8 Claims**



Hopper-type apparatus for orienting and feeding tubular containers of different lengths and thicknesses in which the containers are picked up from the pile at the bottom of the tilted hopper by a rotating feed ring having radially arranged article receiving pockets. Properly oriented containers are frictionally gripped by a friction bar as they ascend and released at the top of the hopper into an outlet chute. Misoriented containers are held away from the friction bar by pins extending radially into the pockets at their peripheral ends to drop back into the hopper. Properly oriented containers shorter than the pockets are moved into position for gripping by the bar by a jet of compressed fluid as the pockets pass it on their ascent. The raised separations between the pockets forming their side walls are formed with transverse slots opposite a midpo..t of the pins, forming an interrupted circle. An arcuate friction bar is adjustably mounted for movement into and out of the slots for gripping containers of different thicknesses.

3,791,554
VENDING MACHINE WITH HANGER CARRIERS

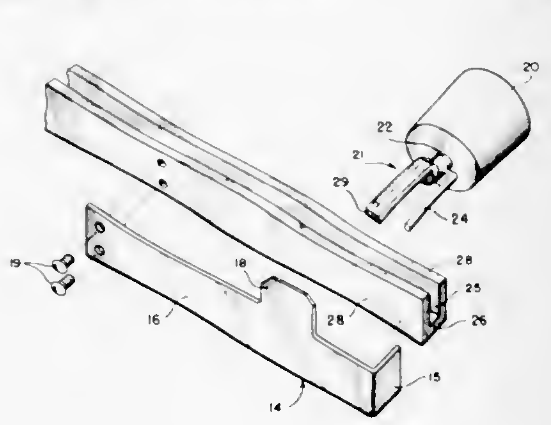
Norimichi Nagatani, and Toyohide Imamura, both of Tokyo, Japan, assignors to Kokusai Keiso Co., Ltd., Tokyo, Japan
Filed Nov. 12, 1971, Ser. No. 198,173
Claims priority, application Japan, Jan. 22, 1971, 46/1609
Int. Cl. G07f *11/16*
U.S. Cl. 221—289 **2 Claims**



A vending machine for releasing a single article at a time by the deposition in the machine of a coin or coins and the operation of a selecting button is disclosed. A plurality of magazines for holding and releasing articles to be delivered are mounted on a slant in the interior of a housing cabinet. The magazines are positioned in a side-by-side, vertically spaced relationship and support rows of hangers carrying articles to be vended. The hangers together with the articles they carry are gravitationally discharged upon the actuation of a hanger releasing means.

3,791,555
TRACK ESCAPEMENT AND COUNTER

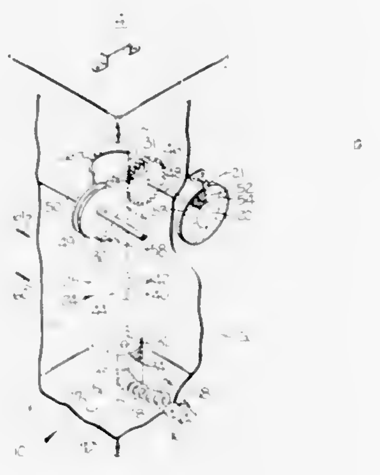
Floyd E. Smith, 5704 Brewster, Erie, Pa.
Filed May 1, 1972, Ser. No. 248,854
Int. Cl. B65g *59/06*
U.S. Cl. 221—298 **9 Claims**



A track escapement and counter including a track for the delivery of oriented parts having an open end from which the parts are discharged. A leaf spring suspended escapement is secured to a side wall of the track and cantileverly secured thereto. An arrest assembly is provided actuated transversely of the track and includes holding and release members. Upon actuating the power source the holding and release members engage a preselected part having a preselected number ahead of it and continues its motion to engage an actuating pad portion of the cantilever spring thereby moving the escapement which is at the end of the spring to open the end of the track and permit those parts ahead of the part retained by the arrest assembly to drop off the track. Thereafter the arrest assembly is returned to its normal position in timed relation to the prior repositioning of the escapement so that upon each cycle a predetermined number of parts are discharged from the track.

3,791,556
FLUID METERING DEVICE

Norman D. Tarter, 1132 Mt. Kisco Dr., Charlotte, N.C.
Filed Dec. 13, 1971, Ser. No. 207,128
Int. Cl. G01f *11/02*
U.S. Cl. 222—21 **6 Claims**

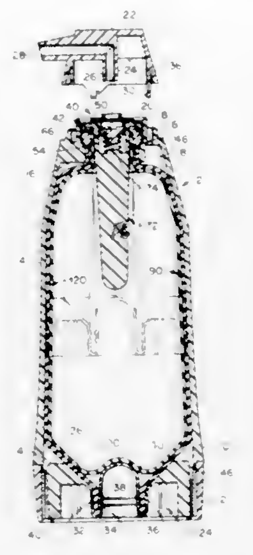


An apparatus for metering and delivering a pre-selected quantity of a fluid comprising a container for holding a relatively large quantity of the fluid, a vertically extending tube positioned within the container and having an open upper end adapted to lie above the fluid level and an open lower end adapted to lie below the fluid level, and a piston translatably mounted within the tube. The piston has a passageway extending therethrough which is connected via an extensible tube to a delivery spigot attached to the exterior of the container. In use, the piston is initially translated to a position below the open lower end such that the fluid in the container passes into the tube. The piston is then raised to a selected elevation such that the fluid in the tube is retained and lifted causing the excess thereof to spill from the open upper end back into the container. This results in a measured quantity of the fluid carried above the piston, which may then be released through the delivery spigot.

3,791,557
NON-AEROSOL CONTAINER WITH EXPANSIBLE BLADDER AND EXPELLING FORCE PROVIDING SHEATH

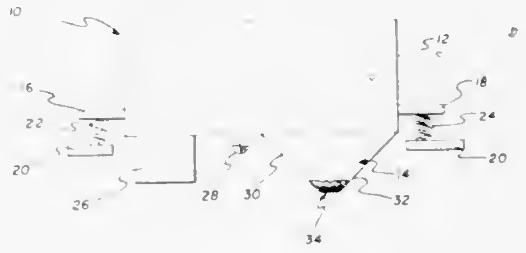
Frank Venus, Jr., Watertown, Conn., assignor to Plant Industries, Inc., Anaheim, Calif.
Filed Jan. 13, 1972, Ser. No. 217,553
Int. Cl. B65d *37/00*
U.S. Cl. 222—105 **14 Claims**

A container construction of the expansible member type wherein the substance to be packaged is contained within the expansible member in conjunction with an ensheathing member to provide the expelling force to expel the substance from the expansible member. The container construction is especially useful for the packaging of highly penetrative substances which heretofore caused permeability problems; and shelf life difficulties; all of which are now overcome.



3,791,558
POWDER DISPENSING APPARATUS HAVING A PREDICTABLE, CONTROLLED FLOW RATE

Jerome M. Katusha, 901 Elmgrove Rd., Rochester, N.Y.
Filed Sept. 7, 1971, Ser. No. 178,096
Int. Cl. B67d *5/64*
U.S. Cl. 222—161 **10 Claims**



Powder dispensing apparatus including a hopper having at least two sloping side walls which converge to an orificed bottom section. A plurality of loose balls disposed in the hopper are caused to circulate therein by vibrating the apparatus to produce elliptical motion in the hopper, which results in the balls climbing the furthest sloped wall from the center of gravity of the apparatus and then rolling off the far wall onto adjacent walls. From there, the balls fall back through the powder towards the orificed plate and break up any clumped or bridged powder masses. The balls then climb the far wall again and continue to circulate through the powder in the hopper for as long as the elliptical vibratory influence is applied, thereby effecting a predictable, controlled flow rate of powder from the hopper.

3,791,559
HOPPER-TYPE MORTAR SPREADER

Albion G. Foye, 885 E. Dublin-Granville Rd. Apt. E., Columbus, Ohio
Filed Dec. 29, 1972, Ser. No. 319,620
Int. Cl. E04g *21/16*
U.S. Cl. 222—176 **5 Claims**

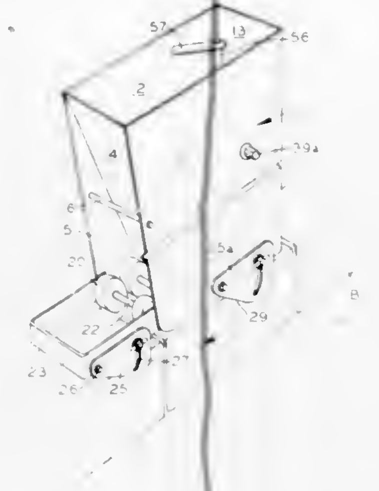
A mortar spreader which is provided with a hopper for receiving a supply of mortar to be applied to a footer or a course of blocks or the like preparatory to receiving a superimposed course. The hopper is mounted on wheels or rollers, including positively driven ones so it will be propelled along the blocks, is provided with guides for engaging the

lower course to properly guide it therealong, which are

a predetermined pressure, the force of the propellant and

and upwardly extending members secured to the arms and supporting a shelf whereby a load may rest upon the shelf and

mounted that for an adjustable period of time can keep the pull-down claw out of reach of the film, and wherein between lower course to properly guide it therealong, which are retractable when necessary, and is provided with mortar-mixing and positive directing means to feed the mortar towards



and through two outlets as two longitudinally extending parallel beads or ribbons on the shoulders of the block course or footer.

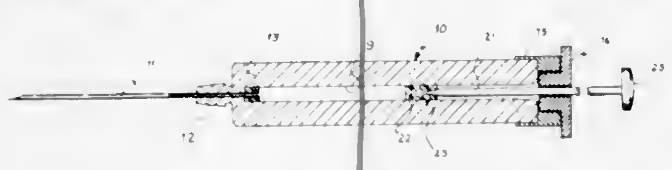
3,791,560
SEALS (PSC-14)

Rano J. Harris, Sr., Baton Rouge, La., assignor to Precision Sampling Corporation

Division of Ser. No. 762,791, Sept. 26, 1968, Pat. No. 3,577,850. This application Aug. 21, 1970, Ser. No. 66,136

Int. Cl. B67d *5/30*

U.S. Cl. 222—386 **10 Claims**



A method, and the apparatus formed by encapsulating and stress forming a thermoplastic material upon a male member, e.g., the needle or plunger of a syringe, or both, to provide a durable and effective leak-proof seal when inserted within enclosing walls defining an opening of restricted diameter. A portion of the said male member is capped with an oversized thermoplastic material, the cap is then reduced in size to correspond to the diameter of the member with which it is to be mated in forming the seal, and then heated up to or just below the softening temperature of the thermoplastic material, generally up to about 425°F., and preferably to about 300°F. The heat stressed member, which is characterized as having very thin layers or films of the stress formed thermoplastic covering the external surface of the member, can then be inserted into snug fit within the mating bore, e.g., the barrel of a syringe, and the tight fit will endure because of the elastic memory of the material by virtue of which it tends to expand to its former size and shape thereby pressing against the enclosing side walls forming the bore.

3,791,561
PRESSURE RELIEF SYSTEM FOR AN AEROSOL DISPENSER

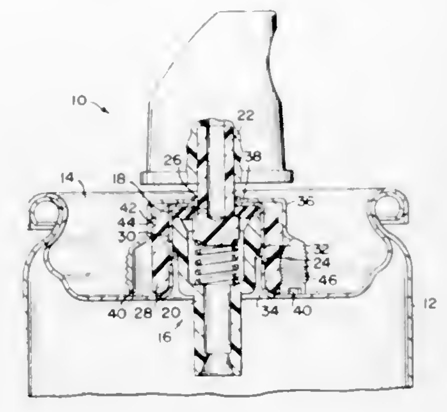
Ronald F. Ewald, Rolling Meadows, Ill., assignor to Seaquist Valve Company, Division of Pittway Corp., Cary, Ill.

Filed July 8, 1971, Ser. No. 160,645

Int. Cl. F16k *17/02*

U.S. Cl. 222—396 **19 Claims**

A pressure relief system for an aerosol dispenser utilizing resilient flexing rings or gaskets arranged in sealing relationship relative to vent ports and/or relief passageways so that, at a predetermined pressure, the force of the propellant and product within the aerosol dispenser acts outwardly against these flexing members to break the seal. Uniquely, the same vent ports and/or relief passageways may be used to pressure fill the aerosol dispenser. In one embodiment, a rotatable button overcap is included as a locking means to prevent inadvertent discharge.



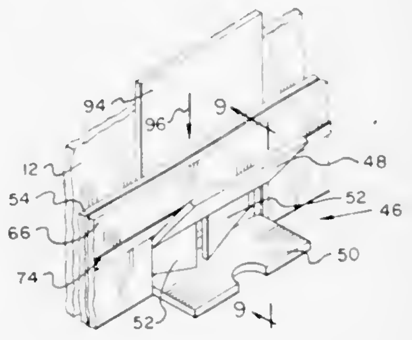
3,791,562
BULK MATERIAL CONTAINER WITH POURING SPOUT

Robert A. Bamburg; Farris N. Duncan, both of West Monroe, and Roger M. Floyd, Monroe, all of La., assignors to Olinkraft, Inc., West Monroe, La.

Filed Sept. 14, 1972, Ser. No. 288,899

Int. Cl. B67d *3/00*

U.S. Cl. 222—528 **10 Claims**



An improved bulk material container for use in shipping, storing and dispensing bulk materials from the container. The container may be formed of paperboard and contains a new and novel reclosable pouring spout as well as means for incorporating a slide valve in the pouring spout to control the flow of material through the pouring spout whenever the pouring spout is opened. The pouring spout is formed from a plurality of outer, intermediate and swinging doors with the inner swinging doors serving to keep the outer and intermediate doors in a generally horizontal position to allow the contents of the container to be easily removed. The container also has formed thereon new and novel means for reinforcing the container whenever it is used to handle extremely large weights of bulk materials.

3,791,563
MOTORCYCLE RACK

Terry J. Raat, Seattle, Wash., assignor to White Automotive Corporation

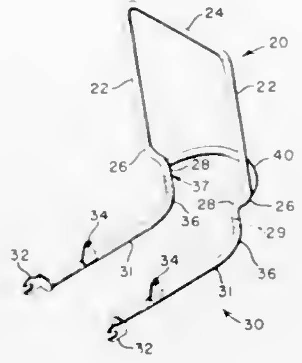
Filed Sept. 15, 1971, Ser. No. 180,556

Int. Cl. B62j *7/04*

U.S. Cl. 224—39 R **6 Claims**

A rack for use upon a motorcycle or other vehicle including a pair of horizontal mounting arms adapted to be secured to the frame of the motorcycle and extend rearwardly of the seat,

and upwardly extending members secured to the arms and supporting a shelf whereby a load may rest upon the shelf and be lashed to the upright members thus providing carrying ability without eliminating the possibility of a second rider.



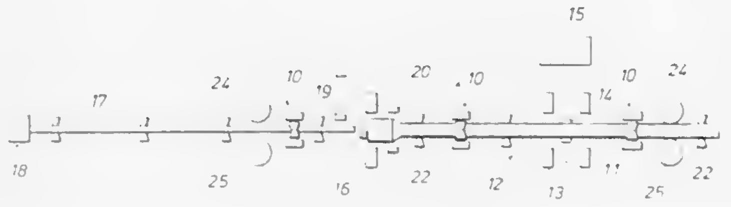
3,791,564
APPARATUS FOR CENTRALIZING HORIZONTALLY-MOVING PIPE SECTIONS

Gerald H. Hugonin, Cypress, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Aug. 17, 1972, Ser. No. 281,364

Int. Cl. B65g *35/00*

U.S. Cl. 226—19 **12 Claims**



As a preferred embodiment of the present invention disclosed herein for centralizing elongated members, such as joints of oil-field tubing or pipe and the like, being transported by a conveyor along a selected horizontal axis, an opposed pair of intercoupled centralizing rollers are spaced on opposite sides of the axis and cooperatively arranged to normally remain immediately adjacent to the surfaces of a pipe joint being transported by the conveyor. Upon passage of an enlarged portion or bent section of the pipe between the two rollers, control means are provided for selectively separating the rollers in unison as well as imposing selectively-increased opposing forces on the rollers as necessary for retaining the pipe in alignment with the axis.

3,791,565
FILM-TRANSPORTING DEVICE

Jan Hendrik Lucas, Zoetermeer, Netherlands, assignor to Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzock Ten Behoeve Van Nijverheid, Handel(En Verkeer), The Hague, Netherlands

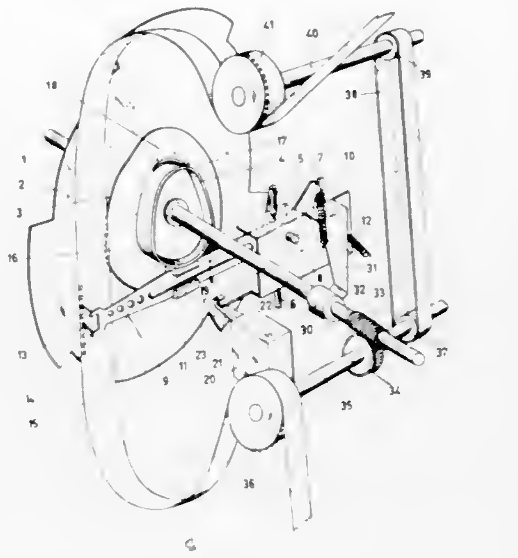
Filed Dec. 20, 1972, Ser. No. 316,734

Claims priority, application Netherlands, Dec. 29, 1971, 18032

Int. Cl. G03b *1/22*

U.S. Cl. 226—67 **4 Claims**

The invention relates to a film-transporting device for a film projector equipped with a main shaft that rotates with a constant number of revolutions per second, carries a disc shutter and a cam disc that operates on a pull-down claw for transporting the film that is swivable around two axes, wherein an interlocking mechanism controlled by an electromagnet is mounted that for an adjustable period of time can keep the pull-down claw out of reach of the film, and wherein between the main shaft and sprockets a single-revolution clutch is mounted controlled by the electromagnet.



3,791,566
INTERMITTENT FOR CINEMATOGRAPHIC APPARATUS

Engelbert Fliesser, Munich, Germany, assignor to Agfa-Gevaert AG, Munich, Germany

Filed Dec. 7, 1971, Ser. No. 205,622

Claims priority, application Germany, Dec. 8, 1970, P 20 60 221.5

Int. Cl. G03b *1/22*

U.S. Cl. 226—68 **5 Claims**

An intermittent for transporting film in motion picture cameras or projectors wherein the movements of the claw of the pull-down into and out of the film plane are effected by an electromagnet and the up and down movements of the claw are effected by the moving coil of an electrical instrument. The supply and takeup reels are rotatable in directions to collect the film by discrete variable-speed d-c motors.

3,791,567
WEB GRIPPING, ADVANCING APPARATUS

Charles M. Schott, Jr., Gloucester, Mass., assignor to Gloucester Engineering Co., Inc., Gloucester, Mass.

Filed Dec. 17, 1971, Ser. No. 209,280

Int. Cl. B65h *17/36*

U.S. Cl. 226—112 **18 Claims**

Web gripping, advancing and forming apparatus operable periodically upon successive portions of a continuous web such as heat-softened plastic sheet for forming articles therefrom. The advancing mechanism includes a pair of elon-

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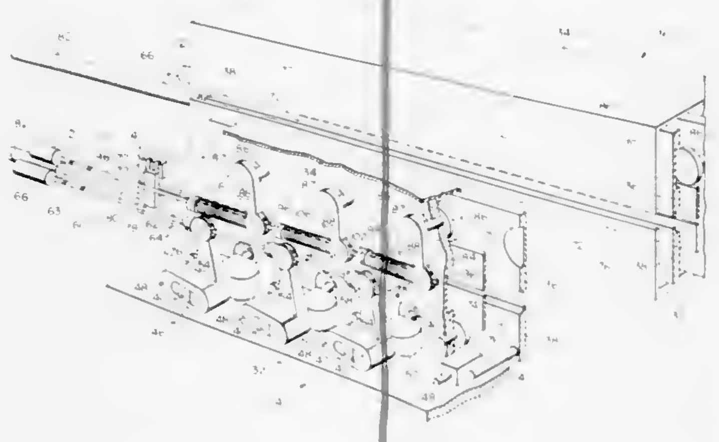
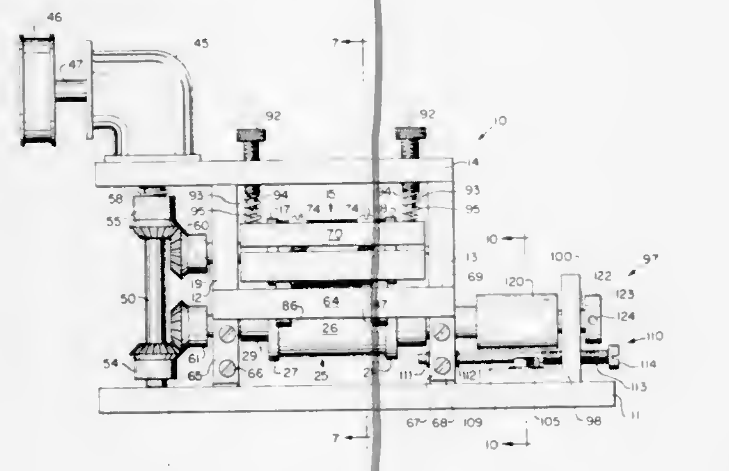
3,791,571

which is used during the second mailing and which is exposed gated indexing jaws disposed in an axial direction parallel to the length of the web, arranged together to grip the web over a long extent in the direction of the length of the web, a driver for advancing and retracting the indexing jaws in the axial direction and a clamping assembly, fixed in the axial direction, the clamping assembly mounted to clamp the jaws together while permitting their axial movement for advancing the web, and to release the jaws while permitting their axial retracting movement. A clamping mechanism includes a spaced apart series of pressing members arranged to press a jaw against a web, the series of pressing members connected to a series of cranks operated in unison by a control rod, preferably with springs either biasing the cranks to gripping position or springs interposed between the control rod and cranks so that the rod acts through springs in urging the jaw to gripping position. Pressing members in the form of rollers permit relative axial movement of jaws, forming a path therefor. The axially moving indexing jaws, of low inertia and lacking self-support against buckling, are slidably guided and supported by axially fixed surfaces including holding jaws. The mechanism extends the length of both warming ovens and forming dies.



3,791,568
ROLL FEED MECHANISM

Robert Homstead, 5 Quaker Ln., Greenville, R.I.
Filed May 3, 1973, Ser. No. 356,761
Int. Cl. B65h *17/26*
U.S. Cl. 226—140 **4 Claims**

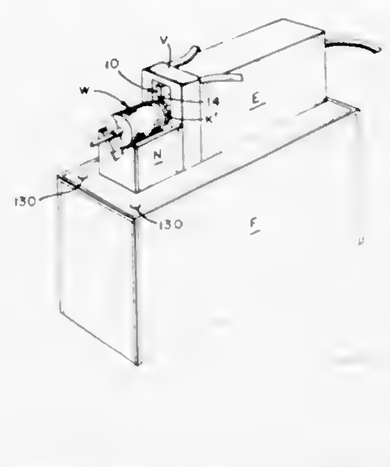


The present disclosure relates to feed mechanisms for stamping presses and similar machines and specifically to an improved roll feed mechanism with a feed stock clamp designed for a fixed feeding increment.

The present invention relates to a novel cam roll mechanism with a feed stock clamp to provide incremental feeding of stock to a punch press or the like.

3,791,569
VIBRATORY WELDING APPARATUS

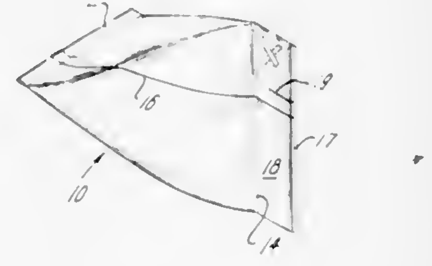
Bruce L. Mims, Redding, Conn., assignor to Branson Instruments, Incorporated, Stamford, Conn.
Filed Sept. 29, 1972, Ser. No. 293,366
Int. Cl. B23k *1/06*
U.S. Cl. 228—1 **3 Claims**



A vibratory welding apparatus for providing metal to metal welds at a plurality of circumferentially spaced locations of a workpiece, such as a motor armature, comprises a welding apparatus having a tip for engaging the workpiece. A nesting structure for the workpiece includes means for locating the workpiece relative to the tip, means for rotationally indexing in stepped fashion the workpiece on the nesting structure and alternatingly urging the workpiece into forced contact with the tip and then withdrawing it therefrom. Control means sequence the rotationally indexing and force engagement means as well as the vibratory welding apparatus. Energy control means are used to provide substantially equal amounts of energy per each weld.

3,791,570
OPENING MEANS FOR CONTAINERS

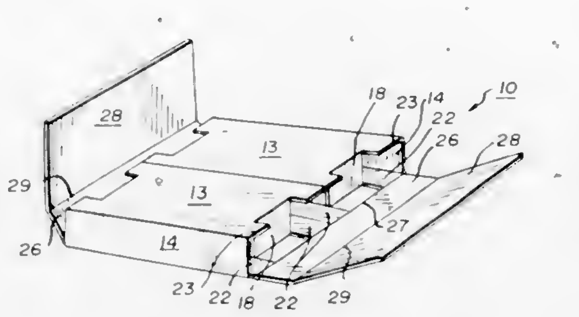
Arthur W. Hopkins, Stonebridge Rd., Cornwall, N.Y.
Continuation-in-part of Ser. No. 232,751, March 8, 1972. This application Sept. 15, 1972, Ser. No. 289,615
Int. Cl. B65d *83/00, 17/00*
U.S. Cl. 229—7 R **14 Claims**



A tetrahedral or similarly shaped container is provided with a pair of tabs at one end. By pulling apart the tabs, an opening is formed at the one end. The end seal at the tab end of the container is shaped and positioned so as to provide for the combination of ease of opening, strong seal which will not distort the configuration of the container. The spout or seal opening region of the seal lies essentially in one longitudinal half of the container, inorder to provide a seal opening structure which utilizes a minimum amount of container material, while providing reasonably large tabs. Preferably, the seal opening is proximate one side of the container, so as to provide a pour spout, particularly in repeated use containers.

3,791,571
CUSHIONED FOLDER

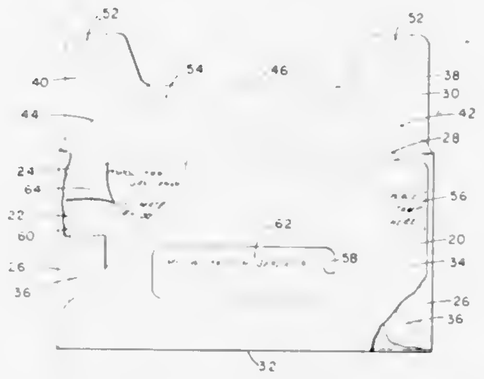
William M. Pilz, III, West Chicago, Ill., assignor to Container Corporation of America, Chicago, Ill.
Filed Sept. 5, 1972, Ser. No. 286,126
Int. Cl. B65d *5/06*
U.S. Cl. 229—40 **6 Claims**



A cushioned folder for a book or similar flat object comprises a rectangular central panel having opposed areas where the board is crushed, with opposed major and minor flaps foldably connected to each other and to opposed margins of the central panel, the minor flaps being folded to position against opposed ends of the article and the major flaps being folded to a position overlying the article. The major flaps are provided with opposed cell forming flaps foldable against other margins of the flat article. Tuck flaps having crushed areas are foldably connected to the cell forming flaps and are folded to position beneath the article in lapping relationship with the crushed areas of the central panel whereby a planar support of the article is provided. A closing flap is foldably connected to the other opposite margins of the central panel and bears against the edges of the major flaps to provide with the cell forming flaps a pair of protective cells. A closure panel is foldably connected to at least one of the closing flaps and is in lapping relationship with the major flaps.

3,791,572
TWO-WAY MAILING ITEM AND CONTINUOUS FORM ASSEMBLY THEREOF

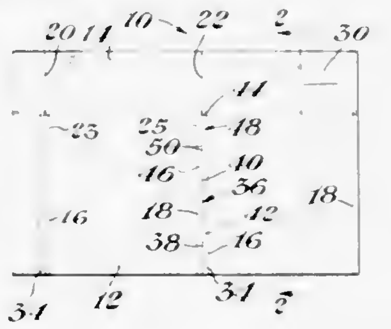
Wilfred H. Gendron, Wilbraham, Mass., assignor to United States Envelope Company, Springfield, Mass.
Filed Mar. 17, 1972, Ser. No. 235,684
Int. Cl. B65d *27/10, 27/04, 27/06*
U.S. Cl. 229—69 **20 Claims**



A two-way mailing item comprises a sealed envelope containing a billing statement, order form or other insert. The envelope includes a sealing panel with two end portions used to releasably hold the sealing panel in its closed position during the initial mailing. Upon opening of the sealing panel after the initial mailing, the end portions are removable therefrom by tearing along weakened lines, and the remainder of the sealing panel includes a manually activatable adhesive for use in securing the remainder of the sealing panel in a closed position during the second mailing. One of the removable end portions is located at the upper right-hand corner of the envelope and includes a postage area for the first mailing. Under this end portion, on an underlying panel, is another postage area which is used during the second mailing and which is exposed upon removal of the end portion from the sealing panel. Also, the insert and/or the panels of the envelope produce two different address areas which are alternatively exposed during the initial and return mailings. The envelopes may include a plurality of tabs separable from the body of the envelope for use in securing the mailing items to a carrier sheet to make a continuous form assembly. Spot carbon areas on the carrier sheet or pressure sensitive coatings on the inserts are used to transfer impressions made by typing onto the carrier sheet to the inserts for addressing the mailing items and/or for entering other information onto the inserts.

3,791,573
BAG CONSTRUCTION

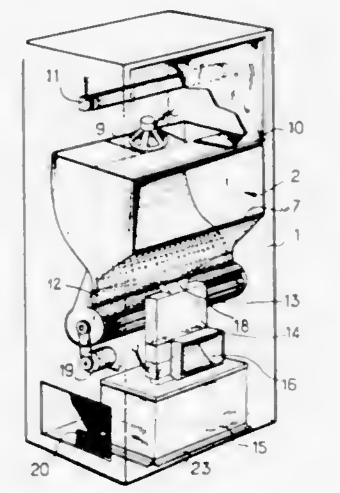
Oliver R. Titchenal, Avon, and William A. Armstrong, New London, both of Ohio, assignors to Basic Packaging Systems, Inc., Avon Lake, Ohio
Continuation of Ser. No. 838,992, July 3, 1969, abandoned. This application Nov. 15, 1971, Ser. No. 199,068
Int. Cl. B65d *27/10*
U.S. Cl. 229—69 **16 Claims**



A packaging system using side by side connected tunnel-top bags, or alternately, bags having spreadable flaps at their tops. The closure sealing characteristics of such bags is improved by permitting the bags to be substantially free of each other at their lower regions but securely connected together adjacent upper regions thereof. Upon filling, the free or mid-portion of the bag sides distort inwardly since material is pulled from the sides to "bloom out" the bag. The sides at upper regions, however, being connected as indicated, resist pull or movement inwardly, thereby causing a tautness in the upper parts of the bag material. A substantially wrinkle-free region is thus obtained for a closure seal.

3,791,574
COIN COLLECTOR RECEPTACLE

Jean-Pierre Picquot, 45 Quai Carnot, St. Cloud, France
Continuation-in-part of Ser. No. 824,517, May 14, 1969, abandoned. This application May 10, 1971, Ser. No. 141,948
Claims priority, application France, May 8, 1970, 70.16820; May 14, 1968, 151,777
Int. Cl. B65g *11/16*
U.S. Cl. 232—44 **1 Claim**



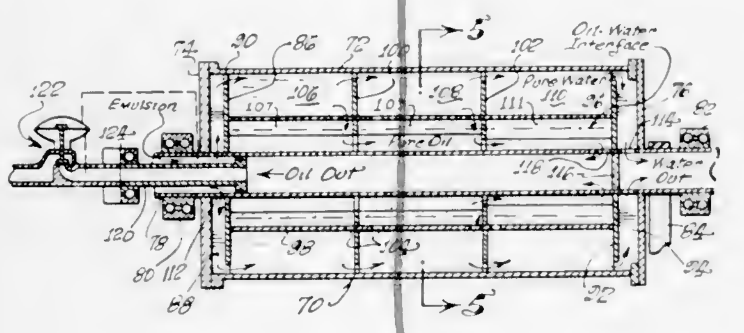
A receptacle for receiving thrown coins or tokens is provided with opposed walls which curve inwardly and downwardly until they reach a narrow part in which the walls are spaced apart by the thickness of a coin, at which point they become parallel. Inclined guide means at the bottom of the walls directs the coins toward a testing device above a money box. A rod positioned just above the narrow part diverts the coins into a position nearly parallel to the walls as they approach the narrow part.

3,791,575
CENTRIFUGAL SEPARATOR DISCHARGE CONTROL SYSTEM

Ernest D. Kartinen, Long Beach, and Roger W. Lewis, Marina Del Rey, both of Calif., assignors to The Garrett Corporation and The Signal Oil and Gas Company, both of Los Angeles, Calif.

Filed Aug. 30, 1971, Ser. No. 175,886
Int. Cl. B04b *11/02*

U.S. Cl. 233—19 A **34 Claims**



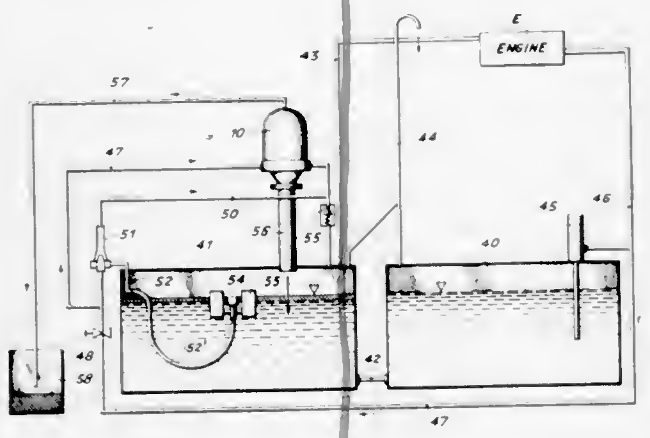
Disclosed is a discharge control system for a centrifugal separator.

3,791,576
CENTRIFUGE

Ludek Bazil, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Jan. 10, 1972, Ser. No. 216,704
Int. Cl. B04b *11/00*

U.S. Cl. 233—19 R **5 Claims**



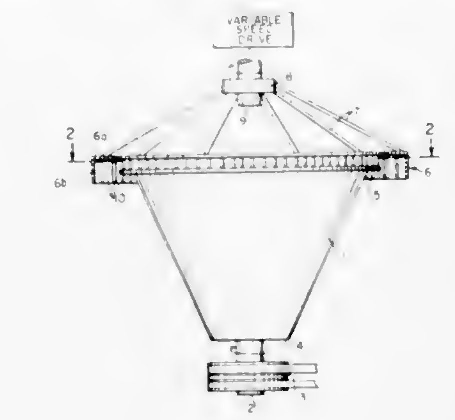
The centrifuge has a two-part rotor provided with two sets of outlets. One set ejects fluid in the form of jets so as to drive the centrifuge. The second set ejects fluid which has been cleaned. Outlets are also provided for the contaminants removed from the cleaned fluid. The liquid flow rate for the drive is high while the flow rate for centrifuging can be low or medium. The liquid flows can be delivered from different sources.

3,791,577
CENTRIFUGE AND ROTATING DISCHARGE MEANS THEREFOR

Jorge Halder Lacher, Apartado 285, Alajuela, Costa Rica

Filed Aug. 8, 1972, Ser. No. 278,722
Int. Cl. B04b *7/04*

U.S. Cl. 233—21 **3 Claims**



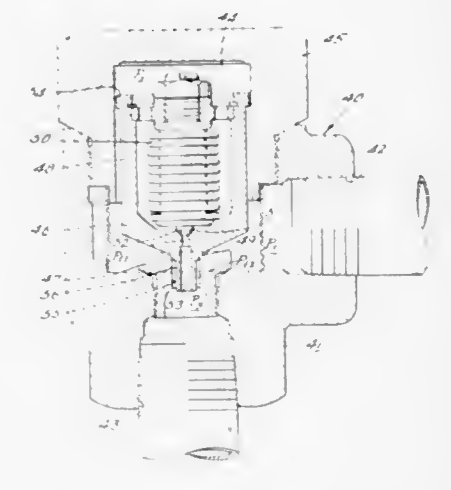
A centrifuge includes a centrifugal drum, a deflector plate for directing the centrifuged material from the drum, and a circumferential baffle plate assembly enveloping the deflector plate. The baffle plate assembly rotates in the same direction as the drum and absorbs the kinetic energy of the centrifugal material in such a way as to minimize damage to the material.

3,791,578
PILOT-OPERATED STEAM TRAPS

Warren H. Brand, Blue Bell, and John Scott, Jr., Huntingdon Valley, both of Pa., assignors to Yarway Corporation, Blue Bell, Pa.

Continuation-in-part of Ser. No. 136,493, April 22, 1971, abandoned. This application Apr. 19, 1972, Ser. No. 245,540
Int. Cl. F16t *1/02*

U.S. Cl. 236—54 **7 Claims**



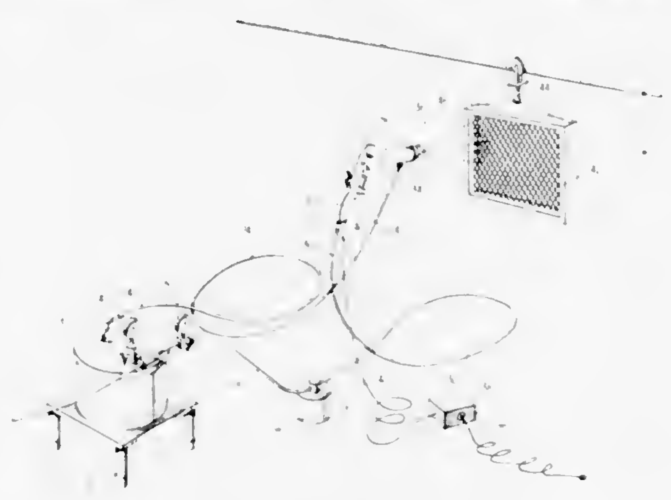
A steam trap having a main valve member mounted in a control chamber and operable to afford and block fluid flow through the trap in response to actuation of a pilot valve by a thermal responsive element mounted on the main valve member is provided with means on the main valve member to channel a quantity of control fluid across the thermal responsive element for improving the response of the steam trap to changes in the temperature of the fluid flowing through the trap. In the illustrated embodiment, a quantity of control fluid is flowed upwardly through a passage around the periphery of the main valve member from the trap inlet and then past the thermal responsive element and through a central passage in the main valve to the trap outlet. Changes in the temperature of the control fluid expands and contracts the thermal responsive element to actuate the pilot valve for applying pressure forces on the main valve to cause the main valve member to engage and disengage its seat. Satisfactory performance of the trap is insured when the restriction to flow of the central passage in the main valve member is less than the restriction to flow of the peripheral passage of if the capability for mass flow through the central flow passage is greater than the capability for mass flow through the peripheral flow passage, taking into account the pressure differential across each of these flow passages. In another illustrated embodiment the thermal controlled pilot valve controls operation of a second pilot valve which in turn controls operation of the main valve to provide a multi-stage control of flow of condensate.

3,791,579
ELECTROSTATIC PAINT SPRAY SYSTEM

Philip L. Cowan, Morrisplains, N.J., assignor to Electrogasdynamics, Inc., Hanover, N.J.

Division of Ser. No. 788,148, Dec. 31, 1968, Pat. No. 3,645,447. This application Feb. 23, 1972, Ser. No. 228,585
Int. Cl. B05b *5/00;* **B05c** *5/02*

U.S. Cl. 239—3 **18 Claims**



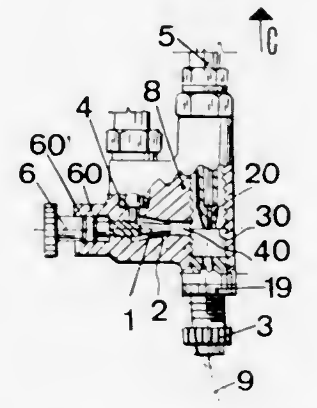
Electrostatic air atomized paint spray system and spray device wherein power of charging air atomized spray droplets and for maintaining electrostatic depositing field is obtained from self-contained electrogasdynamic generator operatively responsive to the flow of seeded atomizing air therethrough.

3,791,580
AIR PRESSURIZED ACTUATED ATOMIZER

Danizzo Taccon, Via G. Di Vittario, 353 20099 Sesto S. Giovanni, Milan, Italy

Continuation of Ser. No. 869,602, Oct. 27, 1969, abandoned. This application Jan. 17, 1972, Ser. No. 218,152
Int. Cl. B05h *7/04*

U.S. Cl. 239—414 **8 Claims**



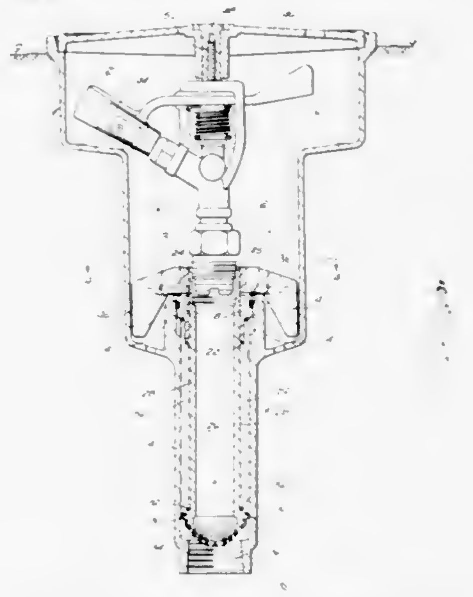
This invention relates to guns or atomizers for spraying moulds with a lubricating liquid composition. There is the necessity of a fine adjustment of the liquid rate even to interception for cleaning the moulds with pressurized air only. A connector is attached to the end of the liquid feeding duct and the end of the pressurized air duct and is formed with a decompression chamber and a passage from the liquid feeding duct to the air pressurized duct is controlled by an adjustment screw up to total interception of the liquid rate. Such a screw may be actuated by the operator from the outside and cooperates with two annular sealing members acting as a brake against uncontrolled rotation of the adjustment screw and therefore of the adjusted rate of the liquid.

3,791,581
POP-UP SPRINKLER

Ho Chow, River Edge, N.J., assignor to Beatrice Foods Co., Chicago, Ill.

Filed Aug. 28, 1972, Ser. No. 284,215
Int. Cl. B05b *3/06, 3/08*

U.S. Cl. 239—205 **12 Claims**



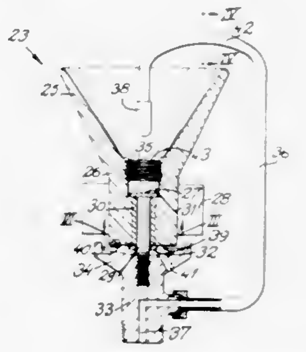
A pop-up sprinkler comprising a housing having an upper relatively wide chamber and a lower guide chamber of reduced diameter. The sprinkler head is mounted on a stem which is in turn mounted in said upper and lower chambers for vertical movement. The stem is provided with stabilizer means vertically slidable with said stem, located in the upper chamber, and shaped to cooperate with walls of that chamber to stabilize the stem, and prevent wobble, significant tilting or lateral movement of the stem, in all vertical positions of the stem.

3,791,582
SPINNER NOZZLE FOR AIR BLAST ORCHARD SPRAYER

Samuel Alfred Mencacci, Antwerp, Belgium, assignor to International Machinery Corporation, S.A., St. Niklaas-Waas, Belgium

Division of Ser. No. 27,017, April 9, 1970, Pat. No. 3,666,177. This application May 13, 1971, Ser. No. 143,177
Claims priority, application Belgium, Feb. 25, 1970, 49936
Int. Cl. B05h *3/04*

U.S. Cl. 239—222.17 **4 Claims**



An atomizing nozzle of the type used for discharging liquid agricultural chemicals into the air blast of an orchard sprayer, and including a discharge bell, or spinner cone, having exter-

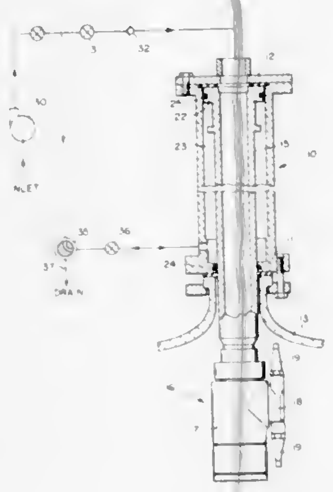
plurality of separate water streams in a desired rotating pat-

pivotally mounted about vertical axes for rotational actuation. supply pipe laid in the wall of a shower enclosure, with the nal air vanes to spin the cone and centrifugally disperse the spray. The spray solution is directed into the cone by a fixed conduit and spray nozzle which are externally located with respect to the cone and its rotary mounting structure in order to eliminate internal flow passages from which the incoming spray solution might escape and cause corrosion or blockage to impair the operation of the nozzle.

3,791,583
SPRAY CLEANING SYSTEM

Erwin J. Nunlist, Penfield, and Howard G. Coleman, Naples, both of N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed Mar. 9, 1973, Ser. No. 339,836
Int. Cl. B05b *3/06, 1/28;* **B08b** *3/02*
U.S. Cl. 239—227 **23 Claims**



A spray cleaning head is mounted on a reciprocating cleaning fluid supply tube extending from the open end of a hydraulic cylinder. An annular piston on the tube, the tube itself, and the cylinder define an expansible chamber within the cylinder. A pump supplies cleaning fluid to the closed end of the hydraulic cylinder, whereby the cleaning fluid exerts pressure on the annular piston, and means are provided for supplying fluid to and draining fluid from the expansible chamber. The pressure exerted by the cleaning fluid on the annular piston moves the supply tube and the cleaning head from a retracted to an extended position when fluid is drained from the expansible chamber, and the supply tube and cleaning head are moved back to the retracted position when fluid is supplied to the expansible chamber.

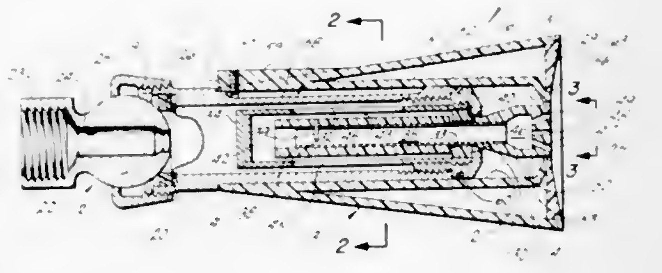
In some embodiments, reciprocating the supply tube moves the cleaning head into and out of an open ended casing attached to the hydraulic cylinder and surrounding the supply tube. A lid closes the end of the casing when the cleaning head is in the casing; and means are provided for filling the casing with fluid when the lid is closed, thereby protecting the cleaning head. Where the cleaning head is of the type having a rotating housing and nozzles rotatably attached to the housing, the lid is preferably attached to the rotating housing, and means are provided for pivoting the lid to close the open end of the casing as the cleaning head moves into the casing and for pivoting the lid out of the spray pattern of the nozzles as the cleaning head moves out of the casing.

3,791,584
SHOWER HEAD

John H. Drew, Encino, and Robert F. Bentley, North Hollywood, both of Calif., assignors to Rain Jet Corp., Burbank, Calif.

Filed Aug. 25, 1972, Ser. No. 283,717
Int. Cl. B05b *3/02*
U.S. Cl. 239—237 **9 Claims**

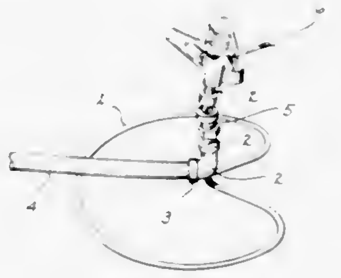
A shower head includes a nozzle assembly and an axially movable surrounding adjustment shroud. The nozzle assembly per se is of the rotary stem type and functions to discharge a plurality of separate water streams in a desired rotating pattern. The trajectory of the several streams oscillates within defined limits. Each stream is composed of individual water droplets. The shroud is adjustable axially along the nozzle assembly so that the discharge characteristic of the head is variable, without affecting water flowrate, from a discharge comprised of these several streams to a relatively hard, closely focused water discharge in which the individual streams are merged, and also to a soft aerated closely focused discharge in which the several streams are merged.



3,791,585
ADJUSTABLE PATTERN WATER SPRINKLER SYSTEM

Thornton L. Warren, 5919 E. Indian School Rd., Phoenix, Ariz.

Filed Oct. 17, 1972, Ser. No. 298,402
Int. Cl. B05h *3/06, 15/04*
U.S. Cl. 239—256 **2 Claims**

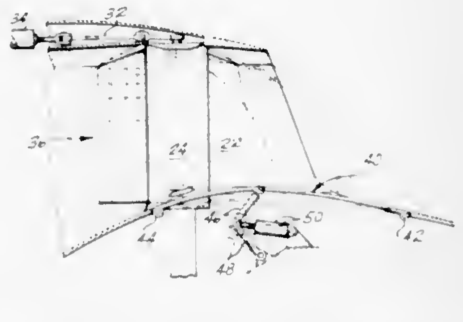


In order to accommodate odd shaped areas to be sprinkled, an impulse sprinkler is supported by apparatus which permits tilting the impulse sprinkler from the vertical in any radial direction. As a result, the sprinkler pattern is altered from a circle (or portion of a circle) to an ellipse-like (or portion thereof) shape.

3,791,586
COMBINATION CLAMSHELL THRUST REVERSER & VARIABLE NOZZLE AREA RAMP

James R. Moorehead, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 26, 1972, Ser. No. 317,908
Int. Cl. B64c *15/04*
U.S. Cl. 239—265.29 **4 Claims**

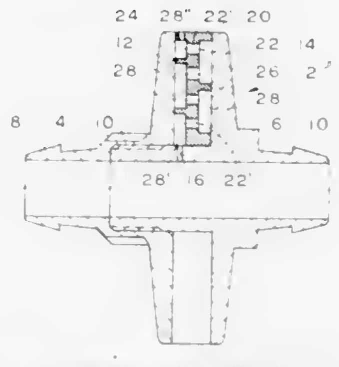


A failsafe thrust reverser for a jet aircraft engine wherein the reverser unit comprises a pair of clamshell blocker doors pivotally mounted about vertical axes for rotational actuation. The reverser unit is positioned within a D-shaped or two-dimensional exhaust nozzle duct that has a variable area ramp on its bottom planar surface. The failsafe feature is provided by the variable ramp being positioned within the rotational arc of the clamshell blocker doors such that when the ramp is in its raised or high cruise speed position, the ramp through a blocking action, mechanically jams the blocker doors so that they can not rotate to the reverse thrust position.

3,791,587
FLOW-REDUCING DEVICE PARTICULARLY USEFUL FOR TRICKLE IRRIGATION

Mordeki Drori, 89 Zahal St., Kiron, Israel

Filed Mar. 15, 1973, Ser. No. 341,713
Claims priority, application Israel, Mar. 17, 1972, 39007; May 23, 1972, 39511
Int. Cl. B05b *1/20*
U.S. Cl. 239—267 **12 Claims**

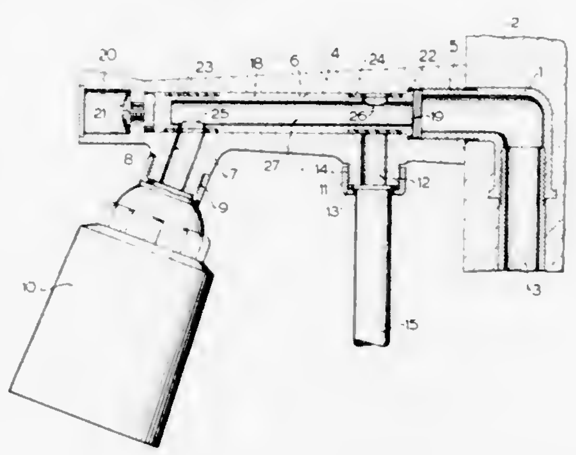


A flow-reducing device is described particularly useful for trickle irrigation. The device includes a flow-retarding member formed with a plurality of holes extending therethrough from one face to the opposite face. The member is further formed on both faces with a plurality of recesses, each recess bridging a pair of holes. The recesses on one face overlap those on the opposite face, such that the pair of holes bridged by a recess on one face lead to separate recesses on the opposite face. The water is thus caused to flow through the holes and recesses in succession, passing back and forth from one to the other face of the member and finally exiting in a slow trickle.

3,791,588
HEAD SHOWER

Gunter Buzzi, Schiltach/Black Forest, Germany, assignor to Hans Grohe KG, Schiltach/Black Forest, Germany

Filed Sept. 6, 1972, Ser. No. 286,820
Claims priority, application Germany, Sept. 9, 1971, 2145014
Int. Cl. A62c *31/00*
U.S. Cl. 239—446 **17 Claims**

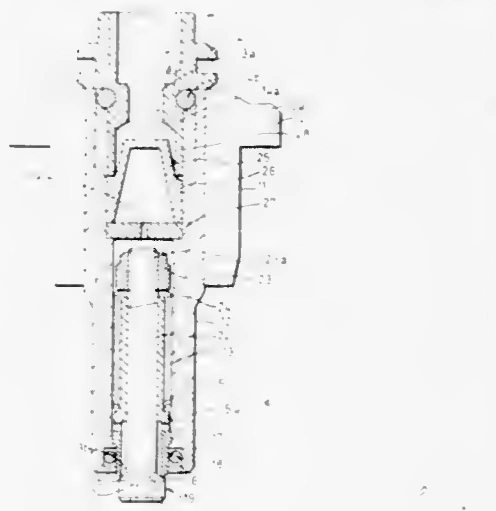


A head shower includes a shower arm designed as a pipe section for connection of an inlet end thereof to a water supply pipe laid in the wall of a shower enclosure, with the shower arm extending substantially horizontally above head level and having a shower head outlet connection to which there is secured a shower head. An additional outlet connection communicates with the shower arm and is arranged to have a hose shower, for washing the hands and the like, connected thereto. A valve controls flow through the two outlet connections, and a single externally accessible manually operable member cooperates with the valve means to provide for flow of water through only a selected one of the two outlet connections. The valve may be rotatable or axially displaceable in the shower arm, with the manually operable member comprising a handle secured to the free end of the valve. Alternatively, the valve may be rotatable and axially displaceable in the additional outlet connection and extend across the bore of the shower arm. In a further embodiment of the invention, the shower head may be of the shut-off type, and may constitute a manually operable member, with the valve comprising a pressure responsive valve in the additional outlet connection.

3,791,589
FUEL INJECTION APPARATUS FOR INTERNAL COMBUSTION ENGINES

Brian Colin Pagdin, Sutton Coldfield, England, assignor to GKN Transmissions Limited, Erdington, Birmingham, England

Filed Mar. 5, 1973, Ser. No. 338,682
Claims priority, application Great Britain, Mar. 3, 1972, 9942/72
Int. Cl. B05b *1/32*
U.S. Cl. 239—453 **5 Claims**



A fuel injector for use with an internal combustion engine comprising a body through which extends a passageway for fuel, the delivery of which is controlled by a valve member slidably mounted in a tubular guide in the passageway between the closed position to which it is urged by a spring and fully opened position determined by a stop nut on the valve stem, a flow restrictor being provided in the passageway to control maximum delivery rate of fuel when the valve member is fully open.

3,791,590
DRIP INHIBITING GLUE NOZZLE

Julian A. Dieter, Cincinnati, Ohio, assignor to R. A. Jones and Company, Inc., Covington, Ky.

Filed Sept. 27, 1972, Ser. No. 292,771
Int. Cl. B05b *1/32*
U.S. Cl. 239—459 **13 Claims**

A glue dispensing nozzle has a nozzle face with an orifice and a surface tapering outwardly and downwardly of the orifice to terminate in a flat circular rim. The nozzle has a bore in which resides a spring-loaded plunger having surfaces cooperating with a valve seat in the bore to seal off the flow of

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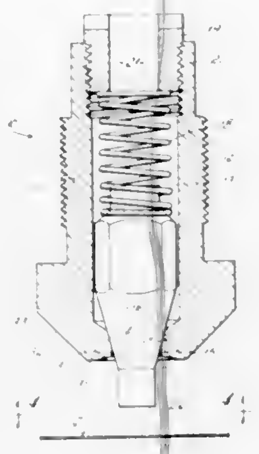
3,791,594

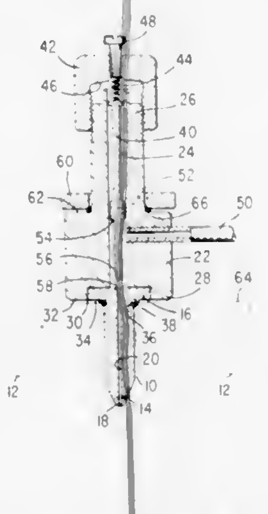
fraction is reground and reconcentrated prior to sending to glue to the orifice. An end of the plunger extends through the orifice and forwardly of the rim so as to engage a workpiece and effectively open the nozzle as the nozzle moves further



toward the workpiece. When the nozzle is retracted from the workpiece, excess glue on the nozzle face is dispersed over the tapering surface and the flat circular rim to inhibit dripping therefrom.

3,791,591
FUEL INJECTION NOZZLE ASSEMBLY

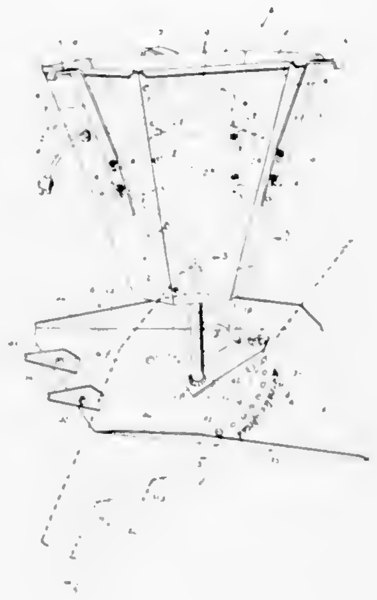
Harry O. Hedges, P.O. Box 141, Marlton, N.J.
Filed June 8, 1972, Ser. No. 261,092
Int. Cl. B05b *1/30*
U.S. Cl. 239—533 **4 Claims**



An improved fuel injection nozzle assembly is provided which may be easily removed from an engine block for replacement and maintenance purposes. A valve body may be provided having an axial passageway extending from a first axial end to a second axial end. A pintle may be axially, slideably disposed within the axial passageway and a coil spring may be disposed between a first axial end of the pintle and a fuel pressure adjustment nut, threadedly engaged over a first axial end of the valve body. An adjustment screw may be threadedly disposed axially through the adjustment nut for engagement with the spring, to make fine fuel pressure adjustments. A recess may be formed in a second axial end of the valve body to receive a correspondingly formed head of a spray nozzle and a clamping means may be provided for urging the body and nozzle toward an engine block bore hole. The valve body and nozzle are held in an operational posture solely in response to the action of the clamping member urging the two against the surfaces of the engine block, defining the bore hole.

3,791,592
GRAIN SPREADER

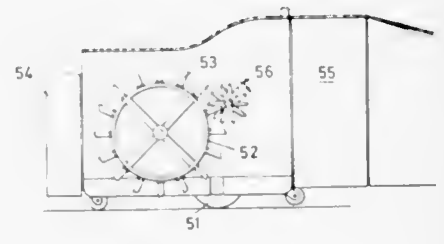
Wayne E. Cobb, 385 Harrison St., Valparaiso, Ind.
Filed Aug. 23, 1972, Ser. No. 283,054
Int. Cl. A01c *17/00*
U.S. Cl. 239—666 **17 Claims**



The invention deals with spreading grain in a bin and comprises a spreader having an impeller which is adjustably secured to a lower offset portion of a driven shaft for directing grain generally radially outwardly for uniform distribution in the bin.

3,791,593
FORM OF TINED SHAFT AND CONSTRUCTIONS OF COMPOSTING MACHINE

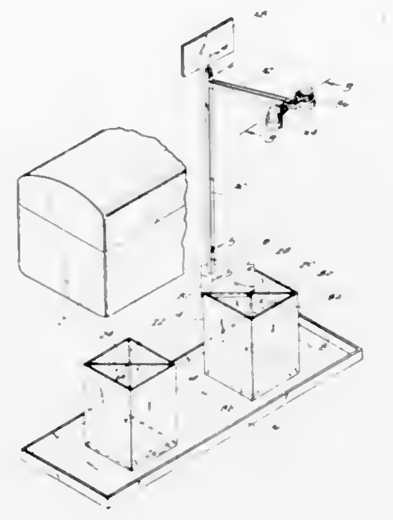
Gordon Douglas Griffin, 7 Payne Ave., Devonport, Tasmania, Australia
Filed Aug. 24, 1972, Ser. No. 283,490
Claims priority, application Great Britain, Aug. 24, 1971, 39746/71
Int. Cl. A01c *19/00*
U.S. Cl. 239—667 **14 Claims**



A composting machine for stacking compost material comprising a wheeled frame having a conveyor or roller for feeding the material towards the rear of the machine at a low velocity onto sets of rapidly rotatable members. These members are angled relatively to the central vertical plane of the machine so that, in use, material received from the conveyor or roller is thrown upwardly, rearwardly and towards the sides of the machine at a relatively high velocity. The invention also includes an improved tined shaft having tine members mounted on the shaft with the leading edges of the members tangential to the shaft.

3,791,594
CASKET LIGHTING FIXTURE

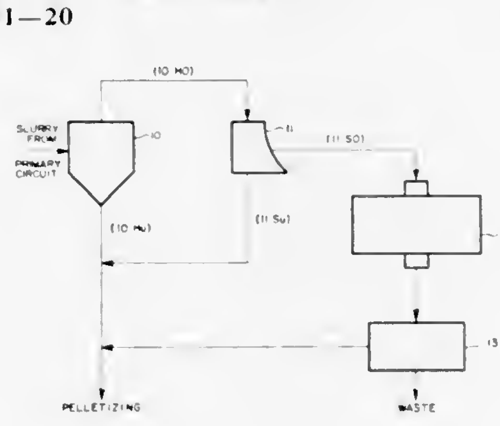
Robert H. Relly, 7211 Market Pl., Cincinnati, Ohio
Filed Jan. 24, 1973, Ser. No. 326,247
Int. Cl. F21v *33/00*
U.S. Cl. 240—2 R **7 Claims**



A casket lighting fixture to illuminate a burial casket on display wherein the lighting fixture includes a base support member cooperable with the bier which supports the casket. The bier is provided with an internal X-frame for rigidity and the lighting fixture base includes provision to fit over the top of the bier and engage the X-frame and the bier and is held in firm supporting relationship on the bier by the weight of the casket itself.

3,791,595
METHOD FOR PROCESSING IRON ORE CONCENTRATES

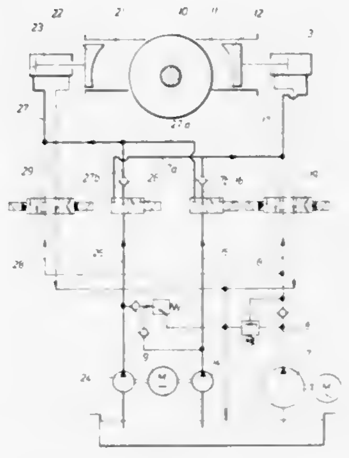
William M. Aubrey, Jr., Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.
Filed Dec. 20, 1972, Ser. No. 316,963
Int. Cl. B02c *25/00*
U.S. Cl. 241—20 **5 Claims**



A water slurry of an iron ore concentrate from concentration equipment, for example, magnetic separators in a primary circuit containing fine high grade mineral particles, coarse low grade middling particles and coarse high grade mineral particles, is pumped to a hydrocyclone in a regrind circuit. The water slurry is separated in the hydrocyclone into (1) an overflow fraction containing substantially all the fine high grade mineral particles and coarse low grade middling particles, and (2) an underflow fraction containing substantially all the coarse high grade mineral particles. The underflow fraction has a pulp density greater than 2.7 and preferably between 3.0 and 3.6. The overflow fraction is further classified into an undersize fraction containing substantially all the fine high grade mineral particles and an oversize fraction containing substantially all the coarse low grade middling particles. The oversize fraction is reground and reconcentrated prior to sending to subsequent treatment, such as pelletizing. The hydrocyclone underflow and the fine high grade mineral particles are sent to subsequent treatment, such as pelletizing, without regrinding.

3,791,596
CONTROL ARRANGEMENT FOR PRESS GRINDER

Helmut Thumm, Robert-Koch-Strasse 64; Gerd Ruessmann, Steinstrasse 4, both of 7920 Heidenheim/Brenz, and Josef Kotitschke, Kappelstrasse 33, 7924 Steinheim, all of Germany
Filed May 26, 1071, Ser. No. 147,061
Claims priority, application Germany, June 10, 1970, 7021704
Int. Cl. B02c *23/02*
U.S. Cl. 241—34 **15 Claims**



The specification discloses a press grinder for mechanically reducing wood to wood pulp in which two or more press boxes are arranged about the grinding wheel and have pressure members for pressing wood work members against the wheel. Each pressure member has a double acting fluid motor, and a separate high pressure pump is provided for supplying each fluid motor in the advancing direction. A low pressure fluid system is provided for actuating the fluid motors during change over when a new work member is inserted in a press box. When advance movement of a pressure movement is interrupted the discharge from the high pressure pump therefor is diverted to another fluid motor to increase the advancing speed thereof, whereby the load of the grinding wheel remains substantially constant at all times.

3,791,597
COMBINATION ICE CRUSHER AND DRINK MIXER

John Walter, Evergreen Park; Worthy L. Chambers, Lombard, and John M. Stipanuk, Elmhurst, all of Ill., assignors to Sunbeam Corporation, Chicago, Ill.
Filed Feb. 14, 1972, Ser. No. 226,157
Int. Cl. B02c *19/00*
U.S. Cl. 241—100 **43 Claims**

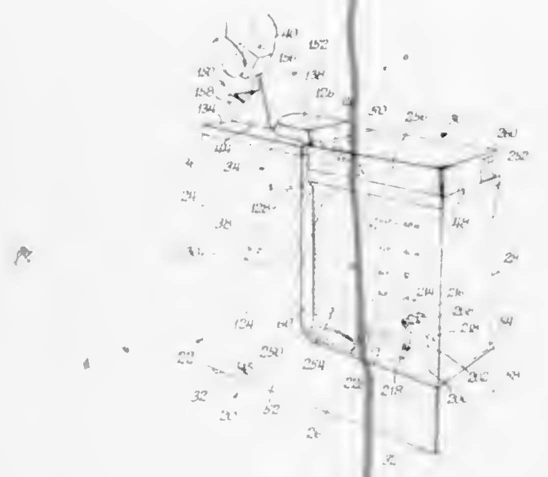
A combination ice crusher-drink mixer appliance which serves either as an ice crusher or as a drink mixer or as a combination of the two whereby to provide crushed ice to a drink as it is being mixed. An electric motor is operably connected to an upwardly inclined ice-crushing auger which is rotatable in an ice-crushing barrel whereby ice cubes introduced to the lower end of the auger-barrel combination through a vertically disposed ice chute are simultaneously crushed, sized, and transported upwardly to a crushed ice discharge port at the upper end of the barrel. A crushed-ice-receiving and drink-mixing container has an agitator mounted off center in the bottom thereof with the container being selectively positionable adjacent the crushed ice discharge port in either of two positions. In one of these positions only, the agitator is automatically coupled to the electric motor. The path of ice movement through the appliance from the entrance to the ice chute

to the bottom of the container is in the form of an inverted N

3,791,599

3,791,601
TISSUE ROLL DISPENSER

winding. A transfer roll having a deformable surface is utilized in combination with a piston or the like for urging the into the bottom of the container is in the form of an inverted N and the ice crushing auger and barrel are formed of high strength plastic. The drive connection between the electric motor, which has a built-in impact clutch, and the auger includes a gear reduction mechanism and a modified universal-joint with the drive ratio therebetween being in the order of 100 1, the drive ratio between the electric motor and the



agitator being in the order of 1 1. The ice chute has a cover which, when opened, defines an upward extension of the ice chute. The auger is readily removable from the barrel for cleaning and the container has a pouring spout with a strainer and a hand-grip formation. The components of the combination ice crusher-drink mixer appliance are nested together to provide a compact multi-purpose appliance which occupies a minimum amount of countertop space.

3,791,598
THREAD DELIVERY DEVICE

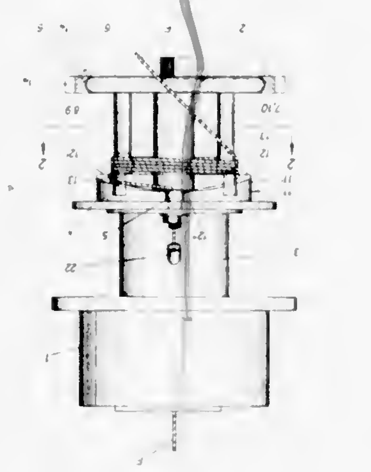
Giuseppe Vischiani, and Alberto Gustavo Sarfati, both of Como, Italy, assignors to Sobrevin Societe de Brevets Industriels-Etablissement, Vaduz, Liechtenstein

Filed July 19, 1971, Ser. No. 163,959

Claims priority, application Germany, July 19, 1970, 2035754; July 25, 1970, 2037031; Apr. 21, 1971, 2119356

Int. Cl. B65h *51/20*

U.S. Cl. 242—47.12 **18 Claims**



A delivery device for running threads with a winding body, to which the thread for forming a winding storage runs tangentially in the rearward range and from which the thread is pulled in axial direction over head, which comprises a winding body including a polygon of a plurality of individual rods. An abutment face is controlled trailingly to a thread feeding station and projects beyond a feeding plane, in order to advance the winding storage towards the head end of the winding body.

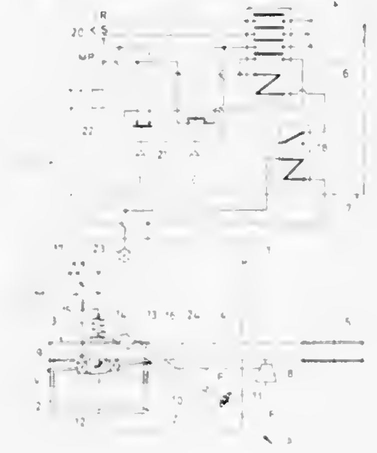
3,791,599
THREAD SUPPLY DEVICE FOR TEXTILE MACHINES

Kurt Arne Gunnar Jacobsson, Ulricehamm, Sweden, assignor to Aktiebolaget Iro, Ulricehamm, Sweden

Filed Nov. 24, 1972, Ser. No. 309,288

Int. Cl. B65h *51/20*

U.S. Cl. 242—47.12 **7 Claims**



A device for monitoring the thread supply available in the thread supply means for textile machines. In a thread supply device for a textile machine it is known to provide a transport device movable axially of the thread storage drum for effecting axial movement of said thread along said drum. Means, which in the illustrated embodiment are mechanical means, are provided in connection with said transport device which means, when said transport device in acting on said thread reaches a predetermined axial position, in turn operate to initiate a switching sequence for stopping the textile machine.

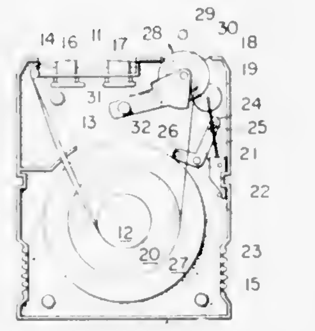
3,791,600
COMBINATION PINCH ROLLER DEPRESSER AND TURNTABLE BRAKE MECHANISM FOR ENDLESS TAPE CARTRIDGE

Tsunehiro Tsukagoshi, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sept. 20, 1972, Ser. No. 290,600

Int. Cl. B65h *17/48*

U.S. Cl. 242—55.19 A **2 Claims**



An endless tape cartridge includes a two-step pinch roller, the larger diameter portion of which is engageable with a capstan when inserted in a player to rotate the pinch roller. The tape is fed from and back to a turntable between the smaller diameter pinch roller portion and a pressing roller carried by a leaf spring. A pivoted, L-shaped brake lever has a brake member on one end adjacent to the turntable and is coupled to the leaf spring at its opposite end. When the cartridge is removed from play position on the player, the leaf spring applies the brake member against the turntable and restrains the pressing roller from forceful contact with the pinch roller.

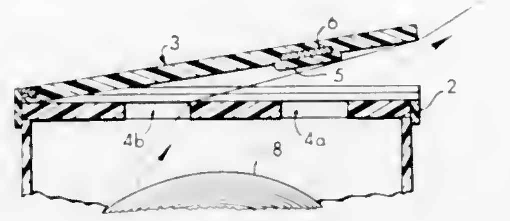
3,791,601
TISSUE ROLL DISPENSER

Kenneth John Broden, 15 Barberry Dr., Rumford, R.I.

Filed June 12, 1972, Ser. No. 261,662

Int. Cl. B65h *19/00*

U.S. Cl. 242—55.53 **4 Claims**



A portable, free-standing tissue paper dispenser including a container in which a roll of the tissue paper is received, the container including a guide plate mounted on the top thereof and having a slot through which a length of the tissue paper extends, a lid being pivotally joined to the guide plate and being movable upwardly relative thereto in response to an outward force exerted on the tissue paper and permitting a selected length of tissue paper to be extracted from the container, the lid being movable into engagement with the guide plate in a closed position for immobilizing the tissue paper so that the selected length thereof may be extracted from the container.

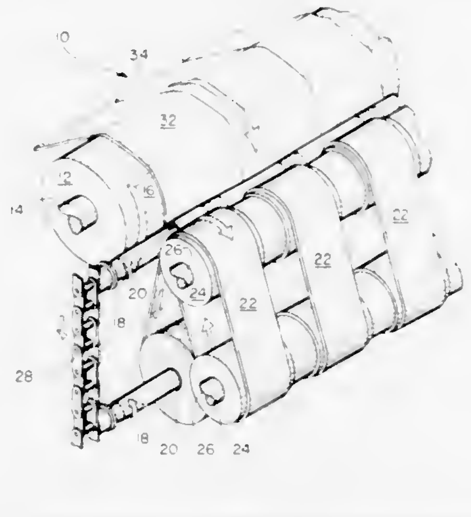
3,791,602
ROLL REWINDER TRANSFER APPARATUS AND METHOD

Eric N. Isakson, Menasha, Wis., assignor to Kimberly-Clark Corporation, Neemah, Wis.

Filed Mar. 13, 1972, Ser. No. 234,140

Int. Cl. B65h *19/20, 75/28*

U.S. Cl. 242—56 A **9 Claims**



Method and apparatus for sheet transfer from one finished rewound roll of multi-ply sanitary tissue, paper towelling or the like to the core of another roll to be wound without interruption of the web unwinding process. By timing the transfer such that the sheet is broken at a tangent point on the finished roll, problems relating to ply separation are avoided. Also included are improved means for obtaining tail tacking.

3,791,603
METHOD AND APPARATUS FOR IMPROVED WEB TRANSFER

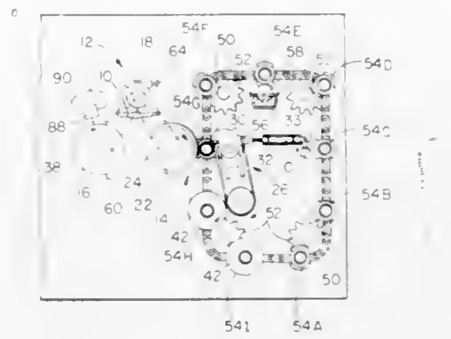
Gary L. Lenius, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Sept. 18, 1972, Ser. No. 290,268

Int. Cl. B65h *19/20, 75/34*

U.S. Cl. 242—56 R **10 Claims**

Improved method and apparatus for obtaining transfer of a web from a parent roll to sequentially supplied cores for rewinding. A transfer roll having a deformable surface is utilized in combination with a piston or the like for urging the individual cores against the web and the transfer roll surface. The deformable surface provides increased wrap of the web



around the core and insures smooth web transfer without excessive wrinkling. In a preferred embodiment a phase shift differential arrangement is included to adjust the location of sheet or web separation upon breaking.

3,791,604
MAGNETIC RECORDING AND/OR PLAYING BACK APPARATUS

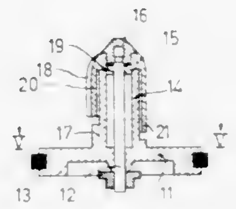
Matheus Johannes Marie Meermans, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 10, 1972, Ser. No. 233,661

Claims priority, application Netherlands, Mar. 25, 1971, 7104001

Int. Cl. B65h *17/02*

U.S. Cl. 242—68.3 **3 Claims**



In an apparatus for recording and/or playing back magnetic recordings on and/or from a magnetic tape accommodated in a cassette, having at least one winding spindle adapted to be received in a flangeless winding core provided in the cassette, the winding spindle comprising a turntable which is mounted for rotation and has a sheath-like hub. A carrier element is mounted on this hub and has the shape of an ogival hat with radially projecting ogival carrier ribs. The turntable and the carrier element have abutment means which limit the relative rotation of the carrier element with respect to the turntable and by which the rotation of the turntable is imparted to the carrier element.

3,791,605
ROTARY SPOOL FOR STORAGE OF CONVOLUTED PHOTOGRAPHIC FILM OR THE LIKE

Rudolf Blank, Cologne, and Achim Kluczynski, Porz-Eil, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

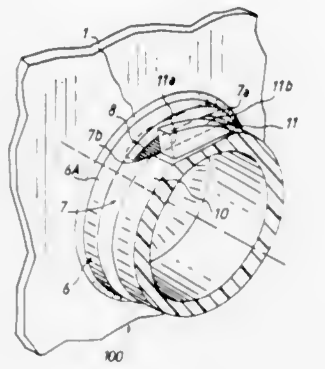
Filed July 31, 1972, Ser. No. 276,535

Claims priority, application Germany, July 31, 1971, 2138429

Int. Cl. B65h *75/28*

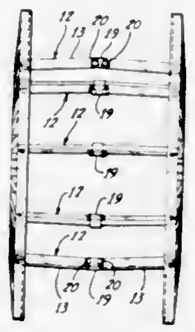
U.S. Cl. 242—74 **10 Claims**

A rotary spool for storage of convoluted elongated flexible strips (such as photographic film or magnetic tape) of the type having a relatively wide end portion followed by a relatively narrow neck portion has a substantially cylindrical core provided in its external surface with a circumferentially extending groove having a main section whose width slightly exceeds the width of a neck portion and a second section whose width slightly exceeds the width of an end portion. That part of the main section which is immediately adjacent to and communicates with the second groove section is flanked by a pair of ledges which overlie two internal recesses provided in the core and communicating with the part of the main section as well as with the second groove section at points located inwardly from the external surface of the core. When the end portion of a strip is inserted into the second groove section and is moved in a direction to enter the recesses of the core, the ledges hold the thus inserted end portion against separation from the spool. A projection in the part of the main groove section has a stop face which prevents the movement of end portion from the recesses back into the second groove section. The projection has a sloping surface located inwardly of the ledges and serving to guide the end portion from the second groove section into those ends of the recesses which are remote from the second groove section.



3,791,606
COLLAPSIBLE CABLE SPOOL

Wallace N. Brown, 2714 N. 21 St., Phoenix, Ariz.
Filed Dec. 27, 1971, Ser. No. 211,975
Int. Cl. B65h *75/22, 75/14*
U.S. Cl. 242—115 **6 Claims**

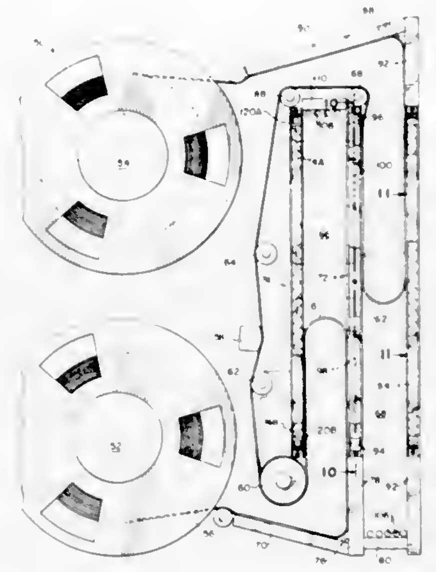


A collapsible cable spool having radially fluted flanges and a plurality of foldable drum or core sectors pivotally carried in the flutes to permit the spool to be collapsed for storage and shipment.

3,791,607
LIGHT COLLECTING AND TRANSMITTING APPARATUS

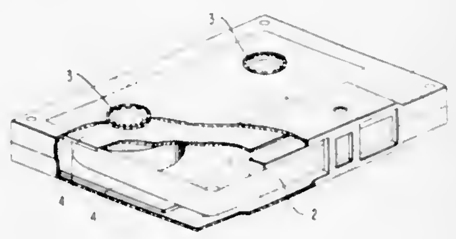
Daniel M. Klang, Huntington Station, and Roger Mosciatti, Coram, both of N.Y., assignors to Bucode, Inc., Hauppauge, N.Y.
Continuation-in-part of Ser. No. 198,588, Nov. 15, 1971. This application June 28, 1972, Ser. No. 267,155
Int. Cl. G11b *15/06, 15/58, 23/12*
U.S. Cl. 242—184 **7 Claims**

An optical device for collecting and transmitting light is described. It consists of a longitudinal bar which is composed of transparent material and which has a plurality of totally reflecting prisms arranged in step-like fashion along an inclined surface of the bar. Light incident on one side of the bar is reflected within the bar toward the base of the bar and light incident on the base of the bar is reflected out one side of the bar.



3,791,608
FRICTION SHEET FOR A MAGNETIC TAPE RECORDING CASSETTE

Goro Akashi, and Takashi Hirakawa, both of Kanagawa, Japan
Filed Sept. 10, 1970, Ser. No. 71,127
Claims priority, application Japan, Sept. 10, 1969, 44-71885
Int. Cl. G11h *23/04*
U.S. Cl. 242—199 **13 Claims**



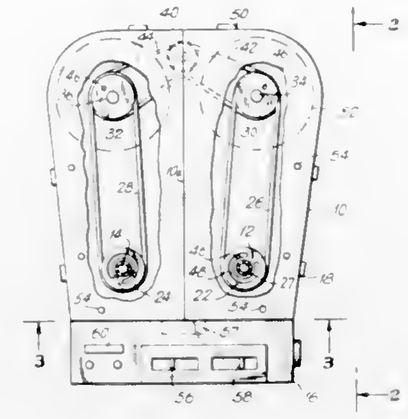
A tape guide sheet for a magnetic tape recording cassette, said sheet comprising a support sheet of a plastic material or paper, one surface of said sheet having a layer containing a powder or graphite, molybdenum bisulphide or tungsten bisulphide, the opposite surface of said sheet having a layer of aluminum.

3,791,609
ADAPTER FOR INCREASING THE CAPACITY OF TAPE RECORDERS

Peter Roma, New York, N.Y., assignor to Video Circuits, Inc., Elmsford, N.Y.
Filed Aug. 16, 1971, Ser. No. 171,853
Int. Cl. G11h *15/32*
U.S. Cl. 242—201 **10 Claims**

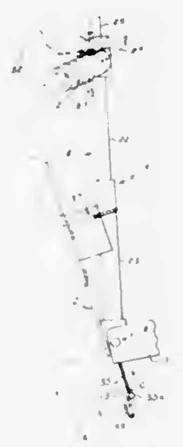
An adapter is secured to the case of a tape recorder, its drive being coupled coaxially to the tape-reel drive means of

the tape recorder. Separate drive shafts projecting from a plate of the adapter carry larger capacity reels than the tape recorder is designed for, increasing the capacity of the tape recorder.



3,791,610
AIRCRAFT EJECTION SEAT ACTUATION SYSTEM

John W. Garrett, Bellbrook; Milton Alexander, Fairborn, and Ralph R. Riepenhoff, Dayton, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Oct. 19, 1972, Ser. No. 298,976
Int. Cl. B63d *25/08*
U.S. Cl. 244—122 A **10 Claims**

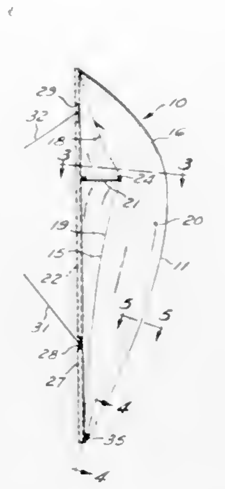


An aircraft seat ejection device including a handle and upright support held in a compressed position, against the urging of separate, built-up springs, within a cover manually operable by the pilot to an open position to free and allow the springs to extend both handle and support into a pop-up position, and open the handle into a hand-gripping position between the legs of the pilot. An actuator-rod, mounted in compressed and telescopic relation within the upright support, and interconnected to a cable attached to the seat ejection-firing mechanism is manually releasable, by the operation of a trigger mounted on the handle, to thereby operate the cable and initiate actuation of the firing mechanism.

3,791,611
CAPTIVE INFLATED LIGHTER-THAN-AIR STRUCTURES

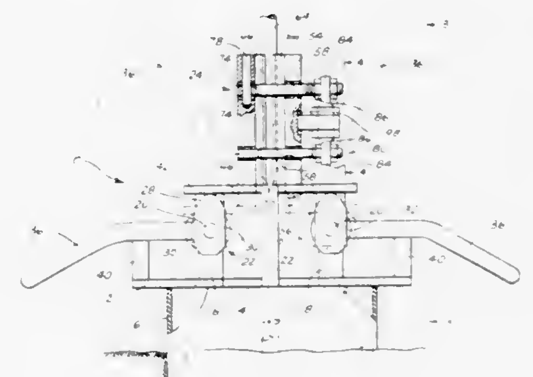
Lewis E. Babbidge, 1743 Holyoke Ave., East Cleveland, Ohio
Filed Sept. 11, 1972, Ser. No. 287,819
Int. Cl. B64c *31/06*
U.S. Cl. 244—153 R **9 Claims**

Captive inflatable lighter-than-air structures comprised of heat-retaining metallized film envelopes for the inflating gas. Internal and/or external stays, suitably guyed if desired, may be used to maintain shape and configuration of envelopes against distortion by internal gas pressure. Structures may be used as kites, mobile sculptures, and/or displays. In kites the metallized film functions as a radar reflector.



3,791,612
DEVICE FOR GRIPPING AND IMPARTING SLACK IN A CABLE

Carl A. Gustavson, Verona; Emmett B. Shutes, Turtle Creek, and Paul C. Wuenschel, Glenshaw, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Filed May 25, 1972, Ser. No. 256,780
Int. Cl. G01v *1/24*
U.S. Cl. 248—49 **7 Claims**



A device for clamping and supporting a cable, usually vertically, and imparting a predetermined amount of slack into the cable, comprising clamping means and means to lower the entire clamping means a predetermined amount corresponding to said predetermined amount of slack.

3,791,613
CABLE CHANNEL

Johann Theodor Nollen, Nieuwerkerk a/d Ijssel, Netherlands, assignor to Verlichtings-en-Metaalwaren Industrie "Gouda-Holland" N.V., Industrieterrein, Haastrecht, Netherlands
Filed Feb. 16, 1973, Ser. No. 333,419
Claims priority, application Netherlands, Feb. 22, 1972, 7202315
Int. Cl. H02g *3/04*
U.S. Cl. 248—49 **1 Claim**

A trough-shaped body for channelling electric cables, which body is composed of substantially parallel side walls and sub-

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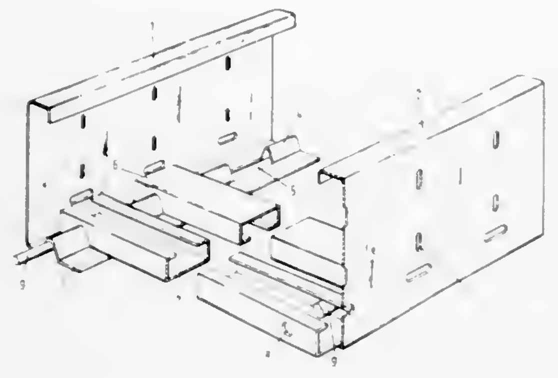
stantially parallel bottom members extending between the side

3,791,615

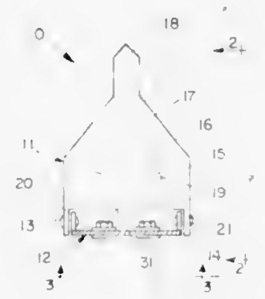
---

guide the tube during flexure. Connections with lost motion

the fluid in the pipes interconnected to the valve construction stantially parallel bottom members extending between the side walls. The bottom members are secured to the side walls by means of a pin inserted through holes in the bottom members under the apexes of V-shaped depressions in the side walls.

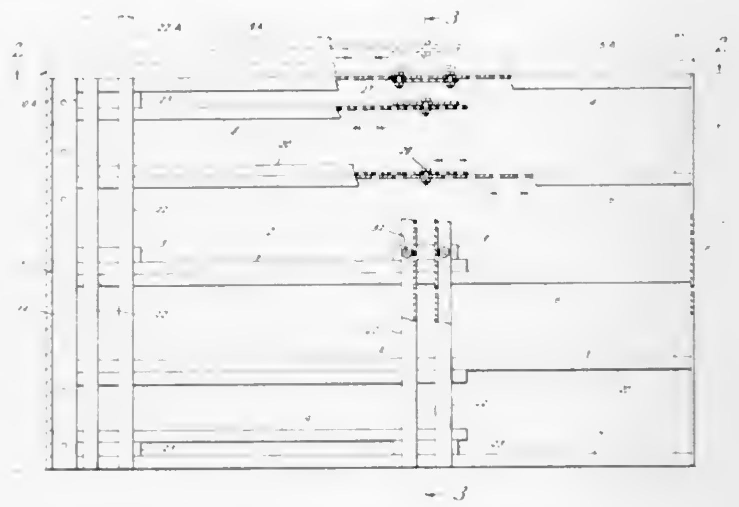


3,791,614
PIVOTABLE WALL MOUNTING BRACKET
Donald M. Scheer, 4407 Central Ave., Indianapolis, Ind.
Filed July 12, 1972, Ser. No. 270,942
Int. Cl. E05d *17/00*
U.S. Cl. 248—216 **3 Claims**



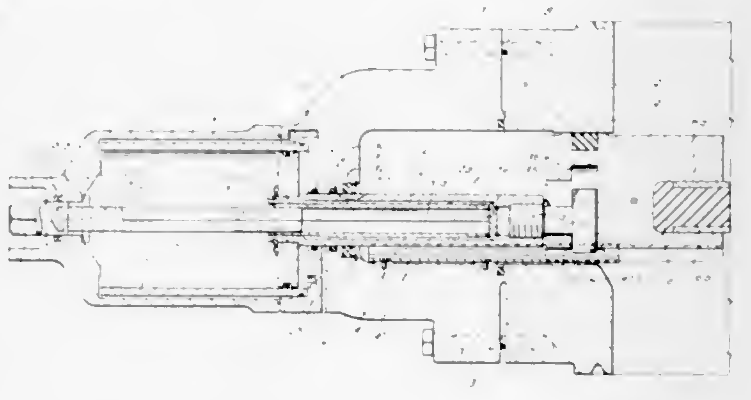
A first and second element are pivotally hinged together. The first element is separated into a first and second portion by an indented line extending laterally across the first element. The first portion has a tapered configuration for driving the first element into a wall and an alternate embodiment has an end positioned at a right angle to hook over a brick when the bracket is mounted to a brick wall. The first element includes a pair of ears upon which the second element is mounted. The ears form stop surfaces for limiting the inward travel of the first element into the wall. The second element has a plurality of slidably mounted fastening nuts which are positioned between the second element and the wall. The bottom end of the second element extends inwardly towards the wall and cooperatively with the stop surfaces spaces the second element from the wall preventing the fastening nuts from contacting the wall.

3,791,615
PANEL FOR USE IN A MODULAR CONCRETE FORM
Josh F. Ewing, Converse, Tex., assignor to Ewing-Records & Associates Inc., Converse, Tex.
Filed Oct. 14, 1971, Ser. No. 189,457
Int. Cl. E04g *9/00*
U.S. Cl. 249—189 **7 Claims**



A modular concrete form panel made up of laterally adjustable and interfitting sections.

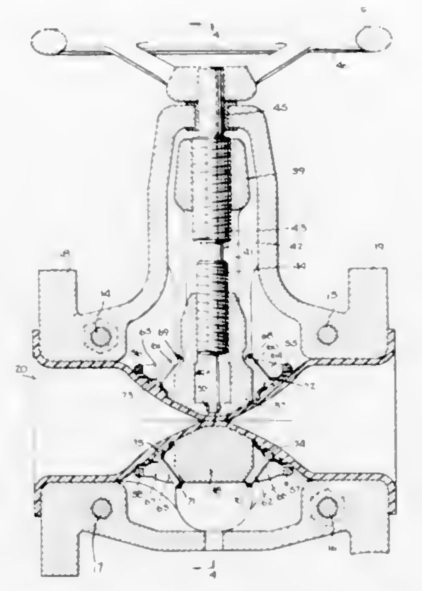
3,791,616
NON-ROTATING RAM ROD LOCKING ASSEMBLY FOR BLOWOUT PREVENTER
Robert K. Le Rouax, Houston, Tex., assignor to Hydril Company, Houston, Tex.
Filed Sept. 8, 1971, Ser. No. 178,713
Int. Cl. E21h *33/06*
U.S. Cl. 251—1 **6 Claims**



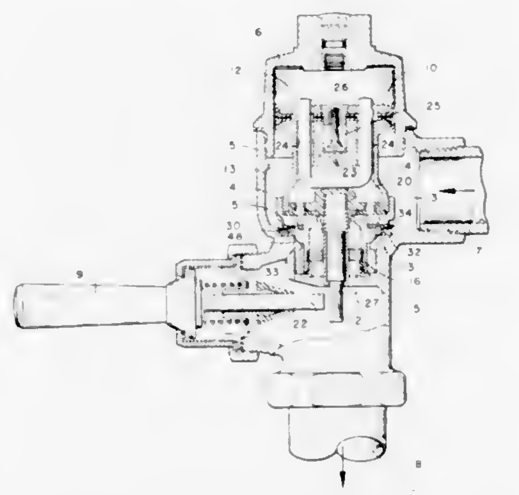
A non-rotating ram rod locking assembly for a blowout preventer having a new and improved means for locking the ram in its sealing position, and means for preventing rotation of the ram rod itself during actuation of the locking assembly.

3,791,617
POSITIVE OPENING AND CLOSING CONSTRICTABLE TUBE VALVE WITH MEANS FOR PROLONGING TUBE LIFE
Irving D. Press, West Orange, N.J., assignor to Resistoflex Corporation, Roseland, N.J.
Filed July 14, 1971, Ser. No. 162,407
Int. Cl. F16k *7/06*
U.S. Cl. 251—8 **20 Claims**

Notched edge clamps cooperate with lateral extensions on the compressor members for ensuring sealing while the clamps have smoothly rounded diverging mouths for preventing crack inducing flexure of the tube in a constrictable tube valve. A limber wishbone shaped yoke maintains sealing pressure. Wings on the compressor members with transition curves guide the tube during flexure. Connections with lost motion between bosses on the tube and respective wings provide positive opening. Resilient extensions are provided on a modification of the compressor members. The tube and bosses are formed by extruding a tube with longitudinal ribs and then machining away the undesired sections of the ribs.



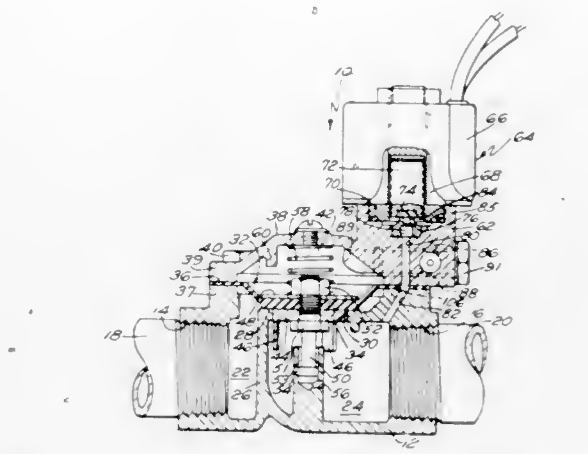
3,791,618
QUIET FLOW DEVICE FOR FLUSH VALVES
Axel B. Nelson, Mount Prospect, and Roman F. Spacko, Darien, both of Ill., assignors to Sloan Valve Company, Franklin Park, Ill.
Filed May 1, 1972, Ser. No. 248,930
Int. Cl. F16k *47/02, 31/383*
U.S. Cl. 251—37 **6 Claims**



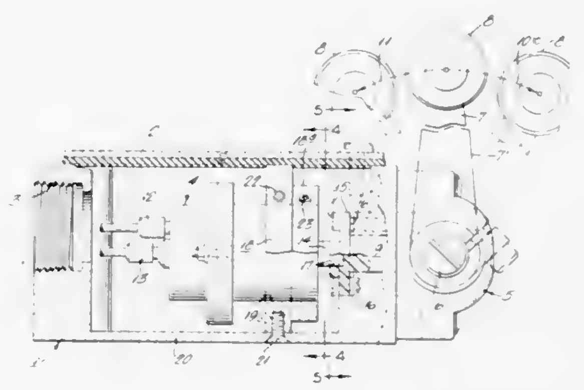
A piston type flush valve having a main valve seat in the body is provided with a ring-shaped quieting device adjacent the main valve seat to quiet the water flow during the closing off action of the valve.

3,791,619
VALVE CONSTRUCTION
Alfred W. Pett, Warwick, R.I., assignor to New England Union Co., West Warwick, R.I.
Filed Jan. 31, 1972, Ser. No. 222,101
Int. Cl. F16k *31/385, 31/40*
U.S. Cl. 251—45 **7 Claims**

A solenoid operated valve construction for controlling flow of a fluid therethrough and including a diaphragm assembly, the movement of which is responsive to a pressure differential thereacross, means being associated with the diaphragm assembly for producing a change in the differential pressure thereacross at a controlled rate, wherein the kinetic energy of the fluid in the pipes interconnected to the valve construction is effectively absorbed, thereby preventing damage to the system and at least preventing the occurrence of waterhammer on the system.



3,791,620
CAM-ACTUATED MAGNETIC VALVE
William M. Scott, c/o Sun Oil Company, Bishop Hollow Rd., Newtown Square, Pa.
Filed May 2, 1972, Ser. No. 249,586
Int. Cl. F16k *31/08, 31/52*
U.S. Cl. 251—65 **7 Claims**



A mechanical arrangement is provided for mounting a magnetically-operated valve (which is adapted to control a fluid) in a housing having cam-actuating means associated therewith, so that the valve can be operated by the cam-actuating means, in the same fashion as a cam-actuated electrical limit switch.

3,791,621
FLUID CONTROL APPARATUS
Asadollah Hayatdavoudi, Madison, Wis., assignor to Petroleum Associates of Lafayette, Inc., Lafayette, La.
Filed Mar. 12, 1973, Ser. No. 340,577
Int. Cl. F16k *47/00*
U.S. Cl. 251—122 **3 Claims**

A method and apparatus for controlling fluid flow from a variable pressure source by a housing which is provided with an inlet for receiving flow from a variable pressure source and an outlet for discharging flow from the housing. Flow constrictor means are mounted within the housing in the form of spaced orifice plates defining flow chambers therebetween. A double acting ram is provided with a conical member mounted thereon with its apex pointed upstream to position the conical member within the orifice plates and chambers defined therebetween to stepwise reduce the pressure and velocity of the variable pressure source.

Means measure the pressure of the variable pressure source at the housing inlet and operate valve means and motor means

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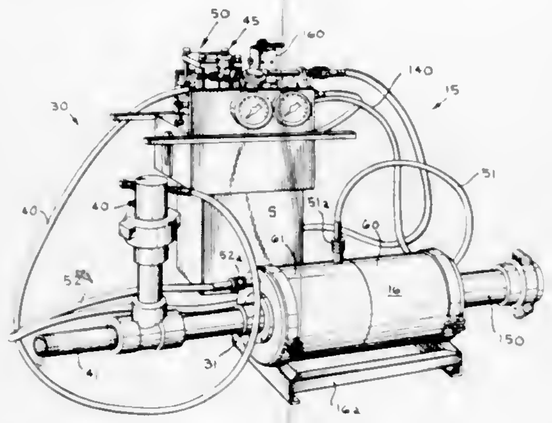
so that the ram with the conical member thereon may be posi-

locking member connectable to and coupled nonmoveably

---

driven so as to maintain its surface speed at the speed of the

is initiated through an external signal for the pneumatic conso that the ram with the conical member thereon may be positioned longitudinally relative to the orifice plates and chambers in response to the pressure of the source measured at the housing inlet to thereby restrict flow from the variable source through the housing. The ram is sealably and movably mounted within the housing so that the fluid medium which controls its position, while acting in response to the variable pressure from the source at the housing inlet does not comingle with the fluid pressure from the source during its passage from the inlet to the discharge end of the housing.



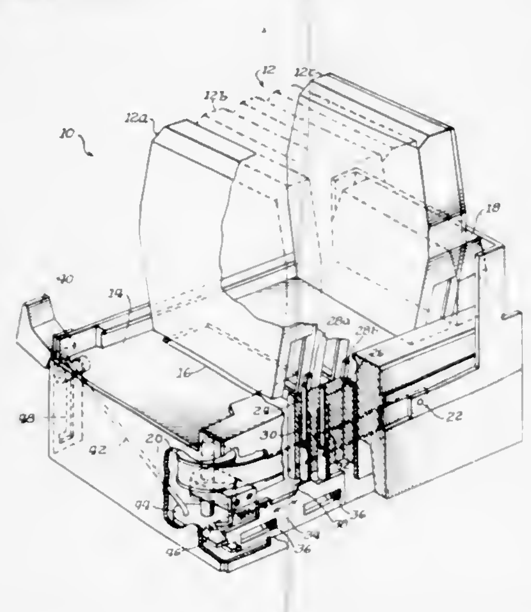
3,791,622
INDEXING MECHANISM

Arthur E. Nupnau, Chicago, Ill., assignor to Bell & Howell, Chicago, Ill.

Filed Jan. 26, 1972, Ser. No. 220,954

Int. Cl. G03b *21/04*

U.S. Cl. 352—123 **3 Claims**



An indexing mechanism for sequentially presenting each of a plurality of cassettes containing photographic film to a projection station in a film projector. The indexing mechanism includes a pair of stop members that are alternately placed in and out of engagement with an abutment on the cassette.

3,791,623
LOCKABLE TENSIONING DEVICE

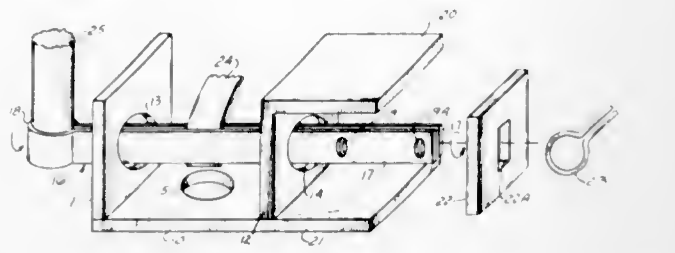
Maynard L. Bozik, P.O. Box No. 976, Pompano Beach, Fla.

Continuation-in-part of Ser. No. 112,528, Feb. 4, 1971, abandoned. This application May 17, 1972, Ser. No. 253,944

Int. Cl. A63h *61/04*

U.S. Cl. 254—51 **7 Claims**

An anchored frame member having at least one protruding flange at one end, a rotatable axial member for tensioning flexible elements such as wire, rope, cable or the like inserted through apertures in said anchored frame, and a removeable locking member connectable to and coupled nonmoveably about said axial member and adjacent the frame flange, the flange prevents the rotational motion of said locking member and said axial member.



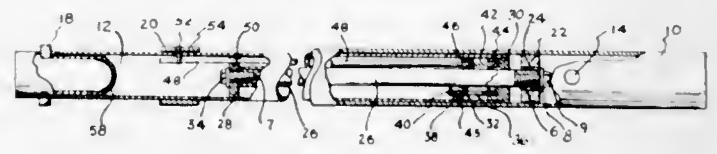
3,791,624
EXTENDIBLE TUBE ASSEMBLY

Buford L. Payson, Garden Grove, Calif., assignor to Roberts Consolidated Industries, Inc., City of Industry, Calif.

Continuation of Ser. No. 186,085, Oct. 4, 1971, abandoned. This application Feb. 5, 1973, Ser. No. 329,458

Int. Cl. A47g *27/04*

U.S. Cl. 254—62 **9 Claims**



An extendible and locking assembly of telescoping tubular members is described which can be secured in a carpet stretcher system to provide a unique and highly efficient action in use of the stretcher. The assembly comprises a pair of telescoping tubes, one of which bears a lock tube and the other bears a sliding lock that fits about the tube and prevents retraction of the members. Manual release means are provided on the sliding lock to permit its release when the members are to be retracted. When used in a carpet stretcher assembly a unique "pump and pull" action results in which the stretcher head or the tubes can be extended simply by depressing and reaising the handle of the stretcher. This avoids the conventional and tedious shifting and relocating of the stretcher head. The assembly is preferably used in combination with a ratchet lock power stretcher.

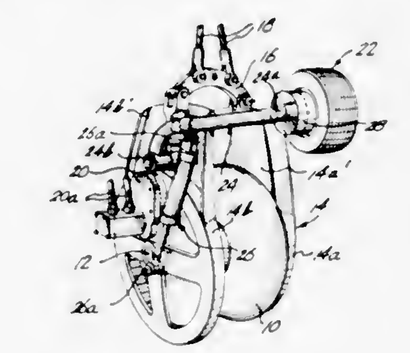
3,791,625
FISHING NET HAULING SHEAVE DEVICE WITH POWERED PRESSER WHEEL SYSTEM

Johan P. Viljoen, Laaiplek, South Africa, assignor to Marine Construction & Design Co., Seattle, Wash.

Filed July 17, 1972, Ser. No. 272,460

Int. Cl. A01k *73/06*

U.S. Cl. 254—138 **10 Claims**



A fishing net hauling sheave device of the Puretic type is disclosed in combination with an assist wheel which is power driven so as to maintain its surface speed at the speed of the net which it contacts and which is actuated so as to press against the net rounding the sheave under pressure which may be selectively adjusted so as to control the wheel's inhibiting effect on internal shearing tendency in the net passing over the sheave. Hydraulic controls and connections cause increase and decrease of power drive torque exerted by the wheel on the net coordinated with increase and decrease of wheel actuator pressure; furthermore, permit accommodation of hydraulic fluid back flow cause by reaction of the actuator in response to outward deflection movement of the wheel when passing over thickening sections of net.

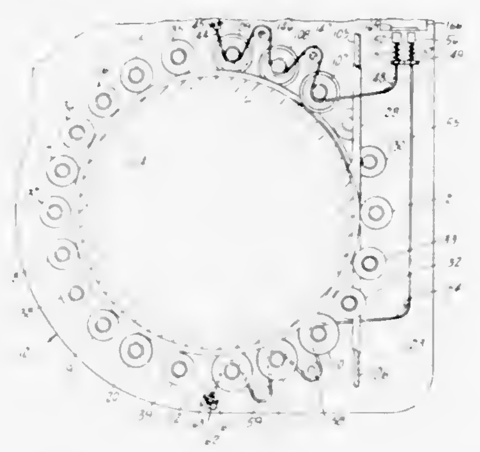
3,791,626
TRACTION TYPE HOIST

Carter H. Arnold, 317 Rocky Point Rd., Palos Verdes Estates, Calif.

Continuation-in-part of Ser. No. 69,709, Sept. 4, 1970, Pat. No. 3,707,275. This application Dec. 13, 1971, Ser. No. 207,374

Int. Cl. B66d *1/30*

U.S. Cl. 254—150 R **3 Claims**



A traction hoist of the type in which a rope is wound around a drum to provide a plurality of windings in side by side substantially parallel relationship. The shunting of the rope from one winding to the adjacent winding and the tensioning of the rope is accomplished by rollers so as to minimize power loss, provide automatic self-reeving action and to permit either end of the rope to be the tensioned end. Means is provided for indicating the presence of a damaged rope and for automatically shutting off the power in the event such damage is detected.

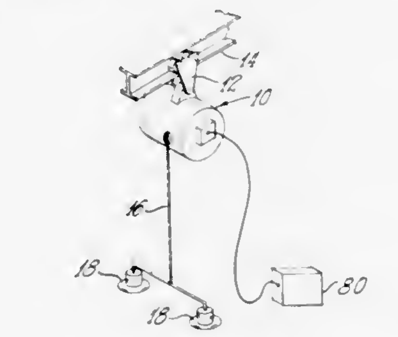
3,791,627
PNEUMATICALLY-OPERATED HOIST WITH AUTOMATIC CONTROL SYSTEM

Charles W. Stone, Garden City, and Edward L. Foster, Rochester, both of Mich., assignors to D. W. Zimmerman Mfg., Inc., Madison Heights, Mich.

Filed Sept. 20, 1971, Ser. No. 181,964

Int. Cl. B66d *1/00*

U.S. Cl. 254—168 **15 Claims**



A pneumatically-operated hoist is operated through an automatic, pneumatic control system. The operation of the hoist is initiated through an external signal for the pneumatic control system by means of which the hoist is automatically directed through a plurality of sequential steps. The hoist preferably has at least two remotely-positioned bleed elements which are operated through the pneumatic control elements to control the hoist pressure at predetermined values in a manner such that an operator can manipulate a load with the hoist in a desired manner without having to operate any manual controls at all. The control system also is equipped with a bleed element which opens to slowly bleed the hoist in the event of air failure, so that a load carried by the hoist can be safely lowered.

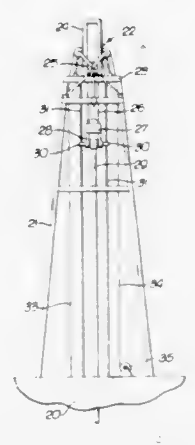
3,791,628
MOTION COMPENSATED CROWN BLOCK SYSTEM

Jerome Q. Burns, La Mesa, William C. Green, and Jack I. McLelland, both of Palos Verdes, all of Calif., assignors to Ocean Science and Engineering, Inc., Long Beach, Calif.

Filed July 26, 1972, Ser. No. 275,354

Int. Cl. B66d *1/48*

U.S. Cl. 254—172 **19 Claims**



A motion compensated crown block system in which a crown block sheave means is movable along a vertical path defined by a framework usually forming part of a drilling rig which is supported on a vessel. The crown block sheave assembly, which carries the hook load, is principally supported by inclined fluid pressure cylinder and piston means having one of their ends pivotally connected to the sheave means and their other ends pivotally connected to the framework in lateral spaced relation to the generally vertical pathway of the sheave means. Changing inclination of the cylinder and piston means during relative movement of the crown block sheave assembly and vessel provides variation in the piston reaction vertical force component which is caused to be nearly proportional to the change in fluid pressure in the cylinder and piston means. Load variation of less than 5 percent of the hook load is achievable over the full path of travel of the sheave means and is in the order of 2 percent over a major portion of said path in which the crown block sheave assembly travels. Means for sensing motion of the crown block sheave means relative to the sea bed are also provided so that the crown block sheave means will be virtually stabilized to maintain unchanged relation with respect to the sea bed during heaving of the vessel as caused by wind and wave action. Means are also provided for reducing to a minimum travel of the sheave cables over idle sheaves during travel of the crown block sheave means in its vertical path.

3,791,629
VIBRATOR ROLLER

Fulton J. Best, 1072 Kipling Ave., Islington, Ontario, Canada

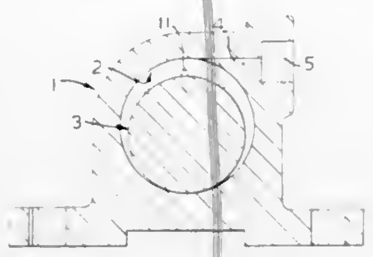
Filed Sept. 5, 1972, Ser. No. 286,135

Claims priority, application Canada, Oct. 28, 1971, 126327

Int. Cl. B01f *11/00*

U.S. Cl. 259—1 R **5 Claims**

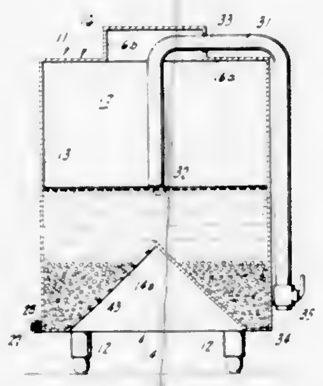
A vibrator including a housing forming a cylindrical chamber, a roller located in the chamber and having a smaller diameter than the diameter of the chamber, air inlet and outlet means to and from the chamber respectively located to cause the roller to roll around the wall of the chamber when air is supplied to said inlet means, said roller having a cylindrical shell with a transverse web extending across the interior of the shell mid-way between the ends of the shell, and secondary masses retained within the shell on opposite sides of the transverse web, the centre of gravity of said masses and hence of said roller being spaced from the central longitudinal axis of the shell.



3,791,630
APPARATUS FOR WASHING, COOLING AND SEPARATING FOOD PRODUCTS

Horace Hinds, Jr., Mountain View, Calif., assignor to Grace Machinery Company Incorporated, Santa Rosa, Calif.
Filed Mar. 19, 1971, Ser. No. 126,079
Int. Cl. B01f *5/10;* **A01j** *25/11*

U.S. Cl. 259—4 **7 Claims**



Process and apparatus for separating, washing and/or cooling food products wherein food particles transported in a fluid are introduced into the lower portion of a processing chamber. Fluid is passed upwardly through the particles and removed from the upper portion of the chamber, while the particles remain in the lower portion of the chamber. The particles are cooled by washing them with fluid at successively lower temperatures, and a single volume of fluid can be used for successive washes to minimize waste disposal, or to result in so little waste that it could be concentrated and dried.

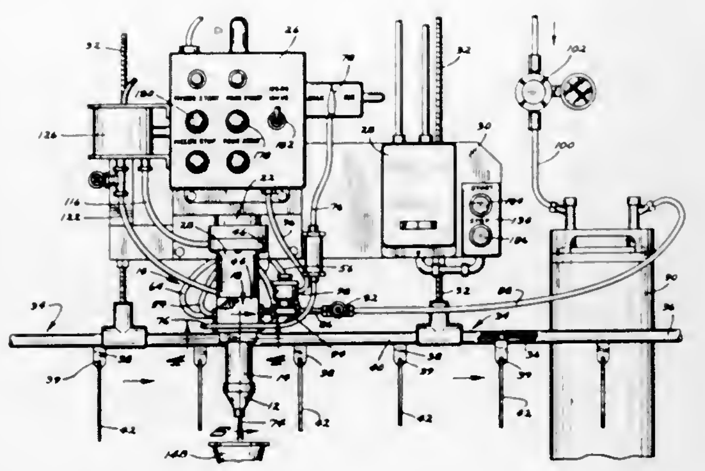
3,791,631
METHOD AND APPARATUS FOR MAKING COLORED EXPANDED FOAM ARTICLES

Maurice J. Meyer, St. Paul, Minn., assignor to MM Industries, Inc., St. Paul, Minn.
Filed Feb. 17, 1972, Ser. No. 227,230
Int. Cl. B01f *7/24*

U.S. Cl. 259—8 **2 Claims**

Colored expanded polyurethane foam articles are made by simultaneous discharging of measured amounts of isocyanate A, a suitable resin B, and a color pigmented liquid C into a mixing chamber in which is situated a rapidly rotating mixer. The mixed charge resulting flows by gravity into the lower section of an article mold. A mating upper section has a bleed hole through the top and is clamped onto the lower section until the resulting foam has risen and set. The mold sections are unclamped and the article ejected from the lower mold section by striking on an ejector pin slidably mounted in the bottom of the lower mold.

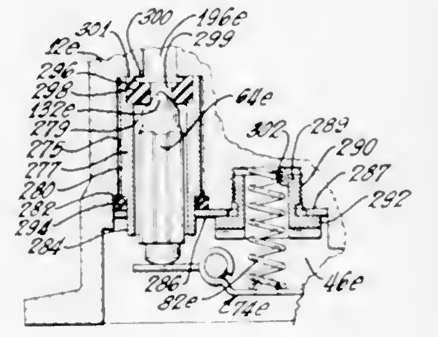
Apparatus for mixing and delivering this charge of urethane foam to the mold typically includes a mixing head to simultaneously deliver the two liquids A and B to the mixing chamber to be mixed and discharged into a mold. By simultaneously adding the color pigmented liquid C to this chamber through a supply conduit and the mixing head, a uniformly colored charge can be obtained. To change colors, only the supply conduit for liquid C is detached, the head flushed out and a second supply conduit C is attached to the head.



3,791,632
CHARGE FORMING APPARATUS

Daniel L. Donovan, Toledo, Ohio, assignor to Borg-Warner Corporation, Chicago, Ill.
Division of Ser. No. 79,855, Oct. 12, 1970, abandoned. This application Apr. 12, 1973, Ser. No. 350,370
Int. Cl. F02m *17/04*

U.S. Cl. 261—35 **8 Claims**



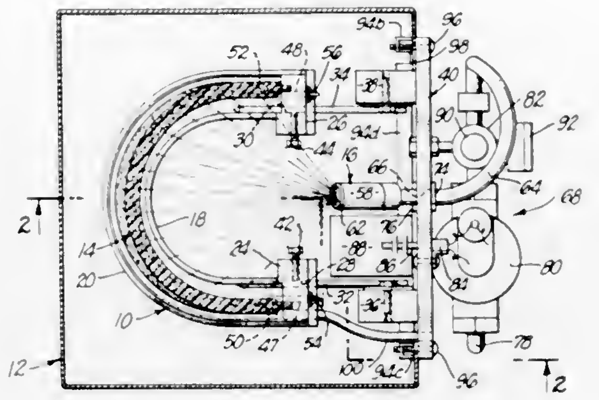
The disclosure embraces a charge forming apparatus or carburetor having a body embodying a guide and valve seat construction for a fuel inlet valve, the valve guide being disposed to seal off porosity adjacent the inlet valve region of the body of the charge forming apparatus or carburetor to prevent seepage or leakage of liquid fuel through a porous region that may exist or be uncovered by processing operations on the carburetor body.

3,791,633
HUMIDIFIER

Ronald C. Lowe, 23203 Via Calisero, Valencia, Calif.
Filed Nov. 24, 1971, Ser. No. 201,938
Int. Cl. B01f *3/04*

U.S. Cl. 261—101 **5 Claims**

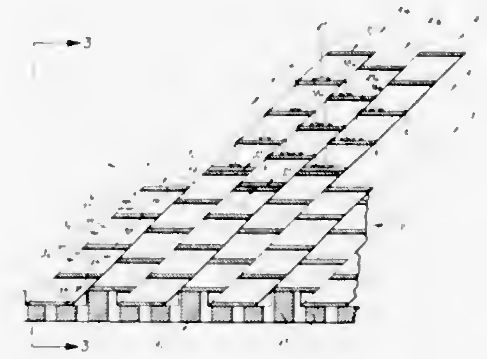
A humidifier for mounting in the plenum of a forced air heater and/or conditioner comprising an elongated U-shaped pan horizontally mounted in the plenum with an upwardly and slightly inwardly inclined U-shaped filter member supported therein. A spray nozzle for generating a wide-angle, flat spray is supported in the plenum opposite the filter member to direct a liquid spray across the plenum and onto the filter member transverse to air flowing upwardly in the plenum. The spray is designed to have a velocity and density relative to the upwardly flowing air sufficient to redirect the air into and through the filter member.



3,791,634
CROSS FLOW TOWER FILL OF CELLULAR CONSTRUCTION

Peter M. Phelps, 15 Buckeye Way, Kentfield, Calif.
Continuation-in-part of Ser. No. 13,875, Feb. 25, 1970, abandoned. This application Apr. 29, 1970, Ser. No. 32,995
Int. Cl. B01f *3/04*

U.S. Cl. 261—111 **1 Claim**



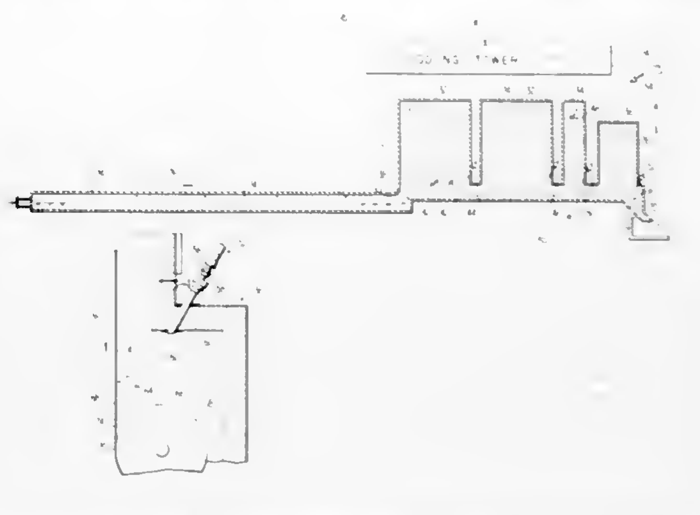
A crossflow tower (e.g., for water cooling) which incorporates packing formed by a number of superposed adjacent cellular units. The principal planes of each unit are generally parallel and inclined at a substantial angle, such as 5° to 70° to the horizontal. Each unit includes a gridwork of horizontally open stacked cells forming substantially horizontal liquid splash plates. The above inclined units are stacked against each other substantially throughout the fill assembly. Each plate is vertically offset from proximal plates so that the open edges of an upper plate overhang intermediate portions of lower plates. Liquid gravitating onto the lower plates forms a film which is contacted by crossflowing air for efficient air-liquid contact.

3,791,635
DETECTION OF RADIANT ENERGY EMITTING FROM A MOVING WEB OF METAL

Crayton H. Schwestka, Michigan City, Ind., assignor to National Steel Corporation, Pittsburgh, Pa.
Filed May 22, 1972, Ser. No. 255,265
Int. Cl. C21d *9/56;* **G01j** *5/00*

U.S. Cl. 266—3 R **11 Claims**

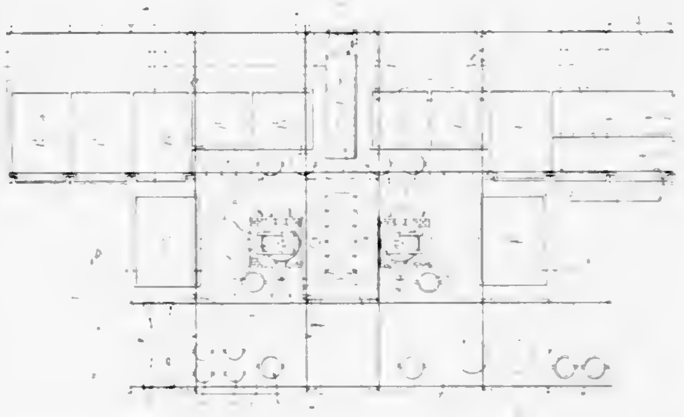
A metal web treating line includes rolls defining a travel path and a radiation pyrometer aimed at the travel path and into the wedge shaped space formed by the relationship of a roll and the travel path. Such aiming eliminates errors produced by changes in emissivity and extraneous radiation thereby providing reliable temperature measurements suitable for process control.



3,791,636
STEEL MILL MELT SHOP ARRANGEMENT

Charles H. Anderson, McMurray, Pa., assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa.
Filed Nov. 15, 1971, Ser. No. 198,573
Int. Cl. C21c *5/52*

U.S. Cl. 266—13 **7 Claims**



The duty cycle of electric furnaces is improved by locating each furnace in an individual bay. Each furnace bay has an overhead crane which runs on tracks that are parallel with the tracks of a similar crane in a juxtaposed bay. The corresponding ends of each set of tracks extend respectively across scrap and service bays the latter two of which are at right angles to the furnace bays. The service bay also serves as a melt transfer bay. The arrangement is such that each individual furnace bay crane can service its own furnace in respect to scrap input and melt output and other services without interference by the other. The duty cycle of each furnace is thereby maximized because none of the services required by one furnace is ever delayed by reason of waiting for a crane that is servicing the other furnace.

3,791,637
INGOT MAKING EQUIPMENT FOR STEEL MAKING WORKS

Kazuo Saigo, Wakayama City, and Kazumasa Nakamura, Kitakyushu City, both of Japan, assignors to Sumitomo Metal Industries Limited, Osaka City, Japan
Filed Mar. 23, 1972, Ser. No. 237,412
Claims priority, application Japan, Dec. 23, 1971, 46-2504; Mar. 24, 1971, 46-21097
Int. Cl. C21c *5/00*

U.S. Cl. 266—13 **4 Claims**

This disclosure relates to an ingot making apparatus for steel making works wherein the size of the steel making works

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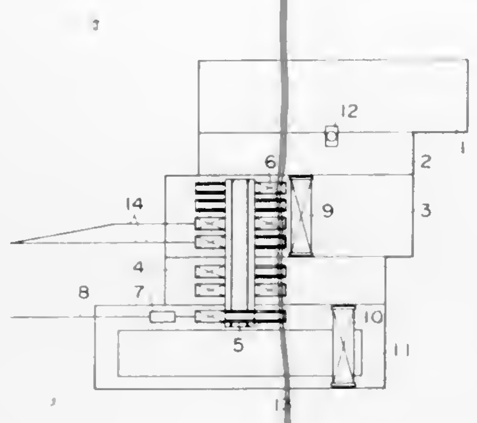
is made small, idle working spaces are eliminated, carriages

3,791,639
SPRING-ACTUATED MECHANISM

3,791,641
ELECTRICALLY CONTROLLED CLOTH SPREADING

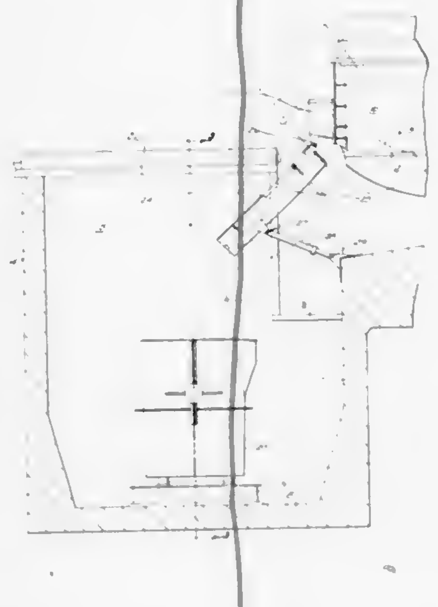
covered state. Side lays in covered state are provided on the table along with a sheet displacing mechanism for releasing is made small, idle working spaces are eliminated, carriages can be moved at a high efficiency, the positions of rails for running the carriage and rails of a traverser can be quickly and accurately adjusted and a high efficiency operation can be attained.



3,791,638

METAL POURING ORGANIZATION

John T. Evans, Jr., Los Angeles, Calif., assignor to Armco Steel Corporation, Middletown, Ohio
Filed Nov. 8, 1972, Ser. No. 304,857
Int. Cl. C21b *7/14*
U.S. Cl. 266—38 **3 Claims**

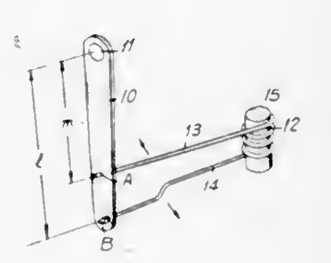


The application discloses a metal pouring organization which makes it possible to pour a melt while evacuating the attendant fumes for air pollution treatment. It comprises a pit below floor level adapted to accommodate a pouring ladle below floor level. A furnace is mounted for rocking movement above floor level and it is provided with a short pouring spout to which a launder is articulated, the other end of the launder being articulated to a support arm, wherein the parameters are such that, during tilting movement of the furnace during a pour, the discharge end of the launder will always be positioned to discharge the molten metal near the center of the ladle. The pit is provided with a powered removable cover which may be retracted to permit insertion of the ladle and then moved back into position. The launder enters the pit through a notch in a wall of the pit and the pit is provided with a duct through which effluent may be evacuated for air pollution control treatment.

3,791,639

SPRING-ACTUATED MECHANISM

Katsuhiko Nomura, Kawagoe, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 107,886, Jan. 20, 1971, Pat. No. 3,680,458. This application Mar. 22, 1972, Ser. No. 236,865
Claims priority, application Japan, Jan. 26, 1970, 45-6265
Int. Cl. F16f *1/06*
U.S. Cl. 267—155 **5 Claims**

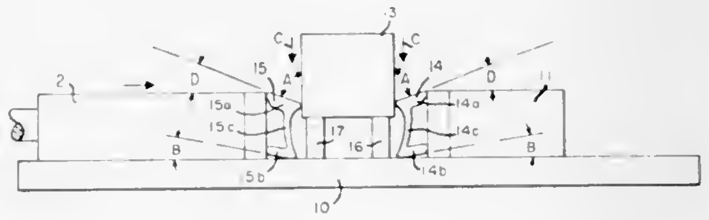


A spring-actuated mechanism particularly adapted for use in a single-lens reflex camera for actuating a tiltable reflector and diaphragm lever thereof. The mechanism includes a lever assembly supported for swinging movement about a given axis in a plane normal to the latter axis. A single spring, such as a coil spring, has a pair of elongated springy portions, which may form elongated free end portions of the coil spring respectively acting on the lever assembly to urge the latter in opposite directions about the above axis. One of the springy portions of the single spring is situated at a greater distance from the axis than the other, so that the lever assembly will be urged to turn about the axis by that one of the springy portions which is at the greater distance from said axis and with a moment the magnitude of which is determined by the difference in the distances between said springy portions from the axis about which the lever assembly turns.

3,791,640

COMPRESSION HOLD-DOWN ELEMENTS

Robert G. Clugage, 6718 Oak Ave., Felton, Calif.
Filed July 21, 1972, Ser. No. 273,971
Int. Cl. B23q *3/02;* **B25b** *1/24, 5/16*
U.S. Cl. 269—136 **1 Claim**

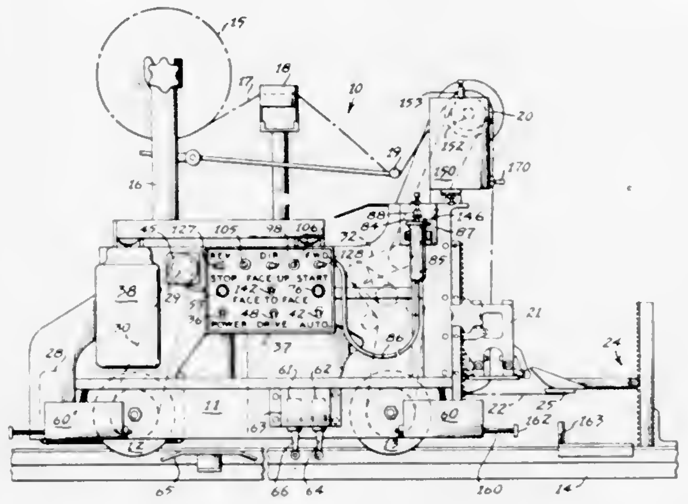


Workpiece hold-down elements for holding the workpiece between the jaws of a machine vice in such a way that the bottom of the workpiece is firmly pressed against the top of the parallel elements. For this purpose the hold-down elements are of channel shape with the top and bottom portions thereof downwardly sloping. The web connecting these portions is slightly curved so that when the workpiece is clamped between the top portions of opposing hold-down elements and pressure is applied by the vice, the webs of the hold-down elements flex slightly and sufficiently to press the bottom surface of the workpiece firmly against the parallel supports positioned beneath the workpiece.

3,791,641

ELECTRICALLY CONTROLLED CLOTH SPREADING MACHINE

Robert W. Benson; James Ronald Chapman; Robert G. Reed, and Hoyt L. Smith, all of Nashville, Tenn., assignors to Cutters Machine Company, Inc., Nashville, Tenn.
Division of Ser. No. 857,509, Sept. 12, 1969, Pat. No. 3,663,006. This application Feb. 25, 1972, Ser. No. 229,604
Int. Cl. B65h *29/46*
U.S. Cl. 270—31 **5 Claims**



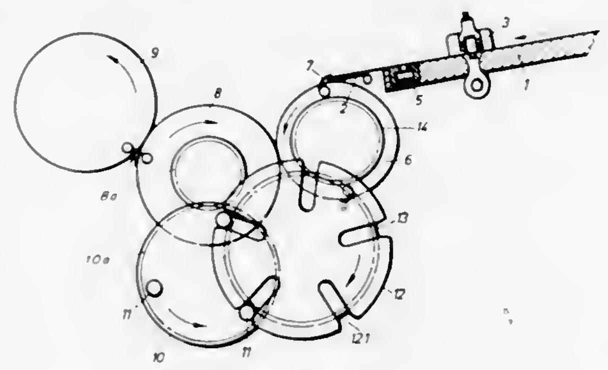
An electrically driven and controlled cloth spreading machine including means for reversing the travel of the machine, means for controlling the high and low speeds of the machine, means for causing the machine to fail safe at low speed upon power failure and open circuit conditions caused by different changes in function of the machine.

The machine is also provided with various selective controls for manual, semi-automatic and automatic operation of the machine, and for spreading cloth face-to-face, face-up or face-down.

3,791,642

SHEET FEEDER FOR PRINTING PRESSES

Hans-Bernhard Bolza Schunemann, Wurzburg, Germany, assignor to Schnellpressenfabrik Koenig & Bauer Aktiengesellschaft, Wurzburg, Germany
Filed Dec. 22, 1971, Ser. No. 210,897
Claims priority, application Germany, Dec. 24, 1970, 2063818
Int. Cl. B65h *5/12*
U.S. Cl. 271—236 **4 Claims**

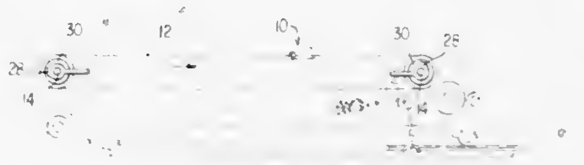


The invention relates to a sheet feeding mechanism for printing presses with rotating pregripper. The mechanism provides considerably higher machine speeds. A rotating pregripper is driven by a Maltese cross transmission such that there is a relatively short resting time on a relatively long acceleration angle. The rotating pregripper is equipped with grippers which withdraw under its surface. The pregripper is located under a sheet feeding table having front-lays which come from below a throw on aligning or pre-aligning device in covered state. Side lays in covered state are provided on the table along with a sheet displacing mechanism for releasing the side lays. By the arrangement of this mechanism the acceleration and braking times are increased by the square, i.e., quadruple to approximately 200° in order to achieve the desired motion features yet not result in higher forces of acceleration. For the shifting way of the sheets yet not result in higher forces of acceleration. For the shifting way of the sheets the rotating pregripper has means for laterally shifting the same after throwon and until sheet transfer. This last mentioned shifting means has means responsive to the side lays being used so that when lateral alignment of the sheet is not attained before leaving the front lays it is reached before sheet transfer from the rotating pregripper.

3,791,643

CHAIN DELIVERY PAPER FEEDING DEVICE

Haruhiro Ito, Iwatsuki, Japan, assignor to Fuji Shashin Koki Kabushiki Kaisha, Saitama, Japan
Filed Dec. 2, 1971, Ser. No. 204,080
Claims priority, application Japan, Dec. 12, 1970, 45/123591
Int. Cl. B65h *29/04*
U.S. Cl. 271—204 **laims**

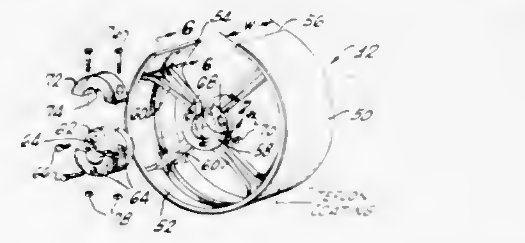


Gripper bar stabilizing means in a paper feeding device for use in an electrophotographic copying machine or the like where the feeding device includes a pair of endless belts or chains in parallel, spaced-apart relationship, at least one gripper bar connected between the belts, at least one gripper arm pivotally mounted on the gripper bar, means for normally biasing the gripper arm against the gripper bar, a pair of shafts including means disposed at the ends of each shaft for supporting the endless belts, means for rotating the shafts in a predetermined direction to impart movement to the belts; cam means disposed on at least one of the shafts for co-acting with the pivotally mounted gripper arm to withdraw the gripper arm from the gripper bar to thereby facilitate the transfer of paper from or to the feeding device and where the stabilizing means is attached to the one shaft and attracts the gripper bar to the stabilizing means while the cam means co-acts with the gripper arm to thereby prevent deflection of the gripper bar and thus maintain the gripper bar in a fixed position.

3,791,644

SHEET HANDLING APPARATUS

Howard W. DeMoore, 3725 Bentley Ave., Los Angeles, Calif.
Continuation-in-part of Ser. No. 141,681, May 10, 1971, abandoned. This application Dec. 14, 1972, Ser. No. 315,125
Int. Cl. B65h *29/20*
U.S. Cl. 271—80 **7 Claims**

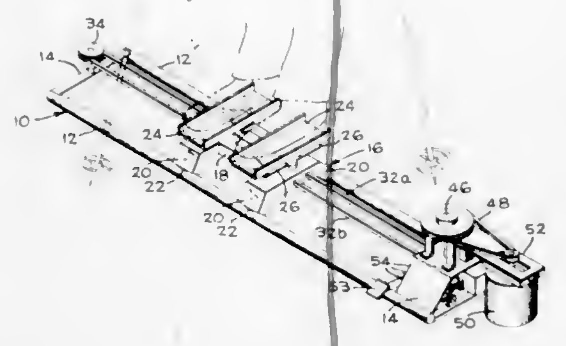


A skeleton wheel for a printing press has an ink-repellent, circumferential surface formed of polytetrafluoroethylene, the surface having substantial width in the direction of the wheel axis.

until one player has moved all his pieces into his objective states which selectively energize the lamps through output cir-

3,791,645
SKI-SIMULATOR TRAINING APPARATUS

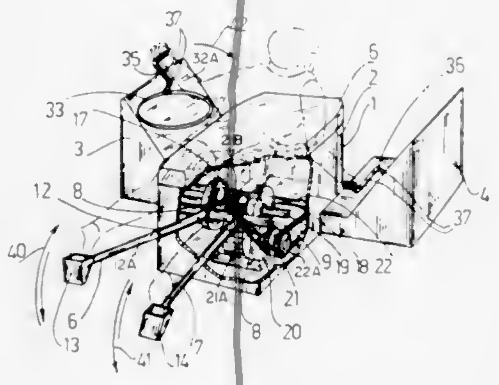
Nick L. Stelma, Rt. 1, Ione, Calif.
Filed Sept. 28, 1972, Ser. No. 292,919
Int. Cl. A63b *69/18*
U.S. Cl. 272—57 B **5 Claims**



Ski-simulator training apparatus including a track supporting a carriage for to and fro powered motion resultant from frictional contact with one or the other of oppositely moving flights of a continuously moving power driven endless belt which contact is automatically established by turning or canting motion of a pair of foot pads supported on the carriage and adapted to receive the feet of a ski trainee.

3,791,646
EXERCISING AND TEACHING APPARATUS FOR LIMB TRAINING AND FOR TEACHING SWIMMING

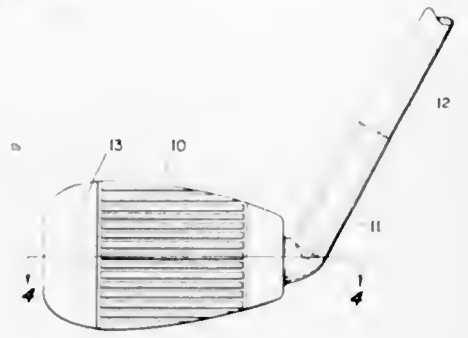
Albano Marchignoni, Mura D'Azeglio 4, Bologna, Italy
Filed Sept. 27, 1971, Ser. No. 183,806
Claims priority, application Italy, Sept. 30, 1970, 3564 A/70
Int. Cl. A63b *69/10*
U.S. Cl. 272—71 **6 Claims**

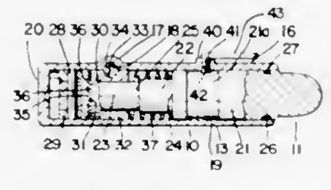


A self-training exercising device to develop the proper limb movement for swimming comprising a central box support and two triangularly shaped arm units, all of which enclose a geared wheel mechanism, chain drive and reduction gear linked by the chain drive to a horizontal bearing shaft, the user of the device placing his body on the box support and stretching his arms to the arm units. The user's legs fit into reciprocating adjustable lever-supported foot rests which are attached to a horizontal shaft. The recirpocating leg levers and leg supports move alternately along vertical planes parallel to each other to provide the proper leg movement for crawl stroke and back stroke and the hand movements are carried out by movement of the arms which grasp a handle member moving along an elliptical track or guideway. A motor serves to drive the leg and arm levers.

3,791,647
ADJUSTABLE HEAD GOLF CLUB FOR RIGHT AND LEFT HANDED PLAYERS

Joseph Verderber, 15255 Lake Shore Blvd., Cleveland, Ohio
Filed July 24, 1972, Ser. No. 274,171
Int. Cl. A63b *53/06*
U.S. Cl. 273—79 **5 Claims**

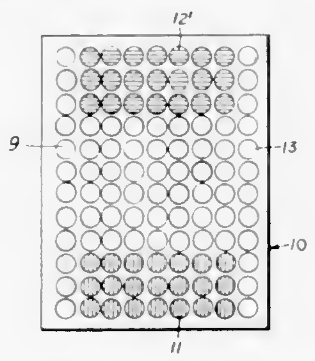




A golf club is provided having an adjustable head which may be moved to a position for use as a putter or any one of eight different irons. It may be used optionally as a right or left-handed club, has embodied therein novel means for easily and efficiently locking the club head in any of its selected positions in relation to the shaft of the club, and a novel arrangement of readily visible index marks and graduations for enabling the club head to be quickly moved to a selected position, and consists of a minimum number of parts of simple construction, which can be manufactured at low cost, and can be quickly and easily assembled without excessive use of tooling.

3,791,648
BOARD GAME APPARATUS

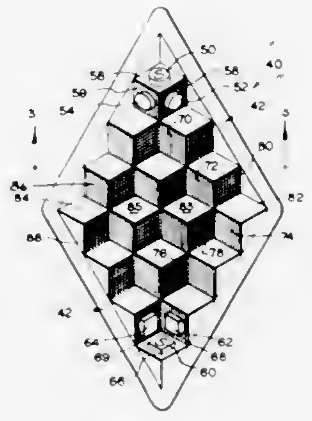
David N. Patterson, Box 306, Edinboro, Pa.
Filed Feb. 28, 1972, Ser. No. 229,830
Int. Cl. A63f *3/00*
U.S. Cl. 273—131 AB **1 Claim**



A game apparatus comprising a board with a playing surface made up of circular spaces disposed about the board in 12 ranks and 9 files. Two shaded areas at opposite ends of the playing surface are the starting and objective spaces for the opposing teams. The cylindrical playing pieces are marked by team (color) and by playing values (dots) on each end. The one end is solid color (e.g., red), the other end is the other team's color (e.g., blue), with a ring of the first team's color around the piece to indicate a captured piece. Play runs through a series of "turns" determined by the roll of two dice until one player has moved all his pieces into his objective shaded area or has filled all the spaces in his objective shaded area.

3,791,649
THREE-DIMENSIONAL BOARD GAME APPARATUS

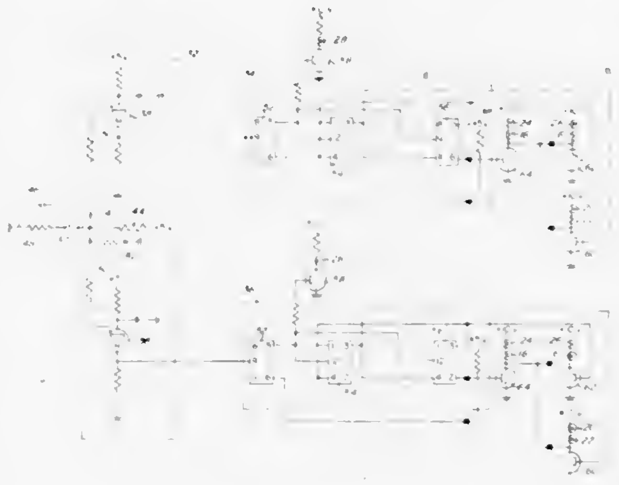
Nicholas Gold, 72 Morningside Dr., Arlington, Mass.
Filed Mar. 8, 1972, Ser. No. 232,849
Int. Cl. A63f *3/00*
U.S. Cl. 273—131 AD **23 Claims**



A game of skill including a three-dimensional playing board and opposing playing pieces adapted to be moved according to predetermined rules on said playing board to achieve a winning objective. The board is generally diamond shaped and includes three groups of square playing spaces, the playing spaces of each group having surfaces located in parallel planes perpendicular to the planes of the playing spaces of the other two groups. Each playing space is joined to at least a playing space of each of the other groups at two of its edges to form a multiplicity of cube corners. The game pieces and game board cooperate to hold the game pieces in playing spaces regardless of the orientation thereof.

3,791,650
SIMULATED DICE GAME AND CONTROL CIRCUIT THEREFOR

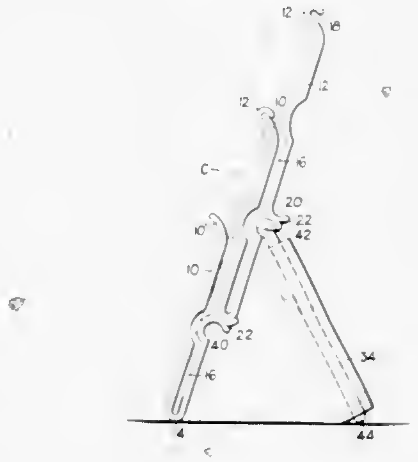
Dennis D. Dice, Yadkinville, N.C., assignor to Elecronic Data Controls Corporation, Salem, N.C.
Filed May 15, 1972, Ser. No. 253,057
Int. Cl. A63b *71/06*
U.S. Cl. 273—138 A **2 Claims**



A simulated dice game including a playing board on which is presented a display including lamps arranged in a pattern corresponding to the spot patterns on two dice. A manually operated switch button is provided to activate and deactivate pulse generating devices for each lamp arrangement, and the generated pulses are fed to counter circuits that are switched through a predetermined recurring sequence of operating states which selectively energize the lamps through output circuitry to show combinations of one to six lamps on each die. The pulse generating device produces triggering pulses at a relatively low frequency and at a constant repetition rate during activation thereof by the switch button and produces such pulses at a descending repetition rate upon deactivation thereof by the switch button whereby the lamps flash visibly during activation and continue to flash at a descending repetition rate upon deactivation until a final operating state is displayed upon cessation of pulse generation.

3,791,651
CARD HOLDER

Donald W. Barnum, 1090 N.W. Chestnut St., Salem, and Richard L. Barnum, 9545 S.W. 62nd Dr., Portland, Oreg.
Filed July 13, 1972, Ser. No. 271,383
Int. Cl. A63f *1/10*
U.S. Cl. 273—150 **11 Claims**



A holder for displaying playing cards, greeting cards and the like includes interconnected front and back curved plates spaced apart to provide a curved card-retaining slot which functions to bend the cards sufficiently to retain them in the slot by frictional engagement with the plates. The front plate is shorter than the back plate to allow the cards to extend upwardly beyond the front plate for viewing. The holder is provided with spaced sockets on its rearward side for interconnection of a plurality of holders to provide a composite assembly. The holder is supported by a support which, in one embodiment, is a brace extending rearwardly of the holder and, in a second embodiment, is a base mounting the holder for pivotal adjustment between upright and collapsed positions

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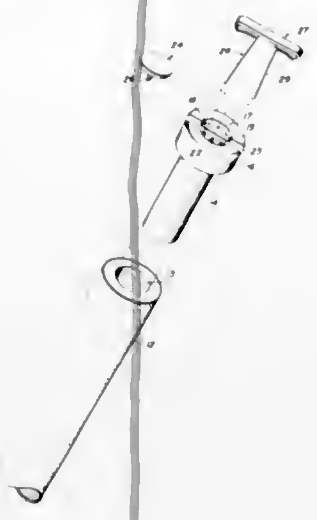
3,791,652
DIMPLE MARK REPAIR DEVICE AND BALL MARKER COMBINATION WITH GOLF CLUB

Gerald J. Schuler, 3233 Freemansburg Ave., Easton, Pa.
Filed Mar. 27, 1973, Ser. No. 345,448
Int. Cl. A63b *53/00*
U.S. Cl. 273—162 D **2 Claims**

A ball marker and a dimple mark repair device for repairing damage done to the turf by a golf ball are held in the handle of a golf club such as a putter. The combination includes an integrally formed cylindrical closure plug which adheredly engages within the wall of a bore in the golf club handle. The plug has a flanged collar at one end thereof and includes a central axial bore at the flanged end for receiving a central depending stem of a golf ball marker. The plug also has a pair of longitudinally oriented bores extending therethrough from the flanged end, in such a manner that the longitudinal oriented bores are spaced with respect to the central axial bore so that the central axial bore is oriented midway between the longitudinal bores, the axes thereof all lying in the same plane. The plug has a central axial recess at the end for receiving a golf ball marker or a coin therewithin. The plug has a groove at the end which extends across the diameter of the plug along a line intersecting the axes of the longitudinally oriented bores. The dimple mark repair device includes an integrally formed member having a pair of spring biased tongs which are adapted to frictionally engage within the longitudinal oriented bores. Portions are bent outwardly so as to seat in the plug groove and protrude a small distance beyond the flange collar so as to facilitate manual manipulation thereof. The member is bent around at 180° angles to form a horizontal bar parallel to the portions.



3,791,653

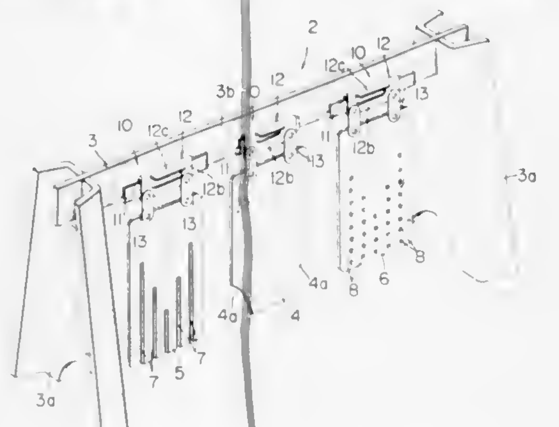
TRAINING DEVICE FOR GOLF BALL PUTTING

Nobuo Yamada, 1-13, 1-chome, Imagawa, Suginami-ku, Tokyo-to, Japan

Filed July 26, 1972, Ser. No. 275,779

Int. Cl. A63b *69/36*

U.S. Cl. 273—185 R **10 Claims**



A training device for golf ball putting, comprising a support frame having a horizontal beam, a central target suspended from the beam, and side targets also suspended from the beam at both sides of the central target, to produce a sound when hit by a golf ball. These targets have different acoustic characteristics so that when hit they make different sounds which serve to judge the course of the ball without looking at the ball. The device includes means for suspending the targets, including a bracket and at least two fittings for the targets. The device may have secondary or convenience features incorporated therein.

3,791,654

METHOD OF DEVELOPING A PROPER GOLF CLUB SWING

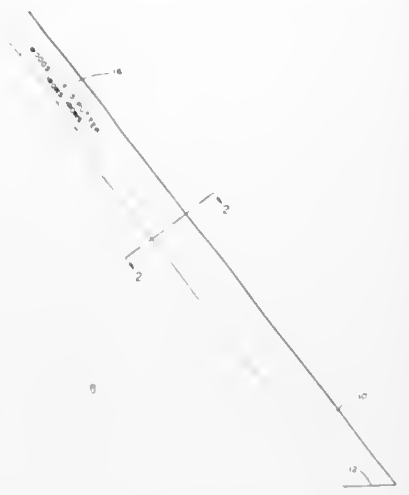
Geno Lupinacci, 280 W. Hill Rd., Stamford, Conn.

Filed Oct. 24, 1972, Ser. No. 299,793

Int. Cl. A63b *69/36*

U.S. Cl. 273—186 A **1 Claim**

In accordance with the golf swing training method disclosed a person learns the proper way to swing a conventional golf club by practicing swinging a special practice club which is of approximately the same length as a conventional club, but substantially lighter and is flexible throughout in one direction normal to its length and substantially rigid in a direction at right angles to said one direction. The club is swung in a manner such that the club will flex in the direction of the swing path if the swing is executed with the exertion of undue swing force, otherwise the club will not flex.



3,791,655

SOLID RUBBER GOLF BALL

George C. Schweiker, Parkersburg, W. Va., and John W. Jepson, Marion, Mass., assignors to Acushnet Company, New Bedford, Mass.

Filed Dec. 1, 1971, Ser. No. 203,856

Int. Cl. A63b *37/00;* **C08c** *11/06;* **C08d** *11/00*

U.S. Cl. 273—218 **7 Claims**

A solid rubber golf ball is disclosed. The golf ball is made from a composition comprising polybutadiene and an unsaturated carboxamide cross-linking said polybutadiene with hydrogen bonding.

3,791,656

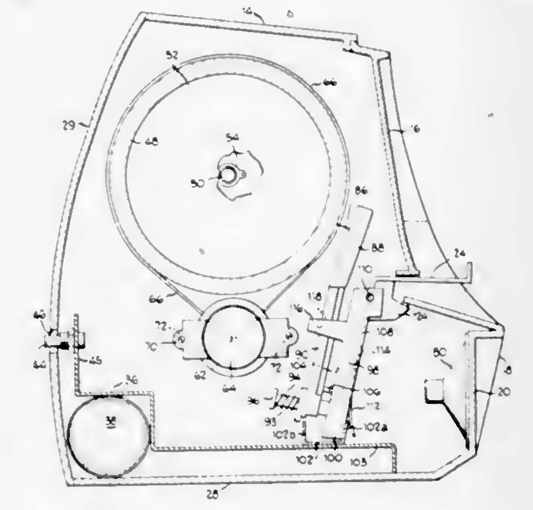
PHONOGRAPH INDEX MEANS

Gunars Licitis, Lombard, Ill., and Gerald M. Rodmaker, Cincinnati, Ohio, assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Sept. 21, 1972, Ser. No. 290,971

Int. Cl. G11b *17/06*

U.S. Cl. 274—17 **14 Claims**



Apparatus for indexing a stylus relative to any of a plurality of recording bands on a record. The apparatus includes an elongated tone arm mounting a stylus and which is received in a bridge on an indexing arm movably mounted for indexing relative to a record. The tone arm is connected to the indexing

arm by means of a connection which permits pivotal movement of the tone arm relative to the indexing arm. The indexing arm itself is pivotally movable about an axis perpendicular to the tone arm pivot axis for moving the stylus away from the record. The tone arm is thus moved away from the record and to a predetermined position on the indexing arm which then may be moved to a desired band on the record.

3,791,657

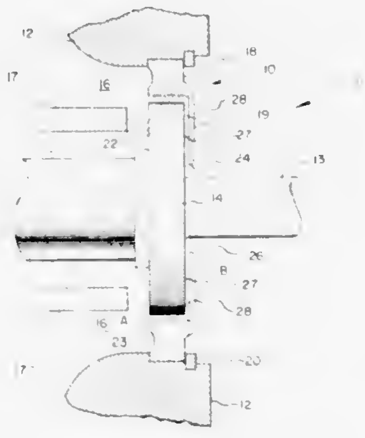
DYNAMIC LIP SEAL

Richard E. Bilski, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed Apr. 27, 1972, Ser. No. 248,152

Int. Cl. F16j *15/42, 15/44*

U.S. Cl. 277—53 **4 Claims**



An annular L-shaped seal member spacially surrounding a rotatable shaft collar, the seal having an axial portion contiguous with the shaft collar periphery to form an axial labyrinth for fluid flow from a higher pressure side to a lower pressure side of the collar, and an integral radial portion axially displaced on the low pressure side of the collar to form a radially inward extension of the fluid flow channel to impede the fluid flow therethrough by the centrifuge of fluid undergoing viscous shear during rotation of the collar.

3,791,658

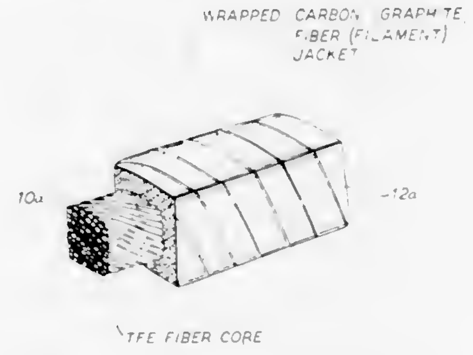
PACKINGS FOR PUMPS, VALVES, AND THE LIKE

Julio Zumeta, New York, N.Y., and Edward M. Case, Weston, Conn., assignors to The Marlo Company, Inc., New York, N.Y.

Continuation of Ser. No. 688,806, Dec. 7, 1967, abandoned. This application May 7, 1971, Ser. No. 141,448

Int. Cl. F16j *15/10*

U.S. Cl. 277—230 **7 Claims**



A packing for fluid-tightly sealing movable elements of pumps, valves, and the like. The packing comprises an inner Teflon-(a trade mark hereinafter referred to as TFE) containing core and an outer carbon-containing jacket surrounding the core. This core may be made of TFE fiber or of a TFE-impregnated packing material such as asbestos or fiberglass, while the outer jacket can be composed of graphite filament either wrapped or braided around the core.

3,791,659

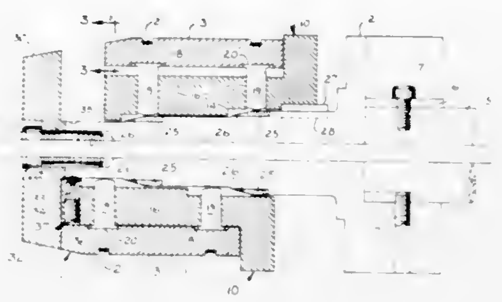
EXPANDABLE CHUCK OR MANDREL

William Medford Hardin, Clyde, N.C., assignor to Champion International Corporation, Hamilton, Ohio

Filed Nov. 17, 1972, Ser. No. 307,659

Int. Cl. B23b *31/42*

U.S. Cl. 279—2 **6 Claims**



An expandable chuck or mandrel is especially well suited for use in winding and machines of the sort used in paper manufacturing operations has a stepped spindle located within the borehole of the mandrel body which spindle provides tapered cam surfaces which cause the mandrel jaws to expand and contract responsive to reciprocal movement of the body of the mandrel on the spindle or vice versa.

3,791,660

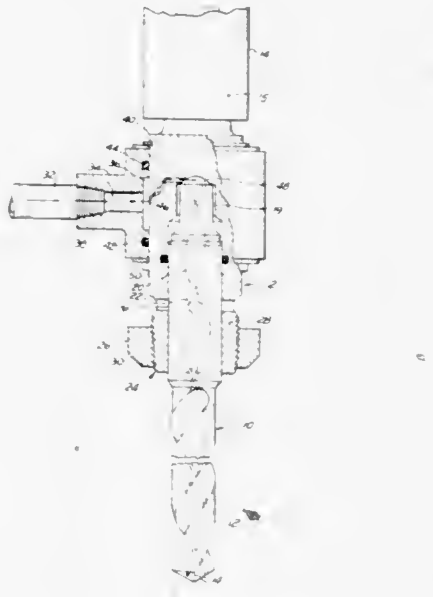
DEVICE FOR GRIPPING, DRIVING AND SUPPLYING COOLANT TO A CUTTING TOOL HAVING COOLANT PASSAGES THEREIN

Robert J. Bostley, Turners Falls, Mass., assignor to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 137,901, April 27, 1971, abandoned. This application Jan. 9, 1973, Ser. No. 322,272

Int. Cl. B23b *31/00, 51/06*

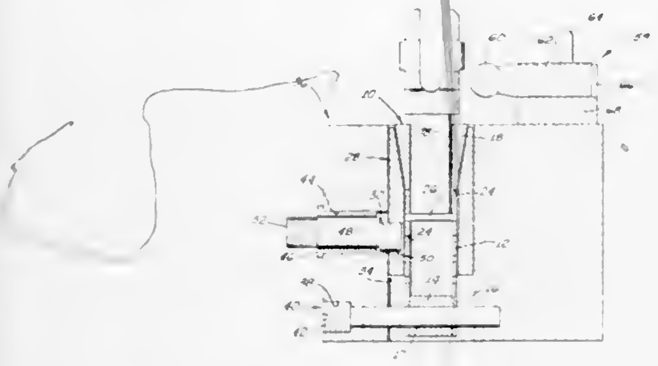
U.S. Cl. 279—20 **2 Claims**



An oil conduit twist drill series and method of making are disclosed which have a common straight shank in each series and a tang drive so as to minimize machining costs, sealing problems, and eliminate the use of adapters involved with taper shank oil conduit drills and such drills which have varying diameter straight shanks.

3,791,661
COLLET AND COLLET FIXTURE

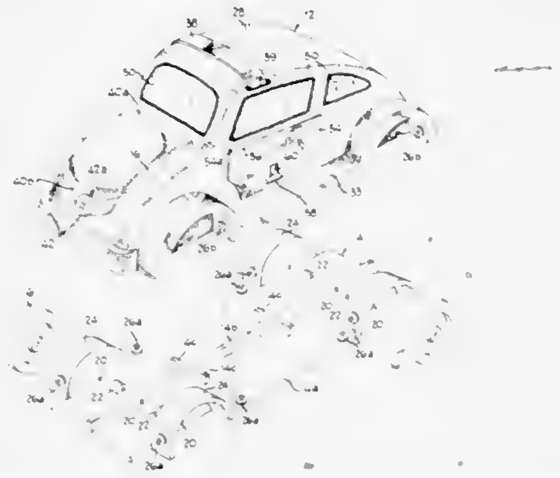
Charles E. Giles, 3654 Overland, Los Angeles, Calif.
Division of Ser. No. 168,106, Aug. 2, 1971, Pat. No. 3,751,027. This application Apr. 18, 1973, Ser. No. 352,100
Int. Cl. B23b *31/20*
U.S. Cl. 279—43 **2 Claims**



An improved collet and collet fixture provides an adjustable height for a work piece held in the collet so that the work piece may be held at the proper height. The collet is locked in position from the bottom by the fixture, thereby providing a secure location and holding of the collet and accurate machining of the work piece.

3,791,662
TOY VEHICLE WITH REMOVABLE SOFT BODY PORTION

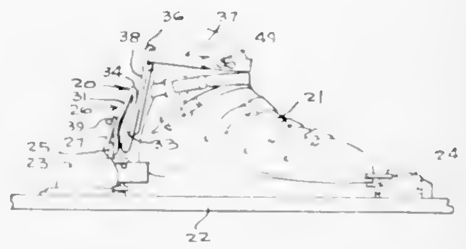
Marvin I. Glass, Chicago; Howard J. Morrison, Highland Park, and Bette M. Kaelin, Chicago, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Feb. 22, 1972, Ser. No. 227,816
Int. Cl. B62d *11/00*
U.S. Cl. 280—1.1 **25 Claims**



A toy vehicle which includes a body portion of soft cushion-type material shaped in the form of an automobile and on which a child may sit. The body portion is supported on a rigid base portion which has a plurality of wheels rotatably mounted thereon to permit the vehicle to be ridden by a child over a supporting surface such as a floor. The soft body portion is removably mounted by snap means on the rigid base portion to permit the body portion to be separated from the base portion and used by the child for a pillow or the like. The body portion has front and rear flexible flaps which are hingedly fixed to the body portion along one edge thereof to simulate front and rear hood or trunk lids. Side flaps are provided simulating doors. Pockets are provided beneath some of the flaps and the flaps are held down by buttons, buckles or the like. A spare wheel is disposed beneath one of the front or rear flaps to simulate a spare tire for the automobile and a simulated automobile motor is imprinted on the body portion beneath the other flap.

3,791,663
SAFETY STRAP RETAINER

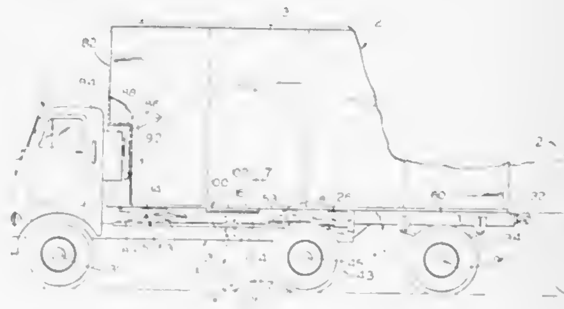
Ivor J. Allsop; Jon I. Allsop; Michael G. Allsop, and James D. Allsop, all of P.O. Box 23, Bellingham, Wash.
Continuation-in-part of Ser. No. 191,313, Oct. 21, 1971. This application Sept. 22, 1972, Ser. No. 291,176
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 N **7 Claims**



A safety strap retainer for ski boots that includes a member that is connected to a heel clamp whereby a ski boot will remain safely and conveniently connected to the ski.

3,791,664
SELF-LEVELER

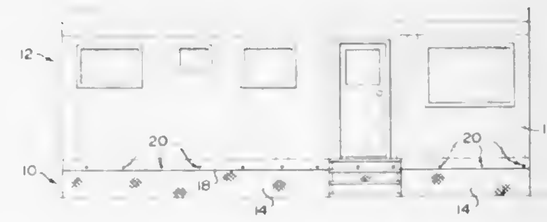
Kenneth W. Self; Norman B. Chew, both of Lake Oswego, Oreg., and Bill I. Twyman, Vancouver, Wash., assignors to Freightliner Corporation, Portland, Oreg.
Division of Ser. No. 067,398, Aug. 27, 1970, Pat. No. 3,718,346. This application Dec. 11, 1972, Ser. No. 314,224
Int. Cl. B60g *17/04*; **B62d** *53/06*
U.S. Cl. 280—124 F **6 Claims**



A vehicular assembly comprising a tractor and a semitrailer so detachably coupled together that they act as a unit, wherein the assembly has three zones of support, one of which is provided by a zero rate suspension means and the other two of which are provided by variable rate suspension means, whereby to maintain reasonably constant a desired pattern of load distribution between the three zones.

3,791,665
COVER ASSEMBLY

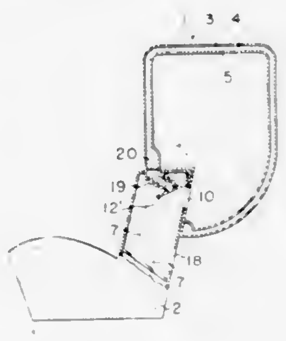
Charles R. McAvoy, 1002 E. Platt, Tampa, Fla.
Filed May 5, 1972, Ser. No. 250,605
Int. Cl. B60r *27/00*
U.S. Cl. 280—150 R **7 Claims**



A cover assembly of the type designed for use in combination with house trailers, mobile homes or like structures comprising one or more skirt-like structures attached about the lower, outer peripheral portion of a house trailer and dimensioned to extend from this portion, vertically downward to approximately the supporting surface on which the mobile home is positioned. The skirt structure is made from a flexible, open meshed material capable of allowing air to pass therethrough and be rolled upon itself when removed from the mobile home. Connecting means are provided in the form of brackets arranged in spaced relation to one another and connected to the mobile home so as to position the skirt structure in abutting relation to the lower, outer peripheral portion of the mobile home. Attachment means comprising an integrally formed rib or a plurality of apertured flanges may be formed on the upper edge of the skirt structure to cooperate with connecting means so as to allow the skirt structure to be removably attached from the mobile home.

3,791,666
SAFETY DEVICE FOR VEHICLES SUCH AS AUTOMOBILES

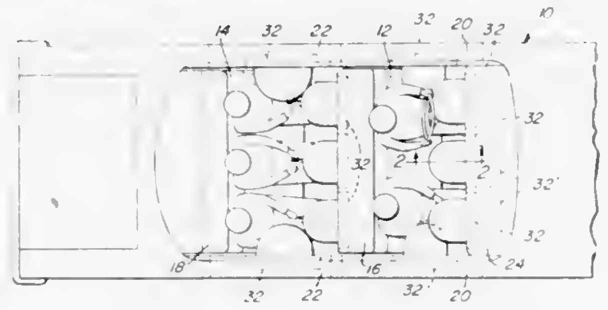
Iwao Shibamoto, No. 31-7, 2 chome Nishi Sugamo Toshimaku, Tokyo, Japan
Filed Nov. 3, 1971, Ser. No. 195,183
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **2 Claims**



A safety device for automobiles, comprises a normally folded bag, an air column structure on said bag which is inflatable to expand said bag into its original shape at the time of collision of the automobile, means for inflating said air column structure, air passage openings for introducing external air into the interior of the bag therethrough in the process of expansion of said bag by virtue of the pressure differential between the interior and exterior of said bag and means for trapping the thus introduced air within said bag, said air passage openings being formed at a portion of the bag adjacent a mounting base on which said bag is mounted and being in communication with duct means formed in said mounting base.

3,791,667
RETRACTABLE VEHICLE PASSENGER CUSHIONING SYSTEM

Harold R. Haviland, 1038 Latty, Defiance, Ohio
Filed May 4, 1972, Ser. No. 250,326
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **9 Claims**



A plurality of individually or collectively actuatable air bag restraint devices for disposition both forward of and alongside of each passenger seating area within a vehicle. Each individual device is strategically located to provide the maximum cushioning effect with a minimum of obstruction within the passenger seating area within the associated vehicle. Each air bag restraint device includes a hollow open-sided housing designed for flush or recessed mounting in an associated vehicle body portion and the open side of the housing is covered by a fluid impervious stretchable membrane whereby the discharging of a selected gas under pressure into the housing will cause the membrane to be inflated and expanded outwardly of the open side of the housing to cushion any object moving in a direction toward the housing.

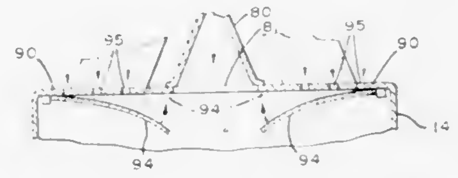
3,791,668
ROLL-OVER PROTECTION STRUCTURE WITH DEFORMABLE LEGS

Stanely B. Adams, Yorkville, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed June 14, 1972, Ser. No. 262,552
Int. Cl. B62d *25/06*
U.S. Cl. 280—150 C **5 Claims**

A roll-over protection structure having spaced upright legs including relatively rigid upper end portions, relatively rigid lower end portions secured to a vehicle frame, and central portions of reduced cross sectional areas from the end portions to absorb energy and predictably deform during a vehicle roll-over rather than having the legs fracture at their end portions to minimize the possibility of complete separation of the protection structure from the vehicle.

3,791,669
CONE ASPIRATING STRUCTURE FOR AIR CUSHION INFLATION

Brian K. Hamilton, Utica, Mich., assignor to Allied Chemical Corporation, New York, N.Y.
Filed Aug. 16, 1972, Ser. No. 281,263
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 AB **2 Claims**



A gas bag assembly for vehicle occupant constraint upon impact of the vehicle. The gas bag assembly comprises an occupant protecting inflatable bag. The bag is partially filled with gas supplied by a gas source, such as stored gas or a gas generator, or a combination of the two, through a cone. The cone supplies gas to a diffuser which is in communication with the interior of the vehicle. Upon passage of inflating gas through the cone for inflation of the outer bag, the diffuser is supplied, because of pressure differential by the action of the

the end sections of the foldable support beam to be folded in a

sisting sideward movement thereof. Said last-named means re-cone on the gas from the source, with air from the interior of the vehicle by aspiration.

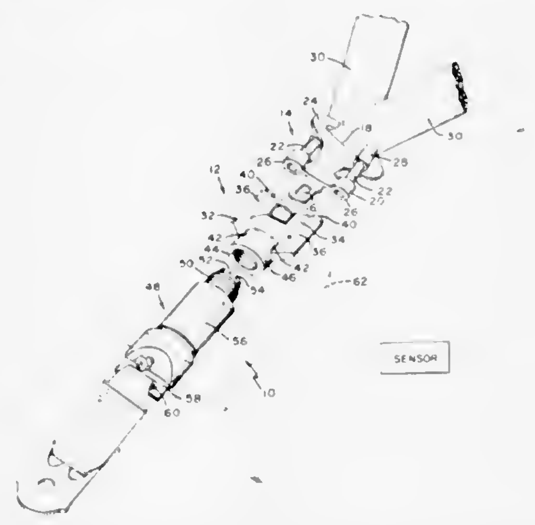
3,791,670
BAND BUCKLE FOR USE WITH INFLATABLE SEAT BELTS

Richard W. Lucore, Rochester, and Robert L. Stephenson, Sterling Heights, both of Mich., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Sept. 21, 1972, Ser. No. 291,107

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **15 Claims**



A seat belt buckle assembly is provided which comprises a tongue portion; a buckle portion adapted to lockably engage with the tongue portion; the tongue portion being connected to an inflatable seat belt; first chamber means provided in the buckle portion; second chamber means provided in the tongue portion and communicating with the inflatable seat belt; second chamber means being adapted to communicate with the first chamber means when tongue and buckle portions are lockably engaged; and inflating means communicating with the first chamber means, the inflating means including a gas source; whereby the inflating means and the inflatable seat belt are interconnected through the first and second chamber means when the tongue and buckle portions are lockably engaged so as to allow gas released from the gas source to pass through the first and second chamber means and inflate the inflatable seat belt.

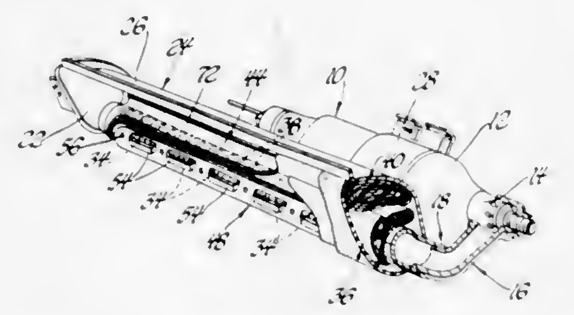
3,791,671
OCCUPANT RESTRAINT SYSTEM

John F. Zens, Algonac, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 10, 1972, Ser. No. 305,444

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **3 Claims**



An occupant restraint system includes an inflator which supplies high temperature pressure fluid to a generally elongated hollow cylindrical diffuser. The diffuser includes two axially extending diametrically opposite flats and two radially spaced rows of slots, one row being in one flat and being divided into spaced groups, and the other row being between the flats. A torso cushion surrounds the diffuser and is fed from the other row of slots. A knee cushion fits within the torso cushion and has slits located transversely of respective groups of slots. A combined seal and heat shield member has an edge portion covering the one row of slots and has a flap portion covering the other row of slots. The member has slits indexed to the cushion slits. An elongated retainer plate within the knee cushion includes louvered openings equal in number to the groups of slots. Fixed studs extend through the knee cushion, seal, and diffuser and are threaded to tapped posts which extend through openings in the other flat of the diffuser. The edge portion of the member provides a seal between the knee cushion and the diffuser when the knee cushion is inflated to prevent flow of the pressure fluid from the knee cushion to the diffuser. The flap portion of the member is moved by the pressure fluid flowing through the other row of slots into the torso cushion into engagement with the knee cushion adjacent such other row of slots to protect the knee cushion from the high temperature pressure fluid.

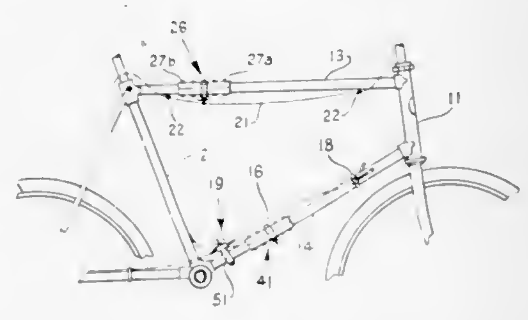
3,791,672
FOLDING BICYCLE

Warren K. Pera, Oakland, Calif., assignor to Bell Fold-A-Bike, Inc., Orinda, Calif.

Filed Nov. 10, 1972, Ser. No. 305,611

Int. Cl. B62k *3/04*

U.S. Cl. 280—287 **9 Claims**



The frame of a bicycle is provided with a hinge on the top bar and a detachable joint on the diagonal bar to permit folding to reduce space for transportation and storage. So-called "10 speed" bicycles require installation of a pair of cables controlling speed changes clamped in a position extending alongside the diagonal bar and these cables must be taut when the bicycle is operative. Hence detachment of the diagonal bar and folding is prevented so long as the cables are clamped to the bar. In accordance with the present invention, the rearmost cable clamp is detachable from the diagonal bar so that the cables can bend when bar is disjointed.

3,791,673
FOLDING MEANS FOR IMPLEMENT FRAME STRUCTURES

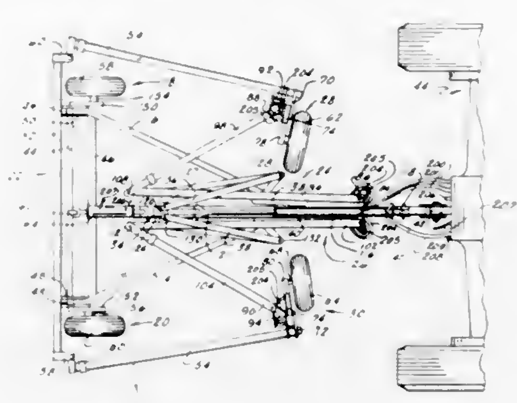
Michael C. Hornung, Spearville, Kans., assignor to American Products, Inc., Spearville, Kans.

Filed Nov. 8, 1972, Ser. No. 304,651

Int. Cl. B62d *53/00*

U.S. Cl. 280—411 A **6 Claims**

A foldable frame for agriculture implements has a frame section with a rear sectional foldable support beam transversely. The support beam is hinged to allow movement of the sections to fold in a forward position, when desired, and then unfold to an extended working position. The sections of the support beam rise and fall with variations in the surface of the ground. Wheels support the end sections of the support beam. The foldable support beam carries farm implements, such as a grain drill, and is pivotally connected at the end sections to a pair of forwardly extending converging folding link members which cooperate with the hinges of the support beam to allow the end sections of the foldable support beam to be folded in a forward direction. A double acting hydraulic cylinder is mounted on a central longitudinal tongue of the frame with the rod thereof connected to a slide in turn connected to the folding link members to extend and retract same. The folding link members provide protected passageways for wheel operating fluid conduits. The end sections of the folding support beam, and thus the implement mounted thereon are maintained in a horizontal position with the central section of the support beam in both the folded and unfolded or extended position.



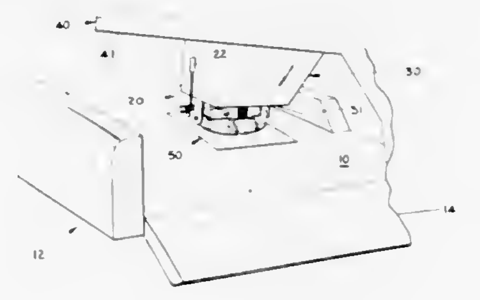
3,791,674
KINGPIN ASSEMBLY

Howard P. Berends, Fruitport, Mich., assignor to Holland Hitch Company, Holland, Mich.

Filed May 30, 1972, Ser. No. 257,576

Int. Cl. B62d *53/08*

U.S. Cl. 280—433 **19 Claims**



A kingpin assembly includes a kingpin pivotally coupled to recessed mounting means positioned with an aperture in a relatively flat surface of a vehicle. The kingpin is movable between a locked upright position during use to a horizontal stored position when not in use. A locking mechanism is also pivotally coupled to the recessed mounting means and provides the dual function of covering the recessed mounting means when the kingpin is in its stored position therein and locking the kingpin in the upright position during use. The locking mechanism includes a shoulder portion adapted to aid in lifting the kingpin from its stored position to its upright position.

3,791,675
SAFETY SKI BINDING

Johann Feichtinger, and Anton Feichtinger, both of Linz, Austria, assignors to Gertsch AG, Zug, Switzerland

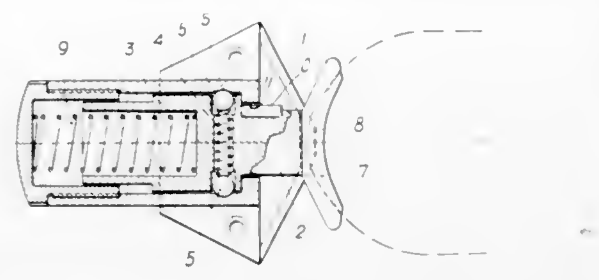
Filed June 5, 1972, Ser. No. 259,545

Claims priority, application Austria, June 29, 1971, 5606/71

Int. Cl. A63c *9/00*

U.S. Cl. 280—11.35 T **8 Claims**

Safety ski binding presents a positive abutment for the toe of the ski boot together with means for preventing upward movement of the toe of the boot and cam-like means for resisting sideward movement thereof. Said last-named means resist sideward movement of the boot by spring-backed detent means having a spring return to normal operating position when the sideward thrust is removed



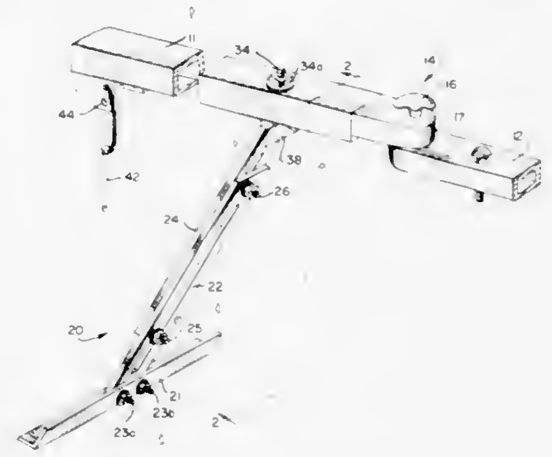
3,791,676
TRAILER ATTACHMENT

James H. Spratlen, Asheville Rd., Beloit, Kans.

Filed Aug. 25, 1972, Ser. No. 283,628

Int. Cl. B60d *1/14*

U.S. Cl. 280—475 **4 Claims**



A method and apparatus for facilitating the rapid connection and disconnection of a trailer tongue from a vehicle tongue having a connection of the type which requires separation therebetween to achieve such coupling. The apparatus comprises a base member capable of resting on a surface, such as the ground, and an adjustable, extended member secured to the base member and having a predetermined length. Means are provided for pivotally securing the base member and the extended member to the trailer tongue so that upon lateral movement of the trailer tongue and the vehicle tongue, the extended member causes the trailer tongue to uplift relative to the vehicle tongue as a result of the rotation of the adjustable member about the base member. The length of the extended member is selected to define a length sufficient to cause separation of the respective tongues. The apparatus also includes a support member for supporting the trailer tongue in a stable position after separation from the vehicle tongue. The method of connecting and disconnecting the respective tongues is also disclosed.

3,791,677
TELEPHONE BOOK HOLDER

Rollie B. Nawman, Oakland, Calif., assignor to Benner-Nawman, Inc., Walnut Creek, Calif.

Filed Sept. 18, 1972, Ser. No. 290,134

Int. Cl. B42d *17/00*

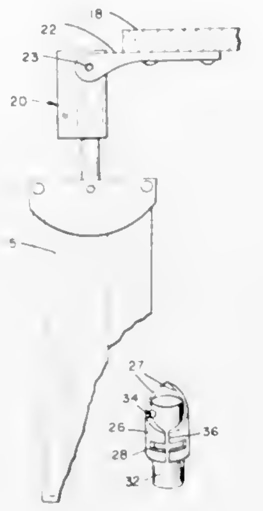
U.S. Cl. 281—46 **8 Claims**

A book container employs metal rods interleaved among the pages of a book or passed through the spine of a book to hold the book within hinged, semi-rigid covers which are spring-biased to a closed position. The container depends subjacently from a shelf and parallel to the edge of the shelf by means of a doubly-pivoting bracket. The bracket allows the

for the usual departures of pipe-ends from true circularity and

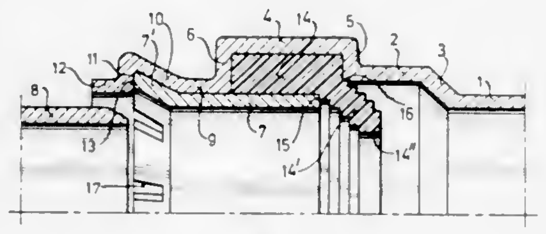
outwardly bent end portions of the tubular members to clamp

a more positive lock. Also, in some embodiments, the pin pro-container to be revolved onto the shelf and rotated to be positioned for normal viewing of the book. The pivot shaft includes a transverse radial pin riding an annular cam, the weight of the container when depending from the bracket causing the pin to traverse the cam surface and rotate the container and return it parallel to the shelf edge.



3,791,678
PIPE COUPLING

Warner Jan De Putter, Hardenberg, Netherlands, assignor to Industriele Onderneming Wavin NV, Zowolle, Netherlands
Filed Feb. 22, 1972, Ser. No. 227,825
Int. Cl. F16l *17/00*
U.S. Cl. 285—110 **3 Claims**

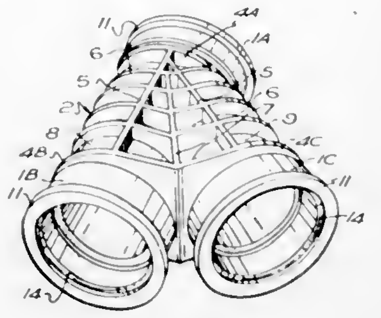


Pipe coupling comprising a pipe end inserted in a sleeve shaped coupling part, which consists of a stepped cylindrical widening of a pipe. The diameter of a first widening is larger than the outer diameter of the pipe end. The mouth of a second widening is partially narrowed and, in the second widening is situated a sealing ring of rubber, said sealing ring being provided with a lip. The sealing ring is retained by means of a thin walled retaining ring, which is preferably provided with notches for deformation.

3,791,679
PIPE FITTINGS

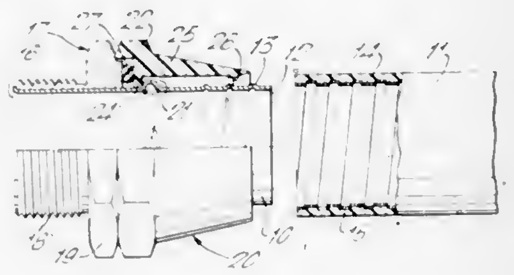
John Benjamin Glover, Stockshridge, England, assignor to The Hepworth Iron Company Limited, Sheffield, England
Filed Dec. 3, 1971, Ser. No. 204,518
Claims priority, application Great Britain, Dec. 18, 1970, 60315/70
Int. Cl. F16l *41/00*
U.S. Cl. 285—155 **10 Claims**

A pipe fitting, especially a pipe junction, is formed of resilient plastics material and has sockets integrally joined by tubular necks to a hollow body, which is stiffened by longitudinal ribs extending between collars adjacent the recks and circumferential ribs connecting the longitudinal ribs, so that the load-bearing capacity is comparable with that of pipes, especially clayware pipes, which it is used to connect, without use of excessive plastics material, and yet affording allowance for the usual departures of pipe-ends from true circularity and tolerances on nominal diameter, as well as accommodating axial and/or angular misalignment over and above any between the pipes allowed for in the design of the fitting.



3,791,680
END FITTINGS FOR FLEXIBLE METALLIC CONDUITS

Ian Martin Cleare, Wycombe, England, assignor to Smiths Industries Limited, London, England
Filed June 28, 1972, Ser. No. 266,874
Claims priority, application Great Britain, July 2, 1971, 31059/71
Int. Cl. F16l *33/22*
U.S. Cl. 285—174 **3 Claims**

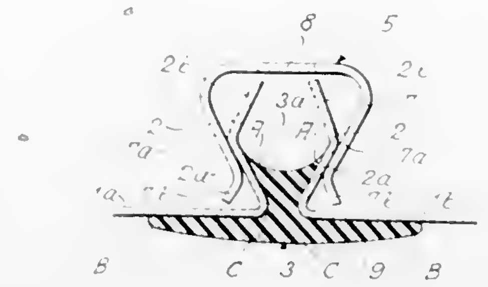


An end fitting for a flexible metallic conduit comprises a metal tube having an external thread at one end to enable the tube to be screwed into an end of the conduit, and first and second tubular members embracing the tube and disposed end to end along the tube. The tube has a plurality of projections spaced apart around the tube and disposed between the threaded end of the tube and the other end of the tube, and the second tubular member has a piurality of projections which interengage with the projections on the tube to enable the second tubular member to impart rotary movement to the tube. The second member has an inwardly directed flange which bears against the side of the projections on the tube remote from the threaded end thereof, and the first member is disposed between the flange and said other end ot the tube, which end of the tube is turned outwardly captively to mount the first and second members on the tube. The first member is rotatable about the tube and has an external thread to facilitate mounting of the end fitting on a support.

3,791,681
DEVICES FOR ESTABLISHING SEALING CONNECTION BETWEEN THE ENDS OF TUBULAR MEMBERS OF SHEET METAL

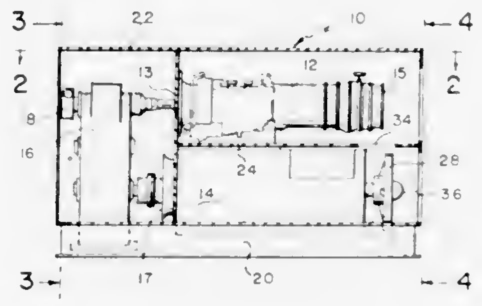
Preben Moldow, Moelledamsvej 10, Birkeroed, Denmark
Filed Feb. 15, 1972, Ser. No. 226,620
Claims priority, application Denmark, Feb. 17, 1971, 711/71; Jan. 17, 1972, 75/72
Int. Cl. F16l *21/00*
U.S. Cl. 285—233 **4 Claims**

A device for establishing sealing connection between the ends of tubular members, comprising outwardly bent end portions on the tubular members af resilient connecting strip having a substantially U-shaped cross section and forced over the outwardly bent end portions of the tubular members to clamp the latter against a sealing member arranged therebetween, the cross section of the sealing member being composed of a first portion adapted to be clamped between the outwardly bent end portions of the tubular members, a second portion constituting a flange extending into the adjoining tubular members to align the same, and a web connecting the first and second portion.



3,791,682
TURBINE DRIVEN ELECTRICAL GENERATOR

Robert W. Mitchell, Houston, Tex., assignor to Stewart & Stevenson Services, Inc., Houston, Tex.
Filed Aug. 23, 1972, Ser. No. 283,217
Int. Cl. F01d *15/10*
U.S. Cl. 290—2 **2 Claims**

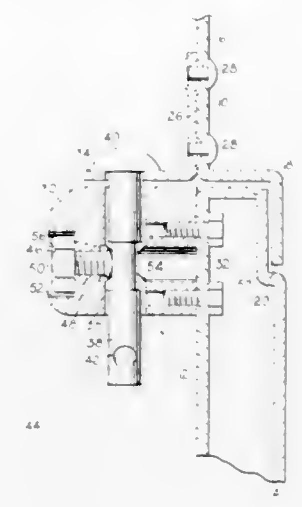


A turbine driven electrical driven generator set having one or more turbines positioned above the generator to provide a power source at locations where there is a minimum available floor space. An acoustical enclosure enclosing the turbine and generator and having air filters for filtering the generator cooling air and the intake air to the turbine. An air fan driven from the generator for cooling the generator and the oil in the turbine and the reduction gearing between the turbine and the generator through an air/oil heat exchanger. The air fan cooling the turbine after shutdown.

3,791,683
SAFETY LOCK FOR ENCLOSURES

William L. Bright, 0605 S.W. Curry St., Portland, Oreg.
Filed Feb. 29, 1972, Ser. No. 230,223
Int. Cl. E05c *1/10, 7/02*
U.S. Cl. 292—32 **2 Claims**

A safety lock for enclosures having a first lock portion attached to the first of two members to be locked together. This lock portion includes a bolt rotatable for accomplishing a locking function. The bolt has a head of non-conventional shape. A second lock portion is attached to the other of the members to be locked together and is engageable by the bolt. The first lock portion includes a protective wall peripherally surrounding the bolt head and open at its outer end. The surrounding wall defines a socket which is at least as deep as the thickness of the bolt head to prevent side engagement of the bolt head and which is of greater diameter than the bolt head to permit removal of the bolt by a special wrench inserted through the open end of the protective wall. The second lock portion in one embodiment includes a pin having a radial notch intermediate its ends engageable by the bolt to provide a more positive lock. Also, in some embodiments, the pin projects beyond the first lock portion and receives a padlock or the end of the pin may project into a socket member to conceal the end thereof. A further locking feature may employ a spring acting on one of the lock portions with a force great enough to prevent children from opening the lock even though other fastening means of the lock are released



3,791,684
ELECTRIC STARTER MOTOR

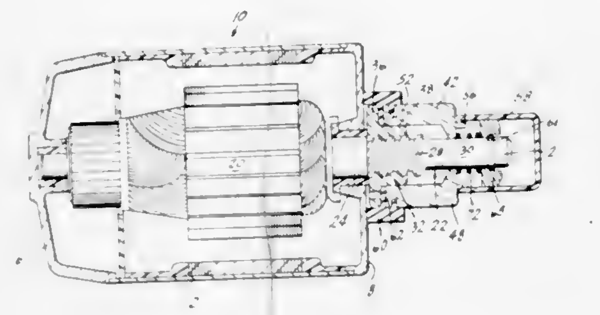
Lyle J. Hamman, Eaton Rapids, Mich., assignor to Eaton Stamping Company, Eaton Rapids, Mich.
Filed Aug. 24, 1972, Ser. No. 283,559
Int. Cl. F02n *11/14*
U.S. Cl. 290—38 **8 Claims**

An electric starter motor for starting small internal combustion engines characterized by its high torque and compact size having a housing including four sides of convex configuration facilitating the winding of four field coils formed of mechanically interconnected and nested laminations defining a stack having annular synthetic insulators at the ends wherein the field wire coils are wrapped about both the poles defined by the laminations and aligned recessed insulators. The motor brushes are mounted upon a brush card, and the armature includes an extension extending from the housing upon which Bendix type starter apparatus is mounted. Four field coils and brushes are employed, and in the DC energized embodiment, two of the field coils are mounted in parallel and connected to one brush, while the other two field coils are connected in parallel with each other, and connected to an opposing brush. The coil connected brushes are shunted to equalize the voltage at the armature commutator.

3,791,685
STARTER PINION WITH MOLDED BASE AND DRIVE

Lyle J. Hamman, Eaton Rapids, Mich., assignor to Eaton Stamping Company, Eaton Rapids, Mich.
Filed Aug. 24, 1972, Ser. No. 283,560
Int. Cl. F02n *11/00*
U.S. Cl. 290—38 **15 Claims**

A starter pinion assembly for use with electric starters for internal combustion engines wherein a starter pinion gear is axially displaced upon a drive shaft during initial rotation of the shaft to engage the pinion gear with an engine flywheel in order to crank the flywheel. The starter pinion includes a hub portion upon which the pinion gear teeth are mounted, the pinion gear teeth being capable of rotation relative to the hub portion, and resilient frictional drive means are interposed between the hub and toothed gear portion through which torsional forces are transmitted. Axial forces imposed upon the hub maintain an effective frictional drive connection with the toothed gear portion, and impact and shock forces are absorbed. A stop mounted upon the drive shaft limits axial movement of the starter pinion assembly, and a compression spring maintains the starter assembly in the "retracted" position when the drive shaft is not being rotated. The resilient drive means prevents binding of the pinion assembly with the stop. A resilient bumper mounted upon the starter assembly, formed of the friction material, absorbs axial movement of the starter assembly toward the noncranking position, brakes the pinion assembly against rotation and also functions as a dust seal.

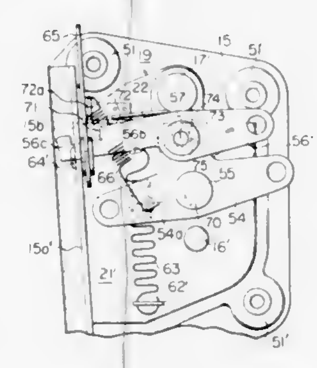


ERRATUM

For Class 292—32 see:
Patent No. 3,791,683

3,791,686
DOOR LOCK MECHANISM

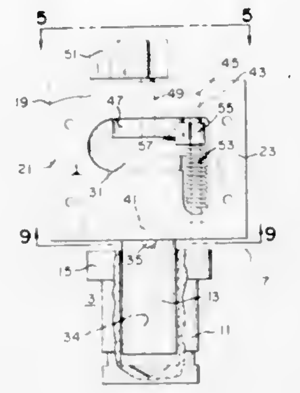
Kiochiro Horozawa, Kariya, Japan, assignor to Aisin Seiki Company Limited, Kariya-shi, Japan
Continuation of Ser. No. 782,077, Dec. 9, 1968, abandoned.
This application Dec. 13, 1971, Ser. No. 207,240
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 6 Claims



An automotive door lock mechanism, comprising a latch or fork member adapted for engagement with striker pin, a pivotable pawl adapted for engagement with said latch for performing the door lock a pivotable open plate adapted for controlling to establish or release the engagement between said latch and said pawl, and a locking plate pivotably mounted on the base of said lock mechanism, characterized by that said locking plate and said open plate are mounted pivotably to each other.

3,791,687
POP UP MAGNETIC DOOR STOP AND HOLDER

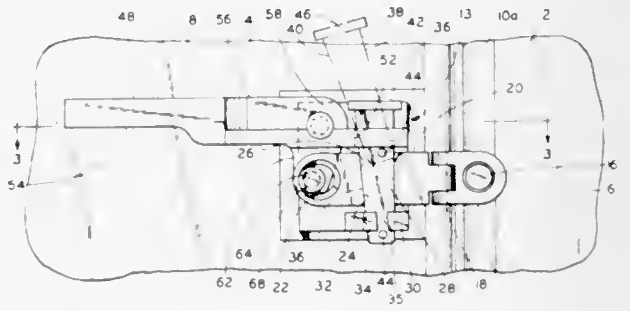
Helmuth M. Schroeder, 17908 Beardsley St., Castro Valley, Calif.
Filed June 19, 1972, Ser. No. 263,929
Int. Cl. E05c *19/16*
U.S. Cl. 292—251.5 7 Claims



A cylindrical bar of magnetic material pops up from its installed position in a floor when a magnet, carried by a housing affixed to a door, reaches the position of installation of the bar, as the door is opened, such attraction of the bar to the magnet serving to stop and hold the door in its open position. A manually operable push member is capable of separating the cylindrical bar of magnetic material from the magnet, to weaken the holding power of the magnet, whereby the door may be closed when desired. A pair of small protuberances extending downwardly from the proximate end face of the magnet housing and forming a part thereof, enables this end of the housing to span the cylindrical bar when attracted to the magnet, whereby displacement of the door from its position is precluded until the cylindrical bar is pushed from its engagement with the magnet. One of the protuberances may extend lower than the push member when in down position, to always function as a stop to limit maximum opening of a door.

3,791,688
OPENING, CLOSING AND LOCKING DEVICE

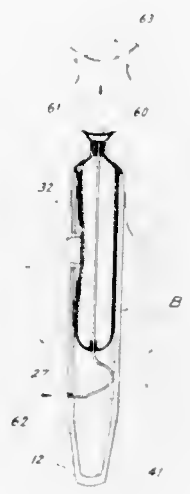
John D. Bailey, Orland Park, Ill., assignor to Pullman Incorporated, Chicago, Ill.
Filed Oct. 6, 1972, Ser. No. 295,757
Int. Cl. E05c *19/08*
U.S. Cl. 292—283 5 Claims



In a railroad car having sliding doors, a lock device including a hasp pivotally mounted on a first sliding door and a bell crank lever pivotally mounted on the second door with the lever pivotally carrying a wedge to wedgingly lock the hasp, lever and a keeper on the second door to keep the doors locked together, the bell crank lever having a drive arm releasably connecting with the hasp for moving the first door away from the second door when the locking wedge pin is removed from the door and the hasp in a freed position by a downward movement of the handle of the lever while at the same time freeing the lever held wedge.

3,791,689
CONTACT LENS HOLDER

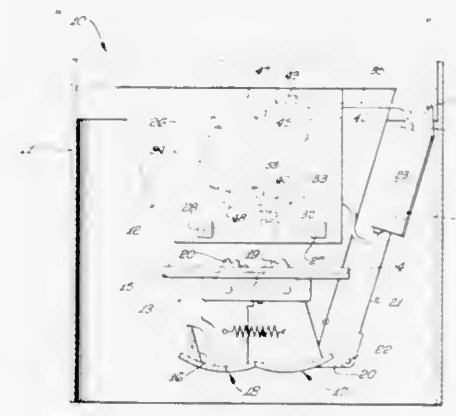
Roger S. Boone, 721 Fincastle, Tazewell, and Frank Pyott, 601 Fairground Rd., Falls Church, both of Va.
Filed June 11, 1971, Ser. No. 152,292
Int. Cl. A61f *9/00*
U.S. Cl. 294—1 CA 5 Claims



A device designed for holding and aligning corneal lenses during insertion and removal from the eye, where the lens can be held against a lens cup under partial vacuum created by a squeeze bulb, while a fiber-optical light conductor terminating inside the lens cup transmits a pencil of light for convenient alignment with the eye, the latter having an angled-off light receiving axis to eliminate undesirable background interference from the light source.

3,791,690
GATE OPERATING SYSTEM FOR CONCRETE BUCKETS

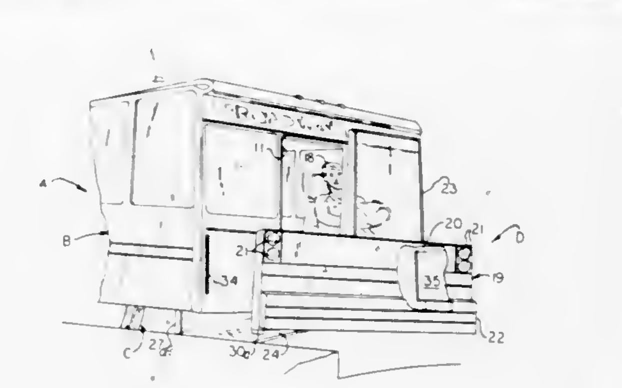
Leslie H. Garlinghouse, 1585 Sierra Madre Villa, Pasadena, Calif.
Filed Dec. 26, 1972, Ser. No. 318,508
Int. Cl. E21b *33/132*
U.S. Cl. 294—71 4 Claims



A system for opening and closing the clamshell gates at the bottom of the hopper of a bucket for placing concrete makes use of a receiver tank for storing air under pressure and a pneumatic actuating cylinder. A main pressure line for air under pressure has one branch connected to the opening end of a pneumatic cylinder and another branch connected to the receiving tank. A pneumatic line from the tank is connected to the pneumatic cylinder at the closing end and a pilot valve in the last mentioned line is subject to control by a pilot pneumatic line fed from the main pressure line whereby to vent the closing end of the cylinder when the opening end is in operation.

3,791,691
BUS STRUCTURE WITH EXTENSIBLE FRONT PLATFORM

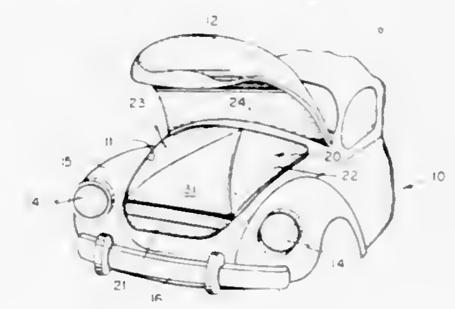
Keith W. Tantlinger, Coronado, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.
Filed Mar. 15, 1972, Ser. No. 235,035
Int. Cl. B60j *5/02;* **B62d** *31/02*
U.S. Cl. 296—28 A 6 Claims



A transportation type vehicle herein described as a bus, has a door opening in its front end for loading and discharging passengers, and an extensible front platform, preferably with shock absorber mounting. A door for closing the door opening may be carried by the platform, so that extending the platform opens the door. Each side of the platform preferably comprises a drop ramp, which may be so controlled by the driver that extending the platform automatically lowers the ramp on a selected side of the bus, while at the same time a gate bars exit from the other side. Thus, the entire interior of the vehicle body is available for seating passengers, and passengers may be taken on or discharged from either selected side of the bus, as on a one way street.

3,791,692
AUTOMOBILE IMPACT ABSORPTION APPARATUS

Benjamin H. Piere, 19631 Delight St., Saugus, Calif.
Filed Apr. 20, 1972, Ser. No. 245,715
Int. Cl. B62d *25/00*
U.S. Cl. 296—31 P 1 Claim



Apparatus for absorbing the energy of the impact of a collision of an automobile. The apparatus consists of an impact-energy absorbing material such as a plastic foam which may be molded in one piece for disposition in the trunk of the automobile. Preferably, the automobile is of the type having a rear engine and a front trunk into which the gasoline tank usually extends. The monolithic, molded foam may be cut into several sections, preferably three to facilitate insertion of the material into the trunk. Such a material has the advantages of reducing injuries due to collisions as well as reducing the cost of repair. It provides flotation, acoustic damping, and may be fire retardant to reduce even further the danger of fire if rupturing of the gas tank does occur in spite of the added impact protection. The plastic foam may be so arranged that it transmits the force of a front impact toward the side walls of the trunk which usually are stronger than the fire wall.

3,791,693
VEHICLE DOOR, IN PARTICULAR FOR MOTOR VEHICLES

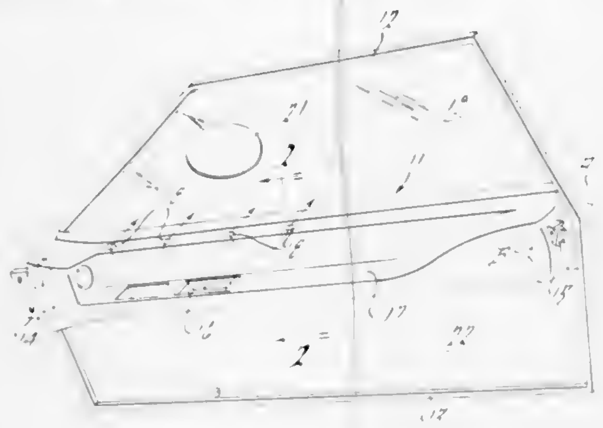
Emund Hellriegel, Cologne, and Dieter Pfadenhauer, Pulheim, both of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 13, 1972, Ser. No. 234,228

Claims priority, application Germany, June 14, 1971, P 21 27 724.7

Int. Cl. B60j *5/04*

U.S. Cl. 296—146 **14 Claims**



A vehicle door, in particular for motor vehicles, having a load-bearing cross-member linking the door hinges and the door lock, to which frames, guides and actuator devices for windows, as well as armrests, handles and actuating devices for the door lock, are attached. The cross-member is attached to flat sheet-metal or synthetic material components forming the internal and external panels of the door.

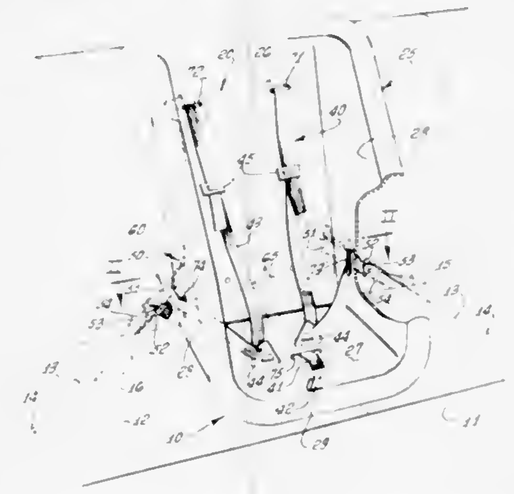
3,791,694
CHILD RESTRAINING SEAT ASSEMBLY

Verne L. Roberts, Southfield, and James H. McElhaney, Ann Arbor, both of Mich., assignors to American Safety Equipment Corporation, Encino, Calif.

Filed Feb. 18, 1972, Ser. No. 227,469

Int. Cl. A47d *1/10*

U.S. Cl. 297—250 **3 Claims**



The seat assembly includes an inverted T shaped plate with two upper slots, opposite side slots and a lower slot; a molded plastic child seat rivited to the plate for placement on a vehicle seat; a crotch belt with an end buckle extending through the bottom slot to be mounted to the plate; a continuous right and left combination shoulder and lap strap extending through the remaining slots to be mounted to the plate for locating intermediate buckles thereon for joining to the buckle on the crotch strap so that the straps will restrain a child in the seat; and a pair of anchor belts extending through the side slots to be mounted to the plate for being joined to the seat belts of the vehicle whereby the restraining load of the straps is transferred via the plate to the anchor belts without being applied to the plastic seat.

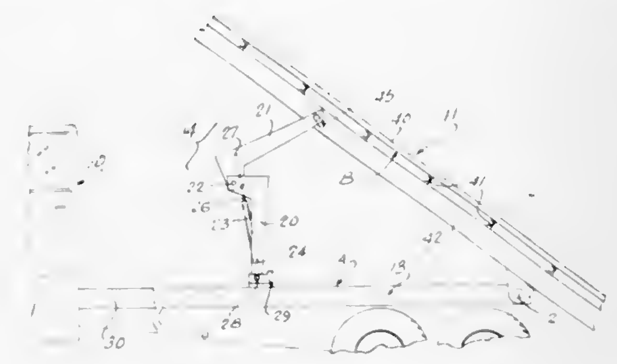
3,791,695
VEHICLE HOIST MECHANISM

Stephen Peter Seniuk, 5 Chester St., Winnipeg, Manitoba, Canada

Filed Jan. 7, 1972, Ser. No. 216,044

Int. Cl. B60p *1/20*

U.S. Cl. 298—22 J **9 Claims**



A dump truck hoist mechanism of the "scissors" type has L-shaped members, depending end portions of which project down below the plane of the upper surfaces of the vehicle chassis in order to achieve a combination of (*a*) a comparatively wide spacing between the axis about which the two members of the mechanism are interconnected and the location at which hydraulic cylinders act on the upper member to rotate it about such axis, with resulting good leverage, and (*b*) a lower than normal "mounting height" between the vehicle and dump box chassises. A lost motion mechanism is incorporated into the pivotal connection between the dump box chassis and the upper member to facilitate the linkage.

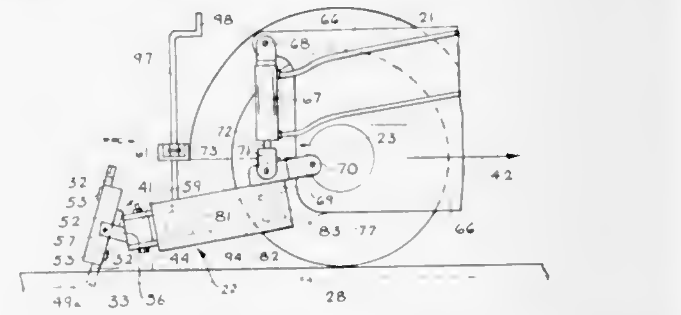
3,791,696
EXPANSION JOINT CLEANING APPARATUS AND METHOD

Marvin E. Riley, P.O. Box 246, Spokane, Wash.

Filed July 14, 1972, Ser. No. 271,942

Int. Cl. E01c *23/09*

U.S. Cl. 299—10 **11 Claims**



An apparatus and method for cleaning of expansion joints between adjacent slabs of concrete and, more particularly, for removing joint sealant compositons from the expansion joints for periodic replacement thereof, are disclosed. The apparatus includes a vehicle having a tool carrying arm on which a plow-type cleaning tool is mounted. The cleaning tool has a cutting face formed from a material capable of cutting concrete and is dimensioned to create an overlap or interference fit with the side walls of the joint. The tool is mounted on the arm with the cutting face inclined toward the direction of advancement of the vehicle down the expansion joint during cleaning, and the cutting forces are applied downwardly and forwardly to effect cutting of the concrete while reducing spalling adjacent the joint. A pantograph-type linkage is employed with a tool having tapered side cutting edges to allow the tool to track or follow the expansion joint during plowing.

3,791,697
METHOD AND APPARATUS FOR FLAME JET CUTTING

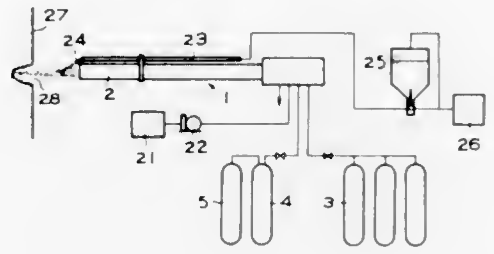
Zenjiro Hokao, Shimoyasumatu 50-80, Tokorozawa-chi, Saitama-ken, and Taiitsu Makajima, Nakato 2482, Musashimurayama-chi, Tokyo, both of Japan

Filed May 8, 1972, Ser. No. 251,183

Claims priority, application Japan, May 12, 1971, 46/32111; Oct. 6, 1971, 46/79018; Jan. 28, 1972, 47/10688

Int. Cl. E21c *21/00*

U.S. Cl. 299—14 **7 Claims**



A cutter proper is provided with a burner having at its tip a nozzle that injects a combustion flame of oxygen and kerosene at supersonic speed. Thermit material is supplied to the flame jet that is injected by burning the oxygen and kerosene at supersonic speed whereby the concrete or stone material and the like is burnt at such high temperatures where said material to be cut is melted. The cutting body can be cut by melting without relying on destruction of human work by injecting the flame jet toward the cutting body.

3,791,698
HYDRAULICALLY OPERATED APPARATUS FOR MECHANICAL SPLITTING OF ROCK AND THE LIKE

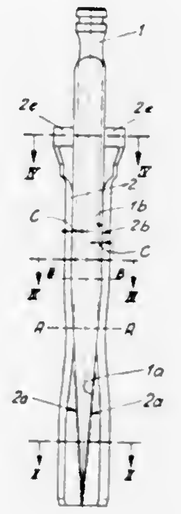
Helmut Darda, Im Tal, 7712 Blumberg/Baden, Germany

Filed Jan. 6, 1972, Ser. No. 215,791

Claims priority, application Germany, Jan. 13, 1971, P 21 01 353.6; July 30, 1971, P 21 38 071.2

Int. Cl. E21c *37/04*

U.S. Cl. 299—23 **17 Claims**



A wedge member has a front end and diverges in direction rearwardly therefrom. The wedge member is hydraulically displaceable in longitudinal direction and has a pair of opposite outer surfaces. A pair of spreading members which are fixed with respect to the longitudinal displacement of the wedge member, overlie the outer surfaces thereof in engagement with them so that they spread radially when the wedge member is displaced forwardly. Mating tongues and grooves are provided in the wedge member and the spreading members and matingly interengage when the wedge member is rearwardly displaced.

3,791,699
IMPACT APPARATUS FOR CUTTING GROOVES IN ROADS

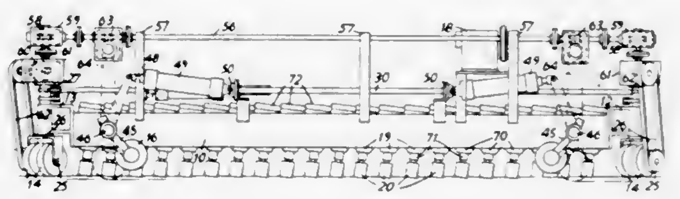
Ronald Albert William Clark, London, England, assignor to Klarcrete Limited, Redhill, Surrey, England

Filed May 24, 1972, Ser. No. 256,437

Claims priority, application Great Britain, May 28, 1971, 17868/71

Int. Cl. E01c *23/09*

U.S. Cl. 299—37 **6 Claims**



Apparatus for cutting parallel grooves in roads, particularly concrete roads, to improve the anti-skid properties of the road, comprises a plurality of pneumatic hammer units mounted in line on a frame supported on steerable road wheels, the hammer units being fitted with cutting tools engagable with the road and being operable to reciprocate the cutting tools so as to impart a series of impact blows to the road surface. The road wheels are drivably connected to a motor on the frame, and in operation the wheels are aligned in a direction such that the frame moves transversely or diagonally across the road with the hammer units spaced apart relative to the direction of travel, whereby the hammer units cut parallel grooves in the road surface. The hammer units are inclined at a small angle to the vertical so that the bases of the grooves are inclined downwards in the direction of the flow of traffic on the road, the downstream side of each groove having a sharply defined edge and the upstream edge merging into the uncut road surface between the grooves.

The frame is provided with retractable wheels drivably connected to the motor and pneumatic cylinders operable to force the retractable wheels downwards and lift the hammer units and road wheels above the road. In operation of the apparatus, the retractable wheels are parallel to the centre line of the road being cut so that after cutting one band of parallel grooves on the steerable wheels the frame can be moved forwards on the retractable wheels to a position suitable for cutting the next band of grooves without altering the steering angle of the road wheels. The steering mechanism of the road wheels may be continuously adjusted during travel of the frame to cut grooves along a curved path, particularly a curved path having a radial centre on or adjacent the longitudinal centre line of the road upstream of the grooves, which curved grooves have a centering effect on the wheels of vehicles.

3,791,700
VEHICLE WHEEL TRIM

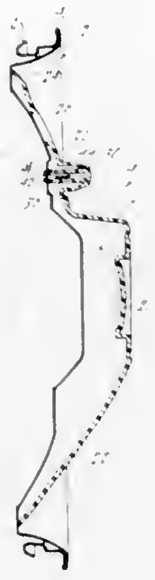
Richard R. Golze, Bloomfield Hills, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Oct. 28, 1971, Ser. No. 193,386

Int. Cl. B60b *7/04*

U.S. Cl. 301—37 CM **2 Claims**

A wheel trim for a motor vehicle including a wheel cover formed from a first material and attachment means for securing the wheel cover to a vehicle wheel. A wheel trim ornament is formed from a second material, disposed over at least a portion of the wheel cover and has extending therefrom in the direction of the wheel cover at least one flexible projection.



Fastener means interconnect the wheel cover and the flexible projection.

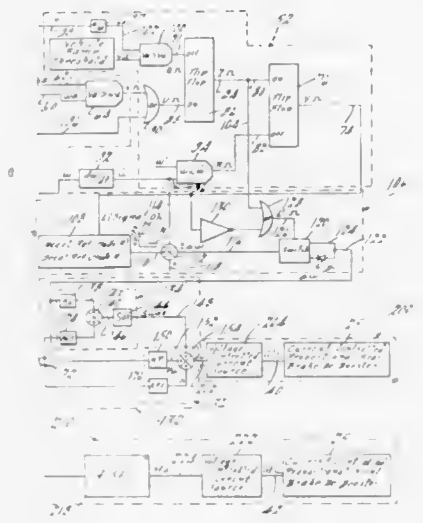
3,791,701
SKID CONTROL SYSTEM

Hugh E. Riordan, Ann Arbor, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Division of Ser. No. 60,273, Aug. 3, 1970, Pat. No. 3,687,504. This application July 7, 1972, Ser. No. 269,509

Int. Cl. B60t *8/10*

U.S. Cl. 303—21 BE **8 Claims**



A braking system including a skid control system, in which the brakes are actuated from a source of hydraulic power with the magnitude of pressure to the brakes being varied generally as a function of the input force from the vehicle operator and; during controlled operation, as a function of the magnitude of an error signal indicative of an incipient skid or excessive slip condition.

3,791,702
BRAKE-FORCE CONTROL SYSTEM FOR VEHICLES, ESPECIALLY MOTOR VEHICLES

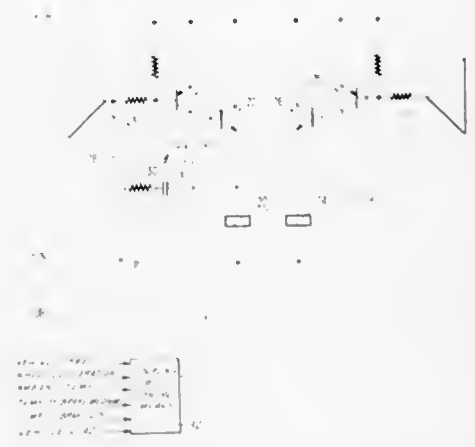
Manfred H. Burckhardt, Waiblingen; Hellmut Krohn, Esslingen; Horst Grossner, Gerardstetten, and Hans-Jorg Florus, Coppingen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Aug. 4, 1971, Ser. No. 168,909

Claims priority, application Germany, Aug. 4, 1970, P 20 38 599.3

Int. Cl. B60t *8/08*

U.S. Cl. 303—21 BE **21 Claims**



A brake force control system for vehicles, especially for motor vehicles in which the brake medium pressure acting on the brakes is controlled as a function of the rotary condition of the wheel by magnetically controlled inlet and outlet valves in the manner of a three point control; during each control of an inlet valve a signal causing a short defined opening of the outlet valve is simultaneously fed to the associated outlet valve by way of a coupling apparatus, preferably consisting of a circuit including a resistor and reactive impedance whose values may be varied as a function of certain characteristics of the brake force control system.

3,791,703
JOURNAL SUPPORT BEARINGS FOR ROTATING SHAFTS

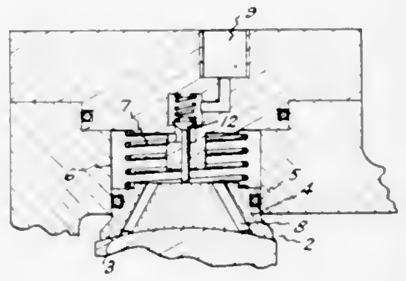
Richard Joseph Ifield, New South Wales, Australia, assignor to Ifield Laboratories Pty. Limited, New South Wales, Australia

Filed Nov. 23, 1971, Ser. No. 201,372

Claims priority, application Australia, Nov. 30, 1970, 3338/70

Int. Cl. F16c *7/04, 17/06*

U.S. Cl. 308—9 **5 Claims**



Journal support bearings for rotating shafts which comprise at least one hydro-statically balanced slipper positioned within a stationary housing. Each slipper has a hollow spherical surface which is adapted to bear on a part spherical surface formed on a shaft about its axis of rotation. Each slipper is either cut out at its center or has grooves in its surface to define a narrow sealing land around the periphery of the surface.

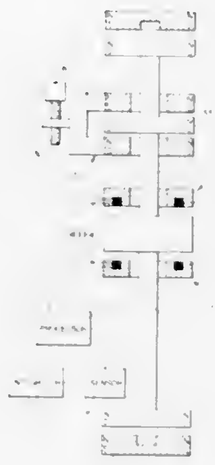
3,791,704
TRIMMING APPARATUS FOR MAGNETIC SUSPENSION SYSTEMS

Lloyd J. Perper, Tucson, Ariz., assignor to Cambridge Thermionic Corporation, Cambridge, Mass.

Filed Aug. 6, 1971, Ser. No. 169,665

Int. Cl. F16c *39/06*

U.S. Cl. 308—10 **7 Claims**



Apparatus is disclosed for trimming magnetic bearings and particularly for trimming magnetic bearings which employ two independently cooperating systems comprising a permanent magnet system and an electromagnet system. Adjustable permanent magnet means are disclosed for maintaining a suspended object in an equilibrium position which is invariant with applied force in at least one dimension. According to one embodiment the trimming is accomplished by mechanically moving adjustable permanent magnets. According to another embodiment of the invention the trimming is accomplished by varying the field of adjustable permanent magnets using at least one magnetizing winding.

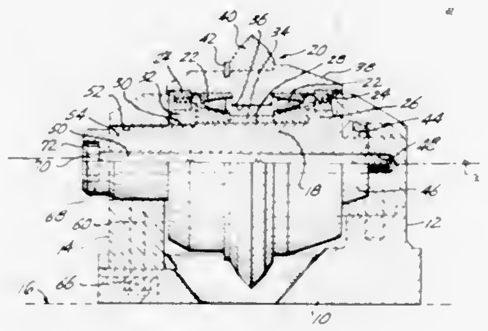
3,791,705
MOUNTING STRUCTURE FOR A ROCK CUTTER WHEEL

Gordon G. Schimel, Kent, Wash., assignor to The Robbins Company, Seattle, Wash.

Filed Mar. 31, 1972, Ser. No. 240,034

Int. Cl. F16c *35/08*

U.S. Cl. 308—15 **16 Claims**



The cutter wheel is mounted for rotation about an elongated support shaft. This subassembly is moved endwise towards a first end standard until a mounting pin on either the shaft or the end standard engages a mounting pin socket in the other. A second mounting standard is moved towards the second end of the shaft until a second mounting pin on either the shaft or the second end standard is engageable with a mounting socket formed in the other. The second end standard is bolted or otherwise detachably mounted to its support.

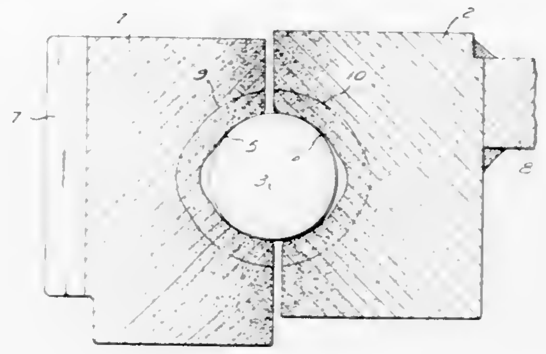
3,791,706
FORGED RING STRUCTURE OF MULTIPLE CAST METALS

John C. Dobson, Bay Village, Ohio, assignor to Formmet Corporation, Avon, Ohio

Division of Ser. No. 151,264, June 9, 1971, Pat. No. 3,714,694. This application Oct. 4, 1972, Ser. No. 294,829

Int. Cl. F16c *33/58*

U.S. Cl. 308—216 **6 Claims**



Disclosed are antifriction bearings, annular ring blanks for forming races of the bearings, and a process of making the annular blanks. The process involves centrifugally casting metals having different chemical compositions, such as steel having different amounts of carbon or other alloying elements, to form a tubular casting having at one periphery metal that has a different chemical or metallurgical composition and hardenability than the metal at the other periphery; annular rings are cut from this tubular casting, and these rings are hot worked by working including roll forging, under conditions that beneficially modify the structure of the metal. The resulting race may be machined into annular bearing races by the usual procedures to form bearing races. These races are hardened in a known manner and by known means, to provide hard metal where the rolling antifriction elements, such as balls, contact the metal, while the metal at the opposite side of the race is substantially more ductile and tough, so that it may be machined to provide gear teeth, or may be machined or welded for other purposes as to provide fastening means for the bearing race.

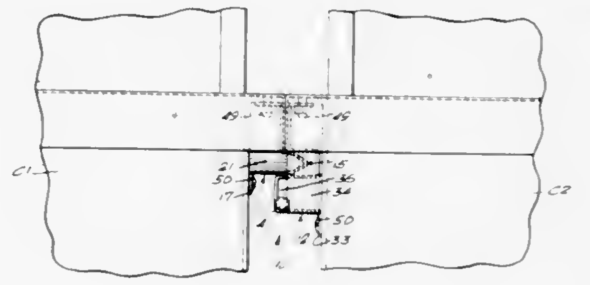
3,791,707
INTERLOCKING DEVICE FOR PORTABLE FOOD SERVICE CABINETS AND THE LIKE

Bruce F. House, Coral Gables, Fla., assignor to Shelley Manufacturing Company, Miami, Fla.

Filed May 11, 1972, Ser. No. 252,428

Int. Cl. F16b *12/06, 12/32*

U.S. Cl. 312—111 **7 Claims**



An interconnecting and locking device for joining portable food service cabinets and the like in side-by-side relation while at the same time adjusting them to be in substantial vertical and horizontal alignment simply by pushing the cabinets together. The device comprises elongated male and female connector members adapted to be secured horizontally along opposed upper edge portions of the cabinets to be joined, the female connector member having an elongated recess along its length and the male connector member having an elon-

the slots in the first-named and additional members for

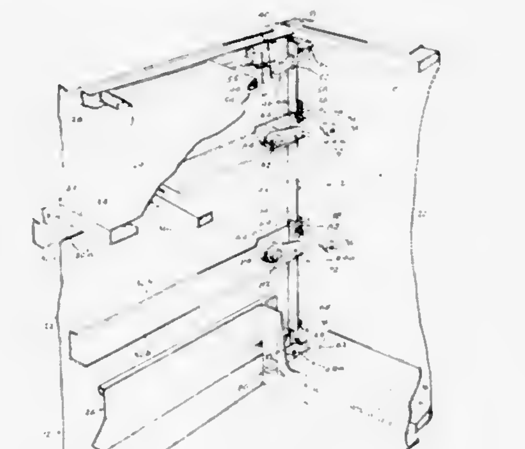
3,791,712
PROJECTION SCREEN

3,791,714
METHOD OF PRODUCING GLASS FOR OPTICAL

gated nose member along its length, both of which are convergently beveled to the outside to serve as horizontal and vertical locating means upon interconnection of the device. Releasable latch means is provided for locking the device in interconnected relation while at the same time providing for manual release for separating the cabinets.

3,791,708
DRAWER LOCKING SYSTEM

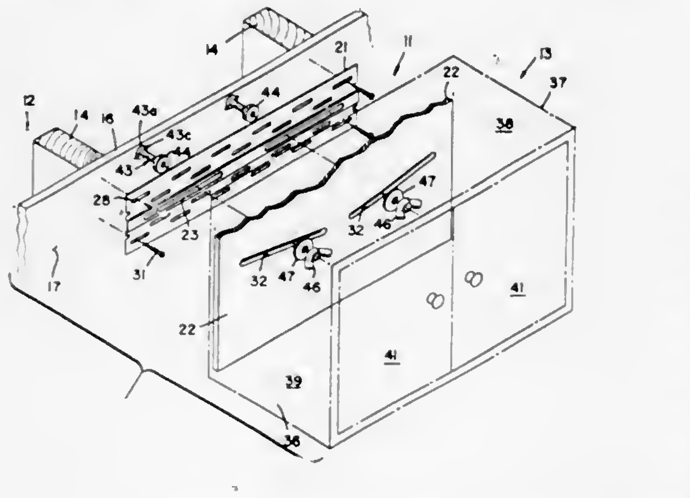
Dennis J. Signore, Ellicottville, N.Y., assignor to AVM Corporation, Jamestown, N.Y.
Filed June 29, 1972, Ser. No. 267,385
Int. Cl. E05c *7/06*
U.S. Cl. 312—221 **7 Claims**



A writing slide controlled lock mechanism for simultaneously locking drawers of a pedestal type desk. The mechanism features latch members carried by the drawers and a locking bar movable by closure of the writing slide to a locking position for effecting locking of the drawers which are in or are subsequently moved into closed position.

3,791,709
BRACKET CONSTRUCTION FOR WALL MOUNTING OF CABINETS

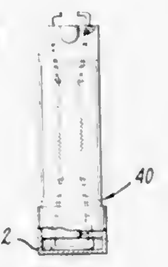
James Waverley Cross, 42 Altos Oaks Dr., Los Altos, Calif.
Filed Sept. 8, 1970, Ser. No. 70,242
Int. Cl. A47b *67/02;* **A47f** *5/08;* **A47h** *1/10*
U.S. Cl. 312—245 **8 Claims**



Bracket construction for wall mounting of cabinets having a relatively rigid member adapted to be secured to a wall and an additional rigid member. Each of the members has a pair of slots formed therein with the slots on one of the members being inclined at an angle with respect to the slots in the other of said members. Releasable securing means extends through the slots in the first-named and additional members for removably securing the additional member to the first-named member whereby said slots permit adjustment of the additional member with respect to the first-named member.

3,791,710
METHOD FOR PRODUCING A MULTIPLE FILAMENTED CARTRIDGE LAMP

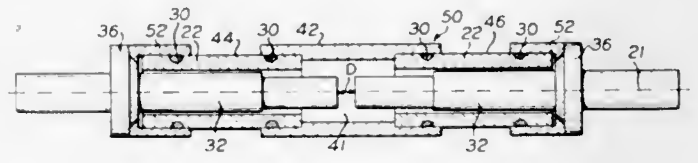
Lorin W. Curtis, Sun City, Calif., assignor to Wagner Electric Corporation, Newark, N.J.
Filed Mar. 24, 1972, Ser. No. 237,847
Int. Cl. H01j *9/00*
U.S. Cl. 316—17 **6 Claims**



A method for producing multiple filamented cartridge lamps is disclosed. The multiple filaments are connected together on the external ends of a cartridge lamp by linking members and then the ends of the lamp are press sealed. Thereafter, a linking member is separated externally on at least one end to form separate terminals for each filament whereby each filament can have a separate source of energy.

3,791,711
METHOD OF FABRICATING A THREE-TERMINAL VOLTAGE SURGE ARRESTER

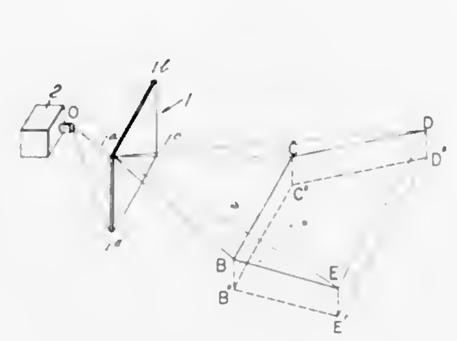
Gaylord D. Jonassen, Smithtown, N.Y., assignor to Telecommunications Industries, Inc., Copaigue, N.Y.
Filed Oct. 13, 1972, Ser. No. 297,412
Int. Cl. H01j *9/38*
U.S. Cl. 316—20 **4 Claims**



A method of fabricating a three-terminal voltage surge arrestor comprising the steps of forming an electrically conductive hollow housing having a cylindrical side wall extending between opposed open ends of the housing, the side wall including a longitudinally extending welding flange at each end; disposing a pair of electrically insulative hollow cylindrical members for disposition within the housing adjacent opposing ends thereof; disposing a pair of electrode rods through the ends of said housing, including a means thereon for engaging its associated welding flange as the rod is inserted into the housing through an end thereof to concentricize the rod in the housing; securing one electrode rod to an end of the housing by welding to said welding flange; withdrawing air from the interior of the housing through the other end of the housing; injecting a noble gas into the interior of the housing through said other end of the housing; securing the other electrode rod to said other end of the housing by welding; and isolating a segment of the housing side wall from both electrode rods.

3,791,712
PROJECTION SCREEN

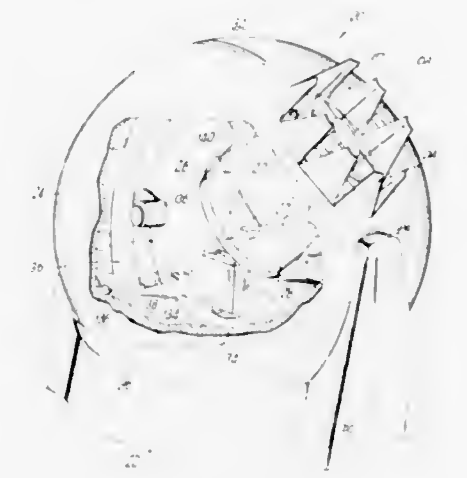
Kiyoshi Miyagi, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan
Filed Apr. 18, 1972, Ser. No. 245,158
Claims priority, application Japan, Apr. 20, 1971, 46-25889
Int. Cl. G03b *21/60*
U.S. Cl. 350—128 **4 Claims**



A projection screen having lenticular lenses in which the directions of refraction differ by 90°. Each lens is made in such a manner that the angles of refraction are varied from the central portion of the lens to its end portions so that an incident ray is uniformly dispersed throughout the service area. The surfaces of the lenticular lenses are finished to prevent a virtual image.

3,791,713
REFLECTING TELESCOPE SYSTEM

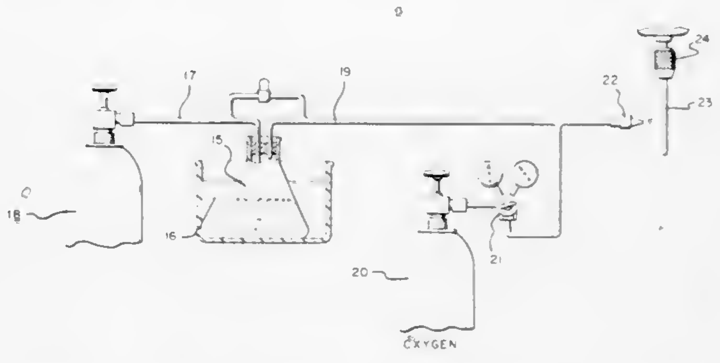
Anthony Mackay, Costa Brava 17, 4B, Madrid 20, Spain
Filed Sept. 21, 1971, Ser. No. 182,350
Int. Cl. G02b *23/16*
U.S. Cl. 350—83 **3 Claims**



A dynamic reflecting telescope system having a support and a hollow spherical housing rotatably mounted thereon. A telescope is fixedly mounted within the hollow spherical housing for rotational movement therewith. The telescope is thermally insulated from the interior of the hollow spherical housing thereby defining two distinct volumes, the volume within the telescope being maintained at essentially the same temperature as the surrounding atmosphere, whereby definition is improved by eliminating variations in the index of refraction within the telescope. Monitoring means adjusts the tangential and radial position of the individual primary mirror portions to compensate for atmospheric turbulence.

3,791,714
METHOD OF PRODUCING GLASS FOR OPTICAL WAVEGUIDES

Robert Distler Maurer, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Mar. 30, 1972, Ser. No. 239,589
Int. Cl. G02b *5/14;* **C03c** *25/2, 15/00*
U.S. Cl. 350—96 WG **12 Claims**



Deuterium is used instead of hydrogen in a process for producing glass having low hydroxyl ion content. In a flame hydrolysis process deuterium gas, or a deuterium compound gas, is passed through a liquid containing a silicon compound such as silicon tetrachloride. The resulting vapor is burned to deposit a film of silicon dioxide on a rotating mandrel. Glass produced in this manner is particularly suitable for use as optical waveguides. The hydroxyl ion normally present in glass produced in the presence of hydrogen is replaced by the deuterium containing ion OD^-. Absorption peaks normally caused by the presence of the hydroxyl ions are shifted to longer wavelengths at which the absorptions are not troublesome when the waveguide is used to transmit light in the band of approximately 7,000A.

3,791,715
SYSTEM FOR COUPLING LIGHT FROM A FIBER OPTIC WAVEGUIDE INTO A THIN FILM WAVEGUIDE

Eric G. Lean, Mahopac, and Keith S. Pennington, Somers, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 11, 1972, Ser. No. 314,204
Int. Cl. G02b *5/14*
U.S. Cl. 350—96 WG **6 Claims**

A coupler for optical guided waves is described which is electronically switchable and wherein light traveling in a fiber optic waveguide can be coupled into a thin film waveguide. The coupler consists of a substrate which in one embodiment is triangular in shape, with a thin film waveguide and an acoustic transducer on one surface thereof. The transducer is designed to produce an acoustic wave across the surface of the substrate and beneath the thin film waveguide. The output light from the optical fiber is introduced via a lens into a Fabry-Perot cavity formed by placing two high reflectivity mirrors located on the other two sides of the substrate. The light from the optical fiber is reflected back and forth in the cavity by being reflected from the surface on which the thin film is located. When the acoustic transducer is operated at

3,791,718

connected to said device and effects automatically the objec-

3,791,722

the proper frequency, the light in the cavity is coupled into the thin film waveguide. Another embodiment is also shown wherein the fiber optic is connected directly into the substrate which is not triangular in shape.

3,791,716
DEVICE FOR DEFLECTING A LIGHT BEAM

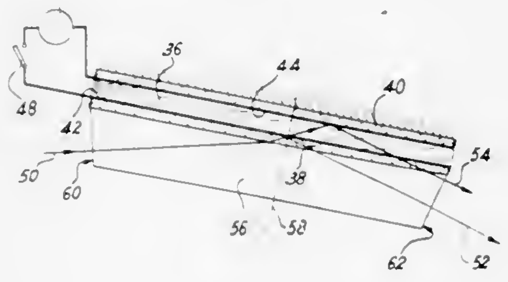
Joseph Borel, Echirolles; Jean-Claude Deutsch, Grenoble; Guy Labrunie, Seyssinet, and Jacques Robert, Grenohle, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Apr. 18, 1972, Ser. No. 245,238

Claims priority, application France, Apr. 22, 1971, 71.14399

Int. Cl. G02f *1/16*

U.S. Cl. 350—160 LC **6 Claims**



The device comprises at least one liquid-crystal cell placed on the path of the beam and constituted by a film of liquid crystals interposed between two walls provided with electrodes between which a potential difference can be applied by suitable means. The incidence of the light beam is oblique with respect to the first wall-liquid crystal interface which is encountered. Use is made of liquid crystals for which the direction of propagation of the light beam is dependent on the potential difference applied between the electrodes.

3,791,717
LIGHT MODULATION APPARATUS

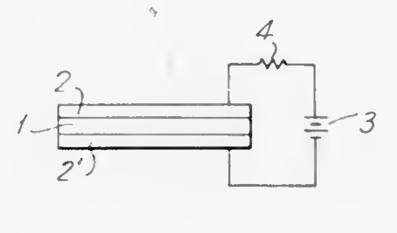
Masanori Honda, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 6, 1972, Ser. No. 304,039

Claims priority, application Japan, Nov. 8, 1971, 46-88821

Int. Cl. G02f *1/36*

U.S. Cl. 350—160 **11 Claims**



Light modulation apparatus or a light repeater directly modulates a light beam into light and comprises a light modulation element having a photoconductive effect and the Franz-Keldysh effect. When intensity modulated light is emitted to the light modulation element, the applied electric field in the light modulation element is controlled. Non-modulated light applied to the light modulation element undergoes intensity modulation due to the Franz-Keldysh effect related to the variations of the applied electric field.

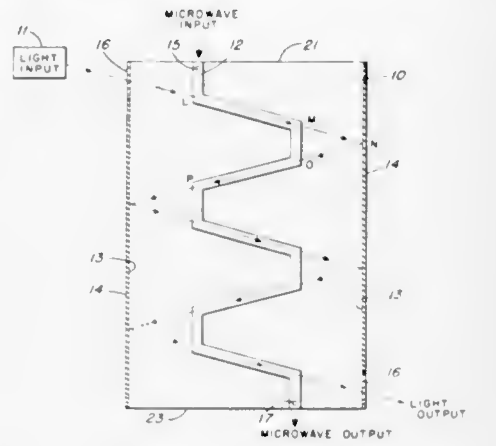
3,791,718
WIDEBAND TRAVELING-WAVE MICROSTRIP MEANDER-LINE LIGHT MODULATOR

Kungta K. Chow, Sunnyvale, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 21, 1972, Ser. No. 308,644

Int. Cl. G02f *1/26*

U.S. Cl. 350—160 R **6 Claims**



A traveling-wave electro-optical light modulator comprises an electro-optical crystal wafer with electrodes on the top and bottom surfaces and a high reflectivity coating covering the side surfaces except for two predetermined areas. A beam of light enters the crystal through one of these areas, is reflected a number of times between the two side surfaces, and leaves the crystal through the other area. The top electrode is in the form of a strip. The light beam passes under the strip once during each reflection. The strip lies on the crystal surface in such a manner that the traveling-wave impressed on the electrodes is traveling in the same direction as the light beam when modulation occurs.

3,791,719
METHOD OF AND DEVICE FOR DETERMINING THE STATE OF REFRACTION OF A HUMAN EYE

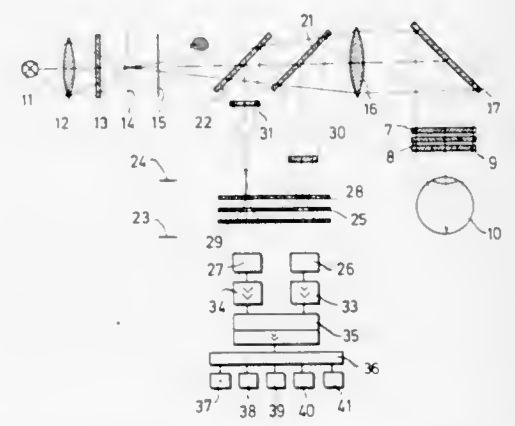
Bernd J. L. Kratzer, Huttlingen, and Heinz Ulffers, Aalen, both of Germany, assignors to Carl Zeiss-Sliftung, Wuerttemberg, Germany

Continuation-in-part of Ser. No. 86,217, Nov. 2, 1970, abandoned. This application Sept. 13, 1972, Ser. No. 288,689

Claims priority, application Germany, Nov. 6, 1969, P 19 55 859.9

Int. Cl. A61b *3/10, 3/02;* **G01j** *1/36*

U.S. Cl. 351—11 **9 Claims**



For determining the state of refraction of a human eye there is first effected automatically a coarse balancing operation and subsequently a fine balancing operation is performed manually with the same apparatus. Said apparatus may be a phoropter or another known device for determining the state of refraction of a human eye. A refractometer attachment is connected to said device and effects automatically the objective coarse balancing operation. The fine balancing operation of said device is performed manually after switching off said attachment.

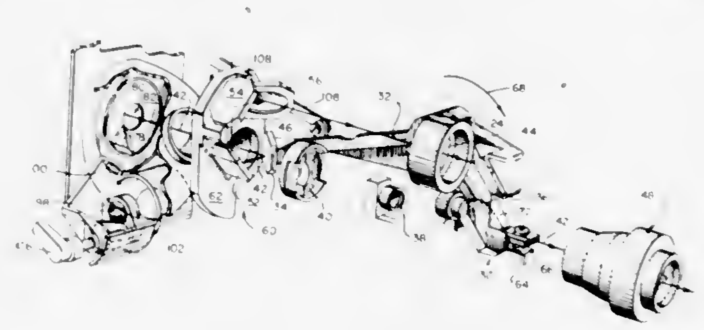
3,791,720
OPHTHALMOMETER HAVING ALTERNATIVE VIEWING AND MEASURING SYSTEMS AND INCLUDING AN IMPROVED ILLUMINATION SYSTEM

Terence Walker, and Joseph C. Dianetti, both of East Aurora, N.Y., assignors to American Optical Corporation, Southbridge, Mass.

Filed Nov. 29, 1972, Ser. No. 310,504

Int. Cl. A61b *3/10;* **G01b** *9/00;* **F21r** *33/00*

U.S. Cl. 351—13 **10 Claims**



Ophthalmometer including a measuring circuit for measurement of the curvature of the cornea and contact lens curvatures with a built-in viewing circuit which is activated by the movement of a lever to allow visible inspection of the cornea and contact lenses. An interference ultraviolet filter in communication with a single light source permits the cornea to be viewed under ultraviolet light as well as ordinary visible light.

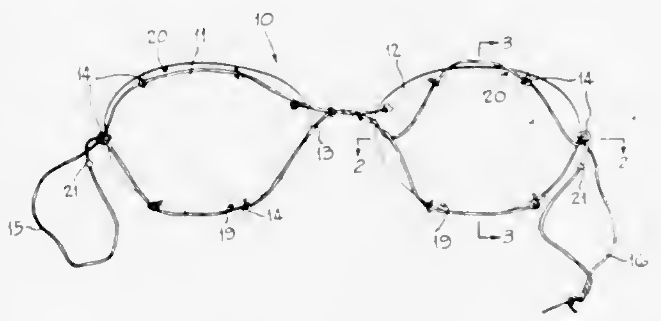
3,791,721
GOGGLES

James L. Helfrich, 4232 Hartel St., Philadelphia, Pa.

Continuation-in-part of Ser. No. 95,740, Dec. 7, 1970, abandoned. This application Oct. 4, 1972, Ser. No. 295,088

Int. Cl. G02c *7/10, 3/00;* **A61f** *9/02*

U.S. Cl. 351—44 **5 Claims**



Compact eye goggles for protection against laser and other high intensity light radiation or energy and having a pair of eye cups which are worn without discomfort over the respective eye balls, lids and lashes of the eyes of the wearer. Should the user wear spectacles, the goggles are worn under the glasses. The cups introduce no distortion of the optical path and can be worn by people with various eye corrections. The cups are each partially hemispherical with rounded corners to snugly fit the user's face without interfering with vision, forward or peripheral.

3,791,722
LENSES

Carl S. Ahlberg, and John W. Drongeson, both of Minneapolis, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 12, 1972, Ser. No. 217,151

Int. Cl. G02c *7/16;* **A61f** *9/06*

U.S. Cl. 351—45 **9 Claims**

Lenses are provided having a central sight zone embracing the field of view and at least an upper shading or shielding zone of lower transmittance arcing around the clear central zone so as to provide shading from above and the sides. A further amount of shading may be provided below the clear portion. Shading and lower transmittance are most advantageously provided by louvered film. The lenses are particularly adapted for skiing goggles.

ERRATUM

For Class 352—123 see:
Patent No. 3,791,622

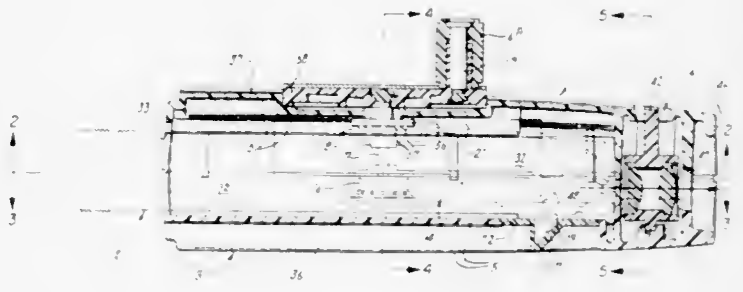
3,791,723
MOTION PICTURE APPARATUS

Tosio Komazaki, Tokyo, Japan, assignor to Action Fiims, Inc., Mountain View, Calif.

Filed Nov. 1, 1972, Ser. No. 302,742

Int. Cl. G03b *21/00*

U.S. Cl. 352—72 **6 Claims**



Motion picture apparatus for use with a removable cartridge having a housing with a cavity formed therein for receiving the cartridge. The housing is provided with a side wall which has a drive member carried thereby. The side wall is formed to permit the portion of the side wall carrying the drive member to be deformed outwardly so as to permit a driving member carried by the cartridge to move over the drive member and to engage the drive member so that the drive member drives a driven member as the drive member is rotated.

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connection adjacent the projection lens and a connection transfer station. Subsequent to the transfer of the developed

3,791,724
OVERLAP CONTROL DEVICE FOR A MOTION PICTURE CAMERA

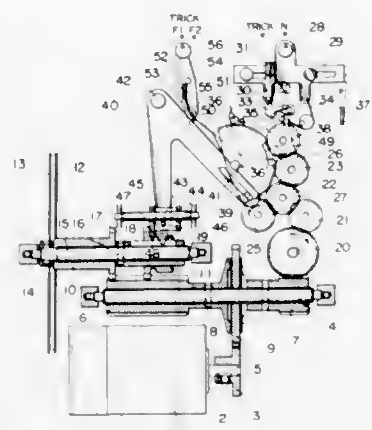
Hiroshi Hirata, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 66,411, Aug. 24, 1970, abandoned. This application Oct. 16, 1972, Ser. No. 297,651

Claims priority, application Japan, Aug. 25, 1969, 44-66462

Int. Cl. G03b *21/36*

U.S. Cl. 352—91 **3 Claims**



First and second circuits for energizing a motor in a normal and a reverse direction to drive film for controlling fade-in and fade-out photography are actuated by a change-over switch which is set by a first manual member at either a normal or fade-in, fade-out photographic positions which respectively select either said first or second energizing circuit. The second energizing circuit includes a switch contact which is closed or opened in accordance with the position of a second manual settable member. The shutter blade mechanism includes a control member for decreasing and increasing the opening thereof. A transmission mechanism is controlled in accordance with the position of the first manually settable member to change the direction of film winding.

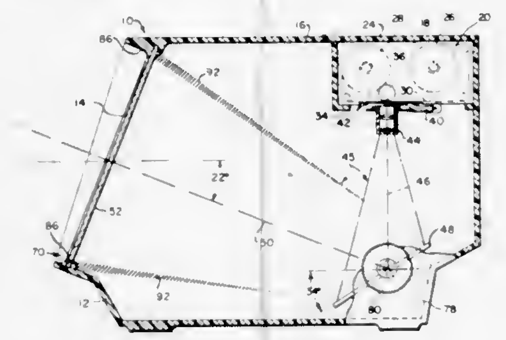
3,791,725
PROJECTION SYSTEM EMPLOYING ADJUSTABLE MIRROR FOR IMAGE FRAMING

Richard W. Young, Wellesley Hills, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 6, 1971, Ser. No. 204,869

Int. Cl. G03b *21/00, 21/46*

U.S. Cl. 352—129 **1 Claim**



A photographic projection system employing an oversize projection aperture and adjustable mirror configured for displacement of the projection path relative to the projection screen so as to frame the projected image within the screen border and thereby transmit only the recorded image of the film to an observer. In a preferred embodiment, the system is a rear projection viewer having a projection lens assembly configured for projecting an image of a film section to an adjustably mounted mirror element and from the latter to the rear of a transparent, front-viewing screen. The projection lens assembly is adapted to project an image of a film section which exceeds the area of the recorded image-frame, and the viewing screen includes an opaque border element which conforms to the projected size of the image-frame such that displacement of the mirror element adjusts the projection path relative to the screen and frames the projected image within the screen border.

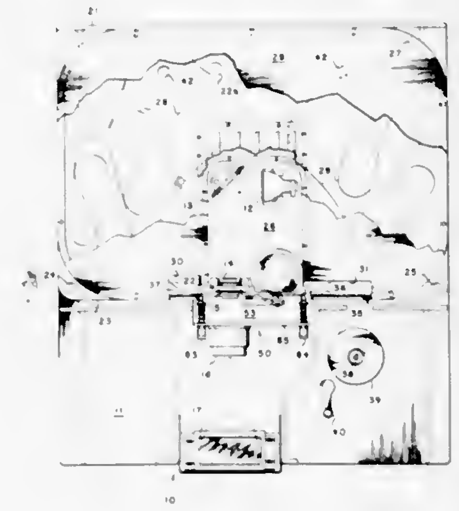
3,791,726
LOW INTERTIA FILM DRIVE AND CASSETTE

John W. Miller, Smyrna, Ga., assignor to Lockheed Aircraft Corporation, Los Angeles, Calif.

Filed Sept. 17, 1971, Ser. No. 181,295

Int. Cl. G03b *1/48, 23/04*

U.S. Cl. 352—166 **9 Claims**



Storage and transport apparatus for a web such as photographic film and the like. The film, which is stored in randomly formed loops within the cassette, is withdrawn from the cassette, passed along a film gate including a projection gate by a drive wheel and pinch rollers which contact the film along its edges, and then is returned to the cassette. The design of the film channel, along with the absence of conventional film storage reels, provides a film transport system having low inertia and resulting in rapid frame access time coupled with precision frame positioning.

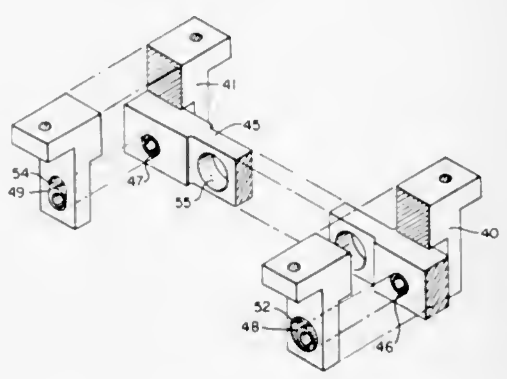
3,791,727
MICROFORM READER PROJECTION LENS TRACKING MECHANISM

Robert L. Kleekamp, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed July 21, 1971, Ser. No. 164,569

Int. Cl. G03b *3/00*

U.S. Cl. 353—101 **12 Claims**



A mechanism for permitting a projection lens assembly in a microform reader to freely float during tracking operation wherein constant focus is maintained throughout the travel of the assembly across the cover plate of a microform carrier. A projection lens mounting member is supported by means of a connection adjacent the projection lens and a connection distal from the lens, the connections being of the lost-motion type to provide for such free floating of the lens assembly.

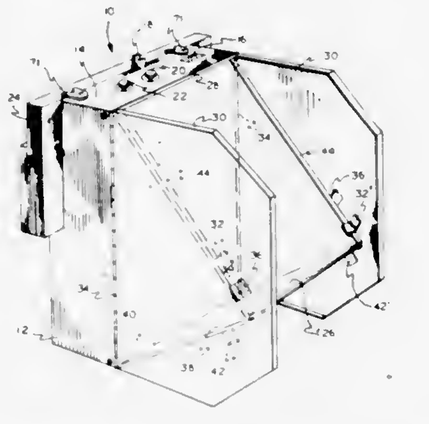
3,791,728
PORTABLE MICROFILM VIEWER

Morton Kaye, Stamford, Conn., and Marvin I. Radlauer, 2 Mistletoe Dr., Matawan, Madison Township, Middlesex, N.J., assignors to Marvin I. Radlauer, Matawan, N.J.

Filed Nov. 1, 1971, Ser. No. 194,724

Int. Cl. G03b *21/11, 21/30*

U.S. Cl. 353—26 **1 Claim**



A portable microfilm viewer is described, which is of compact structure. The viewer includes a control for advance of the microfilm with a lock-out feature whereby single frame advance is deactivated when continuous rapid film advance is selected. The microfilm viewer is adapted to stand upright on a flat surface, with a fold-out viewing screen supported in reading position by side-located shades. The shades fold protectively over the viewing screen when it is not in use, and provide shading against ambient light interference when the screen is in use.

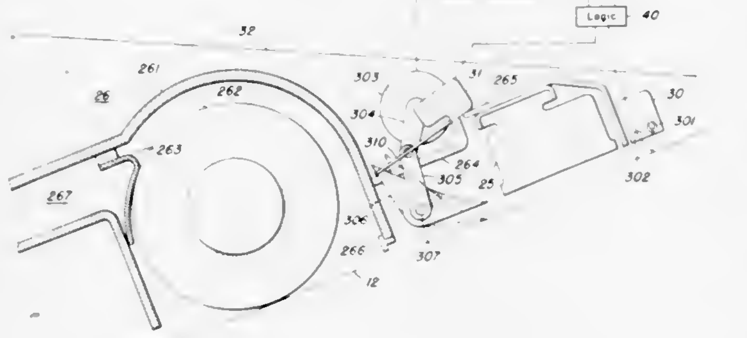
3,791,729
APPARATUS FOR MONITORING A SHEET TRANSPORT MECHANISM

Edward L. Steiner, Macedon, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed July 11, 1972, Ser. No. 270,648

Int. Cl. G03g *15/22*

U.S. Cl. 355—3 R **6 Claims**



Apparatus for monitoring a sheet transport mechanism included in an electrostatic reproduction machine is disclosed in accordance with the teachings of the present invention. The electrostatic reproduction machine includes a support surface adapted to support a developed image of a character pattern, which developed image is transferred to an image receiving medium that is placed in contact with the support surface at a transfer station. Subsequent to the transfer of the developed image to the image receiving medium, the image receiving medium is removed from the support surface and transported to further operating stations. Detecting means in operable communication with the support surface is adapted to detect the presence of an image receiving medium in contact with said support surface, thereby indicating a failure of said image receiving medium to be removed. Means responsive to the detected presence of the image receiving medium serves to regulate the further operation of the electrostatic reproduction machine accordingly.

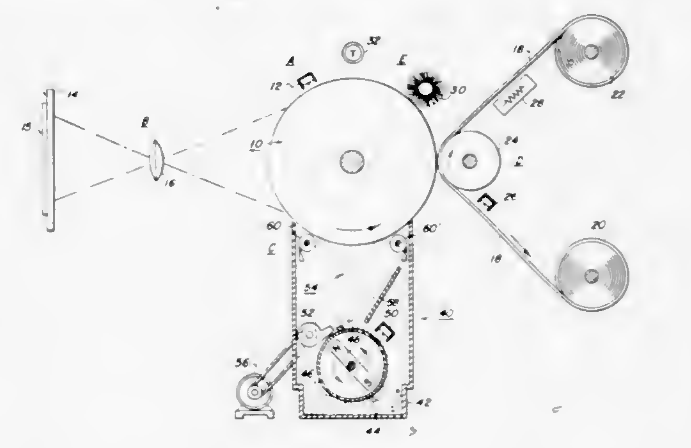
3,791,730
APPARATUS FOR DEVELOPING ELECTROSTATIC LATENT IMAGES

William A. Sullivan, Jr., Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 105,887, Jan. 12, 1971, Pat. No. 3,707,390. This application Sept. 5, 1972, Ser. No. 285,986

Int. Cl. G03g *15/08*

U.S. Cl. 355—3 DD **1 Claim**



A method and apparatus are provided for the development of electrostatic latent images formed on a support member. Magnetic toner particles are magnetically drawn over a non-magnetic surface, while on said surface a charge is applied to the toner particles which is opposite in polarity to that of the electrostatic latent image. A stream of gaseous material is directed against the charged toner particles carried on the non-magnetic surface to form a suspension of said particles in said gaseous material. This suspension, or powder cloud, is contacted with said electrostatic latent image to thereby develop said image with said toner particles. Also provided are toner collecting magnetic rollers which act as a seal by removing the residual toner particles from the suspension and thereby prevent the same from contaminating the rest of the machine.

3,791,731
TRANSPORT MEANS FOR SHEETS

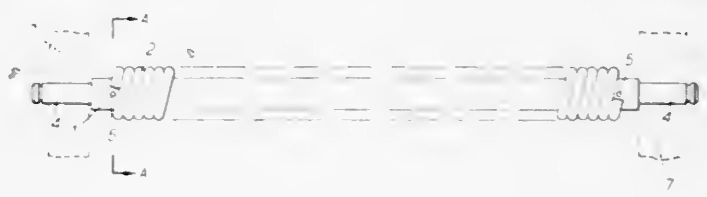
Nandor Mihalik, Walton-on-Thames, England, assignor to Gestetner Copiers Limited, Tottenham, London, England

Filed Nov. 15, 1972, Ser. No. 306,872

Claims priority, application Great Britain, Nov. 18, 1971, 53,628/71

Int. Cl. G03g *15/00*

U.S. Cl. 355—3 R **7 Claims**



A transport roller for forwarding sheets bearing unfused electrostatographic images in copying apparatus comprises a core with a coiled spring wound therearound, the axis of the coils surrounding the core. When the roller is used a minimal distortion or smearing of the powder images occurs.

3,791,732
ELECTROSTATIC COPIER

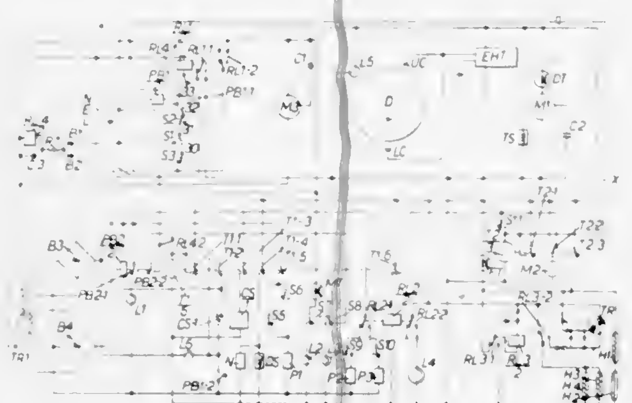
Nandor Mihalik, Walton-on-Thames; Andrew Anthony Moss, Hoddesdon, and John Charles Henry Prince, London, all of England, assignors to Gestetner Copiers Limited, Tottenham, London, England

Filed Nov. 15, 1972, Ser. No. 306,871

Claims priority, application Great Britain, Nov. 17, 1971, 53,460/71

Int. Cl. G03g *15/22*

U.S. Cl. 355—14 **18 Claims**



An electrostatic copier wherein powder images are heat set in a fuser unit and which includes a control circuit having an override device adapted to ensure completion of a fusing operation even if a main on/off switch is turned to off during such an operation. The override device can also ensure completion of a fusing operation in the event that safety devices are actuated during such an operation. This ensures completion of a fusing operation so that paper is not left in the fuser unit where it might ignite next time the copier was used. The copier additionally includes a rapid heating fuser unit and a timer motor to control copying operations.

3,791,733
PHOTOGRAPHIC DEVICE FOR ACHIEVING A DOMINANT COLOR EFFECT

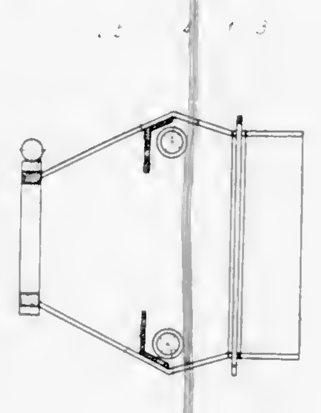
Stefan Horvath, and Aurel Miheles, both of Bucharest, Romania, assignors to Studioul Cinematographic Bucuresti, Bucahrest, Romania

Continuation-in-part of Ser. No. 850,071, Aug. 19, 1969, abandoned. This application Jan. 17, 1972, Ser. No. 218,265

Claims priority, application Romania, July 12, 1966, 51853

Int. Cl. G03b *27/70*

U.S. Cl. 355—39 **3 Claims**



A device to be used in photography for achieving a dominant color effect. Thus the device can be attached to the objective of any camera. It has a tubular enclosure open at both ends and is carrying at one end a fastener for releasably fastening the enclosure to an objective. Adjacent its other end the enclosure has a means for supporting a special color filter. Between the color filter and the objective is an illuminating structure for illuminating the color filter so as to achieve the dominant color effect. Between the illuminating structure and the objective is a shielding structure to prevent the light from the light source from travelling back to the objective, so that in this way the light is primarily directed toward the filter.

3,791,734
MICROFILM CAMERA AND LIGHT SOURCE THEREFOR

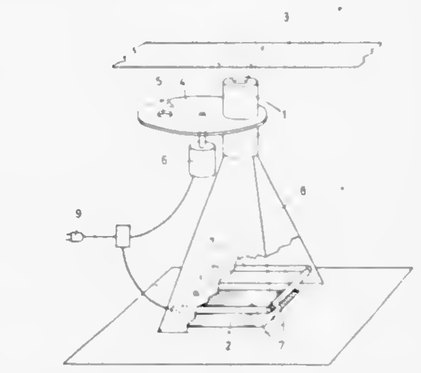
Hansjurg Mey, Kehrsatz, Switzerland, assignor to Walter Leemann A.G. Fabrik fur fototechnische, elektronische und feinmechanische Apparate, Canton of Fribourg, Switzerland

Filed Dec. 11, 1972, Ser. No. 314,252

Claims priority, application Switzerland, Oct. 13, 1972, 14974/72

Int. Cl. G03b *27/54, 27/76*

U.S. Cl. 355—67 **9 Claims**



A microfilm type camera utilized with an illumination device for impressing an image on film having a light source powered by an alternating current power supply for illuminating the image to be exposed to the sensitive film, an adjustable electrically powered shutter device for selectively admitting light from the image to the film, and an electrical drive connected to the shutter device for operating the same in a way that the adjustable exposure time for each point of the light sensitive film zone to be exposed is equal to half the duration of a period of the alternating current power supply source powering the light source or is an integer multiple thereof in order to provide an even light exposure distribution over the total image to be exposed on the film.

3,791,735
DIGITAL MEASURING APPARATUS

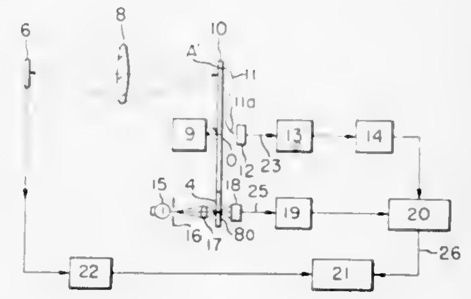
Kiwao Nakazawa, Sagamihara, and Shinya Sasayama, Tokyo, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed May 18, 1972, Ser. No. 254,469

Claims priority, application Japan, May 26, 1971, 46-35478

Int. Cl. G01b *11/00*

U.S. Cl. 356—4 **3 Claims**



A digital measuring apparatus for measuring the distance between two target lines formed on a test sample by the use of circular scanning or the like includes an optical pulse scale disposed in such a predetermined relationship with the target lines as to correct any measurement error resulting from circular (or angular) scanning. A scanning system is disposed to scan the target lines and the optical pulse scale in a predetermined relationship, thereby producing optical target-line position signals and optical pulse scale signals. Photoelectric converter means are provided to convert the optical target-line position signals and the optical pulse scale signals into respective electrical signals. Target-line position signal detector means may detect the target-line positions from one of the said electrical signals. The electrical signals passed through the target-line position signal detector means may be formed into gate signals by a gate circuit. The other electrical signals passed through the gate circuit are counted by counter means.

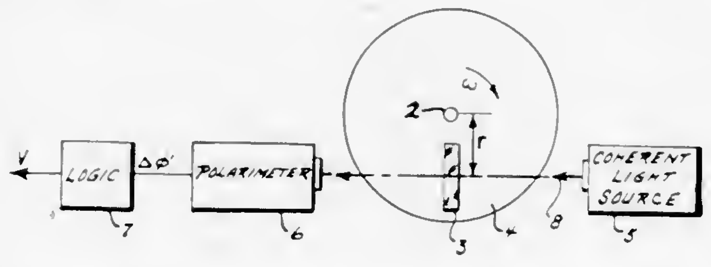
3,791,736
METHOD AND APPARATUS UTILIZING THE PHASE VELOCITY DIFFERENCE OF LIGHT RAYS FOR MEASURING THE VELOCITY OF A MOVING OBJECT

Ronald G. Newburg, Belmont, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 28, 1972, Ser. No. 248,585

Int. Cl. G01p *3/36;* **G01n** *21/40*

U.S. Cl. 356—27 **4 Claims**



Light transmitted through an optical birefringent retardation plate emerges as ordinary (O) and extraordinary (E) rays having a phase velocity difference characteristic of the plate material and thickness. Retardation plate motion introduces an additional phase velocity difference between the E- and O-rays that is a measure of the velocity of such motion. Velocity of a moving object is measured by affixing an optical retardation plate to the moving object, detecting the E- and O-ray phase velocity difference of coherent light transmitted through the moving plate, and converting the phase velocity difference values so obtained to linear and angular velocity values.

3,791,737
SPECTROMETER IN WHICH A DESIRED NUMBER OF SPECTRAL LINES ARE FOCUSED AT ONE FIXED OUTPUT SLIT

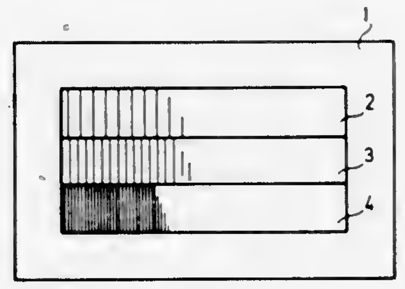
Axel Bernhard Johansson, Klensmedsvagen 40, 37 Hagersten, Sweden

Filed June 16, 1972, Ser. No. 263,777

Claims priority, application Sweden, June 8, 1971, 7945/71

Int. Cl. G01j *3/40, 3/12*

U.S. Cl. 356—79 **3 Claims**



A spectrometer where spectral lines within a wide wavelength range with a high resolution can be focused at one fixed output slit by using a diffraction grating which consists of separate areas having different numbers of grooves per unit length, the grating being arranged to refract spectral lines in superimposition or in alignment with each other, the instrument being suitable for flame photometer determination of substances.

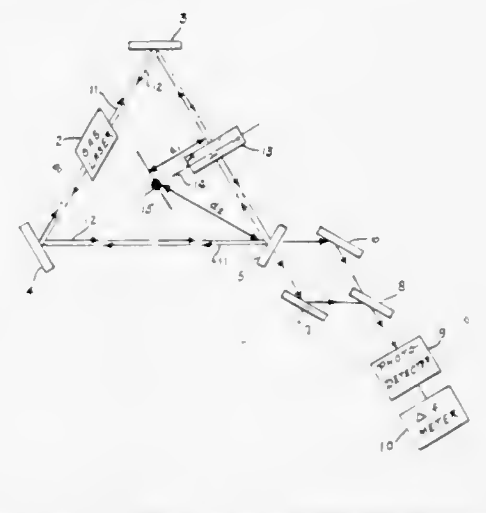
3,791,738
RING LASER UTILIZING AN OPTICAL RETARDATION PLATE TO PREVENT BEAM LOCKING

Ronald G. Newburgh, Belmont, Mass., assignor to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 248,754, April 28, 1972, abandoned. This application Apr. 11, 1973, Ser. No. 350,260.

Int. Cl. G01b *9/02*

U.S. Cl. 356—106 LR **5 Claims**



Ring laser beam locking is substantially eliminated by inserting an optical retardation plate into the circulating laser beams. The retardation plate is positioned with its optical axis perpendicular to the laser beams and is located at a point of minimum distance from the ring laser center of rotation. Further laser beam decoupling is achieved by mechanically vibrating the retardation plate.

3,791,739
INTERFEROMETER FOR X-Y MEASUREMENT

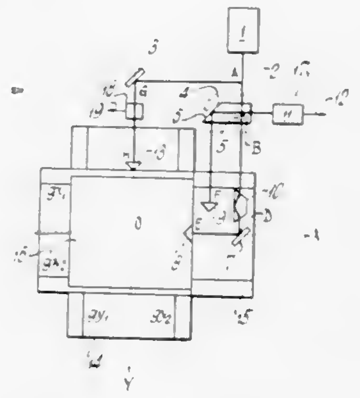
Harumi Kawasaki, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Dec. 22, 1971, Ser. No. 210,964

Claims priority, application Japan, Dec. 30, 1970, 45/122567

Int. Cl. G01b *9/02*

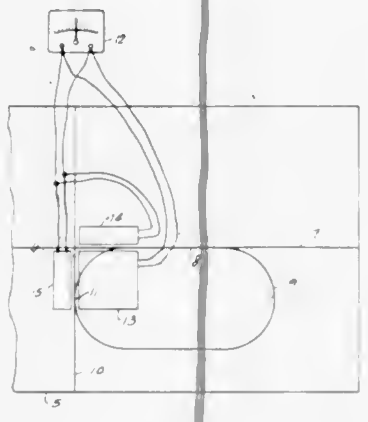
U.S. Cl. 356—106 R **8 Claims**



An interferometer for measuring distances along coordinate axes including a pair of stages each movable in a direction along one of a pair of perpendicular co-ordinate axes, each carrying a mirror which travels along said axis. Each of said mirrors is respectively in the optical path along said axis of an associatedinterferometer means, each of the two interferometer means being fed by a common light source, preferably a laser, and means associated with at least one of said interferometer means to introduce corrections for mechanical play in the system and corrections for relative rotation of the states about the intersection of the co-ordinate axes.

3,791,740
LOW COST HEADLIGHT TESTER AND METHOD
Paul R. Proefrock, Virden, Ill., assignor to Dura Corporation, Springfield, Ill.

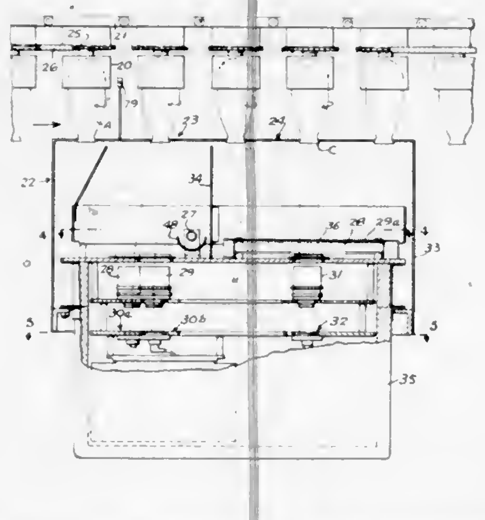
Filed June 14, 1972, Ser. No. 262,602
Int. Cl. G01j *1/00*
U.S. Cl. 356—121 **8 Claims**

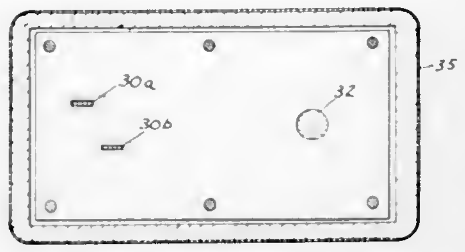


Three photoelectric devices are arranged cooperatively to enable reading on a single milliammeter both horizontal and vertical adjustments of an automotive vehicle headlight. One of the photoelectric devices is located in the high intensity zone of the testing area adjacent to a second of the photoelectric devices located in spaced relation above a predetermined desired position for the upper edge of the high intensity zone while the third photoelectric device is located in spaced relation relative to a predetermined desirable position for a vertical edge of the high intensity zone. Adjustments are effected sequentially, first either vertically or horizontally and then in the remaining mode with the milliammeter being read in each mode, and proper adjustment being determined by maximum reading attained on the milliammeter.

3,791,741
SIZE GAUGING AND QUALITY INSPECTING ROTATING ARTICLES BY IMAGING ONTO SPATIAL FILTERS AND DETECTORS
Irving R. Brenholdt, Greenwich, Conn., assignor to Farrand Optical Co., Inc., Valhalla, N.Y.

Filed Sept. 28, 1971, Ser. No. 184,475
Int. Cl. G01b *11/00*
U.S. Cl. 356—163 **37 Claims**



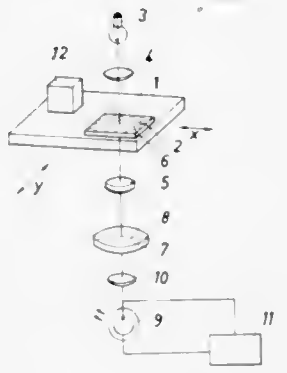


Articles to be inspected are moved in a predetermined path through two successive inspection stations forming a part of a gauging assembly and are continuously rotated while moving through the inspection stations. The portion of the article to be gauged is illuminated at each inspection station and an image of the illuminated portion is directed through spatial filters of the Ronchi ruling type onto optical sensors which sense the modulation of the light passing through the spatial filters.

The modulated light is then electronically measured to produce electronic signals corresponding to the dimension or dimensional variation being inspected and, in addition, is compared with predetermined standards to produce a reject signal when the deviation from the predetermined standards is beyond a predetermined amount.

3,791,742
COORDINATE POSITION MEASURING BY IMAGING A MOVABLE GRATING ONTO A PARALLEL REFERENCE GRATING
Udo Grey, and Winfried Klimmer, both of Jena-Neulobeda, Germany, assignors to Jenoptik Jena G.m.b.H., Jena, Germany

Filed Mar. 6, 1973, Ser. No. 337,359
Int. Cl. G01b *11/14*
U.S. Cl. 356—169 **4 Claims**



In order to position a slide relative to two coordinate directions, two gratings are used, the rules thereon being parallel to each other and non-parallel to neither of the coordinate directions and in which one of the gratings is integral with said slide.

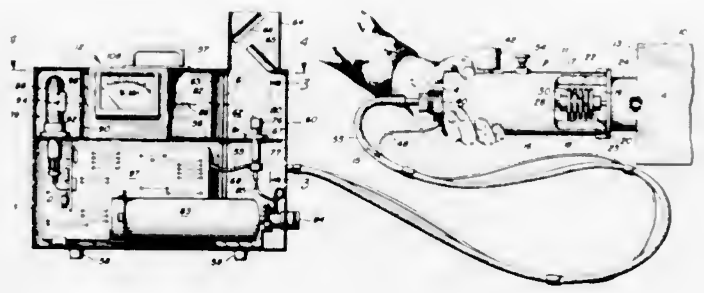
The rules on the one grating are opaque whereas those on the other grating are transparent.

When the rules of the gratings coincide in the course of imaging the gratings on each other, signals will be derived at subsequent photocells.

3,791,743
PORTABLE FLAME PHOTOMETER AND SAMPLING PROBE
Thomas E. Cody, Allentown, Pa.; Arthur L. Davison, Saugus, Calif.; Joseph A. Grohowski, Bethlehem; Geza J. Horvath, both of Bethlehem, Pa., and Theodore R. Linde, Coopersburg, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

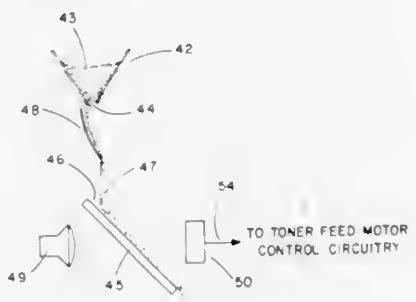
Filed Mar. 21, 1973, Ser. No. 343,305
Int. Cl. G01n *21/58, 1/00;* **G01j** *3/30*
U.S. Cl. 356—187 **15 Claims**

A hand-held sampling probe remotely connected to a portable flame photometer enables immediate on-site identification of a desired piece of steel in a mixed stockpile thereof according to a percentage concentration of manganese element in the steel. An operator causes the sampling probe to strike a low-voltage electric arc on a sampling surface of the test piece so as to generate an aerosol of atmospheric air and sample particles. An induction burner located in the flame photometer is fueled by a self-contained propane bottle and is adjusted to aspirate the aerosol and excite the sample particles in low-energy flame. Photoelectric circuits analyze the flame spectra and accumulate concentrations of iron as an internal standard and manganese as the identifying element. When the iron concentration reaches a predetermined value, a control unit interrupts the electric arc and element accumulations and displays percent manganese concentration on a meter without ratioing iron and manganese signals.



3,791,744
XEROGRAPHIC TONER CONCENTRATION MEASURING APPARATUS AND METHOD
Daniel Richard Erny, Boonton, and Leon Albert Tysko, Rockaway, both of N.J., assignors to Van Dyk Research Corporation, Whippany, N.J.

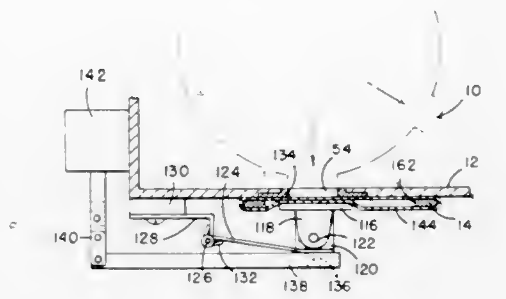
Filed Feb. 22, 1972, Ser. No. 227,965
Int. Cl. G01n *21/26*
U.S. Cl. 356—201 **9 Claims**



An arrangement for measuring the concentration of toner powder in a xerographic developer mixture by causing a sample of the developer to impinge upon a transparent plate. By providing the developer sample in the form of a turbulent stream, inclining the plate at the proper angle, and arranging the geometry of the measuring apparatus so that the stream impinges upon the transparent plate with the proper kinetic energy, a layer of toner powder is formed on the surface of a portion of the plate, the thickness of the toner layer increasing and decreasing with corresponding changes in the concentration of toner in the developer mixture. A photoelectric system is employed to monitor the light transmission of the toner-coated plate to provide a measure of toner concentration.

3,791,745
SPECTROPHOTOMETER ATTACHMENT FOR TESTING YARN DYEING QUALITIES
Richard MacHenry, Prospect Park, Pa., assignor to FMC Corporation, Philadelphia, Pa.

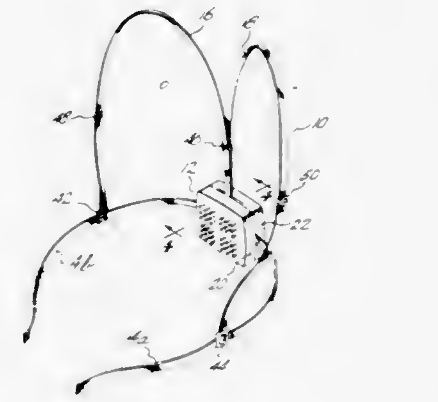
Filed Dec. 26, 1972, Ser. No. 318,218
Int. Cl. G01j *3/46, 3/02*
U.S. Cl. 356—244 **5 Claims**



Dyeing qualities of yarns from different packages of yarn which are intended to be identical are tested by knitting a sleeve having longitudinal segments formed of the yarns to be tested and at least one segment formed of a yarn known to have the desired dyeing characteristics. The knitted sleeve is then dyed and it is found that some or all of the segments have accepted the dye to a different extent than the segment or segments knitted of the yarn having the desired dyeing characteristic. This application discloses an apparatus facilitating the checking by means of a spectrophotometer the depth of shade of the different longitudinal segments of the dyed knitted sleeve, whereby the yarns may be objectively classified as to dyeability.

3,791,746
BACK SCRUBBER
Francis L. [illegible]earka, 10245 37th Pl. S.W., Seattle, Wash.

Filed Mar. 16, 1973, Ser. No. 342,202
Int. Cl. A47k *7/03*
U.S. Cl. 401—201 **11 Claims**



A two part resilient open cell foamed plastic is joined together. A strap is fastened between the two parts and extends outward in opposite directions from the joined parts. A pair of elastic straps are also joined between the plastic parts with both of these straps extending outward in the same direction which is at 90° from the first strap. The adjoining faces of the two plastic parts are joined part way around the periphery only, and are not joined on the side from which the elastic straps extend. One of the plastic parts has a series of outwardly extending holes into each of which a plurality of stiff fibers are embedded and extend outwardly from the foamed plastic.

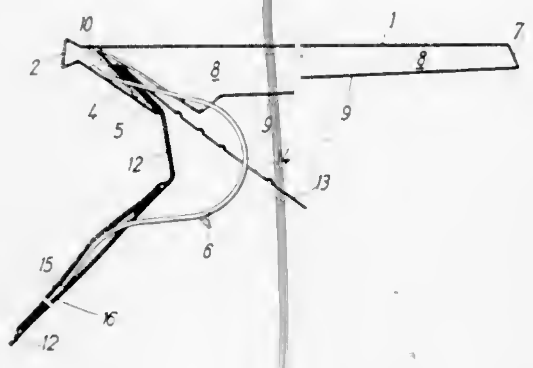
3,791,747

3,791,749

thereof. The bodies are oppositely slidably mounted on the the plank is shiftable back and forth horizontally across the

3,791,747
FILE

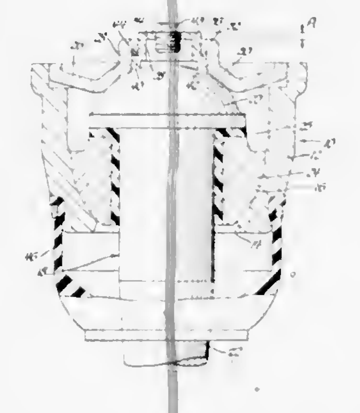
Carl Erik Grundell, Osmogatan 8, S-122 48 Enskede, Sweden
Filed Nov. 4, 1970, Ser. No. 86,913
Claims priority, application Germany, Nov. 10, 1969, 6943636
Int. Cl. B42f *3/00*
U.S. Cl. 402—8 9 Claims



A file comprising at least one cover and at least one, preferably at least two spaced lugs whose ends are held at or near the spine of the file. Such lug or lugs extend between the file rear cover and a tab, which extends also from the spine only for part of the breadth of the file. These lugs are arranged perpendicular in relation to the file cover and are adapted to have their free ends inserted through holes provided in the tab after papers to be accommodated in the file and provided with holes have been placed on the lugs.

3,791,748
BALL JOINT WITH MANUALLY OPERABLE, SENSIBLE WEAR INDICATOR

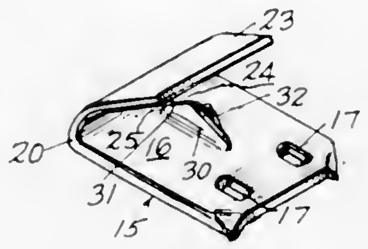
Stanley R. Goodrich, Jr., Saginaw, and Jerry M. Roethlisberger, Bridgeport, both of Mich., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Apr. 17, 1972, Ser. No. 244,683
Int. Cl. F16b *7/00*
U.S. Cl. 403—27 5 Claims



A ball joint subject to wear in normal use and having fixed internal bearing seats in its housing for the ball stud unit giving rise to play or lash as the wear takes place has a manually operable wear indicator. The indicator is mounted on the housing cover in telescoping relationship with respect thereto and is manually operable to accumulate the play occasioned by the wear as a spacing between the ball stud unit and the fixed bearing seat on the cover. Indications are provided by the indicator and the cover cooperatively to identify to the operator whether wear justifying replacement does or does not exist. Wear justifying replacement is indicated when the indicator is manually movable to a position having a predetermined relationship with the cover which is sensible by the operator.

3,791,749
FURNITURE SPRING CLIP AND INSTALLATION

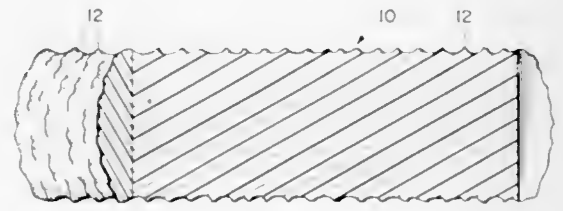
Thomas Grille, New York City; Daniel Krakauer, Great Neck, and Edwin G. Krakauer, Roslyn Heights, all of N.Y., assignors to Kay Manufacturing Corp., Brooklyn, N.Y.
Filed Nov. 11, 1971, Ser. No. 197,823
Int. Cl. F16b *7/04*
U.S. Cl. 403—188 9 Claims



A stop element projects up from the base of a permanently open J-shaped sheet metal clip such as those conventionally used to hold the straight portion of the end bar of a wire furniture spring to a rail of the furniture frame. Progressive creeping of the end bar out of its seat in the clip is resisted by the stop element without the necessity of closing the clip. A single fastener such as one staple through the base holds the clip to the rail. The short imperforate flange or leg of the clip makes an angle of less than 90° to the perforated clip base and is permanently spaced from the stop element a distance not less than the diameter of the wire of the spring end bar.

3,791,750
DOWEL

Herbert A. Cameron, 24 Brooks Ave., Lewiston, Maine
Filed May 15, 1972, Ser. No. 253,526
Int. Cl. E04b *1/48*
U.S. Cl. 403—297 1 Claim



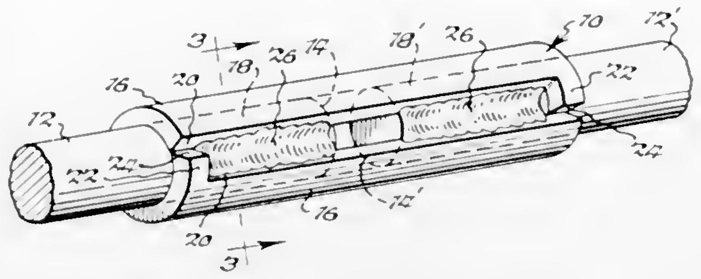
A dowel pin is formed by extruding hot plastic through a cooled die plate to form a cylindrical structure having on its surface a multiplicity of thin resilient fins most of which are disposed transversely to the longitudinal axis of the cylinder. The fins not only provide a roughened surface for better adhesion when combined in a joint with a suitable glue, but also exhibit plastic memory causing them to thrust against the wall of the bore in which the dowel is inserted, in order to effect a permanent joint. In one form the dowel is shaped with an hour-glass cross-section so that it may be inserted into a pair of overlapping bores and thereby provide greatly improved resistance to rotational forces.

3,791,751
ROD REPAIR SPLICE

Robert E. Vey, Elburn, Ill., assignor to Buffalo Brake Beam Company, Lackawanna, N.Y.
Filed Jan. 28, 1972, Ser. No. 221,629
Int. Cl. F16d *1/00*
U.S. Cl. 287—111 10 Claims

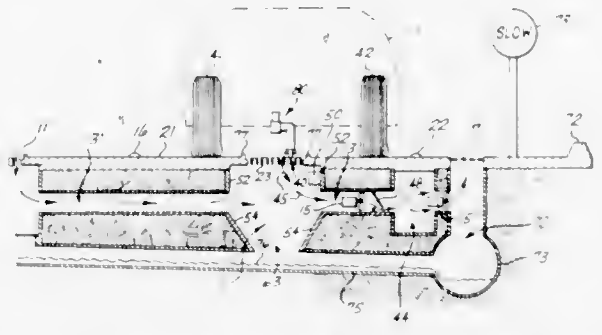
A rod repair splice having a pair of trough shaped bodies each with a rod embracing and body locating flange at one end

thereof. The bodies are oppositely slidably mounted on the rod to be repaired and welded along their opposite longitudinal edges to the peripheral surface of the rod sections.



3,791,752
HIGHWAY DRAINAGE AND EXHAUST SYSTEM

Conrad O. Gardner, 22905 108 West, Edmonds, Wash.
Continuation-in-part of Ser. No. 14,300, Feb. 26, 1970, Pat. No. 3,610,360, which is a continuation-in-part of Ser. No. 545,117, April 25, 1966, Pat. No. 3,503,188. This application Sept. 30, 1971, Ser. No. 185,293
Int. Cl. E01f *5/00*
U.S. Cl. 404—2 6 Claims

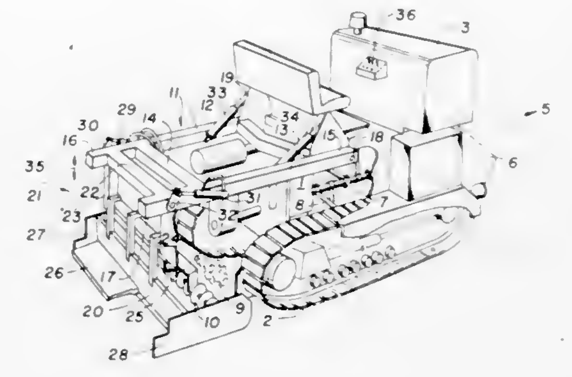


Systems for receiving the noise and/or exhaust emmisions transmitted from motor vehicle exhaust outlet arrangements. The motor vehicle transmitter of noise and/or exhaust emmissions have a modified tail pipe arrangement arranged for close coupling and transmission of the noise and/or exhaust emmissions to receiving means for collecting and processing the noise and/or exhaust emmissions. The receiving means extends along the length of the highway and attenuates the received noise and/or collecting and passing the received exhaust emmissions to processing means for recovering or purifying the exhaust emmissions. The duct portion of the receiving means instead or also utilized to provide transmission of electric power to specially designed types of electrically powered motor vehicles along the highway and also provide guidance where it is so desired to instrument the vehicle and duct.

3,791,753
ROAD CONSTRUCTION APPARATUS

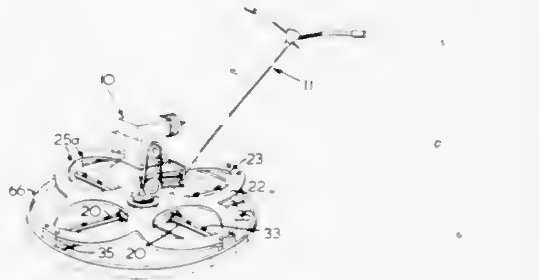
Karl Heinz Rymsa, Horbach, Germany, assignor to Wibau-Westdeutsche Industrie-und Strassenbau-Maschinen-Gesellschaft m.b.H., Wilbaustr, Germany
Filed Mar. 27, 1972, Ser. No. 238,432
Claims priority, application Germany, Mar. 27, 1971, 2115040
Int. Cl. E01c *19/00*
U.S. Cl. 404—84 11 Claims

The present road construction apparatus has a frame supported plank extending across the road to be constructed for installing a road forming composition in a road bed. The frame and installing plank or bar are supported on a carriage and relative to each other in such a manner that the plank may be raised and lowered as a unit or each plank end may be raised and lowered independently of the other plank end. In addition the plank is shiftable back and forth horizontally across the length of the road. The operation of the plank is accomplished by sensor responsive power means which may also be operator controlled.



3,791,754
TROWELLING MACHINE

Francesco Zochil, 10 Cortina Cres., Hamilton, Ontario, Canada
Filed Jan. 10, 1972, Ser. No. 216,557
Claims priority, application Canada, May 14, 1971, 113026
Int. Cl. F01c *19/22*
U.S. Cl. 404—112 10 Claims



A trowelling machine, for finishing cementitious surfaces, of the type having a central hub rotatable by an engine mounted above the hub, the hub having radial carriers which support trowelling blades. In accordance with the invention the outer ends of the trowelling blade carriers are supported by a blade support assembly including a cast steel support member which member is specially designed to resist upwards deflection of the outer ends of the blade carriers.

3,791,755
ADJUSTABLE DRILL ON ATTACHABLE BASE

Wesley S. Warren, Bloomfield Hills, Mich., assignor to General Automation Manufacturing, Incorporated, Troy, Mich.
Filed Nov. 25, 1970, Ser. No. 92,750
Int. Cl. B23b *45/14*
U.S. Cl. 408—76 8 Claims

A base has means by which it is attached to a workpiece to be drilled with one portion of a dovetail slide thereon which cooperates with the other portion of the dovetail slide on the frame which supports the drill unit. After the base is secured on the workpiece, the frame and drill unit may be moved forwardly or rearwardly along a longitudinal plane. The base may be provided with a pivoted section which has the one portion of the dovetail thereon so that after the base is clamped to the workpiece, the drill point may not only be adjusted longitudinally but also sidewardly so that it may be located exactly over the point at which drilling is to occur. This permits the

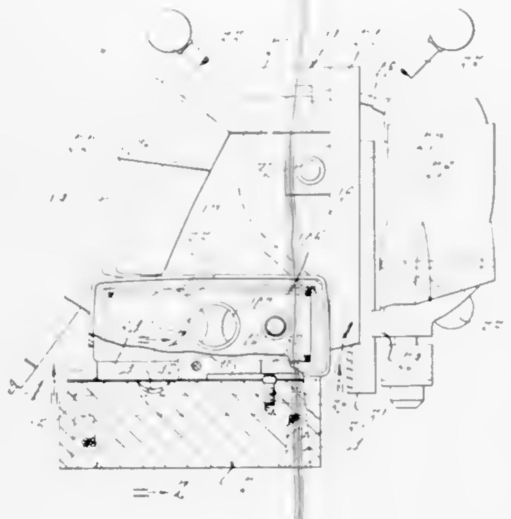
base element to be attached to the workpiece with the drill

3,791,757

3,791,759

3,791,761

base element to be attached to the workpiece with the drill point in approximate position or adjacent to a plurality of

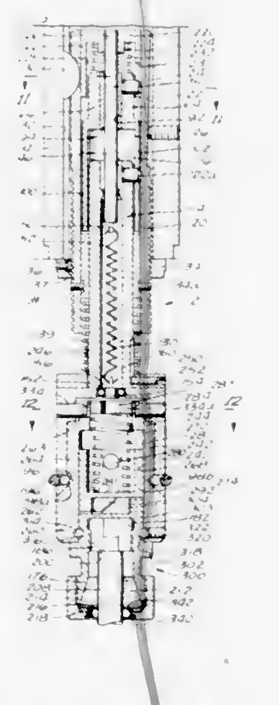


positions after which it may be located over the point or points on the workpiece at which drilling is to occur.

3,791,756

TAPPING SPINDLE WITH TORQUE RELEASE CLUTCH BUILT INTO ITS SHANK AND HAVING AUTOMATIC DEPTH CONTROL

Allan S. Johnson, Newport Beach, Calif., assignor to Tapmatic Corporation, Costa Mesa, Calif.
Filed Mar. 15, 1971, Ser. No. 124,020
Int. Cl. B23b *47/24, 31/04*
U.S. Cl. 408—139 **2 Claims**

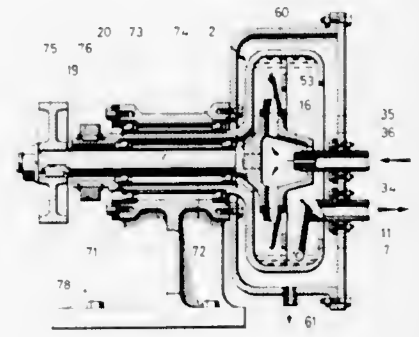


A tapping spindle having a shank with a torque release clutch built into the shank so that the overall size is reduced adapting it for use in a machine carrying multiple closely spaced spindles. The clutch comprises a driving sleeve and a driven sleeve member, and is combined with an automatic depth control in the spindle. In one form the tapping spindle has a removable tool chuck holder having the torque release chuck built into it, the holder being rotatable relative to the spindle.

3,791,757

NEW TYPE OF ROTARY PUMP FOR LIQUIDS

Carlos Sanchez Tarifa, and Jacobo Valdes Pedrosa, both of Madrid, Spain, assignors to Sener Tecnica Industrial Y Naval S.A., Las Arenas, Bilbdo, Vizcaya, Spain
Filed Sept. 13, 1971, Ser. No. 179,983
Claims priority, application Spain, Sept. 11, 1970, 383567
Int. Cl. F04d *1/14*
U.S. Cl. 415—89 **5 Claims**

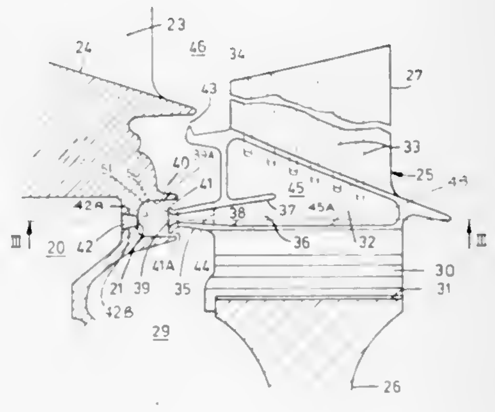


The invention herein described refers to the introduction of improvements, development of new components, new types and new arrangements of the high pressure rotary hydraulic pumps according to the original Spanish Pat. No. 256,654, U.S. Pat. No. 3,093,080 and the Spanish "Certificado de Adicion" Pat. No, 272,092. These improvements have been registered in Spain in accordance with U.S. Pat. No. 383,567 and "Certificado de Adicion" Pat. No. 389,338.

3,791,758

COOLING OF TURBINE BLADES

John Jenkinson, Bristol, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
Filed May 1, 1972, Ser. No. 249,140
Claims priority, application Great Britain, May 6, 1971, 14,172/71
Int. Cl. F01d *5/08*
U.S. Cl. 415—116 **7 Claims**

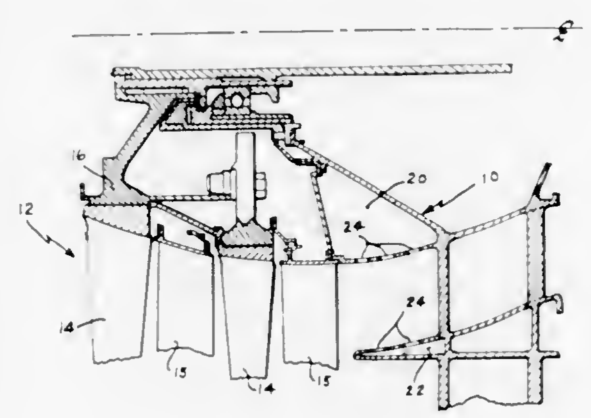


The disclosure of this invention pertains to a gas turbine engine in which cooling air is blown from nozzles in a stationary structure into an annular array of inlet openings in a turbine rotor. The inlet openings lead to passages for supplying the cooling air to turbine blades. The passages are defined by radial walls extending downstream of the inlet openings and shaped to define splitters in respect of the flow through the inlet opening so that the latter is effectively a circumferentially continuous opening. Thereby diffusion of the flow from the nozzles to the openings is facilitated.

3,791,759

TURBINE PRESSURE ATTENUATION PLENUM CHAMBERS

Joseph A. Tetrault, East Hartford, Conn., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed June 7, 1972, Ser. No. 260,645
Int. Cl. F01n *27/02;* **F04d** *29/68*
U.S. Cl. 415—119 **3 Claims**

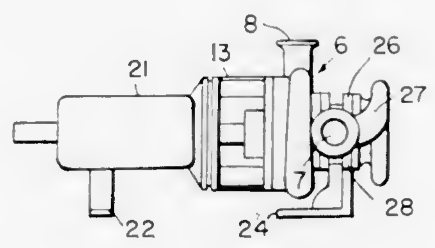


A turbine having a plurality of pressure attenuation plenum chambers. These chambers are located adjacent the vanes of a turbine thereby relieving the excess pressure by distributing it through a series of apertures in the plenum chamber walls.

3,791,760

UNIVERSAL IN LINE AND END SUCTION PUMP ARRANGEMENT

Bruce R. Lipe, Cincinnati, Ohio, assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed July 31, 1972, Ser. No. 276,848
Int. Cl. F04d *29/40, 17/08*
U.S. Cl. 415—121 **1 Claim**

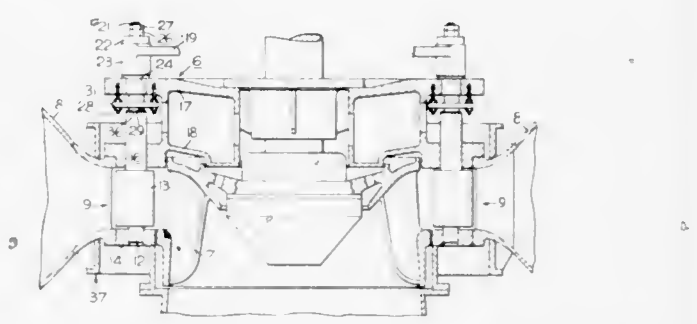


A centrifugal pump having an inlet and a discharge with a universal mounting surface positioned about the inlet. An extension to the inlet including a pump supporting foot can be attached to the universal mounting surface. Additionally, an in line pump inlet can be attached to either the foot support inlet or the pump inlet to provide an inlet to the pump in line with the pump discharge.

3,791,761

THRUST ADJUSTING MECHANISM FOR HYDRAULIC TURBINE WICKET GATES

Gerald L. Hayes, York, Pa., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Sept. 29, 1972, Ser. No. 293,543
Int. Cl. F01d *9/00*
U.S. Cl. 415—163 **1 Claim**

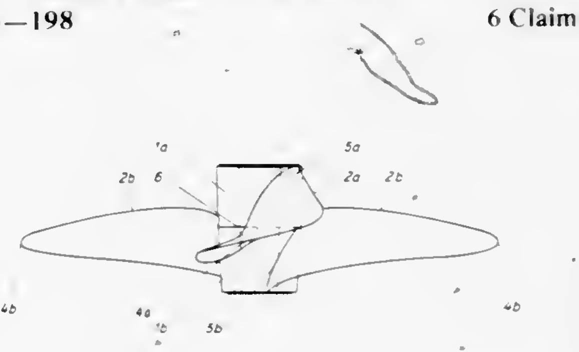


Means are provided for limiting the axial thrust of the turbine wicket gates. A plate adjustably connected to the turbine headcover is selectively positioned relative to a shoulder on the wicket gate shaft to provide the proper thrust clearance.

3,791,762

SHIP'S PROPELLER

Hans Brehme, Hamburg, Germany, assignor to Theodore Zeise, Hamburg, Germany
Filed May 27, 1971, Ser. No. 147,466
Claims priority, application Germany, May 29, 1970, P 20 26 290.2
Int. Cl. B44d *3/06;* **B63h** *1/20*
U.S. Cl. 416—198 **6 Claims**



A ship's propeller has two coaxial hub members and a plurality of blade members, one or more on each of the hub members. Each of the blade members is integral with and radially projects from one of the hub members and its root extends in part to the other hub member. The blade members each have a radially outward blade area and all areas of the blade members together form a propeller shape having blades located in a common propeller plane transverse of the axis of the hub members.

3,791,763

PUMP USED IN DREDGING SYSTEMS OPERATING WITH COMPRESSED AIR

Giovanni Faldi, Via Forese Donatù, 27, Firenze, Italy
Filed Feb. 22, 1972, Ser. No. 228,006
Claims priority, application Italy, Mar. 16, 1971, 21851 A/71
Int. Cl. F04f *1/06;* **E02f** *3/88*
U.S. Cl. 417—118 **3 Claims**

An improvement in the pumps, used in the dredging systems and operating with compressed air, is disclosed, wherein foreign materials, tending to interfere with the operation of the inlet valve and at times to clog the supply pipe of the compressed air, are prevented from entering into the said pipes, by means of an inlet pipe for the dredged material the discharge

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The rotating casing member has an eccentrically positioned

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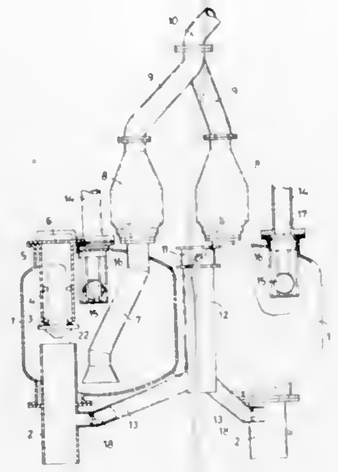
patient through the same needle. Such a dialysis system requires a device, commonly called an "occluder," by means

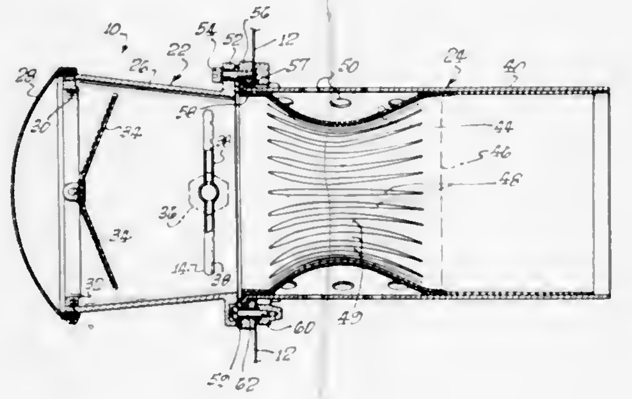
part, adapted to be strapped to the exterior of the chest wall, carries the magnet and mechanical linkage. The motion of the opening of which is not flushed with the bottom of the pump casing and the closure member for the said discharge opening



is positioned outside of the inlet pipe and is axially displaced with respect to the inlet pipe and above the same.

3,791,764
VARIABLE AREA RATIO JET PUMP

James R. Summer, Brielle, N.J., assignor to The Garrett Corporation, Los Angeles, Calif.
Filed Mar. 1, 1972, Ser. No. 230,904
Int. Cl. F04f *5/48*
U.S. Cl. 417—185 **2 Claims**

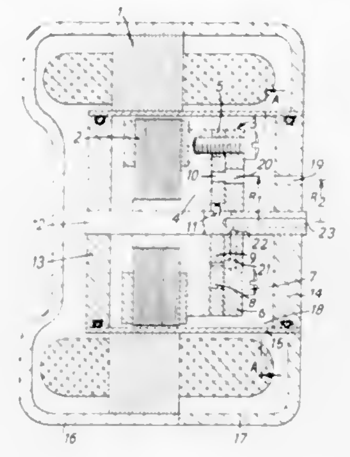


A jet pump having a large ratio of the area of the mixing tubular member to the primary nozzle or nozzles area, is arranged for constriction of the mixing tube upon the application of fluid pressure on the exterior surface, resulting in a gradually decreasing mixing tube throat with a resulting considerable decrease in the area ratio.

3,791,765
LIQUID PUMP, PARTICULARLY A FUEL-OIL PUMP

Gunnar Lyshoji Hansen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Filed Oct. 15, 1971, Ser. No. 189,537
Claims priority, application Germany, Oct. 17, 1970, P 20 51 036.5
Int. Cl. F04b *17/00*
U.S. Cl. 417—357 **3 Claims**

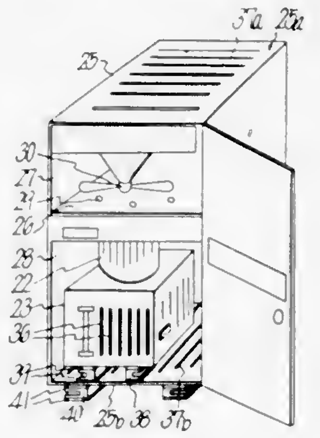
The invention relates to a pump assembly which may be utilized as a fuel oil pump and which has constructional features which minimize the possibility of air binding. The assembly has a rotating casing member in which pumping elements are housed and which is surrounded by a casing so as to form a suction chamber which surrounds the rotating casing member. The rotation of the casing member causes liquid in the suction chamber to also rotate and form a ring of liquid. The rotating casing member has an eccentrically positioned inlet which passes through the ring of liquid so formed once



during each cycle of rotation and this insures the introduction of liquid, as distinguished from only air, into the inlet.

3,791,766
HYDRAULIC PRESSURE GENERATING DEVICE

Aisaku Kikutsugi, Kawasaki, and Yoshihisa Shimoyama, Tokyo, both of Japan, assignors to Kabushikikaisha Tokyo Keiki (Tokyo Keiki Co., Ltd.), Tokyo, Japan
Filed Feb. 2, 1972, Ser. No. 222,848
Claims priority, application Japan, Feb. 27, 1971, 46/12444
Int. Cl. F04b *39/06*
U.S. Cl. 417—363 **9 Claims**



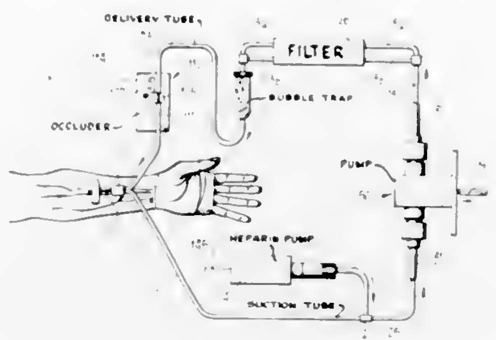
A hydraulic pressure generating device having a housing with air holes formed at least in its upper and lower walls, a partition wall with air holes to divide the housing into upper and lower rooms, a fan located in the upper room of the housing, a pressure compensation variable discharge type pump, a motor mounted in the lower room for driving the pump, and an oil tank disposed in the lower room and having soaked therein the pump. In this case, when the fan is operated, air is sucked into the housing from the air holes bored in the lower wall of the housing and is discharged out of the housing through the air holes bored in the upper wall of the housing to thereby cool the pump and the motor effectively.

3,791,767
DIALYSIS PUMPING SYSTEM

Karl Shill, 38171 Ashford Way, Fremont, Calif.
Filed Mar. 15, 1972, Ser. No. 234,935
Int. Cl. F04b *9/10*
U.S. Cl. 417—389 **4 Claims**

This invention relates to a dialysis pump and pumping system primarily designed for the pumping of blood for purification in an "artificial kidney machine" using the recently announced system of the use of a single needle temporarily inserted into a vein or artery of a patient through which blood is withdrawn from the vein for purification and returned to the

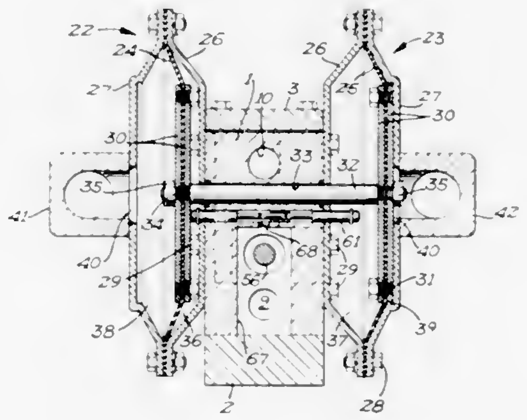
patient through the same needle. Such a dialysis system requires a device, commonly called an "occluder," by means of which blood from the filter is prevented from entering the



needle during the suction stroke of the pump of the machine and is open to flow during the pumping stroke which, in the preferred form, exerts a greater pressure than that supplied by the body during the suction stroke of the pump.

3,791,768
FLUID PUMP

William F. Wanner, 5805 View Ln., Minneapolis, Minn.
Filed June 16, 1972, Ser. No. 263,692
Int. Cl. F04b *17/00, 35/00*
U.S. Cl. 417—393 **3 Claims**

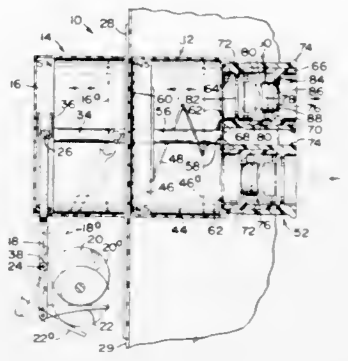


A pair of fluid pressure operated diaphragm pumps, the diaphragms of which are disposed in separate housings and connected together for common reciprocatory movements. A valve body provides support for the housings and for a connection between the diaphragms. The valve body contains a reversing valve, a pilot valve, and a pressure relief valve in a pump operating fluid circuit which includes primary pressure chambers in the housings at one side of the diaphragms. The housings define secondary chambers at the other side of the diaphragms for pumping fluids isolated from the pump operating fluids.

3,791,769
MAGNETIC HEART PUMP

Stephen G. Kovacs, 23 Rockaway St., Clearwater Beach, Fla.
Filed June 4, 1970, Ser. No. 43,519
Int. Cl. F04b *17/04*
U.S. Cl. 417—417 **7 Claims**

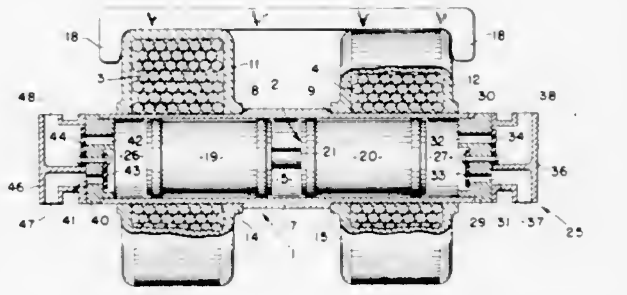
A magnetically driven heart pump wherein relative movement between opposing magnetic fields induce pump piston motion, which simulates the pulsatile pumping action of a natural heart. The heart pump has two separate parts. The first part comprises the pumping and valve chambers, and is adapted to be imbedded within the chest cavity. The second part, adapted to be strapped to the exterior of the chest wall, carries the magnet and mechanical linkage. The motion of the



exterior magnet induces pump piston motion within the pumping chamber.

3,791,770
ELECTROMAGNETIC PUMP OR MOTOR DEVICE WITH AXIALLY SPACED PISTON MEMBERS

Robert A. Farkos, 63 York Rd., Hudson, Ohio
Filed May 24, 1973, Ser. No. 363,332
Int. Cl. F04b *17/04*
U.S. Cl. 417—418 **9 Claims**

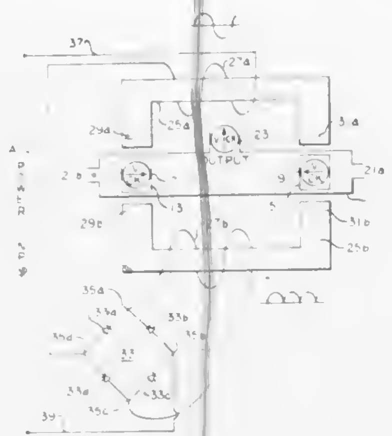


An electromagnetic pump or motor device includes a cylinder having a bore selectively sealed at its ends by removable valve plate assemblies communicating with a fluid system, a piston assembly movable in the bore of the cylinder, and spaced solenoid coils removably accurately positioned about the cylinder by a central radially outwardly projecting annular rib having two stop faces against which the inner ends of the coil housings abut, said solenoid coils being alternately energized to produce respective magnetic fields alternately for attracting the piston assembly to reciprocate the same in the bore. The piston assembly includes two spaced cylindrical pistons joined by a non-magnetic connecting pin or coupling, the piston assembly being of sufficient length to position a part of one piston radially inside the non-energized coil at the end of the piston assembly stroke, whereby such one piston is in a strong magnetic field for the return stroke of the cycle.

3,791,771
PUMP HAVING MAGNETICALLY DRIVEN RECIPROCATING PISTONS

John F. Roesel, Jr., Rt. No. 2, Box 281-M, Upper Manatee River Rd., Bradenton, Fla.
Filed Dec. 23, 1971, Ser. No. 211,183
Int. Cl. F04b *17/04, 35/04, 39/10*
U.S. Cl. 417—418 **7 Claims**

A pump wherein the pumping takes place in an elongated chamber having first and second magnetic material piston members therein, at least one member being moveable and at least said one moveable member having check valve means therein so that liquid is flowed through the check valve means as the members are separating and the relative movement towards each other of the sections closes the check valve means. A unidirectional flow outlet between the members allows the liquid to be pumped out by the relative movement of the piston members. Facing each other on the outside of the chamber are first and second horseshoe electromagnets with first and second coils around each horseshoe. Connected to the first set of coils is an AC to DC converter to supply DC power to the coil, whereas the second coil has a line for connection to an AC source. The first coil, the converter and the second coil are in series so that the first horseshoe magnet presents alternating North and South poles, while the second horseshoe magnet has fixed North and South poles. When plugged into a line, the fixed poles are alternately presented with a similar and a different opposed pole. This causes the moveable piston members to be attracted to the poles on one cycle and be attracted to each other on the next cycle by virtue of the tendency of the pistons to move in the direction of maximum magnetic flux linkage, thus pumping the fluid.



3,791,772
VACUUM CLEANER FAN ASSEMBLY

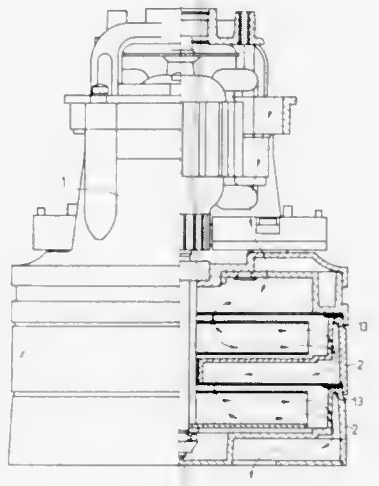
Keimpe Klaas Keimpema, Drachten, and Klaas Vonk, Hoogeveen, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 1, 1971, Ser. No. 185,759

Claims priority, application Netherlands, Oct. 3, 1970, 7014555

Int. Cl. F04b *17/00;* **F04d** *29/44*

U.S. Cl. 417—423 A **1 Claim**



A vacuum cleaner fan assembly consisting of a compressor and an electric motor. A diffuser housing is provided, comprising a ring of guide blades constituting a radial diffuser in which ducts are provided for bypassing the air in the axial direction. The guide blades are supported by sealing means between the housing and an appropriate lid.

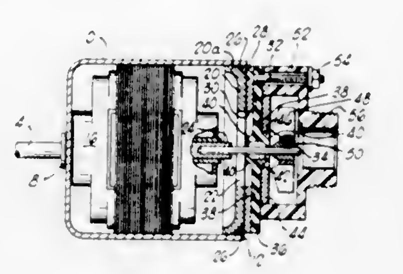
3,791,773
SUBMERSIBLE PUMP

Francis Maginnis, Norman, Okla., assignor to Little Giant Corporation, Oklahoma City, Okla.

Filed June 9, 1972, Ser. No. 261,435

Int. Cl. F04b *17/00*

U.S. Cl. 417—423 **11 Claims**



The disclosure relates to an improved resin encapsulated submersible electrically driven pump of the centrifugal type. The pump unit utilizes a novel sealing gasket arrangement for establishing a seal between the impeller housing and the back support plate, and for establishing a high integrity seal around the shaft extension element.

3,791,774
VACUUM CLEANER UNIT

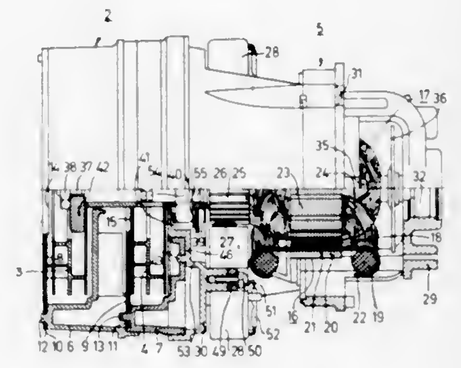
Klaas Vonk, Hoogeveen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 31, 1972, Ser. No. 285,441

Claims priority, application Netherlands, Sept. 2, 1971, 7112062

Int. Cl. F04b *17/00*

U.S. Cl. 417—423 A **4 Claims**



Vacuum cleaner unit comprising a compressor and an electric commutator motor built so as to adjoin the compressor, in which air which in operation emanates from the compressor is used to cool the motor and for this purpose is directed through the motor by means of baffle plates and furthermore is used to conduct away carbon-brush detritus due to wear of the carbon brushes, thereby preventing the detritus from depositing on the motor and in particular on the coils. The commutator with the carbon brushes is positioned between the rotor of the motor and the compressor. A carbon-brush detritus collecting plateau is located at the compressor end of the commutator. The carbon-brush detritus is moved from the commutator circumference towards the compressor by air vorticles produced near the commutator and is deposited on the collecting plateau.

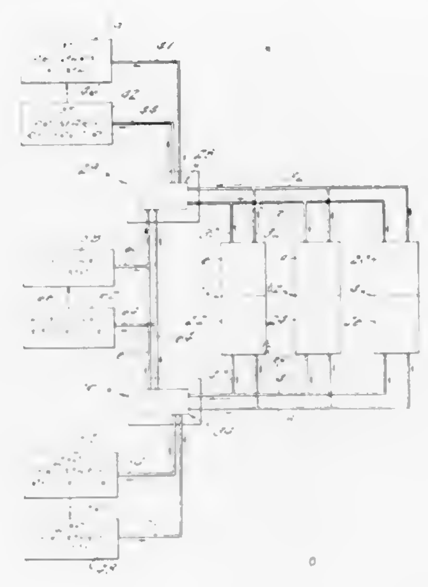
3,791,775
HYDRAULIC FLUID SUPPLY APPARATUS FOR A HYDRAULIC SERVOMECHANISM

Gregory Bochnak, and Roderick A. MacLennan, both of Stratford, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed June 19, 1972, Ser. No. 263,884

Int. Cl. F04b *41/06, 23/04*

U.S. Cl. 417—426 **5 Claims**



Under normal operating conditions a primary pump and a primary reservoir comprise the hydraulic fluid supply apparatus for each of two stages of a hydraulic servomechanism. A transfer valve is responsive to the difference of the hydraulic fluid pressures of each primary pump and an auxiliary pump. A failure which causes a reduction in the pressure provided by either or both primary pumps causes the connection of the auxiliary pump and an auxiliary reservoir to the respective stage.

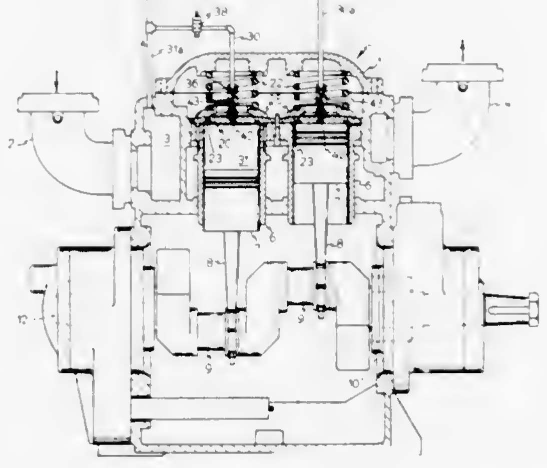
3,791,776
RECIPROCATING CYLINDER TYPE COMPRESSOR HAVING UNLOADING MEANS

Whitney I. Grant, Muskego, Wis., assignor to Vilter Manufacturing Corporation, Milwaukee, Wis.

Filed Apr. 3, 1972, Ser. No. 240,590

Int. Cl. F04b *49/02*

U.S. Cl. 417—440 **2 Claims**



Unloading means for a reciprocating type compressor, for refrigeration equipment or the like, said means placing the discharge chamber in communication with the suction side of the compressor and including a one-way valve and means for actuating the valve at the proper time. The arrangement is such that the individual cylinders of a multi-cylinder compressor can be independently unloaded as desired.

3,791,777
PERISTALTIC PUMP WITH A PLURALITY OF CONTINUOUSLY ADJUSTABLE CHANNELS

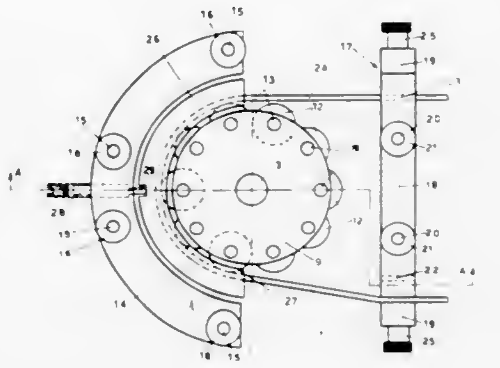
Paolo Papoff, Bari, and Sebastiano Impedovo, Putignano, both of Italy, assignors to Snam Progetti S.p.A., Milanese, Italy

Filed Oct. 8, 1971, Ser. No. 187,643

Claims priority, application Italy, Oct. 8, 1970, 30722/70

Int. Cl. F04b *43/08, 43/12, 45/06*

U.S. Cl. 417—475 **2 Claims**



A novel peristaltic pump is disclosed which comprises a support base, a shaft mounted for rotation on said support base, a rotor means mounted on said shaft at one side of said support base, motor means for driving said shaft mounted on the opposite side of said support means, said rotor means having spaced around its periphery a plurality of force bearings, in a plurality of rows spaced axially along said rotor, a half jaw mounted around the periphery of said rotor means, said half jaw having a plurality of stacked-grooved sectors spaced axially along said rotor means, said plurality of stacked-grooved sectors having individual means for independent adjustment of the radial depth of each of said stacked-grooved sectors.

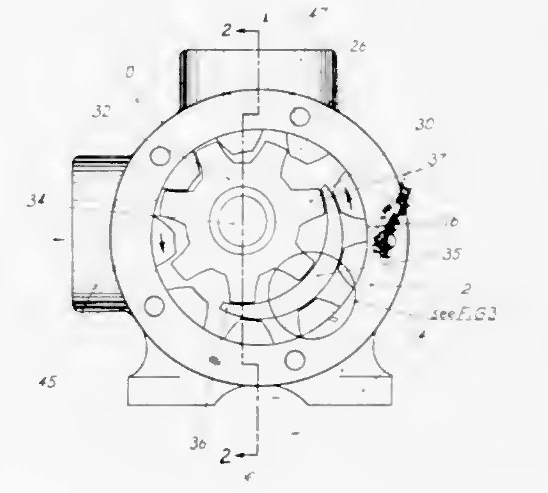
3,791,778
FOAM GENERATOR

Robert E. Eron, 3375 34th St., North, St. Petersburg, Fla.

Continuation-in-part of Ser. No. 771,704, Oct. 30, 1968, abandoned. This application Dec. 8, 1970, Ser. No. 96,105

Int. Cl. F01c *1/14*

U.S. Cl. 418—15 **13 Claims**



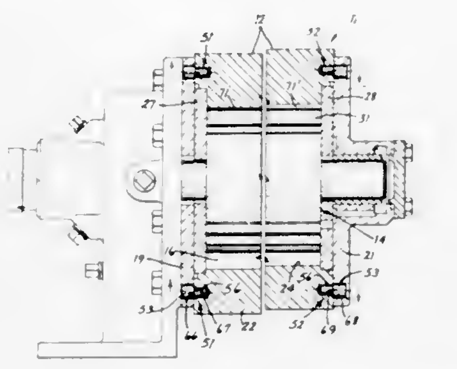
A method and apparatus for simultaneously generating and pumping foam. As air is being pumped, foam solution is transmitted through a number of bores formed in the pump's pumping members, whereupon foam is generated when the solution emerges from the bores and is discharged at the pump's outlet. Additionally the pumping members are designed to meter, through a plurality of inlet ports, amounts of different chemicals of foam solution into the pump.

3,791,779
PUMP ROTOR ADJUSTMENT MECHANISM

Richard E. Nelson, Grand Rapids, Mich., assignor to Dover Corporation, Grand Rapids, Mich.

Filed July 31, 1972, Ser. No. 276,563
Int. Cl. F01c *21/16*

U.S. Cl. 418—30 **2 Claims**



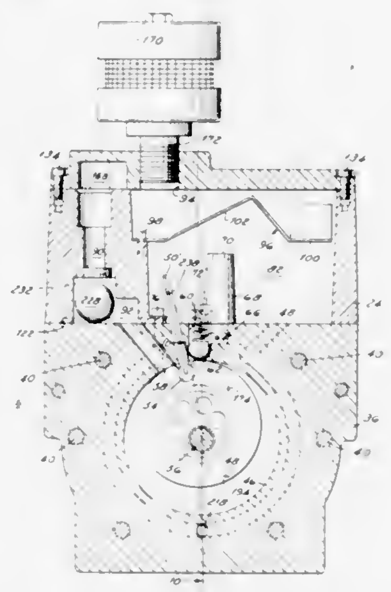
A rotary pump having a housing defining therein a pump chamber and a rotor disposed within said pump chamber for pumping fluid between inlet and outlet ports. The rotor includes slidable vanes which slidably engage an internal guide surface formed on a ringlike cylinder. The ringlike cylinder is fixedly connected to a pair of head members which define opposite ends of the pump chamber and rotatably support the rotor shaft. A plurality of eccentric pins are fixedly connected between each head member and the adjacent axial end of the cylinder for permitting the cylinder, when the pump is being assembled, to be selectively positioned in one of at least two predetermined positions relative to the head members to permit the minimum clearance between the rotor and the inner guide surface to be selected in accordance with the type of fluid to be pumped.

3,791,780
VACUUM PUMP

Junior L. Fritch, Edgerton, and Don R. Brandeberry, Montpelier, both of Ohio, assignors to Robinair Manufacturing Corporation, Montpelier, Ohio

Filed May 11, 1972, Ser. No. 252,213
Int. Cl. F01c *21/04;* **F04c** *27/02, 29/02*

U.S. Cl. 418—60 **13 Claims**



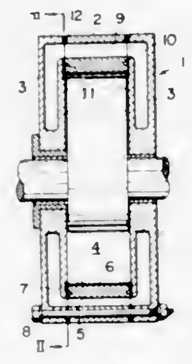
An improved vacuum pump of the rotary mechanical type having interchangeable component parts which may be assembled in "building block" fashion to provide single and multistage pumps built up from the same basic parts. The multistage pump may be provided with a switchable feature whereby the stages may be operated in series or in parallel, with automatic switching therebetween if desired. Both air ballast and oil injection are provided, the latter incorporating a check valve to control the supply of oil to the pumping chamber.

3,791,781
ROTARY PISTON INTERNAL COMBUSTION ENGINE

Tetsuo Fujiyama, and Takashi Hamamoto, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed June 29, 1972, Ser. No. 267,263
Claims priority, application Japan, June 29, 1971, 46/56728
Int. Cl. F16m *1/04*

U.S. Cl. 418—179 **7 Claims**



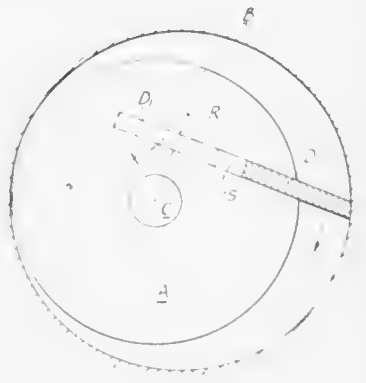
In a rotary piston engine, anti-wear treatment such as metal spray, etc., is provided on a fixing surface of a center housing and side housings and particularly the fastening surface around the plug hole, in order to prevent abnormal wear of the fastening surface and the consequent disadvantage caused by abnormal wear.

3,791,782
ROTARY PUMPS

Robert Horne, Cheltenham, England, assignor to Lacy-Hulbert and Company Limited, Beddington, Croydon, Surrey, England

Filed Nov. 22, 1972, Ser. No. 308,821
Claims priority, application Great Britain, Dec. 20, 1971, 58,992/71
Int. Cl. F01c *1/00;* **F04c** *1/00*

U.S. Cl. 418—236 **1 Claim**



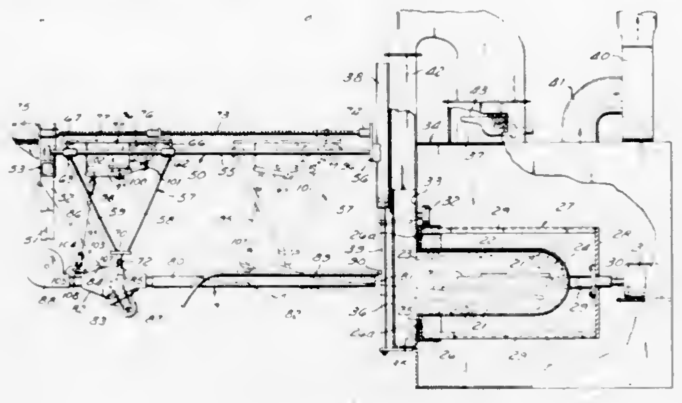
A pump of the eccentric rotor offset sliding blade type has the blade slots of such depth, in relation to the length of blades approaching the fully worn condition, that upon re-starting after stoppage worn blades remain retracted in their slots and cannot escape to cause jamming and damage to the pump.

3,791,783
APPARATUS FOR FORMING FIBER PREFORMS

Ronald L. Damon, Thompson, and Arthur J. Wiltshire, Cleveland, both of Ohio, assignors to Structural Fibers, Inc., Chardon, Ohio

Filed June 28, 1971, Ser. No. 157,434
Int. Cl. B29c *5/04, 5/06*

U.S. Cl. 425—82 **4 Claims**



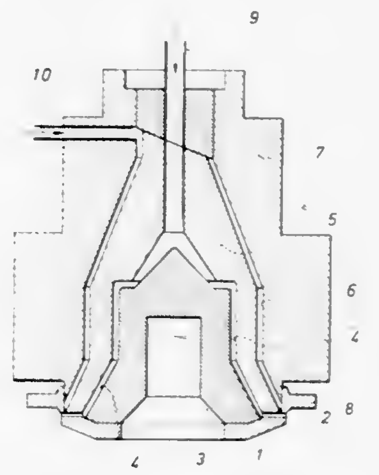
A machine for fabricating fibrous preforms which may be used in molding fiber-reinforced plastic articles by impregnating the preform with a suitable thermosetting resin. The preform is a unitary, seamless, porous cylinder having a closed bottom and comprises short lengths of fibers which are bonded together by a cured resin binder. The machine according to this invention includes a screen form which defines the shape of the preform to be formed. The form has an open mouth, a cylindrical sidewall, and a closed opposite end and is mounted for rotation about its horizontal axis. The outside surface of the screen form is substantially enclosed by a chamber, and an exhaust fan is provided in the chamber to draw air through the form from the inside to the outside thereof. A fiber dispenser, which comprises a tube, extends into the screen form and includes a chopper at one end for chopping continuous filaments into short lengths. The chopped filaments are blown through the tube and are deposited on the screen as the screen is rotated. The tube is mounted on a carriage and is movable from an initial position wherein its discharge mouth is located closely adjacent the center of the closed end of the screen, to a position which is closely spaced from the sidewall of the screen, and then along the sidewall to the open mouth of the screen. A binder resin dispenser is provided adjacent the discharge mouth of the tube so that the binder resin is deposited on the fibers as they are deposited on the screen.

3,791,784
CONTINUOUS EXTRUSIGN MACHINE FOR MANUFACTURING PLASTIC NETS

D. Ignacio Aurrecoechia Arechavaleta, Bilbao, Spain, assignor to Triker S.A., Bilbao, Spain

Filed Nov. 13, 1972, Ser. No. 305,928
Claims priority, application Spain, Nov. 6, 1971, 396735
Int. Cl. B29f *3/04*

U.S. Cl. 425—132 **7 Claims**



A continuous extrusion machine for manufacturing a net like mesh: the machine includes a circular housing having first and second adjacent outlets near its base; one extrusion outlet includes means for extruding longitudinal ribs which means is replaceably fastened at the end of the housing; the other extrusion outlet is shaped to produce transverse ribs and to deposit the transverse ribs on the longitudinal ribs; each outlet communicates with a separate extrusion pressure chamber, whereby two different materials may be extruded; blocking means at the exterior of the housing are shifted between a position which blocks the second outlet and one which opens the second outlet, thereby selectively cutting off or permitting flow out the second outlet to produce spaced transverse ribs.

CHEMICAL

3,791,785

AROMATIC POLYESTER TEXTILE FIBERS DYED WITH BIS(ARYLAMINO) DIHYDROXYANTHRAQUINONE DYES

Raouf Botros, Lock Haven, Pa., assignor to American Aniline Products, Inc., Lock Haven, Pa.

Continuation-in-part of Ser. No. 222,361, Jan. 31, 1972. This application May 17, 1972, Ser. No. 253,995

Int. Cl. D06p *3/54;* **C07c** *97/14;* **C09b** *1/50*

U.S. Cl. 8—39 **5 Claims**

Aromatic polyester textile material is dyed with anthraquinone dyes made by the reaction of an arylamine, such as aniline, with a dichloro-dihydroxyanthraquinone in which one of the chlorine atoms is in a non-peri position, the reaction being conducted in the presence of an acid acceptor and a copper catalyst. This class of anthraquinone dyes, when appropriately dispersed, provides clear blue dyeings on aromatic polyester fabrics with excellent substantivity, very good sublimation fastness, and excellent fastness to light. The dyes are applied to polyesters, such as polyethylene terephthalate, by carrier, pressure and thermofixation methods.

3,791,786

PROCESS FOR BROWN MINERAL DYEINGS OF CELLULOSICS WITHOUT OXIDATIVE DEGRADATION (TENDERING), FROM A SINGLE BATH

Charles J. Conner, Metairie, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 5, 1972, Ser. No. 241,461

Int. Cl. D06p *3/60*

U.S. Cl. 8—52 **2 Claims**

Cellulosic textiles have been imparted controllable shades of "bistre-brown" or of "reddish-brown" coloration which have proved to be durable to laundering. These coloration have been imparted mainly to cotton fabrics through single bath mineral dyeings with inorganic compounds or mixtures thereof by impregnating the cellulosic textile with an aqueous solution containing potassium permanganate and a methylolated ethylene urea, removing the excess solution, then curing the wet impregnated textile. The reddish-brown varieties are prepared by incorporating small quantities of zirconia in the solutions. Whereas the treatment with permanganate alone severely degrades the cellulosic by oxidation, the incorporation of a methylol urea inhibits the cellulosic oxidation and subsequent degradation.

3,791,787

PROCESS FOR DYEING CELLULOSE FIBERS

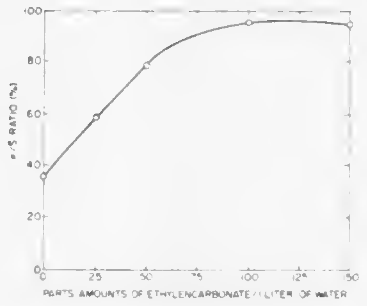
Yasushi Yamada, Yono; Hiroomi Hosoi, Urawa; Hiroaki Ohno, Tokyo, and Teruhito Sotogoshi, Yono, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed July 27, 1972, Ser. No. 275,575

Claims priority, application Japan, Aug. 5, 1971, 46-58668; Aug. 5, 1971, 46-58669

Int. Cl. D06p *3/66*

U.S. Cl. 8—54.2 **10 Claims**



Cyclic alkylene carbonates or inorganic salts containing fluorine are used as reaction promoters in the fixation of reactive dyestuffs (other than those of resin type) to cellulose fibers under nearly neutral conditions.

3,791,788

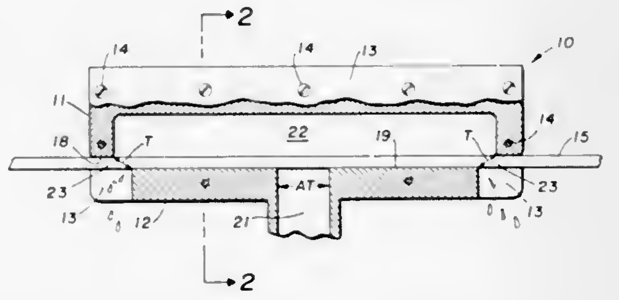
METHOD FOR WASHING A TOW

Ernest A. Taylor, Jr., Decatur, Ala., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 198,780, Nov. 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 51,261, June 30, 1970, abandoned. This application Dec. 18, 1972, Ser. No. 315,951

Int. Cl. D01f *7/06*

U.S. Cl. 8—137.5 **13 Claims**



A method for washing a tow wherein the tow is passed through a confined zone and a stream of water is forced through the tow at a minimum rate at least as great as

$$x = 1{,}000T \quad WN/h\,(\mu/\rho)$$

where x is the water flow rate in gallons per minute, T is the thickness of the stream of water in inches, W is the width of the confined zone in inches, h is the thickness of the confined zone in inches, N is the number of filaments in the tow, μ is the viscosity of the water in pounds per foot-second, and ρ is the density of the water in pounds per cubic foot. Preferably, the water is forced through the tow at a rate at least 3 times the minimum rate.

3,791,789

1,2-DITHIOLIUM COMPOUNDS AS CORROSION INHIBITORS

Bernardus A. Oude Alink, St. Louis, Mo., assignor to Petrolite Corporation, Wilmington, Del.

Division of Ser. No. 79,709, Oct. 9, 1970. This application June 22, 1972, Ser. No. 265,243

Int. Cl. C23f *11/04, 11/16*

U.S. Cl. 21—2.5 R **18 Claims**

1,2-dithiolium compounds are prepared by oxidizing 1,2-dithiole-3-thiones. In general, aliphatic-substituted dithiolium compounds have been found to be more stable and more water-soluble than aryl-substituted dithiolium compounds. Dithiolium compounds are useful as corrosion inhibitors in aqueous and/or aerated and/or acidic systems. Their usefulness as corrosion inhibitors is enhanced by the high water solubility and stability of the aliphatic-substituted dithiolium compounds.

3,791,790

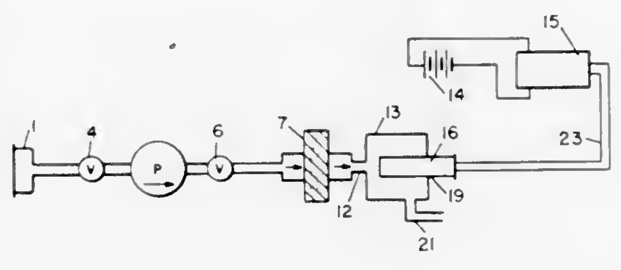
PORTABLE PURIFICATION DEVICE FOR FLUIDS

John L. Wyndham; Wayne E. Stevens, and Philip J. McCauley, all of El Paso, Tex., assignors to Intertech Corporation, El Paso, Tex.

Continuation of Ser. No. 782,657, Dec. 10, 1968, abandoned. This application Nov. 16, 1971, Ser. No. 199,156

Int. Cl. C02b *3/00;* **A61l** *3/00*

U.S. Cl. 21—102 R **7 Claims**



A portable purification device for fluids having a filter for filtering fluid and clarifying same, and a purifying apparatus having a tube, a cylinder and a spiral distributor forming a thin, annular, spiraling flow path for subjecting filtered fluid to germicidal rays to destroy harmful micro-organisms. A pump pumps a fluid through the filter. A battery and an inverter provide alternating current for a radiation lamp which is used as a source of germicidal rays. The pump, filter, battery, inverter, and purifying apparatus are arranged in a common housing to form an integral unit.

3,791,791

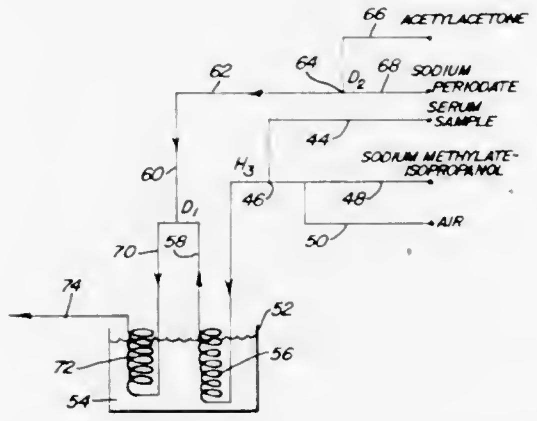
METHOD AND APPARATUS FOR DETERMINING TRIGLYCERIDE LEVEL

Bernard G. Finkel, Spring Valley; Arthur L. Levy, Mount Vernon, and Carol Keyloun, Briarcliff Manor, all of N.Y., assignors to Scientific Specialties Ltd., Garden City, N.Y.

Filed Nov. 2, 1971, Ser. No. 194,944

Int. Cl. G01n *33/16*

U.S. Cl. 23—230 B **2 Claims**



Blood serum is introduced into an extraction tube filled with a premeasured extraction reagent Triglycerides are selectively extracted from the serum by an extraction reagent. The extracted triglycerides are subjected to transesterification to liberate glycerol. The triglycerides are then oxidized and treated with a color-producing reagent. The amount of color is directly proportional to triglyceride concentration which can be measured by a colorimeter.

3,791,792

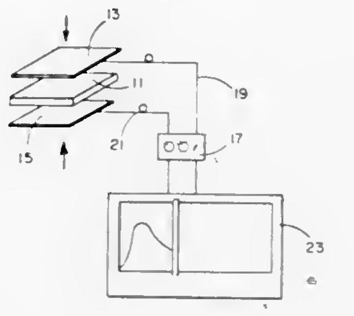
POLYMER CURE DETERMINATION METHOD

Newton E. Lindsay, Newbury Park, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Mar. 29, 1972, Ser. No. 239,226

Int. Cl. G01n *27/00*

U.S. Cl. 23—230 R **8 Claims**



A pair of electrodes formed of dissimilar metals are placed in an uncured resin. As the resin cures, the material produces a dc potential up to several hundred millivolts. The potential can be plotted with time of cure as an indication of the relative rate of chemical activity occurring during the curing period.

3,791,793

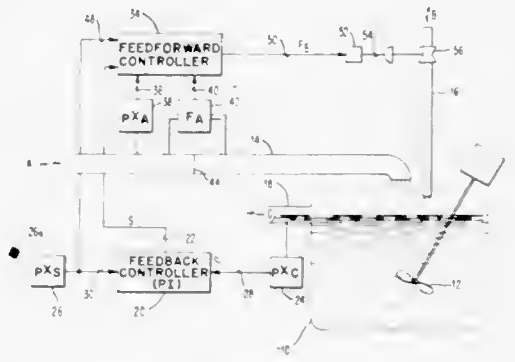
ADAPTIVE FEED FORWARD-FEEDBACK CONTROL OF THE CONCENTRATION OF A SELECTED ION OF A SOLUTION

Paul G. Friedmann, Wyndmoor, Pa., and William C. Cohen, Willingboro, N.J., assignors to Leeds & Northrup Company, Philadelphia, Pa.

Filed Jan. 31, 1972, Ser. No. 222,234

Int. Cl. G05b *13/02;* **G05d** *21/02*

U.S. Cl. 23—230 A **11 Claims**



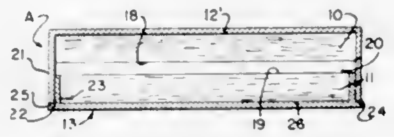
A control system for controlling the flow of reagent into a reactor for the correction of the concentration of a selected ion in the influent to the reactor so as to provide a desired concentration in the effluent stream from the reactor. A feedback controller having proportional and reset responses is provided to control the flow of reagent to maintain the logarithm of the concentration of the ion in the effluent at its set point. The control signal from the feedback controller is multiplied by a feedforward control signal responsive to changes in the logarithm of the ion concentration of the influent, the effluent set point, and influent flow. The resulting product is then summed with the feedforward control signal to provide the final control signal required to control a linear operator for modification of the reagent flow to maintain the logarithm of the ion concentration in the effluent at the set point.

components being subjected to reduction and sintering in a

3,791,802

3,791,794
INDICATOR MEANS IN FROZEN STATE UTILIZING pH-SENSITIVE INDICATOR AND SEPARATED ELECTROLYTE

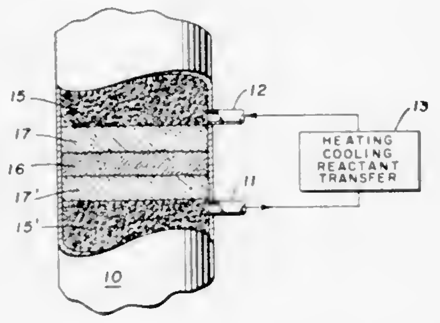
Abraham Emil Tomkin, P.O. Box 7311, Washington, D.C.
Filed Dec. 28, 1971, Ser. No. 212,982
Int. Cl. G01n *21/06, 33/02*
U.S. Cl. 23—253 TP **9 Claims**



Means whereby it becomes practical and at low cost to determined whether a frozen product has thawed prior to reaching the ultimate user. By the use of an Indicator Means consisting of liquid in a frozen state that forms a layer or layers separating two activating components, a solute electrolyte and a pH-sensitive indicator, that remain inactive as long as the layer or layers are in a frozen state. Upon the melting of the frozen layer or layers, the two activating components become activated in the formed single liquid. The thawing of the frozen product causes the melting of the frozen layer or layers of the Indicator Means thereby triggering an identifying color in the Indicator Means. The identifying color is sharp, distinct and irreversible remaining after the thawed package may be re-frozen providing the ultimate user with a check for prethawing since the Indicator Means could be permanently attached to or visibly inserted into each individual package or a number of the indicators could be placed in a carton containing a plurality of frozen packages before the carton is sealed.

3,791,795
INTERBED SEAL FOR MULTIBED REACTORS

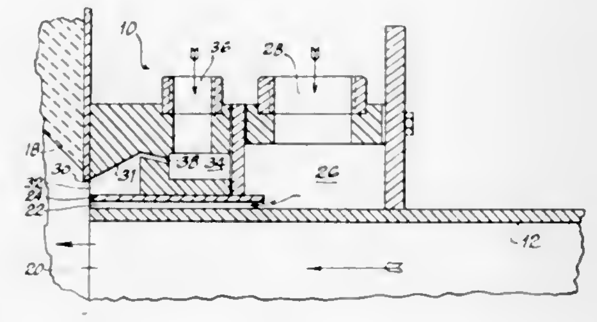
Bingham Y. K. Pan; John R. Garton, and Robert V. Parker, all of Texas City, Tex., assignors to Monsanto Company, Saint Louis, Mo.
Filed Nov. 19, 1971, Ser. No. 200,512
Int. Cl. B01j *9/04*
U.S. Cl. 23—288 R **12 Claims**



An improved interbed seal for fixed multibed vapor phase catalytic reactors which provides minimum leakage between beds operated under different conditions or with different reactant concentrations. The improved seal consists in a floating seal of a plurality of layers of different sizes of finely divided inert material of increasing size from the center of the seal to the adjacent catalyst beds. The improved seal offers efficient sealing, economy of cost and ease of charge and discharge together with the plurality of catalyst beds for regeneration or recharging fresh catalysts. The preferred finely divided inert material is well-sieved sand of a plurality of different size ranges from smaller than 100 mesh to one-eighth inch.

3,791,796
ANTI-POLLUTION APPARATUS

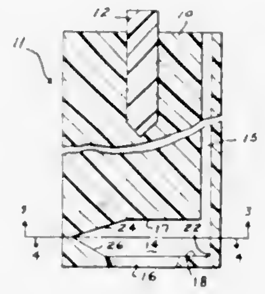
Slade B. Gamble, Park Ridge, and Richard A. Kelly, Prospect Heights, both of Ill., assignors to Flinn & Dreffein Engineering Co., Northbrook, Ill.
Filed Nov. 24, 1971, Ser. No. 201,885
Int. Cl. F23c *9/04*
U.S. Cl. 23—277 C **8 Claims**



Apparatus for the generation of free radicals and admixture thereof with combustible pollutants for substantially complete elimination of such pollutants by oxidation or combustion.

3,791,797
METHOD FOR PURIFYING MERCURY

Vann Yuen, 2809 Land Park Dr., Sacramento, Calif.
Division of Ser. No. 869,665, Oct. 27, 1969. This application Dec. 20, 1971, Ser. No. 210,277
Int. Cl. B01d *11/04;* **C01g** *13/00*
U.S. Cl. 23—312 R **2 Claims**



An apparatus for atomizing liquid materials comprises a solid cylindrical body having a rotation means attached to one end and a chamber formed in the other end thereof. Passageways extending through the cylindrical body to the chamber are so arranged that their vertical axes are parallel to and adjacent the sides of the body. An opening is provided into the chamber which has complementary ribs formed in its top and bottom. The apparatus can be employed in a variety of mixing and liquid contacting operations, but it is particularly useful for effecting contact between mercury and agents used in its purification.

ERRATUM

For Class 23—230 B see:
Patent No. 3,792,044

3,791,798
METAL BONDING WITH SINTERING

John F. Joyce, and Hoy O. McIntire, both of Columbus, Ohio, assignors to National Standard Company, Niles, Mich.
Continuation-in-part of Ser. No. 817,304, April 18, 1969, abandoned. This application July 24, 1972, Ser. No. 274,433
Int. Cl. B22f *7/02, 3/00*
U.S. Cl. 29—182.2 **24 Claims**

Heat bonding of a first metal component with a second metal component in which the holding is affected to the metal

components being subjected to reduction and sintering in a favorable environment and in which the second metal component consisting of a reducible metal compound has contraction characteristics during reduction and sintering greater than that of the first metal component to effect bonding of two components.

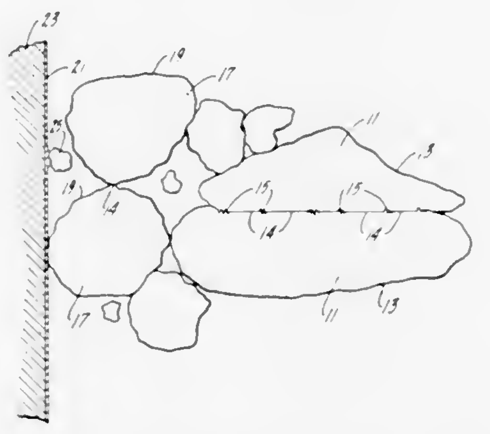
3,791,799
EXTRUSION DIE

Friedrich Franz Xaver Heitzinger, Lechaschau, Austria, assignor to Schwarzkopf Development Corporation, New York, N.Y.
Filed Jan. 29, 1971, Ser. No. 111,136
Claims priority, application Austria, Feb. 2, 1970, 906/70
Int. Cl. B22f *5/00*
U.S. Cl. 29—182.5 **5 Claims**

This invention relates to extrusion dies useful for processing both non-ferrous metals and alloy steels, the dies being made of a predominant amount of molybdenum or tungsten, the remainder being zirconia.

3,791,800
POWDER METALLURGY ALUMINUM PARTS

Sherwood W. McGee, Lisle, Ill., assignor to Amsted Industries, Inc., Chicago, Ill.
Filed Feb. 3, 1971, Ser. No. 112,242
Int. Cl. B22f *3/00, 7/00*
U.S. Cl. 29—182.5 **6 Claims**



A powder metallurgy aluminum article and a method of producing it in which a lubricant is mixed with an aluminum powder of selected particle shape and size and the mixture is cold compacted to a desired density. The compacted mixture is then sintered in air or a protective atmosphere. The sintered article may then be coined or sized.

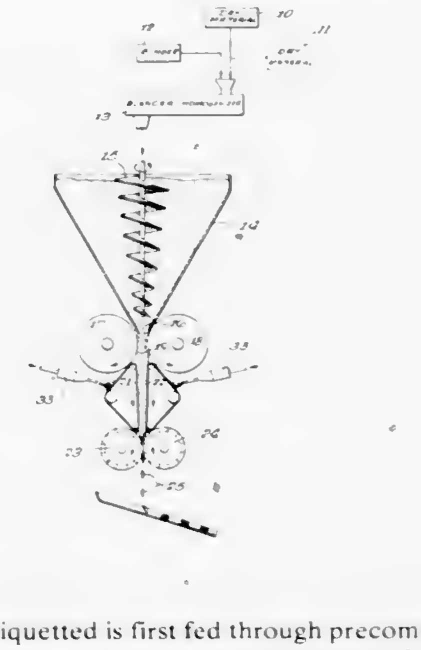
3,791,801
ELECTROPLATED STEEL SHEET

Keiji Ariga; Satoshi Morishita; Katsumi Kanda, and Takashi Mizobe, all of Yamaguchi-Ken, Japan, assignors to Toyo Kohan Co., Ltd., Tokyo, Japan
Filed July 23, 1971, Ser. No. 165,751
Int. Cl. C23b *11/00;* **C23d** *5/00*
U.S. Cl. 29—196.5 **2 Claims**

An electroplated steel plate product with a zinc-rich deposit on the steel surface, said deposit comprising an oxide of molybdenum and tungsten (including hydrated oxides), and/or the total amount in the oxide being about 0.05 to about 2 weight percent of the deposit. In addition, the deposit may further include at least one additional material selected from the group consisting of iron, nickel, cobalt, tin and lead, and compound of said metal, the total metal content of the said additional material being about 0.5 to about 15 weight percent of the deposit.

3,791,802
BRIQUETTING APPARATUS

Michael O. Holowaty, Crown Point, Ind., assignor to Inland Steel Company, Chicago, Ill.
Filed Mar. 27, 1972, Ser. No. 238,380
Int. Cl. B30b *11/00;* **C10l** *5/22*
U.S. Cl. 44—13 **17 Claims**



Material to be briquetted is first fed through precompacting rolls to form a precompacted strip of material guided by a pair of endless belts to the nip of briquetting rolls mating to form a line of briquetting pockets. Resulting briquettes have uniform density regardless of the pocket in which they were formed.

3,791,803
ORGANIC COMPOSITIONS CONTAINING N-ACYL BENZOTRIAZOLES

Harry J. Andress, Jr., Pitman, and Alfred B. Piotrowski, Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 163,093, July 15, 1971, abandoned. This application Apr. 17, 1972, Ser. No. 244,915
Int. Cl. C10l *1/22*
U.S. Cl. 44—63 **16 Claims**

Organic compositions, which are normally susceptible of corroding copper, are provided, containing, in an amount sufficient to inhibit such corrosion an N-acyl benzotriazole.

3,791,804
FUEL AND LUBRICATING OIL ADDITIVES TRANSITION METAL COMPLEXES

William T. Brannen, West Lake, Ohio, and Roger W. Watson, Highland, Ill., assignors to Standard Oil Company, Chicago, Ill.
Filed Oct. 10, 1969, Ser. No. 865,496
Int. Cl. C10l *1/24*
U.S. Cl. 44—68 **1 Claim**

The disclosure describes the reaction product produced by the reaction of about equal molar portions of (1) an alkyl benzene sulfonic acid, an alkyl sulfonic acid, an alkyl phosphorus acid or an alkyl carboxylic acid having an average molecular weight between about 200 and about 1600 and (2) a transition metal complexed with a polyamine.

3,791,805

TRANSITION METAL COMPLEXES AS FUEL AND MOTOR OIL ADDITIVES

William T. Brannen, West Lake, Ohio, and Roger W. Watson, Highland, Ind., assignors to Standard Oil Company, Chicago, Ill.

Filed Oct. 10, 1969, Ser. No. 865,498

Int. Cl. C10l *1/24*

U.S. Cl. 44—68 **1 Claim**

The disclosure describes the reaction product produced by the reaction of about equal molar portions of (1) a polymeric succinic anhydride, polymeric succinic acid or polymer succinimide having an average molecular weight between about 250 and 2,500, and (2) a transition metal complexed with a polyamine.

3,791,806

CONTINUOUS PRODUCTION OF LIGHT-CONDUCTING GLASS FIBERS WITH ION DIFFUSION

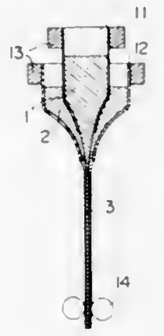
Ken Koizumi, Kawanishi; Yoshiro Ikeda, Nishinomiya, and Mitsugi Yoshiyagawa, Takarazuka, all of Japan, assignors to Nippon Selfoc Kabushiki Kaisha a/k/a Nippon Selfoc Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1970, Ser. No. 101,573

Claims priority, application Japan, Dec. 30, 1969, 44-424

Int. Cl. C03c *25/02*; **C03b** *5/26, 15/00*

U.S. Cl. 65—3 **5 Claims**



In a process for continuously producing a light conducting glass fiber wherein the refractive index in a plane perpendicular to the optical axis of the glass fiber is so distributed that it continuously decreases outward from a certain value at the center toward the peripheral portion, a first kind of glass containing ions having a greater degree of contribution to the refractive index is drawn, in molten state from a central orifice to form the core portion of the glass fiber, and another kind of melted glass containing ions having less contribution to the refractive index is drawn from a second orifice to form an outer coating layer of the glass fiber, the tip of the first central orifice being located at a retracted position compared to that of the second orifice with respect to the drawn direction of the melted glasses, whereby thermal mutual diffusion of these ions is caused to occur through a boundary surface between two kinds of glasses located mainly in the distance portion between the tips.

3,791,807

WASTE WATER RECLAMATION IN FIBER GLASS OPERATION

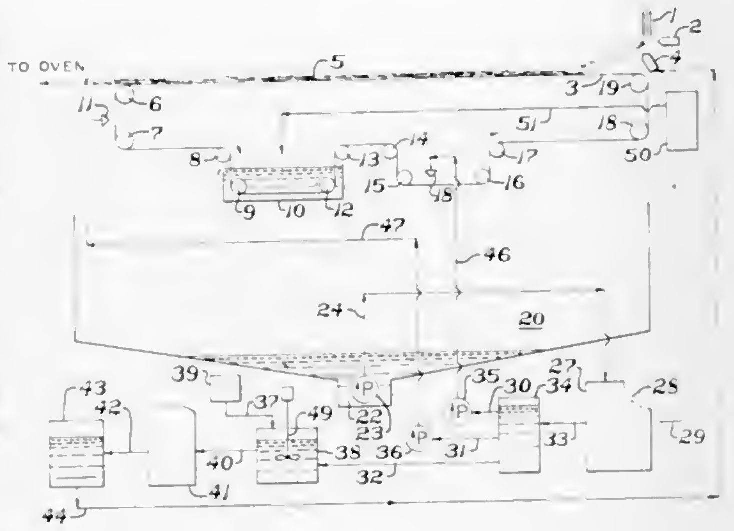
James E. Etzel, Lafayette; Clarence H. Helbing, Shelbyville, and Carl A. Justus, Indianapolis, all of Ind., assignors to Certain-teed Products Corporation, Valley Forge, Pa.

Filed May 2, 1972, Ser. No. 249,582

Int. Cl. C03c *25/02*

U.S. Cl. 65—3 **5 Claims**

A process is described for the utilization of waste waters typically encountered in the manufacture of fiber glass in which the waste water is treated both mechanically and chemically to remove solid materials contained in the waste water such as fiber glass, dust and other like materials. The waters are also chemically treated with high molecular weight cationic polymers to reduce substantially the phenolic resin content of the waters. Recirculation of various water streams for utilization in the fiber glass manufacturing process including utilization of treated waters in the manufacture of binder solutions is also described. The process is such that waste waters used in the manufacturing process can be totally reused thus requiring no disposal of waters to the environment.



3,791,808

METHOD FOR PRODUCING GLASS CERAMICS

Ian M. Thomas, Temperance, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 23, 1971, Ser. No. 211,760

Int. Cl. C03b *29/00*

U.S. Cl. 65—30 **17 Claims**

There is disclosed a process for the preparation of glass ceramics from a thermally crytallizable oxide product which is formed by hydrolysis and condensation reactions and wherein the oxide product is produced and is converted to a glass ceramic at temperatures below the normal liquidus or normal melting temperature of an oxide composition corresponding to the oxide composition of the oxide product.

3,791,809

METHOD OF STRENGTHENING GLASS ARTICLES USING POWDERED SALTS FOR ION EXCHANGE

Raymond Thomas Lau, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 12, 1973, Ser. No. 323,172

Int. Cl. C03c *17/00, 21/00*

U.S. Cl. 65—30 **25 Claims**

Methods for strengthening glass articles such as glass containers are disclosed using powdered salts as the ion exchange medium. In one embodiment, beer bottles made of a conventional flint container glass are sprayed with a powdered ion exchange medium comprising potassium nitrate and tripotassium phosphate. The hot, newly-formed bottles can be advantageously run through the normal annealing treatment in a large volume production line to provide strengthened bottles.

3,791,810

PROCESS FOR PREPARING LIGHTWEIGHT FERTILIZER CONTAINING AMMONIUM POLYPHOSPHATE

Clinton Allen Hollingsworth, Lakeland, and Louis John Lamb, Lutz, both of Fla., assignors to Borden, Inc., New York, N.Y.

Continuation of Ser. No. 83,234, Oct. 22, 1970, abandoned. This application Aug. 30, 1972, Ser. No. 284,770

Int. Cl. C05b *7/00*

U.S. Cl. 71—34 **1 Claim**

A process for preparing a lightweight fertilizer containing ammonium polyphosphate and optionally other plant nutrients by heating a mixture of ammonium polyphosphate with a leavening and hardening agent selected from calcium carbonate, calcium oxide, magnesium carbonate, sodium carbonate, sodium bicarbonate, dolomite or manganese carbonate at a temperature of about 250°F to 375°F for a time sufficient to foam the mixture and subsequently cooling the foamed mixture. Preferably, various plant nutrients such as sources for potash are added to the mixture prior to foaming.

3,791,811

STORABLE HIGHLY CONCENTRATED PESTICIDES AND PROCESS FOR THEIR MANUFACTURE

Heinz French; Konrad Albrecht, both of Frankfurt am Main, and Eugen Schafer, Hofheim, Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius and Bruning, Frankfurt Main, Germany

Continuation of Ser. No. 746,507, July 22, 1968

Filed Jan. 14, 1970, Ser. No. 4,174

Claims priority, application Germany, July 28, 1967, 53083

Int. Cl. A01n *9/20*

U.S. Cl. 71—120 **12 Claims**

The invention provides highly concentrated preparations of pesticidal formulations and their manufacture by means of a wet-grinding and spray-drying process

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3,791,812

PROCESS FOR THE RECOVERY OF NON-FERROUS METAL VALUES FROM SULFIDE ORES AND THE REDUCTION OF GASEOUS EMISSIONS TO THE ATMOSPHERE THEREFROM

Robert L. Frank, Lake Geneva, Wis.; Sidney G. Martin, and Clayton S. Smith, both of Crystal Lake, Ill., assignors to Morton-Norwich Products, Inc., Chicago, Ill.

Filed Dec. 20, 1971, Ser. No. 210,081

Int. Cl. C22b *3/00*; **C01g** *3/10*; **C01c** *3/04*

U.S. Cl. 75—9 **9 Claims**

A process for roasting an admixture of an inorganic chloride and a sulfide ore for subsequent extraction of substantially all of the copper, nickel, cobalt and manganese values of the ore as water soluble salts and for reducing the emission to the atmosphere of large quantities of sulfur dioxide and chlorine formed during said process without the necessity of using chemical absorbing solutions. The process comprises mixing the ore with an inorganic chloride such as sodium chloride, lithium chloride, potassium chloride, calcium chloride and magnesium chloride, providing the mixture in a gas permeable state to a first stage heating or roasting zone while maintaining therein from about 80 to about 140 percent of the stoichiometric quantity of air therein, conducting exhaust gases from the first stage heating zone to a second stage heating or roasting zone which contains roasted mixture from the first stage heating zone, replenishing the first stage roasting zone with fresh inorganic chloride-ore mixture, trapping exhaust gases from the second stage heating zone in water and leaching the roasted mixture from said second stage heating zone with water to extract substantially all of said metal values as water soluble salts. The process reduces the emission to the atmosphere of sulfur dioxide and of chlorine by at least about 85 percent, and upwards of 90 percent in preferred embodiments.

3,791,813

METHOD FOR INJECTING A GASEOUS REACTING AGENT INTO A BATH OF MOLTEN METAL

Sundaresan Ramachandran, Natrona Heights, and Basil U. N. Igwe, New Kensington, both of Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed July 9, 1971, Ser. No. 161,040

Int. Cl. C21c *7/00, 5/30*

U.S. Cl. 75—59 **7 Claims**

Method for injecting a gaseous reaction agent into a bath of molten metal by the use of a submerged nozzle to achieve the generation of a mass of very fine bubbles throughout a substantial portion of the bath. The bubbles mix and stir the bath to effect chemical homogeneity with a minimum amount of splashing and slopping of the molten metal and persist for a time sufficient to promote substantially complete reaction of the gas phase with the environmental fluid. By selecting a bubble diameter from a consideration of the desired gas flow rate and appropriate Reynolds number, the gas issuing into the molten bath will disperse into small bubbles of essentially constant diameter to maximize the gas-liquid interfacial area Additionally, by controlling the pressure of the gas forced through the nozzle, the penetration of the fine bubbles into the bath can be controlled to achieve maximum stirring and optimum bubble retention time within the bath without damaging the refractory lining of the vessel containing the bath.

3,791,814

PROCESS FOR OXYGEN REFINING OF PIG IRON

Alfred Decker, Embourg, Belgium, assignor to Centre de Recherches Metallurgiques, Brussels, Belgium

Filed Feb. 21, 1973, Ser. No. 334,340

Claims priority, application Belgium, Feb. 22, 1972, 779689; Nov. 29, 1972, 792087; Luxembourg, Apr. 7, 1972, 65126

Int. Cl. C21c *5/30*

U.S. Cl. 75—60 **7 Claims**

In the refining of pig iron in a convertor vessel in which oxygen is introduced into the melt by means of one or more tuyeres located in the sidewall of the convertor. Excessive wear of the convertor lining opposite the tuyere is avoided by blowing in a protective fluid which shields the lining from the erosive action of the refining gas and excessive slopping due to oscillations caused by introduction of the refining gas are countered by introduction of fluid opposing the movement of the bath, and pulsed to be out of phase with the bath movement.

3,791,815

PROCESS FOR LANTHANIDE AND ACTINIDE METALS ORE REDUCTION

Paul Franklin Taylor, P.O. Box 468, Crossville, Tenn.

Filed Dec. 13, 1972, Ser. No. 314,809

Int. Cl. C22c *59/00, 61/04*

U.S. Cl. 75—84.1 R **3 Claims**

The Lanthanide and Actinide series of metals are found mainly in the three ores Monazite, Carnotite, and Uraninite or Pitchblende. In winning these metals from the ores usually the oxides are separated either seperately or in groups first, then the oxides are reduced either separately or in groups, thereby providing individual metals, or an alloy known as a commercially designated Misch metal. Such separations and reductions apply to only the ores as found natural and does not include the manmade nuclear transformation elements of the series. The separations and reductions both from the ores, the oxides, and the Misch metal are quite complicated, cumbersome, costly, and at times are inefficient. By application of the instant process such ores and oxides may be reduced in either of those forms in a more simple manner to either the individual metals or the alloy. The alloy metal may then be sub-

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sequently separated into individual metals at great savings in operations and cost in comparison to that which is known. The

3,791,817

RECOVERY OF COOPER FROM COPPER SULFIDE

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savings in the time, capital investment, and labor required to produce a given quantity of steel. The practical difficulties

3,791,822

REMOVAL OF BACKGROUND FROM AN IMAGED

sequently separated into individual metals at great savings in operations and cost in comparison to that which is known. The ores or oxides are subjected to a certain liquid formula solution, such material being finely pulverized, by mixing together within a suitable container, followed by additions of pulverized limestone and stirred while the reaction goes to completion. The liquid formula is comprised of phosphoric acid, zinc oxide, and an alkylphenol polyglycol ether type sulfated surfactant. The mixture is heated within the container by an endothermic heat source until the ore has been digested by the liquid formula solution with the consequent release of gases and expanded in volume to a dry, spongelike state. In this condition the material is considered as being "fixed" for smelting. Upon smelting the material releases the metal which forms into ingot-like masses at the bottom of the furnace as reduced and smelted metal. The combination of reduction ingredients are effective, therefore, in liberating the metals from chemically bound oxygen and other impurities upon heating the mixture and then smelting the residue.

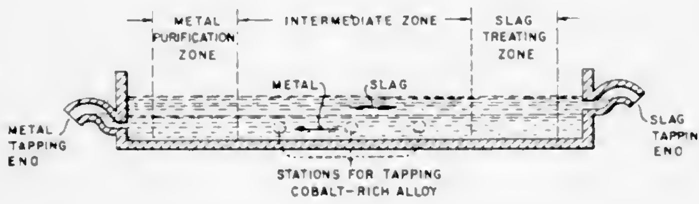
3,791,816
PRODUCTION OF NICKEL FROM NICKEL-BEARING MATERIALS

Robert D. Israel, Oakland, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Continuation-in-part of Ser. No. 22,755, March 26, 1970, abandoned. This application Mar. 30, 1972, Ser. No. 239,454

Int. Cl. C22b *23/00*

U.S. Cl. 75—82 **4 Claims**



A process for producing nickel of high purity and with high recovery from nickel-bearing materials containing nickel and less noble metals including cobalt and iron, such as ores and alloys. A molten slag phase and molten metal phase is provided in a furnace having an elongated flow path in which the nickel of high purity is removed at a point near one end of the furnace while molten slag highly impoverished with respect to nickel oxide is removed at a point near the other end. A metal purification zone and a slag treating zone are established in the vicinity of the molten metal removal point and the molten slag removal point, respectively.

An intermediate zone is located between the metal purification zone and the slag treating zone, and a countercurrent movement between the slag and metal phases is induced, the said slag phase flows from the metal purification zone through the intermediate zone to the slag treating zone while the metal phase flows from the slag treating zone through the intermediate zone to the metal purification zone. Oxidation of the metal phase in the metal purification zone provides the nickel in high purity, while treatment of the slag in the slag treating zone with a reducing agent effects a high recovery. Interphase contact and intraphase mixing between the slag and metal phases is promoted during their flows. At least periodically, a portion of the metal present in the metal phase in the intermediate zone, which is rich in cobalt, is removed.

3,791,817
RECOVERY OF COOPER FROM COPPER SULFIDE CONTAINING CONCENTRATES

Edward Peter Cadwell, Tucson, Ariz., assignor to Treadwell Corporation, New York, N.Y.

Filed Feb. 10, 1972, Ser. No. 225,095

Int. Cl. C22b *3/00*

U.S. Cl. 75—106 **8 Claims**

Low grade copper sulfide containing concentrates and ores are treated with an alkaline cyanide, such as calcium cyanide and excess lime or sodium cyanide and excess sodium alkali. This dissolves the copper sulfide as a complex cyanide, the liquor is separated from the denuded solids, and the solids washed with water to remove adhering soluble copper cyanide complex. The two liquors are then treated with acid or metal salts to desulfurize them, transforming the sulfur content either to hydrogen sulfide or a metal sulfide and precipitating the copper as acid insoluble cuprous cyanide. The cuprous cyanide is separated and copper recovered therefrom by known methods, such as reduction with hot hydrogen. HCN evolved if the desulfurization is by acid and/or from the hydrogen-HCN produced by the hot hydrogen reduction is transformed into alkaline cyanide and reused. A reducing agent, such as sulfur dioxide, is present during the cuprous cyanide precipitation in sufficient amount to maintain copper in the cuprous state.

3,791,818
STEEL ALLOY

Thomas Watmough, Dolton, and Robert P. O'Shea, Lombard, both of Ill., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 14, 1972, Ser. No. 280,282

Int. Cl. C22c *39/26;* **F42b** *13/48*

U.S. Cl. 75—126 E **3 Claims**

A low alloy steel which utilizes boron as an essential alloying ingredient. The boron controls and manipulates the fragment mass distribution characteristics of alloy steels used in fabricating explosive warheads.

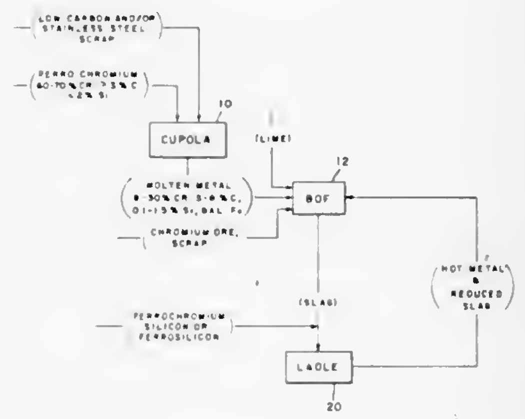
3,791,819
PRODUCTION OF STAINLESS STEELS

Russell H. Loutzenhiser, Detroit, Mich.; Egil Aukrust, Bethel Park, and Harry W. Meyer, Mount Lebanon, both of Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 464,900, June 18, 1965, abandoned. This application Nov. 12, 1968, Ser. No. 775,041

Int. Cl. C22c *39/14*

U.S. Cl. 75—130.5 **1 Claim**


LOW CARBON AND/OR STAINLESS STEEL SCRAP
FERRO CHROMIUM 60-70% CR 7.5% C <2% SI
10
CUPOLA
(LIME)
12
MOLTEN METAL 8-30% CR 5-6% C, 0.1-1.5% Si, BAL Fe
BOF
CHROMIUM ORE, SCRAP
(SLAG)
HOT METAL & REDUCED SLAG
FERROCHROMIUM SILICON OR FERROSILICON
LADLE
20

Disclosed is a method of making stainless steel that has remarkable advantages over the electric-furnace practices now used. The method uses an oxygen furnace, yielding large

savings in the time, capital investment, and labor required to produce a given quantity of steel. The practical difficulties that attend the use of an oxygen vessel to make stainless steel are overcome, principally by using a slag of high basicity ratio (3.5 minimum) operating the furnace so that the melt stays below 3100° F during most of the refining, and reducing the slag in a separate vessel, the contents of which are returned to the oxygen vessel.

3,791,820
FLUXLESS ALUMINUM BRAZING

William J. Werner, Clinton, Tenn., assignor to The Unites States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Division of Ser. No. 77,762, Oct. 2, 1970. This application June 23, 1972, Ser. No. 266,372

Int. Cl. C22c *21/00*

U.S. Cl. 75—140 **1 Claim**

This invention relates to a fluxless brazing alloy for use in forming brazed composites made from members of aluminum and its alloys, said brazing alloy consisting of, in weight percent, 35–55 percent aluminum, 10–20 percent silicon, 25–60 percent germanium; 65–88 percent aluminum, 2–20 percent silicon, 2–18 percent indium; 65–80 percent aluminum, 15–25 percent silicon, 5–15 percent yttrium.

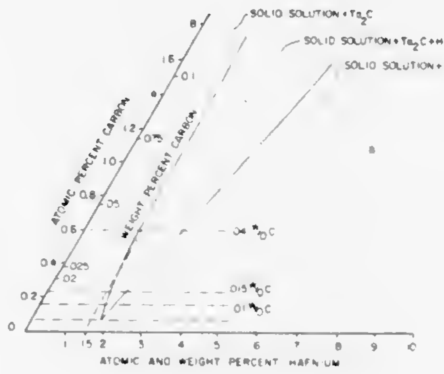
3,791,821
TANTALUM BASE ALLOYS

Raymond W. Buckman, Jr., Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 598,941, Dec. 5, 1966, abandoned, which is a continuation-in-part of Ser. No. 454,650, May 10, 1965, abandoned. This application Oct. 30, 1968, Ser. No. 771,714

Int. Cl. C22c *27/00;* **C22f** *1/18*

U.S. Cl. 75—174 **9 Claims**



This invention is directed to tantalum-base alloys having superior elevated temperature strength and high resistance to creep deformation at elevated temperature in a high vacuum or space environment. The alloys comprise from 4 to 8.5 percent tungsten, up to 3 percent of at least one of the group consisting of molybdenum and rhenium, up to 1.5 percent of at least one of the group consisting of zirconium and hafnium, up to 0.04 percent of at least one of the group consisting of carbon and nitrogen and the balance essentially tantalum.

3,791,822
REMOVAL OF BACKGROUND FROM AN IMAGED MIGRATION LAYER

William L. Goffe, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 784,164, Dec. 16, 1968, Pat. No. 3,741,757, which is a continuation-in-part of Ser. Nos. 725,676, May 1, 1968, abandoned, and Ser. No. 460,377, June 1, 1965, Pat. No. 3,520,681, and Ser. No. 483,675, Aug. 30, 1965, Pat. No. 3,656,990, said Ser. No. 725,676, is a continuation-in-part of Ser. No. 460,377, , and Ser. No. 483,675, , each is a continuation-in-part of Ser. No. 403,002, Oct. 12, 1964, abandoned. This application Nov. 17, 1972, Ser. No. 307,675

Int. Cl. G03g *13/14, 13/22*

U.S. Cl. 96—1 PS **12 Claims**

Providing an imaged member comprising a layer of softenable material and migration material selectively distributed in depth in said softenable material in first image configuration and comprising in addition to said first image pattern of migration material a background of substantial amounts of migration material in said softenable material but spaced apart, in depth, from said first image pattern; and removing said background.

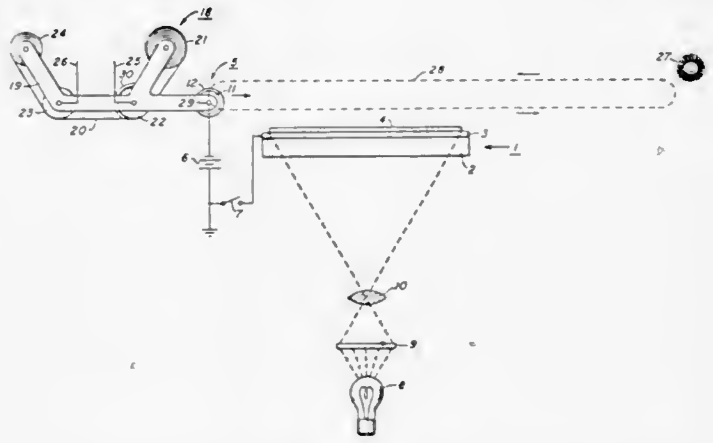
3,791,823
PHOTOELECTROPHORETIC IMAGING TRANSFER METHOD

Leonard M. Carreira, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Continuation of Ser. No. 808,921, March 20, 1969, abandoned, which is a continuation of Ser. Nos. 459,860, May 28, 1965, abandoned, and Ser. No. 677,706, Oct. 24, 1966, abandoned, and Ser. No. 677,707, Oct. 24, 1967, abandoned. This application Feb. 18, 1970, Ser. No. 12,366

Int. Cl. G03g *13/00, 13/14*

U.S. Cl. 96—1.4 **6 Claims**



An electrophoretic imaging system is described in which a particulate image is transferred to a receiving sheet having a water tackifiable surface. The surface is moistened, pressed against the image and dried. In a preferred embodiment, the water tackifiable material is converted to a water insoluble form by heat after transfer of the image.

3,791,824
CONJUGATED POLYMERS IN ELECTROPHOTOGRAPHY

Wolfgang G. Bauer, Korntal, Germany, and Ulrich T. Mueller-Westerhoff, Monte Sereno, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 20, 1973, Ser. No. 333,829

Int. Cl. G03g *5/04, 7/00*

U.S. Cl. 96—1.5 **4 Claims**

Poly-2,9-methylenefluorene, fully conjugated via 9-methylenefluorene repeating units, has been found to be a useful photoconductor in electrophotographic processes.

3,791,825
PHOTOCONDUCTOR IN A COPOLYMER BINDER OF VINYL ACETATE, VINYL LAURATE AND AN $\alpha\beta$-ETHYLENICALLY UNSATURATED ACID

Karel Eugeen Verhille, Hoboken, and Luciaan Frans Voet, Katelijne-Waver, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed June 6, 1972, Ser. No. 260,202

Claims priority, application Belgium, June 8, 1971, 19477

Int. Cl. G03g *5/04, 5/06*

U.S. Cl. 96—1.5 8 Claims

A photoconductive recording layer for use in electrophotography comprises a photoconductive pigment dispersed in an electrically insulating binder therefor consisting of a copolymer of 83 to 95.5 percent by weight of vinyl acetate, 4 to 15 percent by weight of vinyl laurate and 0.5 to 2 percent by weight of an α, β-ethylenically unsaturated acid, preferably crotonic acid.

3,791,826
ELECTROPHOTOGRAPHIC PLATE

Albert J. Cherry, Morgan Hill; Robert R. Neiman; Meredith D. Shattuck, both of San Jose, and William J. Weiche, Los Gatos, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 33,531, April 30, 1970, abandoned. This application Jan. 24, 1972, Ser. No. 220,471

Int. Cl. G03g *5/04, 5/08*

U.S. Cl. 96—1.5 1 Claim

An electrophotographic plate comprising in successive layers: (a) a conductive substrate, (b) a barrier layer, (3) an inorganic charge generating layer at least 0.15 microns thick, and (d) an organic charge transport layer from 3 to 20 microns thick comprising at least about 20 percent by weight of 2, 4, 7-trinitro-9-fluorenone.

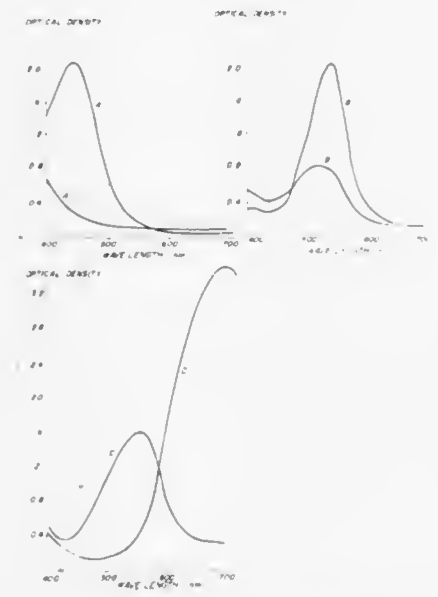
3,791,827
'ONIUM INDOPHENOXIDES

Walter Monroe Bush, Victor; John Warburton Gates, Jr., and Robert John Newmiller, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 6, 1971, Ser. No. 169,706

Int. Cl. G03c *5/50, 7/32*

U.S. Cl. 96—22 30 Claims



'Onium indophenoxide compounds are disclosed with processes for preparation of 'onium indophenoxides. In one embodiment, improved photographic processes are described for forming indophenoxide image dyes in a photographic element. Another embodiment relates to improved photographic elements containing 'onium indophenoxide image dyes.

3,791,828
DEVELOPER SOLUTION FOR DEVELOPING PRESENSITISED PHOTOLITHOGRAPHIC PRINTING PLATES

Brian Joseph Moore, and Leonard James Watkinson, both of Yorkshire, England, assignors to W. H. Howson Limited, Yorkshire, England

Division of Ser. No. 727,656, May 8, 1968. This application Aug. 23, 1972, Ser. No. 282,935

Claims priority, application Great Britain, May 18, 1967, 23249/67

Int. Cl. G03f *7/02*

U.S. Cl. 96—33 4 Claims

This disclosure relates to developer solutions suitable for developing exposed presensitised photolithographic printing plates, which solutions comprise a solvent for the areas of presensitised layer to be removed from the printing plate and a surface active agent, the volumetric ration of solvent to surface active agent being considerably higher than conventionally used, whereby the efficacy of the developer solution is considerable enhanced.

3,791,829
PHYSICALLY DEVELOPABLE COPY MEDIUM WITH PHOTOCONDUCTORS AND COMPLEXING AGENT

Phillip G. Creter, Sudbury, Mass., assignor to Itek Corporation, Lexingon, Mass.

Filed July 3, 1972, Ser. No. 268,240

Int. Cl. G03c *5/24, 5/30, 1/00, 1/06*

U.S. Cl. 96—48 PD 46 Claims

This invention relates to a copy medium capable of transmitting ultraviolet radiation comprising a photosensitive layer having a photoconductive material such as titanium dioxide and certain complexing agents incorporated in a binder. The photosensitive material, upon exposure to activating radiation in an image pattern, becomes reversibly activated in the image pattern. The reversibly activated portions are then capable of causing a chemical reaction which permits development and formation of an irreversible image by physical development such as by contact with a chemical redox system, an aqueous solution of silver nitrate and a suitable photographic reducing agent being an example thereof. The copy medium of the invention is characterized by having a photosensitive layer of reduced photoconductor coat weight without the expected decrease in sensitometric characteristics such as reduced image optical density. The reduced coat weight of photoconductor is made possible by the addition of the complexing agent to the photosensitive material. A copy medium having a photosensitive layer of reduced photoconductor coat weight is an advantage as it permits more efficient use of the copy medium for various applications such as use as a diazo master wherein the medium must transmit radiation which is absorbed by the photoconductor e.g., ultraviolet radiation. Another advantage of reduced photoconductor coat weight is reduced manufacturing costs as a result of more efficient use of photoconductor and associated spectral sensitizing dyes.

3,791,830
SILVER HALIDE PHOTOGRAPHIC ELEMENT CONTAINING A REACTION PRODUCT OF A HETEROCYCLIC MERCAPTAN AND A CHLOROFORMIC ACID ESTER AS ANTIFOG AGENT

Werner Abele, Friedrich-List-Strasse, Germany, assignor to E. J. du Pont de Nemours and Company, Wilmington, Del.

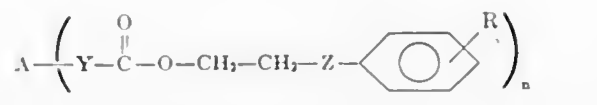
No Drawing. Continuation-in-part of Ser. No. 207,593, Dec. 13, 1971, abandoned. This application May 22, 1973, Ser. No. 362,737

Claims priority, application Germany, Dec. 16, 1970, 2061972

Int. Cl. G03c *1/34, 1/48*

U.S. Cl. 96—76 R 8 Claims

Photographic material is stabilized against over-development wherein the emulsion layer or an auxiliary layer in contact with emulsion layer contains an antifogging agent of the formula



$$A\left(Y-\overset{\overset{O}{\|}}{C}-O-CH_2-CH_2-Z-C_6H_4R\right)_n$$

where A is a nitrogen-containing heterocyclic radical having 5 or 6 atoms in the heterocyclic ring; Y is S for $n=1$ and S or S and NH - for $n=2$; R is any desired substituent such as alkyl, halogen or hydroxyalkyl; Z is S or SO_2; and n is 1 or 2.

3,791,831
PHOTOGRAPHIC MATERIALS WITH ANTISTATIC LAYERS

Wulf von Bonin, Leverkusen; Julius Geiger, Odenthal-Gloehusch; Gunter Meinhardt; Karl-Otto Meyer, both of Leverkusen; Werner Wagenknecht, Cologne, and Wolfgang Himmelmann, Opladen, all of Germany, assignors to Agfa-Sevaert Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 3, 1971, Ser. No. 120,761

Claims priority, application Germany, Mar. 12, 1970, 2011649; Jan. 23, 1971, 2103197

Int. Cl. G03c *1/82*

U.S. Cl. 96—87 A 9 Claims

The antistatic properties of photographic materials can be improved by applying an antistatic layer containing as antistatic agents a mixture of polymers, or a graft polymer, containing sulfo as well as carboxyl groups.

3,791,832
DIAZOTYPE PHOTOPRINTING MATERIAL

Shoji Maruyama, Sagamihara; Tadashi Saito, Yokohama; Shigfaki Yoshida, Yokohama, and Masaru Shimada, Yokohama, all of Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

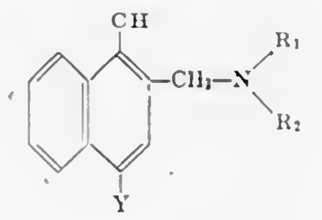
Continuation-in-part of Ser. No. 821,968, May 15, 1969, Pat. No. 3,699,000. This application Mar. 10, 1972, Ser. No. 233,756

Claims priority, application Great Britain, Apr. 22, 1969, 20378/69; Germany, May 14, 1969, 1924685; Netherlands, May 12, 1969, 6907274

Int. Cl. G03c *1/58*

U.S. Cl. 96—91 R 5 Claims

This invention describes diazotype photoprinting material containing as a coupling component a compound of the formula:



wherein R_1 and R_2 are hydrogen, alkyl, phenyl, or taken together form a heterocyclic ring and Y is an alkyl or alkoxy.

This photoprinting material gives a dense dye-image having high preservability. It could be developed by both dry and wet development methods.

3,791,833
CERAMIC COMPOSITION

Masatoshi Sugiura, 2, Jodoji Minamida-cho, Sakyo-ku, Kyoto; Masaya Hirabayashi, 6, Shironoue, Kotari, Nagaoka-cho, Otokuni-gun, Kyoto, and Yosimasa Goto, c/o Kyoto Ceramic Co., Ltd., 101 Hara-machi, Nishinokyo Nakagyo-ku, Kyoto, all of Japan

Continuation-in-part of Ser. No. 864,178, Oct. 6, 1969, abandoned. This application Jan. 27, 1972, Ser. No. 221,267

Claims priority, application Japan, Oct. 18, 1968, 43-76218

Int. Cl. C04b *33/26*

U.S. Cl. 106—46 5 Claims

A colored ceramic body for use in various parts of electronic equipment, comprising at least one of Al_2O_3 and BeO as a basic component, 0.1 to 5 percent by weight CoO and further additive chosen from the group consisting of MnO_2, Cr_2O_3, V_2O_5, Fe_2O_3 and mixtures thereof, the total amount of CoO and further additive being 1.0 to 10 percent by weight. The ceramic body is dark in color and has excellent electrical, mechanical and thermal characteristics, and maintains an acceptably high volume resistivity even after the body has been heated in a reducing atmosphere.

3,791,834
ZIRCON REFRACTORY COMPOSITIONS

Edward L. Manigault, Cincinnnati, Ohio, assignor to The Chas. Taylor & Sons Company, Cincinnati, Ohio

Filed May 31, 1972, Ser. No. 258,459

Int. Cl. C04b *35/16, 35/48*

U.S. Cl. 106—57 4 Claims

A new refractory composition comprising from 70.0% to 96.8% zircon, from 3.0% to 29.8% iron-chromite ore and from 0.2% to 5.0% rutile titanium dioxide has been prepared which has a low porosity and high modulus of rupture.

3,791,835
SEMI-SILICA PLASTIC REFRACTORY COMPOSITION

George F. Carini, Pittsburgh; George H. Williams, Cheswick, and Richard Orman Burhans, Irwin, all of Pa., assignors to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 225,287, Feb. 10, 1972, which is a continuation-in-part of Ser. No. 66,627, Aug. 24, 1970, abandoned. This application June 4, 1973, Ser. No. 366,386

Int. Cl. C04b *35/14*

U.S. Cl. 106—68 5 Claims

Semi-silica plastic refractory comprising crude flint clay, quartizite, and a plastic bond clay.

3,791,836
LOW DENSITY MOLDING POWDER OF VERMICULITE AND CLAY

Patrick Michael Brown, Baltimore, and Vernon Bruce May, Ellicott City, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Aug. 25, 1972, Ser. No. 283,896

Int. Cl. C04b *31/20, 31/26*

U.S. Cl. 106—71 9 Claims

A process for the continuous preparation of a homogeneous lightweight molding powder comprised of clay, vermiculite, water, and, in some cases, an additive for further improving strength, in which the solid components are fed to a liquid-solids blender wherein the water can be added simultaneously.

3,791,837
DEXTRAN AS BONDING AGENT FOR PLASTER OF PARIS BANDAGES

David F. Smith, 120 Grove St., Bay Head, N.J.

Division of Ser. No. 95,365, Dec. 4, 1970, Pat. No. 3,671,280, which is a continuation-in-part of Ser. No. 65,732, Aug. 20, 1970. This application Jan. 21, 1972, Ser. No. 219,887

Int. Cl. C04b *11/16;* **A61l** *15/07*

U.S. Cl. 106—114 **2 Claims**

Dextran is disclosed as efficient bonding Agent for plaster of Paris bandages.

3,791,838
VULCANIZATION ACCELERATOR FOR NATURAL AND SYNTHETIC RUBBER

Earl Kaplan, Metuchen, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 119,858, March 1, 1971, which is a continuation of Ser. No. 762,126, Sept. 24, 1968, abandoned. This application Oct. 13, 1972, Ser. No. 297,552

Int. Cl. C08h *25/02*

U.S. Cl. 106—205 **12 Claims**

A fast wetting, rubber vulcanization accelerator composition is provided which comprises a major amount of the zinc salt of 2-mercaptobenzothiazole and minor but effective amounts of: (a) a salt of a dialkyl (C_5–C_{20}) ester of sulfosuccinic acid, and (b) guar gum or starch. Dispersions of the composition in water are stable, fluid and substantially non-thixotropic such that they are storable and can be easily pumped and blended with a rubber latex.

3,791,839
WAX EMULSIONS FOR CONTROLLING TRANSPIRATION IN PLANTS

Donald R. Cushman, Wenonah; Edward A. Oberright, Woodbury, both of N.J., and Roy T. Edwards, deceased, late of Mullica Hill, N.J. (by Katherine S. Edwards, representative), assignors to Mobil Oil Corporation, New York, N.Y., by said Cushman and Oberright

Continuation-in-part of Ser. No. 60,957, July 2, 1970, which is a division of Ser. No. 639,041, May 17, 1967, abandoned. This application May 25, 1972, Ser. No. 256,997

Int. Cl. C08h *9/06*

U.S. Cl. 106—268 **4 Claims**

Transpiration in plants, particularly during growth in dry climates, transplantation or shipment, is controlled by application to the plant surface of wax emulsion compositions comprising paraffin wax, petrolatum, emulsifier and water.

3,791,840
TREATMENT OF CARBON FIBERS TO IMPROVE SHEAR STRENGTH IN COMPOSITES

John Baldwin Barr, Strongsville, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Oct. 21, 1970, Ser. No. 82,816

Int. Cl. C09c *1/44*

U.S. Cl. 106—307 **51 Claims**

The interlaminar shear strength of carbon fiber-plastic composites is improved by treating the fibers, before they are incorporated into the plastic matrix, with an aqueous solution of hypochlorous acid having a pH below 6.

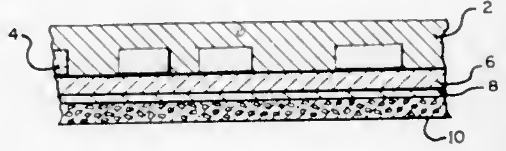
3,791,841
LOW TEMPERATURE DECALCOMANIA

Andrew E. Carmellini, Brookfield, Conn., and Andrew J. Rogers, Bronx, N.Y., assignors to Commercial Decal, Inc., Mt. Vernon, N.Y.

Continuation-in-part of Ser. No. 145,630, May 21, 1971, abandoned. This application Aug. 10, 1972, Ser. No. 279,473

Int. Cl. B41m *3/12*

U.S. Cl. 117—3.4 **25 Claims**



There is provided herewith a decalcomania which is designed for application to a ware and which becomes adherent to the surface thereof by firing at low temperatures. The decal includes a lacquer layer and an opaque layer, each comprising a thermosetting epoxy resin in a solvent therefor and containing combined therewith a cross-linking agent.

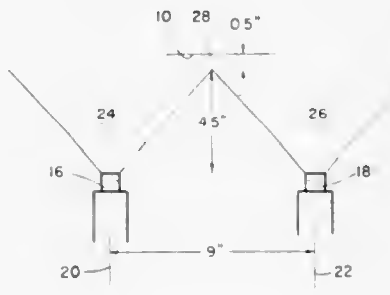
3,791,842
PROCESS OF APPLYING POWDER TO A ROTATING OBJECT

Dennis Neal, Tulsa, Okla., assignor to Midwestern Specialties, Ltd., Tulsa, Okla.

Filed Mar. 31, 1971, Ser. No. 129,869

Int. Cl. B05b *5/2;* **B44d** *1/94*

U.S. Cl. 117—16 **6 Claims**



A method of spraying powder from nozzles onto the outer periphery of the pipe while the pipe is rotated about its longitudinal axis. The spray nozzle or nozzles are spaced from the outer periphery of the pipe and at the optimum angle with respect to the transverse or cross-sectional configuration of the pipe for providing the most efficient and complete coating or covering of the object.

3,791,843
THERMOMAGNETIC IMAGING METHOD

Josef Kohlmannsperger, Munich, Germany, assignor to Agfa-Gevaertaktiengesellschaft, Leverkusen, Germany

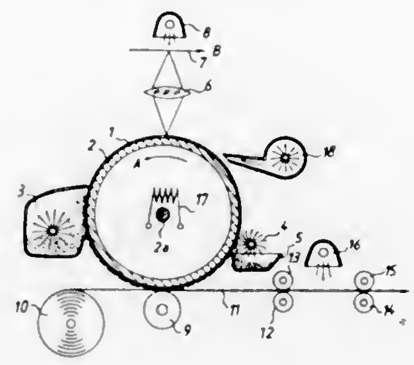
Filed Nov. 3, 1971, Ser. No. 195,338

Claims priority, application Germany, Nov. 4, 1970, 2054117

Int. Cl. G03g *17/00, 19/00*

U.S. Cl. 117—17.5 **10 Claims**

The magentic image receiving surface of a copying apparatus is provided with a layer of FeRh or an analogous ingredient which is antiferromagnetic above and below its Neel temperature but exhibits a pronounced coercive force at the Neel temperature. The image receiving surface is moved past an exposure station to receive a thermal image of an original. The exposing step may involve heating selected areas of the image receiving surface to Neel temperature in accordance with the image pattern of the original or heating selected areas of the image receiving surface to above the Neel temperature while the remaining areas remain at Neel temperature. The resulting thermal image is converted with magnetic toner into a powder image, either on the image receiving surface or upon transfer onto an auxiliary surface, and the powder image is transferred onto and fused to paper or another transfer material.



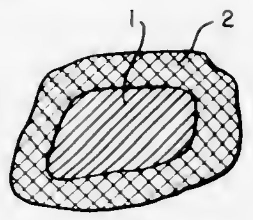
3,791,844
PHOSPHORS FOR MULTI-COLOR DISPLAYS

Melvin Tecotzky, Mendham, and James J. Mattis, Long Valley, both of N.J., assignors to U.S. Radium Corporation, Morristown, N.J.

Filed May 2, 1972, Ser. No. 249,559

Int. Cl. C09k *1/00,* **B44d** *5/00;* **H01i** *29/20*

U.S. Cl. 117—33.5 CM **15 Claims**



A phosphor composite consists of particles each having a core of gadolinium, yttrium or lutetium oxide activated with praseodymium, substantially completely surrounded by a shell of the corresponding oxysulfide or oxyfluoride. This phosphor when deposited on the face of a cathode ray tube emits light of distinctly different colors when excited by electron beams projected at substantially different voltages. A method for making the new phosphors is also described.

3,791,845
ELEMENTS CONTAINING BRIGHTENER COMPOSITIONS

Robert J. Tuite, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 863,364, Oct. 2, 1969, Pat. No. 3,684,729. This application June 9, 1972, Ser. No. 261,181

Int. Cl. G03c *1/92*

U.S. Cl. 117—33.5 T **15 Claims**

Hydrophilic colloids having intimately dispersed therein an essentially hydrophobic solid solution of an oil-soluble brightening agent in an essentially hydrophobic organic solvent that is rigid (an organic glass) at room temperature, i.e., has a glass transition temperature (Tg) that is above about 25°C. and is a polymer that is an acetal condensation product of polyvinyl alcohol and an aldehyde or ketone having from two to 40 carbon atoms are advantageously used in photographic elements and in image receiving elements for image diffusion transfer because the light-stability of the brightening agents in these dispersions is increased substantially over the light-stability of the same brightening agents in dispersions outside the immediate invention.

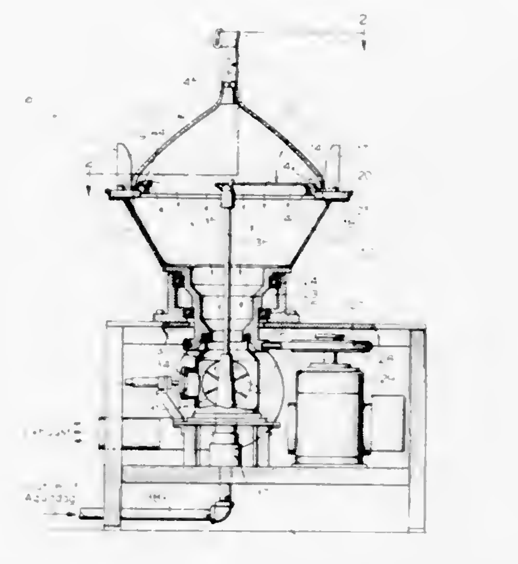
3,791,846
METHOD FOR APPLYING AN INTERNAL COATING TO A CATHODE RAY TUBE

Donald E. Nuehring, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Feb. 2, 1972, Ser. No. 222,874

Int. Cl. B05c *7/00;* **C03c** *17/00*

U.S. Cl. 117—38 **3 Claims**



Apparatus for applying Adquadag coating to the funnel of a cathode ray tube envelope comprises means for supporting the envelope with the sealing land exposed, and means for spraying an Aquadag solution upon the wall of the funnel. A deflector is interposed between the spray means and the edge of the funnel to intercept that portion of the spray directed toward that edge while another member is positioned adjacent the inside wall of the funnel to establish an orifice between that member and that portion of the funnel wall normal to the sealing land. The envelope supporting means is rotated, relative to the spray means, to apply a uniform coat of Aquadag upon the funnel while an air pump establishes a pressure differential between the inside of the envelope and the outside to generate a flow of air across the sealing land of tne funnel, up through the orifice and into the funnel to prevent deposit of coating material upon the sealing land. The invention also contemplates a method, utilizing the above described apparatus, for applying an Aquadag material to the funnel section of a cathode ray tube while maintaining the sealing land free of material.

3,791,847
PROCESS FOR THE PRODUCTION OF INCOMBUSTIBLE CARBONACEOUS MATERIAL

Tadashi Araki; Kiro Asano, both of Tokyo, and Jyuniti Koshugi, Urawa, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed July 26, 1971, Ser. No. 166,118

Claims priority, application Japan, July 27, 1970, 45-65050

Int. Cl. C01b *25/00, 25/08, 31/30;* **C23c** *11/00*

U.S. Cl. 117—46 CG **13 Claims**

A carbonaceous material is obtained by bringing a mixture of one or more substances selected from the group consisting of molecular phosphorus, inorganic phosphorus-containing compounds and organic phosphorus-containing compounds and organic compounds into contact with a substrate heated at a temperature of 600°–1,500°C thereby depositing the resulting carbon formed by pyrolysis on the substrate. Alternatively, an organic phosphorus-containing aromatic compound is brought into contact with a substrate heated at a temperature of 600°–1,500°C thereby depositing the resulting carbon formed by pyrolysis on the substrate. A shaped article coated with said carbonaceous material is obtained by effect-

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ing such pyrolysis and deposition on a shaped article made of

fibers with a liquid binder system containing (a) a liquid aque-

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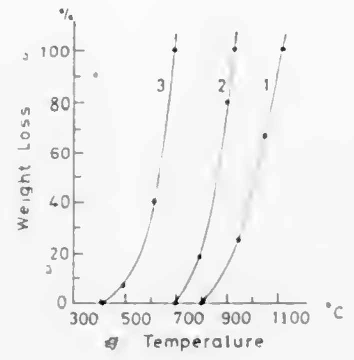
hydrocarbon gas is introduced into the chamber, and the metal vapor atoms and gas atoms are activated by electrons deflected from the electron beam to the reaction zone by a

3,791,855
VAPOR PHASE INHIBITOR CONTAINING

ing such pyrolysis and deposition on a shaped article made of metal, ceramics glass or carbon. The carbonaceous materials obtained according to this invention are composed of



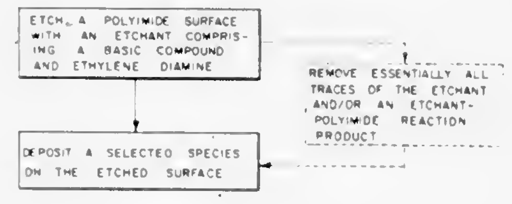
80–99.9% of carbon and 0.1–20% of phosphorus and are incombustible having excellent oxidation-resisting properties in addition to the intrinsic properties of carbon.

3,791,848
METHOD OF IMPROVING THE ADHERENCE OF A METAL DEPOSIT TO A POLYIMIDE SURFACE
Michael Anthony DeAngelo, Hamilton Twp., Mercer County, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 152,792, June 14, 1971, abandoned. This application May 19, 1972, Ser. No. 255,124

Int. Cl. B44d *1/092;* **C23c** *3/02*

U.S. Cl. 117—47 A **6 Claims**


ETCH A POLYIMIDE SURFACE WITH AN ETCHANT COMPRISING A BASIC COMPOUND AND ETHYLENE DIAMINE
REMOVE ESSENTIALLY ALL TRACES OF THE ETCHANT AND/OR AN ETCHANT-POLYIMIDE REACTION PRODUCT
DEPOSIT A SELECTED SPECIES ON THE ETCHED SURFACE

An etching composition and a method utilizing such a composition for etching a surface of a polyimide is disclosed. The method comprises exposing the polyimide surface to an etching composition comprising an aqueous solution of a basic compound and ethylene diamine. The ethylene diamine synergistically increases the etching rate of the polyimide. When the ethylene diamine is present in an amount in excess of its degree of solubility the etching of the polyimide results in a frosted or matte finish thereof.

3,791,849
PROCESS FOR THE MANUFACTURE OF A CHEMICALLY BONDEDTEXTILE SHEET MATERIAL BASED ON SYNTHETIC FIBERS AND HAVING A HIGH WATER VAPOR ABSORPTION CAPACITY
Klaus-Dieter Hammer, Finthen, and Herbert Porrmann, Konigshofen, both of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

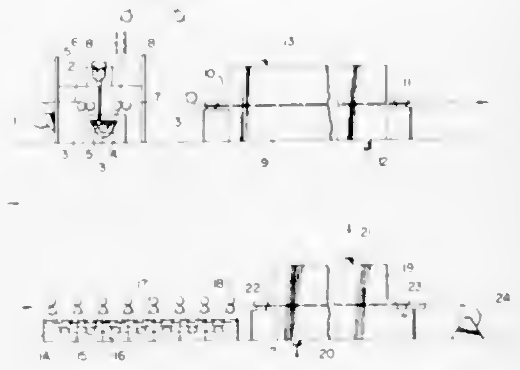
Filed Oct. 13, 1970, Ser. No. 80,335

Claims priority, application Germany, Oct. 15, 1969, 1951977; Sept. 22, 1970, 2046664

Int. Cl. B44d *1/44, 1/06*

U.S. Cl. 117—63 **20 Claims**

This invention relates to a process for the manufacture of chemically bonded, textile sheet material based on synthetic fibers, in which a polymer material in the form of a solution or dispersion is incorporated in the flexible textile sheet material and the polymer material is then coagulated, which comprises impregnating the textile sheet material containing synthetic fibers with a liquid binder system containing (a) a liquid aqueous dispersion of an elastomer, (b) a liquid aqueous solution of a hydrophilic polymer, and (c) a liquid aqueous emulsion of a long-chain aliphatic monoisocyanate and/or diisocyanate, or an aqueous dispersion of an ethylene imine reaction product of a monoisocyanate and/or a diisocyanate; heating the textile sheet material to the coagulating temperature of the elastomer; further heating the impregnated textile sheet material to a temperature in excess of 100°C, but below the softening temperature of the fibers contained in the textile sheet material; treating the sheet material with a washing liquid; and drying the sheet material.



3,791,850
FORMABLE, WELDABLE COATED ARTICLE OF MANUFACTURE
Robert V. Deshay; Robert A. Isaksen, both of Longmeadow, and Atam P. Sahni, Springfield, all of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 30, 1971, Ser. No. 176,236

Int. Cl. B23k *11/10;* **B32b** *15/04*

U.S. Cl. 117—75 **9 Claims**

Disclosed herein are formable, weldable articles of manufacture comprising a metal sheet coated with a first coating of metal phosphate and a second coating comprising a blend of polyvinyl butyral and phenolic resins in at least one non-corrosive organic solvent which is a solvent for each component of the resin blend having dispersed therein a basic zinc chromate and a particular atomized aluminum powder.

3,791,851
PROCESS FOR HEAT TREATING PLASMA-CONSOLIDATED BERYLLIUM
Thomas A. Taylor, and Robert J. Baird, both of Indianapolis, Ind., assignors to Union Carbide Corporation, New York, N.Y.

Filed Sept. 28, 1970, Ser. No. 76,258

Int. Cl. B05k *7/22*

U.S. Cl. 117—93.1 PF **10 Claims**

A three stage process for heat treating plasma-consolidated beryllium to produce highly densified beryllium having a theoretical density greater than 99 percent.

3,791,852
HIGH RATE DEPOSITION OF CARBIDES BY ACTIVATED REACTIVE EVAPORATION
Rointan F. Bunshah, Los Angeles, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

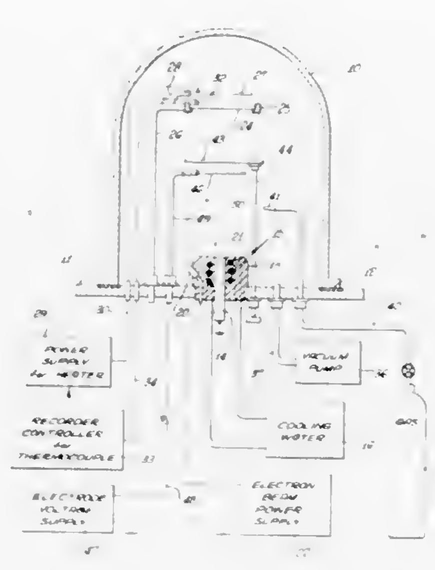
Filed June 16, 1972, Ser. No. 263,708

Int. Cl. C23c *11/08*

U.S. Cl. 117—93.2 **11 Claims**

Process and apparatus for the production of carbide films at high rates by physical vapor deposition. The metal is evaporated in a vacuum chamber by an electron beam, the

hydrocarbon gas is introduced into the chamber, and the metal vapor atoms and gas atoms are activated by electrons deflected from the electron beam to the reaction zone by a low voltage electrode at the reaction zone. The reaction takes place primarily in the vapor phase in the reaction zone, rather than on the substrate. A high reaction efficiency is obtained with the activated atoms and a deposition rate in the range of 1 to 12 micrometers per minute and higher is achieved.



3,791,853
THERMAL COATED BOOMS FOR SPACECRAFT
Michael Lauriente, Clarksville, and Ernst R. Pemsel, Jr., Ellicott City, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 742,191, July 3, 1968, Pat. No. 3,622,400. This application July 28, 1971, Ser. No. 166,965

Int. Cl. B64g *1/00*

U.S. Cl. 117—97 **8 Claims**

A spacecraft boom having improved resistance to thermally induced bending forces resulting from solar radiation is disclosed, comprising a beryllium containing copper base alloy having a highly absorbent coating disposed on the interior and a highly reflective coating on the exterior. A process is disclosed for manufacturing such booms including a coating, milling, forming and heat treating to obtain the finished product.

3,791,854
FLAME RETARDANT FABRIC BLENDS
Thomas D. Miles, Marlboro, Mass., and Armando C. Delasanta, Woonsocket, R.I., assignors to The United States of America as represented by the Secretary of the Army, Alexandria, Va.

Filed Nov. 2, 1971, Ser. No. 195,011

Int. Cl. C09d *5/18;* **D06m** *13/26*

U.S. Cl. 117—136 **4 Claims**

Flame retardance-producing compositions for fabric blends comprising thermoplastic fibers, such as polyester fibers, and cellulose fibers, such as cotton fibers, comprising mono (2,3 dibromopropyl) phosphoric acid, a water-soluble cyclic nitrogen-containing polymerizable monomeric compound, and a catalytic amount of tetrakis (hydroxymethyl) phosphonium chloride in aqueous solution, the method of rendering a fibrous organic fabric flame retardant by the application of the flame retardance-producing composition to such a fabric, including drying the fabric, and the flame retardant fibrous organic fabric produced by the method using the flame retardance-producing composition therein.

3,791,855
VAPOR PHASE INHIBITOR CONTAINING BENZOTRIAZOLE AND TOLYLTRIAZOLE MIXTURES
Charles J. Korpics, 4107 Barbara Dr., Toledo, Ohio

Continuation of Ser. No. 152,528, June 14, 1971. This application Mar. 9, 1973, Ser. No. 339,526

Int. Cl. C23f *11/14, 11/04,* **D21h** *5/22*

U.S. Cl. 117—154 **2 Claims**

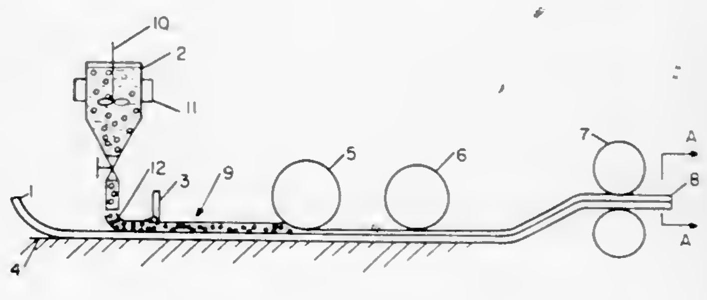
Solutions of mixtures of benzotriazole and tolyltriazole in water and organic solvents such as benzene and tetrachloroethylene are disclosed. The aqueous solutions contain 40 to 98 percent by weight of benzotriazole and from 60 percent to 2 percent by weight of tolyltriazole, on a solids basis. The aqueous solutions may also contain sodium hydroxide, potassium hydroxide or another pH control agent, and may also contain isopropanol, ehtylene ethylene or another organic solubilizer that is soluble in water. Aqueous solutions according to the invention are useful as additives for cooling water because of the ability of both benzotriazole and tolyltriazole to inhibit metal corrosion. The benzene solutions contain 2 to 98 percent by weight of benzotriazole and from 98 percent to 2 percent by weight of tolyltriazole, on a solids basis. The tetrachloroethylene solutions contain 2 to 98 percent by weight of benzotriazole and from 98 to 2 percent by weight of tolyltriazole, on a solids basis. Benzene — benzotriazole/tolyltriazole solutions are useful in unleaded gasolines, and tetrachloroethylene — benzotriazole/tolyltriazole solutions are useful as dry-cleaning or metal-cleaning additives. Benzotriazole/tolyltriazole impregnated paper for use as a vapor phase corrosion inhibitor for copper and copper alloys may be produced without the use of a solvent system.

3,791,856
METHOD OF PREPARING POLYMER COATED-WAX IMPREGNATED CELLULOSIC STOCK
Irl N. Duling, West Chester, and John C. Merges, Jr., Glen Mills, both of Pa., assignors to Sun Research and Development Co., Philadelphia, Pa.

Continuation-in-part of Ser. No. 884,847, Dec. 15, 1969, abandoned, which is a continuation-in-part of Ser. No. 745,884, July 18, 1968, abandoned. This application July 15, 1971, Ser. No. 163,041

Int. Cl. D21h *1/28, 1/36*

U.S. Cl. 117—155 UA **9 Claims**



Porous cellulosic stock can be coated with a thermoplastic polymer coating while being impregnated with a wax by this invention. A dispersion of polymer particles in molten wax is applied to cellulosic stock at a temperature below the melting point of the polymer. This treated cellulosic stock is then heated to a temperature above the melting point of the polymer and subjected to pressure. The resulting laminated product is polymer coated-wax impregnated cellulosic stock. The polymer used must be substantially insoluble in the molten wax at a temperature below the melting point of the polymer and must be fusible below a temperature which would degrade the stock. This product has utility as a packaging material comprising a high water vapor barrier coupled with a tough, scuff-resistant, non-blocking surface.

3,791,857

The reacted silicate coating is provided in such a fashion that

3,791,863

3,791,865

3,791,857
GELATIN-CONTAINING PHOTOGRAPHIC LAYERS HAVING IMPROVED PHYSICAL PROPERTIES

Gerhard Balle, Cologne; Wolfgang Himmelmann, Opladen; Otto Ernst, Leverkusen, and Fritz Nittel, Cologne, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 17, 1971, Ser. No. 172,554

Claims priority, application Germany, Aug. 20, 1970, 2041323

Int. Cl. G03c *1/04*

U.S. Cl. 117—161 KP **3 Claims**

The mechanical properties of gelatin layers are improved by the addition of a graft polymer of a cationic or anionic polyurethane, with polymerizable vinyl compounds.

3,791,858
METHOD OF FORMING MULTI-LAYER CIRCUIT PANELS

Alexander J. McPherson, Binghamton, and Herman C. Scheer, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 812,700, April 2, 1969, abandoned. This application Dec. 13, 1971, Ser. No. 207,500

Int. Cl. B44d *1/18*

U.S. Cl. 117—201 **11 Claims**

A process for producing multi-layer printed circuit panels using additive techniques for forming the conductors within each layer. The conductors are built up by metal deposition through photo-sensitive masks which are subsequently removed and replaced with fluid dielectric curable to a solid form. Additional layers are formed successively by repeating the process.

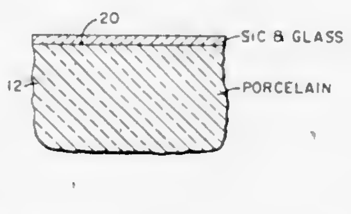
3,791,859
STRESS GRADING COATINGS FOR INSULATORS

Chikara Hirayama, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 4, 1972, Ser. No. 223,540

Int. Cl. H01b *17/42*

U.S. Cl. 117—201 **11 Claims**



A stress grading coating for insulators comprising a nonlinear semiconducting coating, such as silicon carbide, or the like using a glass binder having a fusion temperature of less than 850°C.

3,791,860
COATED ALUMINUM WELDING ELECTRODE AND FILLER ROD

Walter G. Zelley, Lower Burrell, and William M. Rogerson, New Kensington, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 27, 1971, Ser. No. 212,785

Int. Cl. B23k *35/00, 35/22*

U.S. Cl. 117—202 **13 Claims**

A method of manufacturing a welding electrode or filler rod by cleaning the surface of an aluminum wire rod and applying to the cleaned surface an aqueous solution of an alkali metal silicate having a concentration of greater than 0.5 percent for a period of greater than 5 seconds at a temperature in excess of 140°F in order to establish a thin, oxidation resistant reacted silicate coating on the aluminum surface. Subsequently rinsing and drying the coated aluminum wire or rod. The reacted silicate coating is provided in such a fashion that it has a thickness such that the outermost 1,000 angstroms of the aluminum surface has about 0.10 to 1.25 percent silicon.

An aluminum welding rod or electrode having a thin reacted oxidation barrier coating on the exterior surface thereof. The oxidation barrier coating is such that the outermost 1,000 angstroms of the wire surface contains about 0.10 to 1.25 percent silicon and preferably about 0.50 to 0.80 percent silicon. The oxidation resistant coated surface is characterized by resistance to appreciable crazing and flaking responsive to deformation of the aluminum wire.

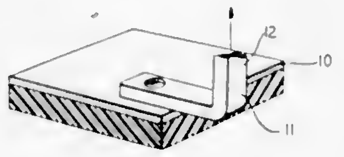
3,791,861
METHOD FOR PRODUCING THIN FILM CIRCUITS ON HIGH PURITY ALUMINA SUBSTRATES

Robert Charles Sundahl, Jr., Bethlehem, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 16, 1971, Ser. No. 134,665

Int. Cl. H05k *3/18*

U.S. Cl. 117—213 **14 Claims**



In the production of thin film circuits, adhesion of the metallization to the surface of high purity alumina substrates is enhanced by annealing the substrates prior to metallization.

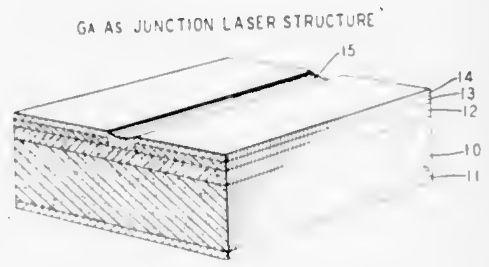
3,791,862
CHEMICAL GROWTH OF INSULATING LAYERS ON GALLIUM ARSENIDE

Robert Edmund Albano, Scotch Plains, and John Cameron Dyment, Chatham, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 156,886, June 25, 1971, abandoned. This application Dec. 22, 1971, Ser. No. 210,992

Int. Cl. B44d *1/20;* **C23b** *5/62*

U.S. Cl. 117—213 **12 Claims**



A process is described for the fabrication of gallium arsenide devices in which insulating layers are chemically grown on gallium arsenide using a pH adjusted peroxide solution as the chemical agent. This procedure has the advantage that it can be carried out at room temperature using fairly simple inexpensive equipment and without introducing additional foreign cations into the process which could contaminate the gallium arsenide.

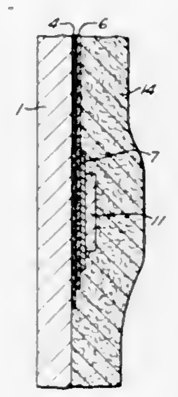
3,791,863
METHOD OF MAKING ELECTRICAL RESISTANCE DEVICES AND ARTICLES MADE THEREBY

Virgil P. Quirk, St. Marys, Pa., assignor to Stackpole Carbon Company, St. Marys, Pa.

Filed May 25, 1972, Ser. No. 256,757

Int. Cl. C23b *5/64;* **B05b** *7/20*

U.S. Cl. 117—217 **12 Claims**



An insulating substrate or surface is provided with a flame-sprayed porous electrical resistance coating, impregnated with dielectric material to fill its pores. If the support is metal, it is first provided with a flame-sprayed porous insulating coating that likewise is impregnated with dielectric material. Metal is flame-sprayed onto the resistance coating to form terminals. By using resistance material with a negative temperature coefficient of resistivity, such as a ceramic ferrite, when the resistance coating is used for heating purposes, the article to which it is applied can be prevented from becoming overheated.

3,791,864
METHOD OF ORNAMENTING ARTICLES BY MEANS OF MAGNETICALLY ORIENTED PARTICLES

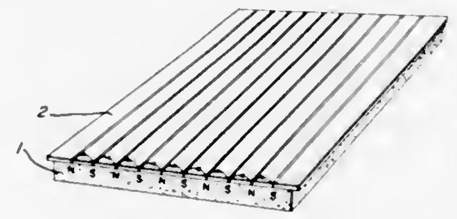
Erich Steingroever, Bonn, Germany, assignor to Magnetfabrik Bonn G.m.b.H., Bonn/Bad Goldesberg and Weilburger Lackfabrik J. Grebe, Weilburg/Lahn, both of, Germany, part interest to each

Filed Nov. 5, 1971, Ser. No. 196,171

Claims priority, application Germany, Nov. 7, 1970, 2054934

Int. Cl. H01f *10/00*

U.S. Cl. 117—238 **14 Claims**



A patterned effect can be produced in coatings applied to any surface by employing a preliminary coating which includes a liquid vehicle in which permanent magnet particles are suspended; the coating being applied and then hardened, after which the particles are magnetized under the influence of magnetic lines of force arranged in a predetermined pattern, and another coating containing magnetically orientable particles is applied, which particles become oriented by the magnetic field product by the particles first applied.

3,791,865
HIGH MALTOSE SYRUPS

Thomas L. Hurst, and Almerin W. Turner, both of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed May 12, 1969, Ser. No. 823,937

Int. Cl. C12d *13/02*

U.S. Cl. 127—32 **8 Claims**

Storage stable high maltose starch conversion syrups having a minimum F.E. of 85%, a minimum D.E. value (dextrose equivalent) of about 50%, a maltose content of about 60 to 80% and a maltotriose content of 15 to 35%, and method for producing said syrups wherein a starch paste containing at least 5% by weight solids is saccharified with a maltogenic enzyme and amylo-1,6-glucosidase.

3,791,866
RECOVERY OF WASTE BRINE REGENERANT

Robert Kunin, Yardley, and William Fries, Southampton, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Aug. 7, 1972, Ser. No. 276,018

Int. Cl. C13d *3/14*

U.S. Cl. 127—46 A **7 Claims**

Saline solutions, used to regenerate exhausted porous anion exchange resins loaded with organic color bodies resulting from sugar syrup purification, may be re-used after treatment with an oxidizing reagent such as hydrogen peroxide, sodium hypochlorite or calcium hypochlorite.

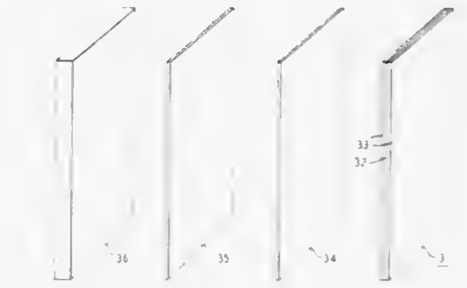
3,791,867
RECHARGABLE NONAQUEOUS BATTERY

John Broadhead, Morristown, and Alexander Duane Butherus, Murray Hill, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 24, 1972, Ser. No. 274,596

Int. Cl. Holm *35/02*

U.S. Cl. 136—6 R **10 Claims**



A nonaqueous battery is described which employs a conventional nagative electrode and a positive electrode in which the active material is incorporated in the layered structure of a transition metal chalcogenide. Such positive electrode structures may be utilized completely and are rechargeable.

3,791,868
METHOD OF MAKING A BATTERY CELL HAVING A COILED METALLIC FOIL CATHODE MEMBER

Charles E. Compton, Martinez, and William H. Taplin, III, Lafayette, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 70,146, Sept. 8, 1970, abandoned. This application May 12, 1972, Ser. No. 252,624

Int. Cl. H01m *35/16*

U.S. Cl. 136—13 **9 Claims**

The invention is an improved process for making a battery cell having as an electrode a metallic sheet wound into a vertical coil of spaced apart layers. The use of a thin metallic foil as such an electrode is made feasible by:

1. disposing a metallic spacer strip between the foil layers adjacent to their lower edges

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2. radially compressing the spacer strip and the foil into close contact, and
3. forming at least one common electrical connection between the spacer strip and foil edges by heli-arcing a weld bead on the bottom of the assembly.

3,791,869
STORAGE BATTERY ELECTRODE

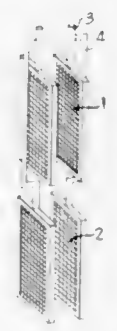
Jurgen Brinkmann, Berenbostel; Manfred Rasche, Hagen, and Willi Heissmann, Nachrodt, all of Germany, assignors to Varta Aktiengesellschaft, Frankfurt/Main, Germany

Filed June 26, 1972, Ser. No. 266,162

Claims priority, application Germany, July 1, 1971, 2132690

Int. Cl. H01m *35/32*

U.S. Cl. 136—81 **19 Claims**



The plate electrodes of storage batteries having large vertical dimensions are made up of two or more vertically spaced plate segments. Connectors are provided which link these segments mechanically together, and which connect them electrically in parallel.

3,791,870
PROCESS FOR REACTIVATING A FUEL CELL BATTERY

Horst Grune, Kelkheim/Taunus, Germany, assignor to Varta Aktiengesellschaft, Frankfurt/Main, Germany

Filed Apr. 13, 1970, Ser. No. 28,095

Claims priority, application Germany, Apr. 11, 1969, 1918353

Int. Cl. H01m *27/00*

U.S. Cl. 136—86 E **14 Claims**

Process for activating a hydrogen electrode in a fuel cell during or prior to the operation of the cell by supplying hydrogen to both electrodes for a specified limited time, establishing certain electrically conductive conditions for a specified time, and discontinuing the hydrogen supply to the oxygen electrode. The cell then resumes its optimum operating capacity.

ERRATUM

For Class 136—86 A see:
Patent No. 3,791,896

3,791,871
ELECTROCHEMICAL CELL

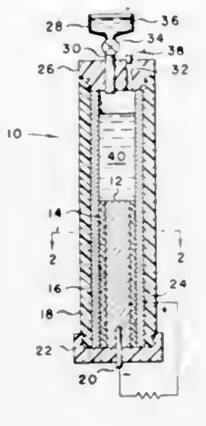
Leroy S. Rowley, San Jose, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Apr. 14, 1971, Ser. No. 133,833

Int. Cl. H01m *13/00*

U.S. Cl. 136—100 R **15 Claims**

The effective generation of electrical power is provided utilizing materials which are both chemically and electrochemically highly reactive with one another, in particular, alkali metals and water. The transport of water molecules to the alkali metal anode surface is restricted in the electrolyte. In a simple single stage cell an alkali metal hydroxide aqueous solution electrolyte is provided between an alkali metal anode and a non-reactive metal cathode at a sufficiently high concentration to prevent melting of the anode or thermal runaway. No other chemical or mechanical intermediary is required. Electrical power is obtained by continuously adding to the electrolyte during operation a controlled restricted quantity of water proportional to the electrical current withdrawn from the cell. No external heating is required and the cell operates near room temperature. The control of the rate of water addition may be used to control the power output of the cell.



3,791,872
METHOD FOR PRODUCTION OF ELECTRODE FOR ELECTROCHEMICAL CELLS

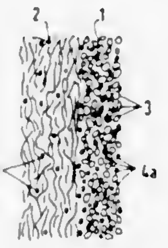
Ferdinand V. Sturm; Walter Naschwitz, both of Erlangen; Werner Rummel, Grossdechsendorf, and Dieter Groppel, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Erlangen and Berlin, Germany

Filed June 30, 1971, Ser. No. 158,459

Claims priority, application Germany, July 1, 1970, 2032549

Int. Cl. H01m *13/04*

U.S. Cl. 136—120 FC **10 Claims**



An electrode for electrochemical cells constituting a porous cover layer of fibrous material and a layer of pulverulent catalyst. The catalyst particles are connected with each other as well as with the cover layer by means of a binder. The cover layer contains a binder. A butadienestyrene acrylonitrile copolymer is present in the catalyst layer. Also described is a method for producing the electrode.

3,791,873
CLOSURE SEAL FOR ELECTROCHEMICAL CELLS

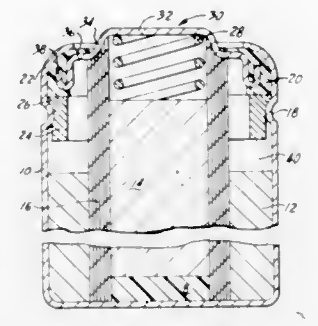
Stephen J. Angelovich, Yonkers, N.Y., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Nov. 2, 1970, Ser. No. 85,840

Int. Cl. H01m *1/02*

U.S. Cl. 136—133 **4 Claims**

A Closure Seal for an electrochemical cell comprises a metal can constituting one of the terminals of the cell, a top closure means for the can constituting the other terminal of the cell, an insulating sealing means confined between cooperating portions of the can and of the closure means, a radial constriction in the upper wall portion of said can and spaced below the sealing means, and an insulating supporting member positioned into the space below said sealing means and above said constriction.



When the upper rim of the metal can is crimped down to press against the sealing means thereby to seal the cell, the supporting member prevents distortion of the sealing means.

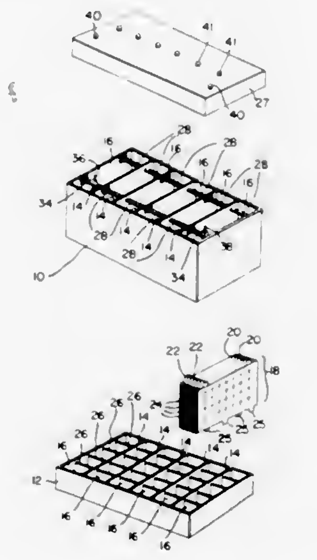
3,791,874
BATTERY CONTAINER

Frederick J. Port, West Chester, Pa., assignor to ESB Incorporated, Philadelphia, Pa.

Division of Ser. No. 871,207, Oct. 17, 1969, Pat. No. 3,746,579, which is a division of Ser. No. 726,068, May 2, 1968, Pat. No. 3,519,489. This application Mar. 16, 1973, Ser. No. 341,969

Int. Cl. H01m *1/02*

U.S. Cl. 136—134 R **12 Claims**



A battery has a container consisting of an upper portion and a lower portion sealed together in any convenient manner. The cover may be separate from, or integrally constructed with, the upper portion of the container. Single cell or multicell as well as primary or secondary batteries may be so constructed.

In multicell batteries the intercell strap connectors extend through the partitions of the cell compartments, preferably as molded inserts in the partitions. Preferably the ends of the intercell strap connectors are anchored by the container. Strap connectors may extend from end cells through the container as inserts molded therein to function as terminals.

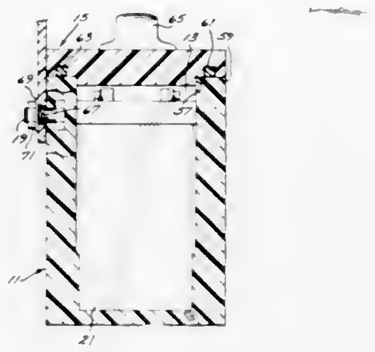
3,791,875
UNDERWATER WET CELL BATTERY CASE

Carlton L. Koehler, P.O. Box 236, Avalon, Calif.

Filed Aug. 7, 1972, Ser. No. 278,450

Int. Cl. H01m *1/04;* **A45c** *11/22*

U.S. Cl. 136—173 **6 Claims**



An underwater wet cell battery case for housing a battery to drive an underwater electrical device and including a housing formed with a body defining a battery-receiving cavity and including a cover secured to such body and cooperating therewith to form a water-tight seal. A mounting bracket is formed with a belt loop for securement to a scuba diver's belt and includes swivel means connecting the case thereto for pendulum pivoting of such housing to enable a battery to be placed therein and maintained in an upright position irrespective of maneuvers undertaken by the diver.

3,791,876
METHOD OF MAKING HIGH STRENGTH ALUMINUM ALLOY FORGINGS AND PRODUCT PRODUCED THEREBY

Paul W. Kroger, San Gabriel, Calif., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 164,912, July 21, 1971, abandoned, which is a continuation-in-part of Ser. No. 823,997, May 12, 1969, abandoned. This application Oct. 24, 1972, Ser. No. 300,153

Int. Cl. C22f *1/04*

U.S. Cl. 148—2 **40 Claims**

An aluminum base alloy containing zinc, magnesium and copper is fabricated into a forging having very high strength. The alloy is cast, homogenized and fabricated into wrought forging stock, preferably by extrusion, under specially prescribed conditions. This stock is soaked, forged, solution heat treated and aged under herein prescribed conditions.

3,791,877
METHOD FOR TREATING MILITARY EQUIPMENT

Joseph V. Otrhalek, Dearborn, and Russell S. Banush, Trenton, both of Mich., assignors to Basf Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 20, 1972, Ser. No. 219,516

Int. Cl. C23f *7/10*

U.S. Cl. 148—6.15 Z **3 Claims**

Ferrous metal substrates, and in particular, military ammunition or armament, is rendered corrosion resistant by the application thereonto of a film-forming composition consisting essentially of an organic solvent having a maximum flash point of about 150°F. and a calcium soap of a mixture of organic acids, lactones and esters. When the composition dries on the substrate, a camouflaging olive drab color is imparted thereto.

3,791,878

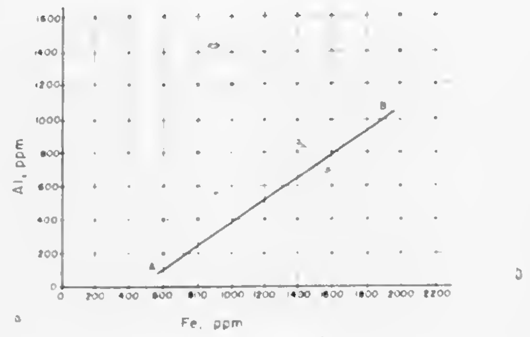
METHOD OF OBTAINING DUCTILE BERYLLIUM

William Taylor, Wyomissing; William O. Frauson, Conyngham, and Stanley Chinowsky, Reading, all of Pa., assignors to Kawecki Berylco Industries, Inc., New York, N.Y.

Filed Mar. 25, 1971, Ser. No. 127,972

Int. Cl. C22f *1/18*

U.S. Cl. 148—11.5 F **2 Claims**



A critical relationship is described between the rate of cooling of beryllium from a stress-relieving or forming temperature and the indigenous iron-to-aluminum impurity ratio in mechanically worked beryllium, with resulting improvement in its ultimate ductility.

3,791,879

SOLDER FLUX COMPOSITION

Harold Goldfarb, Walnut, and Christopher Valsamakis, Huntington Beach, both of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Continuation of Ser. No. 201,138, Nov. 22, 1971, abandoned. This application May 21, 1973, Ser. No. 361,917

Int. Cl. B23r *35/34;* **C07c** *29/00*

U.S. Cl. 148—23 **1 Claim**

A fluxing composition suitable for soldering electrical connections and characterized by producing a bright and shiny solder joint comprising about 40 to 65 percent by weight of polypropylene glycol and 35 to 60 percent by weight rosin.

3,791,880

TEAR RESISTANT SHEET AND PLATE AND METHOD FOR PRODUCING

Harold Y. Hunsicker, and James T. Staley, both of Lower Burrell, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation of Ser. No. 58,337, July 27, 1970, abandoned. This application June 30, 1972, Ser. No. 267,973

Int. Cl. C22f *1/04*

U.S. Cl. 148—11.5 A **20 Claims**

An aluminum base alloy of the aluminum-zinc-magnesium-copper-chromium type with specially controlled composition limits is provided as a sheet or plate type product having the high strength and good resistance to stress corrosion cracking normally associated with this type of alloy but also having exceptional resistance to tearing. Certain prescribed fabrication procedures including thermal treatments are preferably followed in producing the improved product.

3,791,881

ANNEALING TREATMENT FOR CONTROLLING WARHEAD FRAGMENTATION SIZE DISTRIBUTION

George A. Hayes, China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Arlington, Va.

Filed Mar. 2, 1972, Ser. No. 231,429

Int. Cl. C21d *9/16, 1/50;* **F42b** *13/18*

U.S. Cl. 148—143 **1 Claim**

Methods for controlling the sizes and shapes of fragments produced by warhead casings are disclosed.

3,791,882

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES UTILIZING SIMULTANEOUS DEPOSITION OF MONOCRYSTALLINE AND POLYCRYSTALLINE REGIONS

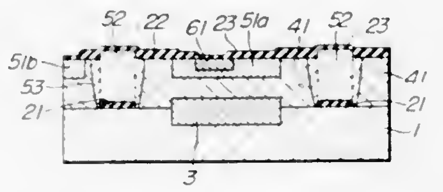
Katumi Ogiue, Kodaira-shi, Japan

Filed Aug. 23, 1967; Ser. No. 662,646

Claims priority, application Japan, Aug. 31, 1966, 41-56903

Int. Cl. H01l *7/36, 5/00;* **B44d** *1/18*

U.S. Cl. 148—174 **21 Claims**



A semiconductor device and a method of manufacturing such device, which includes the step of electrically isolating the respective elements of a semiconductor integrated circuit from each other by means of PN junctions. More specifically, the method disclosed herein includes the steps of forming a silicon dioxide layer on one main surface of an N type silicon substrate in such a manner as to surround a predetermined area of said one main surface, depositing P type silicon layers on said one main surface and said silicon dioxide layer from the vapor phase to integrally form monocrystalline silicon layers and a polycrystalline silicon layer on said one main surface and said silicon dioxide layer respectively, and thereafter introducing an N type impurity from the surface of said polycrystalline silicon layer until it reaches said silicon dioxide layer, thereby defining P type silicon regions surrounded by the N type silicon substrate and the N type polycrystalline silicon layer.

3,791,883

SEMICONDUCTOR ELEMENT HAVING SURFACE COATING AND METHOD OF MAKING THE SAME

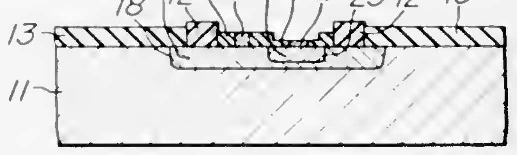
Ichiro Takei, Kodaira-shi; Katsuyoshi Sasaki, Jujisawa-shi, and Sumio Nishida, Kodaira-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 623,903, March 17, 1967. This application July 15, 1969, Ser. No. 860,450

Claims priority, application Japan, Mar. 23, 1966, 41-17415

Int. Cl. H01l *7/34*

U.S. Cl. 148—187 **17 Claims**



A semiconductor element having a surface coating consisting of, for example, a silicon nitride film and a silicon oxide film covering different surface portions of a semiconductor substrate of, for example, silicon so that such surface coating can be utilized for selective diffusion of impurities such as gallium and antimony. In a semiconductor device thus formed, the surface coating acts as a satisfactory surface protective film against external atmosphere, and the backward characteristics of the PN junction can be improved because the end edge of the PN junction terminating at the substrate surface is covered with the silicon nitride film.

3,791,884

METHOD OF PRODUCING A PNP SILICON TRANSISTOR

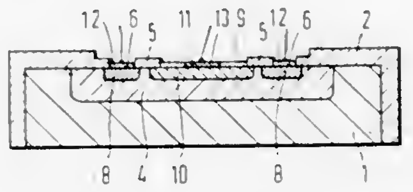
Joachim Dathe; Leo Grasser, both of Munich, and Wolfgang Muller, Vaterstetten, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin, Munich, Germany

Filed Feb. 19, 1971, Ser. No. 116,943

Claims priority, application Germany, Feb. 23, 1970, 2008319

Int. Cl. H01l *7/44*

U.S. Cl. 148—187 **5 Claims**



During the production of a pnp silicon transistor, one side of a p-conducting silicon wafer is provided with a base zone through masked diffusion of phosphorus atoms. A subsequent diffusion process increases the phosphorus concentration at the surface of the base zone to 10^{20} to 10^{21} phosphorous atoms/cm^3. The same phosphorus concentration is produced at the opposite side of the silicon wafer. The emitter is produced in the region of the base zone through a masked diffusion of acceptor atoms. Finally, the phosphorus-doped layer is removed from the reverse or back side of the semiconductor wafer.

3,791,885

METHOD OF MANUFACTURING A SEMICONDUCTOR REGION

Kamal Merchant, Heilbronn, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed June 28, 1971, Ser. No. 157,440

Claims priority, application Germany, July 2, 1970, 2032838

Int. Cl. H01l *7/34*

U.S. Cl. 148—187 **9 Claims**

A method of manufacturing a semiconductor region comprises forming a layer of diffusion material over a diffusion window and a layer of insulating material on a semiconductor body and in which the diffusion window is formed, removing the diffusion material from the insulating layer so as to leave the diffusion material over the diffusion window and diffusing the diffusion material through the diffusion window into the semiconductor body.

3,791,886

SOLDER FLUX COMPOSITION

Harold Goldfarb, 859 S. Penarth Ave., Walnut, and Christopher Valsemakis, 22081 Susan St., Huntington Beach, both of Calif.

Continuation of Ser. No. 201,135, Nov. 22, 1971, abandoned. This application Apr. 18, 1973, Ser. No. 352,146

Int. Cl. B23r *35/34;* **C07c** *31/20*

U.S. Cl. 148—23 **5 Claims**

A fluxing composition suitable for soldering electrical connections and characterized by producing a bright and shiny solder joint comprising about 40 to 99 percent by weight of polypropylene glycol and 0.25 to 15 percent by weight phosphoric acid. An optional component in the fluxing composition is 0 to 50 percent by weight rosin.

3,791,887

LIQUID-PHASE EPITAXIAL GROWTH UNDER TRANSIENT THERMAL CONDITIONS

Richard Deitch, Bayside, N.Y., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed June 28, 1971, Ser. No. 157,525

Int. Cl. H01l *7/38*

U.S. Cl. 148—172 **8 Claims**

Thin epitaxial layers of material are grown on a substrate from a saturated solution of a solute dissolved in a metal solvent. The solute and solvent are first mixed and then heated to produce the saturated solution. The solution temperature is maintained while a suitable substrate is heated to and maintained at a temperature which is at least 5°C lower than that of the solution. The substrate is then brought into contact with the solution. Upon contact, a supersaturated condition is produced in the solution proximate to the substrate and a thin epitaxial layer of solute material grows on the substrate as the substrate and solution temperatures approach equilibrium. Layer growth continues until all the supersaturation in the solution is relieved or until the substrate and solution are physically separated.

3,791,888

SOLID PROPELLANTS PREPARED FROM ACIDIC VINYLIDENE POLYMERS USING BOTH POLYAZIRIDINYL AND DIFUNCTIONAL AZIRIDINYL CURING AGENTS

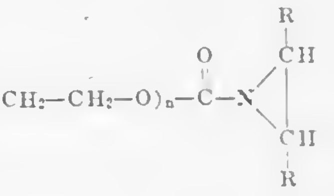
Paul S. Hudson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 23, 1961, Ser. No. 84,450

Int. Cl. C06d *5/06*

U.S. Cl. 149—19 **15 Claims**

1. A solid propellant composition comprising an inorganic oxidizing salt and a synthetic polymer formed by reacting an uncured polymer of a vinylidene-containing monomer selected from the group consisting of conjugated dienes containing from four to 12 carbon atoms, vinyl-substituted aromatic compounds, vinylpyridines, vinylquinolines, vinylisoquinolines, acrylic acid esters, alkacrylic acid esters, nitriles, N,N-disubstituted amides, vinylfuran, and N-vinylcarbazole, said uncured polymer containing at least one acid group of an element selected from the group consisting of sulfur, carbon, selenium, silicon, tin, antimony, tellurium, and arsenic per molecule, with a combination curative containing a compound having at least three 1-aziridinyl radicals in which the ring carbons are bonded to radicals containing up to a total of 20 carbon atoms and selected from the group consisting of hydrogen, alkyl, cycloalkyl, aryl, alkaryl and aralkyl radicals and a diaziridinyl compound having the formula



$$(RCH)_2N-\overset{O}{\overset{\|}{C}}-O(CH_2-CH_2-O)_n-\overset{O}{\overset{\|}{C}}-N(CHR)_2$$

wherein *n* is an integer of 1 to 2 and each R is selected from the group consisting of hydrogen and alkyl radicals containing from one to four carbon atoms.

3,791,889

FUEL COMPOSITION CONTAINING LITHIUM, CALCIUM AND FLUOROCARBON

Johann Schroder, Drimbornallee 125A, Aachen, Germany

Continuation of Ser. No. 860,977, Sept. 25, 1969, abandoned. This application Mar. 27, 1972, Ser. No. 238,474

Int. Cl. C06d *5/06*

U.S. Cl. 149—19.3 **6 Claims**

A fuel for producing calorific energy by reaction with SF_6, the fuel containing mostly lithium and a solid highly fluorinated compound.

3,791,890

supplying apparatus includes upper and lower container half

structure such as nickel screen is coated with carbonized nickel powder bonded in place by an organic polymer. The

stituted of at least two layers of helically wound metallic wires or cables. This process is characterized in that each armoring

3,791,890

GRANUALR POLYKETONE PREPARATION

Frederick W. Gander, Kennet Square, Pa., and William D. Garlington, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 18, 1972, Ser. No. 227,613

Int. Cl. C08g *23/00*

U.S. Cl. 260—61 **6 Claims**

An improvement in the preparation of polyketones by Friedel-Crafts synthesis, wherein the reaction mixture is dispersed into a heated fluid, prior to coagulation of the polyketone, to form a granular product.

3,791,891

SOLID COMPOSITE PROPELLANTS WITH VERY HIGH BURNING RATES

Mart G. Baldwin, Newtown, and Lew R. Beason, Ivyland, both of Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 836,176, June 24, 1969, abandoned. This application Apr. 12, 1972, Ser. No. 243,430

Int. Cl. C06d *5/06*

U.S. Cl. 149—19 **4 Claims**

A fast burning composite propellant comprising a cured intimate mixture of a prepolymer/plasticizer solution wherein the prepolymer is a copolymer of carboranylmethyl acrylate and acrylic acid and the plasticizer is selected from triethylene glycol dinitrate and butane-triol trinitrate and mixtures thereof, an inorganic oxidizing salt, and an additive of metal powder.

3,791,892

CASTABLE POLYURETHANE COMPOSITE PROPELLANTS

Aubrey J. Hammond, Sacramento, and Hyman R. Lobowitz, Redondo Beach, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 24, 1966, Ser. No. 522,779

Int. Cl. C06d *5/06*

U.S. Cl. 149—19.4 **17 Claims**

A solid propellant with a polyurethane resin binder made from the reaction of a di-isocyanate compound and the condensation product of 1,2-polyoxybutylene glycol with an alkanedioic acid.

3,791,893

FAST BURNING DOUBLE-BASE PROPELLANT

William E. Hill, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 16, 1969, Ser. No. 817,617

Int. Cl. C06b *11/00*

U.S. Cl. 149—19 **5 Claims**

Double-base propellant compositions employing 1-nitro-2-carboranylpropene (NIPC) as a catalyst are stable compositions which burn at increased rate.

3,791,894

DENESTER SYNCHRONIZER APPARATUS AND METHOD

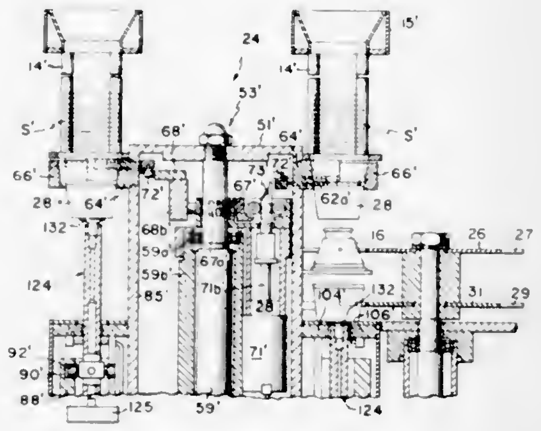
Robert J. Mistarz, Northbrook, Ill., assignor to Koehring Company, Milwaukee, Wis.

Filed Aug. 28, 1972, Ser. No. 284,035

Int. Cl. B32b *31/16*

U.S. Cl. 156—60 **16 Claims**

Container assembly apparatus, for joining vertically aligned container halves, wherein apparatus for supplying upper and lower vertically aligned container halves to joining apparatus at a container assembly station is provided. The container half supplying apparatus includes upper and lower container half denesters which move stacks of upper and lower nested container halves in independent paths of travel and successively denest the container halves in the stacks and discharge them at generally laterally spaced, upper and lower container half discharge stations, respectively. The container half supplying apparatus also includes mechanism for moving the discharge upper container sections from the upper half discharge station into juxtaposed relation with the lower container halves discharged at the lower half discharge station, and control mechanism, operatively connected in circuit with the upper and lower container half denesters, for operating them to insure the release of the upper and lower container halves at appropriate times during the cycle. The control mechanism includes control elements for insuring that the upper and lower container halves, and particularly the initially and the finally released container halves at the upper and lower half discharge stations, are denested and discharged in properly timed relation to provide sets of vertically aligned halves to travel to the container assembly machine.



3,791,895

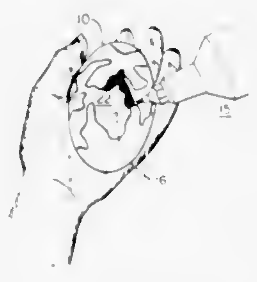
METHOD OF CUTTING AND DECORATING EGGSHELLS

Sally A. LeVan, 2704 Boyd St., Bethlehem, Pa.

Filed Oct. 3, 1972, Ser. No. 294,502

Int. Cl. B44c *5/00*

U.S. Cl. 156—62 **11 Claims**



Intricate cutting of an empty eggshell is accomplished by applying over and affixing to the surface of the shell a fine cord, or braid, in a manner so as to produce an artistic design, and cutting out portions of the eggshell bounded by the cord by inserting a drill bit into and within the eggshell and cutting laterally with the drill edge along the boundary of the portion formed by the cord until the enclosed portion is completely cut out.

3,791,896

BI-FUNCTIONAL GAS ELECTRODE

Jack C. Sklarchuk, Trenton, N.J., assignor to ESB Incorporated, Philadelphia, Pa.

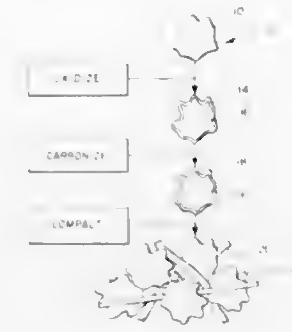
Filed Dec. 16, 1971, Ser. No. 208,815

Int. Cl. H01m *35/00, 27/04*

U.S. Cl. 136—86 D **6 Claims**

A bi-functional gas electrode is described suitable for use in a rechargeable gas-metal cell or gas-metal oxide cell. A grid

structure such as nickel screen is coated with carbonized nickel powder bonded in place by an organic polymer. The electrode is waterproofed by adhering a sheet of microporous polyfluorohydrocarbon on one of the surfaces of the electrode. The electrode is suitable for use with such gasses as oxygen, hydrogen carbon monoxide, and numerous carbon hydrogen compounds.



3,791,897

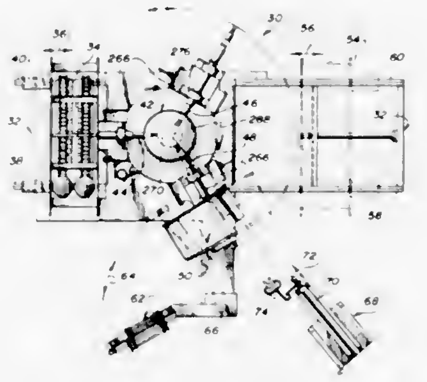
METHOD AND APPARATUS FOR MAKING ENDLESS BELTS

Xavier Mesly, Sherbrooke, Quebec, Canada, assignor to Bombardier Limited, Valcourt, Quebec, Canada

Filed June 16, 1971, Ser. No. 153,696

Int. Cl. B29h *7/22, 17/04, 17/16*

U.S. Cl. 156—137 **20 Claims**



The disclosure herein describes an apparatus which consists of a rotatable turret carrying three horizontally extending shafts, each capable of supporting an improved track-receiving drum, of at least two improved vulcanizers mounted adjacent the turret and movable relative thereto, of an automatic rod applicating device adapted to come in circumferential abutment with the track-receiving drum, of a track-extracting device adapted to be inter-connected with the drum, and of heating and cooling stations having conduits for connection with the drum. The disclosure also describes a new method making snowmobile-type tracks in a more efficient and economical way.

3,791,898

WINDABLE FLEXIBLE SHAFT CAPABLE OF WITHSTANDING HIGH TRACTIVE FORCES AND TORSIONAL STRESSES AND PROCESS FOR MANUFACTURING THE SAME

Reynard Remi, Montesson, France, assignor to Institut Francais Du Petrole Des Carburants Et Lubrifiants, (Hauts de Seine), Rueil-Malmaison, France

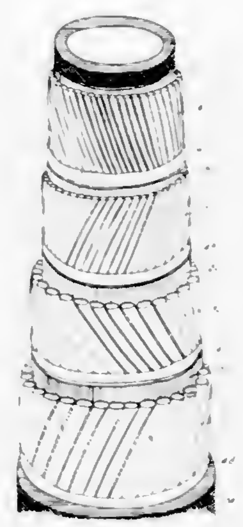
Division of Ser. No. 725,426, April 30, 1968, Pat. No. 3,559,693. This application Oct. 6, 1970, Ser. No. 78,592

Claims priority, application France, May 5, 1967, 67.105469

Int. Cl. B31c *13/00;* **B29h** *7/14*

U.S. Cl. 156—143 **11 Claims**

A process for manufacturing a flexible shaft including a flexible core surrounded with at least one armoring constituted of at least two layers of helically wound metallic wires or cables. This process is characterized in that each armoring layer is provided with an anchoring layer wherein it is embedded, thin anchoring layer being constituted of an elastomeric or thermoplastic material which has been subjected to a thermal treatment, in combination with a thin hooping and separating layer which covers the armoring layer and is constituted of a material which can withstand the thermal treatment without flowing, thin material preferably retracting under the conditions of this thermal treatment.



3,791,899

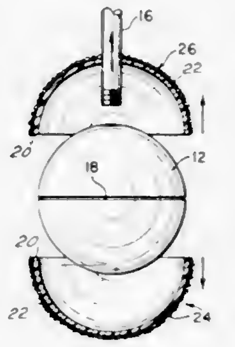
METHOD OF MAKING ORNAMENTAL HOLLOW PLASTIC ARTICLES

Ben Walters, 4600 E. 11th Ave., Miami Beach, Fla.

Filed Apr. 15, 1971, Ser. No. 134,187

Int. Cl. B29c *21/00*

U.S. Cl. 156—152 **5 Claims**



A process for making a hollow, ornamental, plastic article which has a smooth interior surface to which is bonded a randomly arranged layer of pellets forming the outer surface and extending outwardly therefrom. The pellets provide a radiating and lighting surface to dissipate heat from a light source positioned within the article and diffusing the light. The article is produced by placing a layer of plastic powder upon a heated surface of a mold in the form of the article, heating the layer to make it tacky and distributing a layer of pellets of a compatible plastic material over the tacky layer of powder, and heating the pellets until they become soft and cooling the mold and article so that the pellets adhere to each other and to the layer and removing the article from the mold.

3,791,900

PROCESS AND APPARATUS FOR THE PRODUCTION OF HOLLOW BODIES FROM REACTION RESINS, WHICH ARE REINFORCED WITH FIBRES

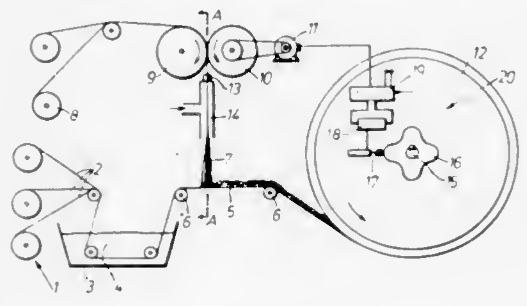
Leonard Goerden, Oedt, and Franz Gromping, Krefeld, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 24, 1972, Ser. No. 220,055

Claims priority, application Germany, Feb. 9, 1971, 2105955

Int. Cl. B65h *81/06*

U.S. Cl. 156—171 **24 Claims**



Glass fibre reinforced hollow bodies, e.g. pipes produced from reaction resins, are produced by a winding process whereby the fibres are fed to a supporting layer as endless rovings with a speed which is higher than the circumferential speed of the winding core whereby the supporting layer supplies the rovings to the winding core at a speed equal to the circumferential speed of the latter.

3,791,901

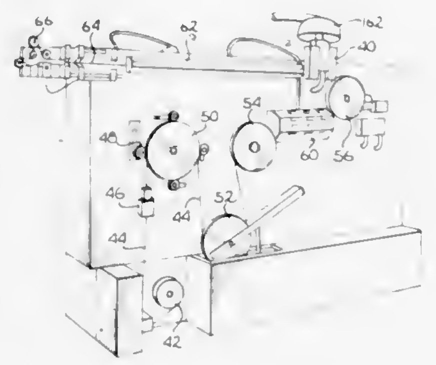
METHOD AND APPARATUS FOR MAKING POTENTIOMETER WINDINGS

Louis Beauregard, North Hollywood, Calif., assignor to Techno-Components Corp., Van Nuys, Calif.

Filed Feb. 22, 1971, Ser. No. 117,652

Int. Cl. B32b *81/08*

U.S. Cl. 156—172 **7 Claims**



A method and apparatus for making potentioneter windings whereby the potentiometer wire is wound on an insulated mandrel and thereafter a mixture of adhesive and solvent is sprayed over the wound mandrel from one side of the mandrel. By controlling the spray, the adhesive may be limited to approximately 180° of the mandrel periphery, thereby securing the potentiometer wire to the mandrel over approximately half the mandrel area while leaving clean and uncovered the areas of the mandrel which will become the wiper track and the areas in which end connections and taps will be attached. The spraying process may be accomplished as a separate operation after winding the potentiometer wire on the mandrel, or as a continuous process by an addition of the apparatus of the invention to a suitable winding machine. The apparatus of the invention adapts a conventional artists air brush for use as a sprayer and provides all adjustments and controls necessary to achieve the desired result.

3,791,902

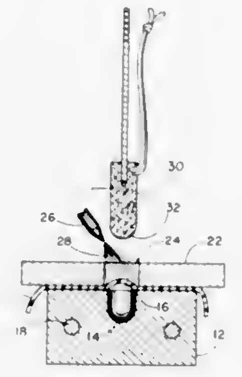
METHOD FOR COATING TAMPONS WITH WATER-SOLUBLE FILM

David E. Hanke, Neenah, and Richard R. Tews, Menasha, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Nov. 12, 1971, Ser. No. 198,278

Int. Cl. B29c *17/02;* **C09j** *5/02;* **A61f** *13/20*

U.S. Cl. 156—212 **7 Claims**



A method for coating the tip of a compressed absorbent tampon with a thin film of water-soluble plastic. The uncoated surface of the prefabricated film, such as polyvinyl alcohol, which is to be applied to the tampon is solvent-activated by humidifying the film or by the application thereto of a plasticizing fluid. While the film surface is still activated the film is molded onto the tampon tip by means of a heated tip-conforming die. The result is a thin film of unstressed polyvinyl alcohol intimately bonded to the tampon tip over the entire film-tampon interface by the autogenous adhesive power of the plasticized film.

3,791,903

MICROFILM MOUNTER

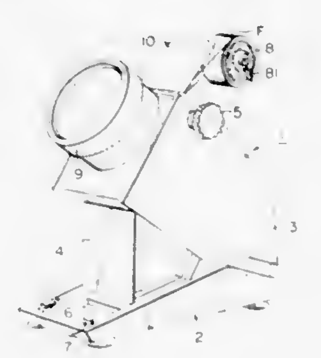
Kokichi Omi, and Toshio Arai, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed July 1, 9171, Ser. No. 158,810

Claims priority, application Japan, July 11, 1970, 45-60739

Int. Cl. B32b *31/18;* **B31b** *1/24*

U.S. Cl. 156—517 **10 Claims**



A film mounter for cutting a long film such as pre-recorded microfilm or the like into pieces of a predetermined size and mounting such pieces of film onto apertured cards. The film mounter is equipped with a cutter device which normally consists of a movable cutter member and a pair of stationary cutter members. The movable cutter has a pair of cutting edges and the stationary cutter has a wedge-shaped transverse slot having a cutting edge, the film being cut by their cooperation. The stationary cutter is pivotally supported on a frame so that the resilient and forceful contacts between the cutting edges of the movable cutter and the stationary cutter are assured. Furthermore the relative movement between the movable and stationary cutters provide self-sharpening due to the close contact between them. Accordingly an excellent cutting performance can be always expected.

3,791,904

FEEDER FOR LABELLING MACHINES

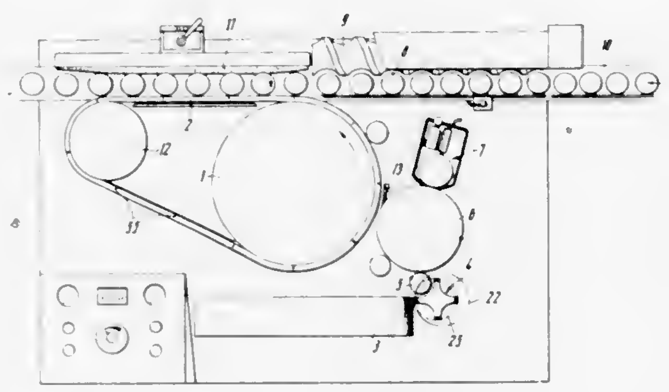
Ernst Schlacht, Berlin, Germany, assignor to Johann Weiss, Maschinenfabrik und Apparatebau GmbH, Berlin, Germany

Filed July 7, 1972, Ser. No. 269,547

Claims priority, application Germany, July 20, 1971, 2136908

Int. Cl. B65c *9/14*

U.S. Cl. 156—571 **4 Claims**



A feeder mechanism incorporated in a machine for attaching labels to work units. The feeder mechanism cooperates with and singly extracts labels from a label container, carries and delivers the singled labels to a gumming drum which passes the gummed, singled labels to a label-applicator device. The feeder has plural arms, being a substantially star-shaped unit, each arm being provided with label singling and receiving surfaces containing controlled suction apertures for holding the labels. A planetary or epicyclic gearing drives the star-shaped feeder so each label receiving surface passes along a cycloid path.

3,791,905

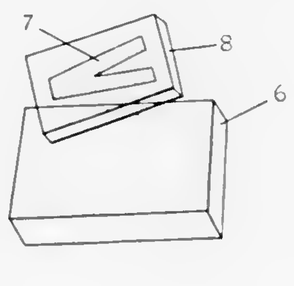
METHOD FOR TRANSFERRING INFORMATION PRINTED ON A CLAY-COATED SUBSTRATE TO A TRANSPARENT SUBSTRATE FOR THE PURPOSE OF MAKING SLIDES

Donald Joseph Molner, Englishtown, N.J., assignor to Q. S. Industries, Inc., New York, N.Y.

Filed Feb. 19, 1971, Ser. No. 116,861

Int. Cl. B32b *31/24;* **B44c** *1/16*

U.S. Cl. 156—235 **4 Claims**



A method of making slides using a transfer process including contacting a clay-coated image bearing surface with an adhesive coated transparent substrate, burnishing the image and the transparent substrate and separating the transparent substrate from the original image bearing surface whereby a transfer of the image to the substrate is accomplished which is suitable for conventional image projection.

3,791,906

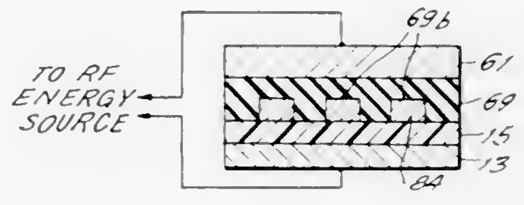
METHOD OF USING A COMPRESSIBLE DIE MEMBER TO FORM PATTERNS ON A PLASTIC SHEET — INCLUDING THE USE OF A LIQUID PLASTISOL AND DIELECTRIC HEATING

Robert D. Farkas, 772 Prospect St., Westfield, N.J.

Continuation-in-part of Ser. No. 112,692, Feb. 4, 1971, abandoned. This application Dec. 9, 1971, Ser. No. 206,363

Int. Cl. B29c *19/04,* **B29h** *5/26*

U.S. Cl. 156—245 **1 Claim**



A die assembly incorporating a resilient die face and/or backing for sealing and/or patterning or texturing plastic and other like material through the use of RF heating. The die face contains all of the texturing, embossing, printing and the like of the surface of the material or object being simulated. The die face and/or the resilient backing material are imbedded or otherwise provided or formed with conductive and/or resistive material to enhance the dielectric heating operation, as well as to provide heat flow toward the plastic load immediately upon the institution of the RF heating operation.

The resilient die faces may be integrated with the cutting edges forming fixed or compound die assemblies for cutting and/or sealing operations which may be performed substantially contemporaneously with the patterning or texturing operations.

3,791,907

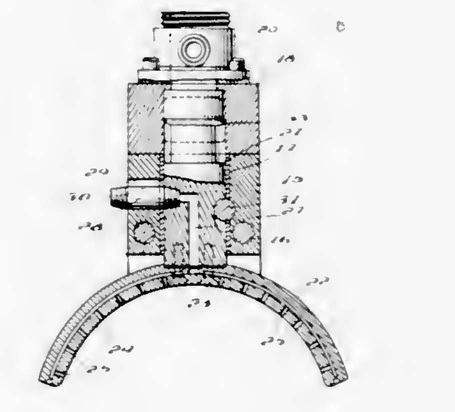
METHOD AND APPARATUS FOR SECURING THE TAIL CONVOLUTION OF A ROLL

Robert L. Marcalus, One Market St., East Paterson, N.J.

Filed Nov. 1, 1971, Ser. No. 194,244

Int. Cl. B32b *31/00*

U.S. Cl. 156—253 **7 Claims**



A method and apparatus for causing adherence of the tail end portion of a wound paper roll to underlying convolutions at and in connection with the sawing off of the rolls from logs. Operating in timed relation with the saw is a manifold which extends partway around a portion of the log in advance of the sawing operation and having means for applying spots of water or other liquid to the peripheral portion of the log. Additional means is related thereto for penetrating the external portion of the log at the spots of water or liquid to cause the liquid to enter into the log and for adherence of the convolutions during the subsequent cutting and packaging of the rolls.

3,791,908

Applicants have succeeded in producing reinforced laminates

3,791,914

to high yield, wherein the digested slurry is subjected to fine

3,791,908

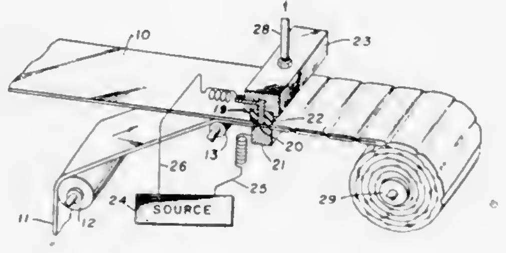
METHOD OF HEAT SEALING POROUS MATERIALS

Lester Gidge, Nashua, N.H., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 71,656, Sept. 14, 1970, Pat. No. 3,671,709. This application Dec. 2, 1971, Ser. No. 204,342

Int. Cl. B29c *27/02*

U.S. Cl. 156—273 **5 Claims**



An apparatus for seam bonding layers of fabric by radio frequency power is provided with electrodes at least one of which is flanked by and is recessed in a resilient insulating member which acts to fill the voids in the fabric during bonding and resultingly prevents electrical arcing through the fabric.

3,791,909

METHOD OF LAMINATING POLYIMIDE FILM

Ian K. McKee, Princeton, N.J., assignor to Circuit Materials Division Dodge Industries, Inc., Hoosick Falls, N.Y.

Filed Jan. 12, 1972, Ser. No. 217,229

Int. Cl. C09j *5/02;* **B32b** *31/12*

U.S. Cl. 156—306 **5 Claims**

A process of laminating a polyimide film and a film of a completely fluorinated ethylene-propylene copolymer, the later film having one surface rendered cementable, by bringing together one surface of said polyimide film and said cementable surface of said fluorinated ethylene-propylene film under pressure and with the application of heat.

3,791,910

MULTIPLE GLAZED UNIT

George H. Bowser, New Kensington, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 49,779, June 25, 1970, abandoned. This application Mar. 7, 1972, Ser. No. 232,411

Int. Cl. E06b *3/66*

U.S. Cl. 161—45 **12 Claims**

Disclosed herein is a room temperature vulcanizable mastic for hermetically sealing multiple glazed units. Also disclosed is a dehydrator element for a multiple glazed unit comprising a desiccant material dispersed in a matrix of moisture vapor transmittable material.

3,791,911

ADHESIVE FREE FIBER REINFORCED LAMINATE

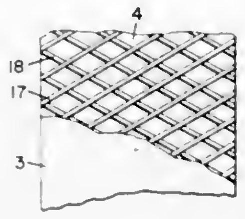
Luther L. Yaeger, and Wei-Gwo Chen, both of Houston, Tex., assignors to Griffolyn Company, Incorporated, Houston, Tex.

Continuation of Ser. No. 871,916, Oct. 28, 1969, abandoned. This application Feb. 23, 1972, Ser. No. 228,783

Int. Cl. B32b *5/12*

U.S. Cl. 161—58 **11 Claims**

By very rapid and precise electronic controlled heat application, with conditions held between specified critical limits, Applicants have succeeded in producing reinforced laminates without the use of adhesives, and yet retaining the capacity of the reinforcements to move controllably in response to stresses so as to present maximal tear resistance.



3,791,912

CONSTRUCTION MEMBER

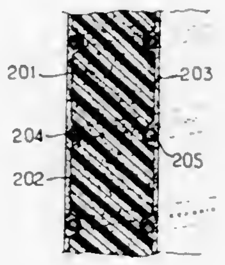
Francois Allard, 34, Avenue Leclere, Douai, France

Filed July 16, 1971, Ser. No. 163,297

Claims priority, application France, July 22, 1970, 70.27047; Jan. 15, 1971, 71.01277

Int. Cl. B32h *3/26, 5/18, 5/24*

U.S. Cl. 161—160 **18 Claims**



A construction member comprising a core of plastic foam or expanded plastic material, a covering of plastics resin reinforced with glass fibres bonded to the faces of the core, reinforcing rods being disposed at the connection of the covering with the core such that upon hardening of the resin the reinforcing rods are tightly bonded to the core as well as the covering. The construction member may be formed as a panel, paving slab, flooring member, telephone pole, or silo depending on the desired use.

3,791,913

FREE FLOWING ELASTOMER PELLETS AND PROCESS FOR THEIR PREPARATION

Gary Ver Strate, Matawan, and Edward N. Kresge, Watchung, both of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed May 17, 1971, Ser. No. 144,300

Int. Cl. B32b *33/00*

U.S. Cl. 161—164 **9 Claims**

Free flowing pellets of substantially unvulcanized elastomeric polymers having a cured surface are prepared by exposing the pellets to a curing medium for said elastomer for sufficient time to allow vulcanization of the exterior portions of the pellet; i.e., so that the pellet is cured to a maximum depth of about one-tenth of the diameter of its smallest dimension.

3,791,914

LAMINATED GLASS ARTICLES

Vernon G. Ammons, Glenshaw, and Michael E. Dufala, Tarentum, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 117,164, Feb. 19, 1971, abandoned, which is a continuation of Ser. No. 645,881, June 14, 1967, abandoned. This application Jan. 26, 1972, Ser. No. 221,083

Int. Cl. B32b *27/40, 17/10*

U.S. Cl. 161—190 **18 Claims**

This invention relates to polyurethane resins having reduced adhesion to other materials. It particularly pertains to polyurethane interlayers, especially interlayers utilized in laminated safety glass articles. More particularly, this invention relates to polyurethane compositions comprising the reaction product of an organic polyisocyanate and an organic polyol which has reduced adhesion to other materials due to the inclusion therein of a proton containing compound of phosphorus, preferably acid organic phosphorus compounds.

3,791,915

MULTILAYER LAMINATED POLYETHYLENE COPOLYMER-POLYAMIDE FILM

Clifford Clayton Goehring, Princeton; Arthur Clifford Hart, Jr., Chester, and Derek Wooldridge, Princeton, all of N.J., assignors to American Can Company, Greenwich, Conn.

Filed July 6, 1971, Ser. No. 160,145

Int. Cl. B32b *27/34, 27/08*

U.S. Cl. 161—227 **8 Claims**

A heat sealable laminated film including at least a layer of a polyamide polymer, a layer of a blend of polyethylene and a zinc-neutralized ionic copolymer, and an adherent layer of a zinc-neutralized ionic copolymer of ethylene and an α,B-ethylenically unsaturated carboxylic acid. Preferred respective materials are polycaproamide and a zinc-neutralized ionic copolymer of ethylene and methacrylic acid.

3,791,916

SEALING POLYSTYRENE

Frank E. Eastes, Spartanburg, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed Dec. 6, 1971, Ser. No. 205,394

Int. Cl. B32b *27/06;* **B65d** *5/42*

U.S. Cl. 161—247 **5 Claims**

Two polystyrene surfaces may be sealed together with a fusion type seal at a temperature below the melting point or distortion temperatures of the polystyrene by coating the polystyrene with a selected material that causes the polystyrene to seal in such a manner at a temperature between room temperature and the melting temperature of the polystyrene. A new article is formed having two layers of polystyrene separated by a layer of polystyrene with a selected material dispersed therein. In some species the medial layer is stronger than the adjacent polystyrene layers and in others, the seals will open along the seal line when opening stress is applied to the article.

3,791,917

PROCESS FOR PRODUCING KRAFT PAPER LAMINATE OF TOP STOCK AND BASE STOCK LAYERS

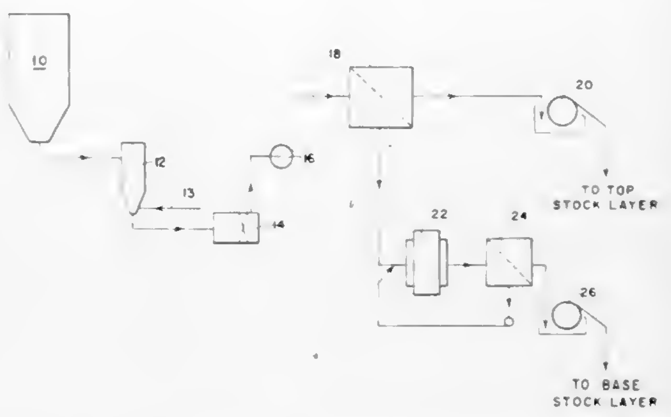
Joseph A. Bolton, III, North Attleboro, Mass., assignor to Bird Machine Company, Inc., South Walpole, Mass.

Filed Mar. 7, 1973, Ser. No. 338,826

Int. Cl. D21h *5/00, 1/02*

U.S. Cl. 162—55 **8 Claims**

A process is disclosed for producing kraft paper laminate of top stock and base stock layers from kraft fiber slurry digested to high yield, wherein the digested slurry is subjected to fine screening to separate from about 10% to about 30 percent of its fiber, substantially all of the separated fibers being suitable for top stock, and forming the top stock and bottom stock layers of the laminate respectively from the so separated fibers and the remaining fibers of the slurry.



3,791,918

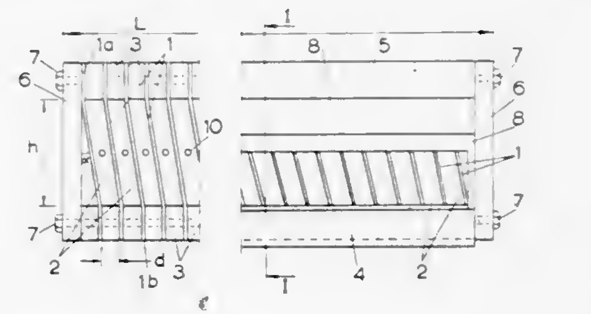
HEADBOX OF A PAPER MAKING MACHINE HAVING MULTIPLE, VERTICALLY INCLINED VANES

Jouni Koskimies, and Kauko Heinanen, both of Jyvaskyla, Finland, assignors to Valmet Oy, Helsinki, Finland

Filed Mar. 8, 1972, Ser. No. 232,739

Int. Cl. D21f *1/02, 1/06*

U.S. Cl. 162—343 **7 Claims**



In a headbox of a paper making machine flow resistance is used to provide a pressure drop required for rendering uniform the flow velocity profile and for homogenizing paper pulp slurry. The flow resistance is produced by employing vanes extending parallel to the flow and dividing the headbox into flow channels having a small cross sectional area and a large friction surface area. The invention is particularly characterized in that the vanes are inclined in relation to a vertical plane and have vertical extensions. The vanes are spaced apart a distance such that the height of each flow channel is substantially greater than the width.

3,791,919

CONTINUOUS VACUUM FILTER

Wolfgang Schuller, Wertheim, and Karl Veeh, Haslock, both of Germany, assignors to Glaswerk Schuller GmbH, Faserweg, Wertheim/Main, Germany

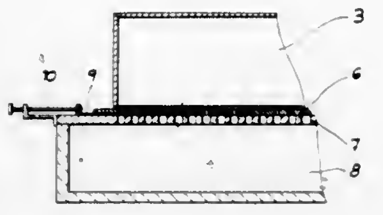
Filed Oct. 18, 1971, Ser. No. 189,850

Claims priority, application Germany, Oct. 17, 1970, 2051048

Int. Cl. D21f *1/58, 1/52*

U.S. Cl. 162—353 **6 Claims**

A continuous vacuum filter wherein the outlet of a feeding unit discharges a wide stream of a suspension of fibrous particles in a liquid carrier onto the upper stretch of an endless belt-like foraminous screen so that the liquid carrier passes through the interstices of the screen and the fibrous particles accumulate on the upper stretch to form thereon a sheet. The width of such sheet can be varied by two impermeable masks which overlap the marginal portions of the upper stretch and are movable toward and away from each other below the outlet of the feeding unit to thus determine the width of that portion of the upper stretch through which the liquid is free to flow. Such width determines the width of the sheet which is formed on the upper stretch. The length of the masks equals or slightly exceeds the length of the outlet, as considered in the direction of lengthwise movement of the upper stretch.



3,791,920
SUCTION BOX ARRANGEMENT FOR PAPERMAKING MACHINE HAVING PARTITION WALL BETWEEN THE TOP AND BOTTOM

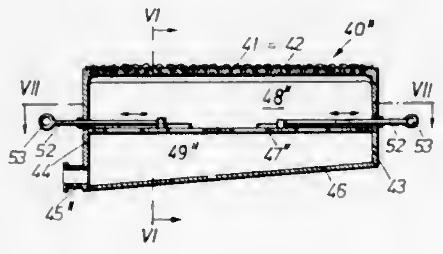
Henrik Nisser, Korsnas, Sweden; Jakob Wolf, Heidenheim/Brenz, Germany; Werner A. Schoen, Ridley Park, Pa., and Ernst Albert Schoffmann, Heidenheim/Brenz, Germany, assignors to J. M. Voith GmbH, Heidenheim/Brenz, Germany

Filed May 27, 1971, Ser. No. 147,401

Claims priority, application Germany, June 13, 1970, 2029212

Int. Cl. D21f *1/52*

U.S. Cl. 162—363 **9 Claims**



A partition wall located between the top and bottom walls of a suction box has one or more apertures therein which can be controlled as to size by mask elements which are disposed on the top of the partition wall. The mask elements can be slidably moved by rods which extend through the side walls of the suction box to adjust the positioning of the mask elements in a direction parallel to the plane of the partition wall. The mask elements may be, for example, rectangular or trapezoidal in shape, and may be mounted in flexible or swivelable fashion.

3,791,921
METHOD OF BREEDING FISSILE FUEL IN A COUPLED NUCLEAR REACTOR

Richard Myles Stanton, Canton, Mass., assignor to Research Corporation, New York, N.Y.

Continuation of Ser. No. 858,851, Sept. 17, 1969. This application Mar. 10, 1972, Ser. No. 233,824

Int. Cl. G21c *1/00*

U.S. Cl. 176—17 **10 Claims**

A nuclear fuel for incorporation into the fast region of a coupled nuclear reactor to provide power and breeding of additional fissile fuel comprising a heterogeneous mixture or grouping of a fertile material with lithium and an isotope of hydrogen. The absorption of thermal neutrons by the lithium-6 isotope in the lithium causes the isotope to break up into helium (He^4), and tritons (H^3) with an energy of about 2.8 MeV. The fusing of the tritons, so produced, with the hydrogen isotope, which may be in the form of deuterium or tritium, forms further helium and releases fusion neutrons with energies in the range from 10 to 20 MeV. The latter high energy neutrons produce direct fission of the fertile material, e. g., U^{238} or Th^{232}, releasing about 3.5 neutrons per fission and 200 MeV. energy. The heat produced by these reactions may be used for power and the remaining fertile material is rendered fissile by final neutron capture, thus breeding additional fissile fuel.

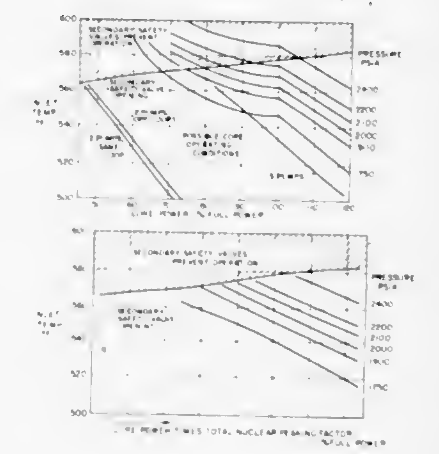
3,791,922
THERMAL MARGIN PROTECTION SYSTEM FOR A NUCLEAR REACTOR

Charles R. Musick, Rockville, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 23, 1970, Ser. No. 91,808

Int. Cl. B21c *7/32*

U.S. Cl. 176—20 **26 Claims**



A thermal margin protection system for a nuclear reactor wherein the coolant low flow trip point and the calculated thermal margin trip point are switched simultaneously and the thermal limit locus is made more restrictive as the allowable flow rate is decreased. The invention is characterized by calculation of the thermal limit locus in response to applied signals which accurately represent reactor cold leg temperature and core power; cold leg temperature being corrected for stratification before being utilized and reactor power signals commensurate with power as a function of measured neutron flux and thermal energy added to the coolant being auctioneered to select the more conservative measure of power. The invention further comprises the compensation of the selected core power signal for the effects of core radial peaking factor under maximum coolant flow conditions.

3,791,923
RECUPERATIVE THERMAL RECOMBINING SYSTEM FOR HANDLING LOSS OF REACTOR COOLANT

Andrew Tej Bhan, Bridgeport, Conn., assignor to Universal Oil Products Company, Des Plaines, Ill.

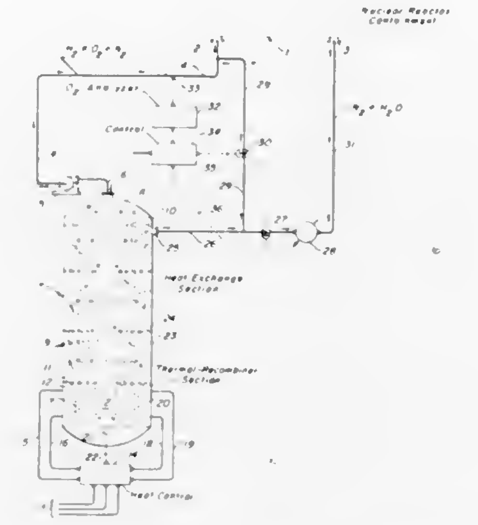
Filed Jan. 10, 1972, Ser. No. 216,714

Int. Cl. G21c *19/32*

U.S. Cl. 176—37 **10 Claims**

A recycle loop method and recuperative heating system is provided for thermally recombining hydrogen and oxygen, such as may be desired in connection with a dissociated gas stream from a containment vessel for a nuclear reactor under loss of coolant accident conditions. The dissociated charge stream is preferably heated by indirect heat exchange with a resulting water vapor containing combined stream to effect heat conservation and, also preferably, the recuperative heat

exchange operation and the high temperature recombining reaction are carried out in a unitary zone incorporating electrical, non-flame, heat input means. The feature of having recycle of a portion of the resulting combined stream into admixture with the hydrogen-oxygen containing charge stream is carried out and regulated responsive to an oxygen analysis and oxygen content measured in the stream at a point ahead of the recombiner zone.



3,791,924
BIOLOGICAL METHOD OF PRODUCING PHENOLIC AMINO ACIDS

Koichi Ogata, Osaka; Hideake Yamada; Hitoshi Enei, both of Kanagawa, and Shinji Okumura, Tokyo, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 879,934, Nov. 25, 1969, abandoned. This application Oct. 13, 1971, Ser. No. 188,991

Claims priority, application Japan, Dec. 2, 1968, 43-88261; Oct. 21, 1970, 45-92658; Nov. 2, 1970, 45-96703; Dec. 30, 1970, 45-1281713

Int. Cl. C12d *13/06*

U.S. Cl. 195—29 **16 Claims**

3, 4-Dihydroxyphenyl-L-alanine, L-tyrosine and 2, 4-dihydroxyphenyl-L-alanine are obtained by the action of β-tyrosinase produced by cultivation of certain microorganisms, on catechol, phenol and resorcin, and cysteine, cystine, serine and alanine, or ammonia and pyruvic acid, oxalacetic acid, fumaric acid, malic acid, maleic acid, maleic oxime, glyoxylic acid, lactic acid or these derivatives.

3,791,925
PROCESS FOR PRODUCING L-HISTIDINE

Kiyoshi Nakayama, Sagamihara, and Kazumi Araki, Tokyo, both of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed May 6, 1971, Ser. No. 141,025

Claims priority, application Japan, May 20, 1970, 45/42408. The portion of the term of this patent subsequent to Jan. 30, 1990, has been disclaimed.

Int. Cl. C12b *1/00*

U.S. Cl. 195—29 **4 Claims**

L-histidine is produced by fermentation of an aqueous nutrient media, wherein the ratio of the nitrogen source to the carbon source is at least 5:100, with organisms of the genera *Brevibacterium*, *Corynebacterium*, *Arthrobacter*, *Micrococcus*, *Bacillus*, *Nocardia* and *Microbacterium*.

3,791,926
PROCESS FOR THE PRODUCTION OF L-ASPARTIC ACID

Ichiro Chibata, Osaka; Tetsuya Tosa, Kyoto, and Tadashi Sato, Osaka, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Oct. 18, 1972, Ser. No. 298,529

Claims priority, application Japan, Oct. 28, 1971, 46-85778

Int. Cl. C12d *1/02*

U.S. Cl. 195—30 **33 Claims**

At least one monomer selected from the group consisting of acrylamide, N,N′-lower alkylene-bis(acrylamide) and bis (acrylamidomethyl)ether is polymerized in an aqueous suspension containing an aspartase-producing microorganism. The resultant immobilized aspartase-producing microorganism is subjected to enzymatic reaction with ammonium fumarate or a mixture of fumaric acid or its salt and an inorganic ammonium salt. Divalent metal ion is preferably added to the anzymatic reaction solution. L-aspartic acid is produced.

3,791,927
ENTRAPPED CARRIER BOUND ENZYMES

Peter Salvatore Forgione, Stamford, Conn.; Rocco Alberto Polistina, Port Chester, N.Y., and Edward Emil Schmitt, Norwalk, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed July 14, 1971, Ser. No. 162,699

Int. Cl. C07g *7/02*

U.S. Cl. 195—63 **10 Claims**

The catalytic activity of carrier bound enzymes is maintained and the channelling and compacting of the bound enzyme is substantially reduced by entrapping the carrier bound enzyme in a self-supporting reliculated cellular material.

3,791,928
PURIFICATION OF THYMIDINE KINASE

Wolfgang Rohde, Bovenden, and Axel Lezius, Gottingen, both of Germany, assignors to Max-Planck-Gesellschaft Zur Forderung Der Wissenschaften e.V., Gottingen, Germany

Filed May 28, 1971, Ser. No. 148,189

Claims priority, application Germany, June 10, 1970, 2028588

Int. Cl. C07g *7/02*

U.S. Cl. 195—66 R **6 Claims**

Purified thymidine kinase is recovered from its contaminated aqueous solutions by adsorption on cross-linked dextran of chromatographic grade activated with bromine cyanide and coupled with 3′- or 5′-aminothymidine or its N-aminoalkyl derivatives, followed by elution with dilute sodium chloride solution at pH 8.

3,791,929
PHOSPHATASE ASSAY USING LYOPHILIZED ARYL PHOSPHATE MONESTERS

Frank E. Hammer, Chicago, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 856,205, Sept. 8, 1968, Pat. No. 3,723,579. This application Nov. 13, 1972, Ser. No. 306,033

Int. Cl. G01n *31/14*

U.S. Cl. 195—103.5 R **4 Claims**

Lyophilized aryl phosphate monoesters having a pH of substantially 1 to 4 upon reconstitution with the amount of water removed during lyophilization; are prepared by lyophilizing an aqueous solution of the aryl phosphate monoesters having a pH of substantially 1 to 4. Diagnostic compositions for the determination of phosphates in which the lyophilized aryl phosphate monoesters are employed.

3,791,930

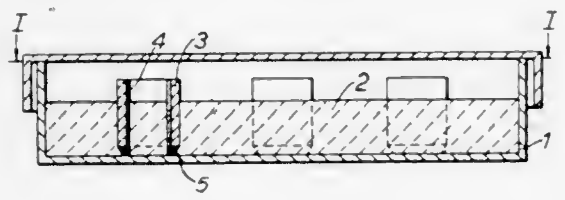
SUPPORTING ELEMENT AND ASSOCIATED METHOD OF USE IN MICROBIOLOGICAL, SEROLOGICAL, IMMUNOLOGICAL, CLINICAL-CHEMICAL AND SIMILAR LABORATORY WORK

Rolf Saxholm, Aastadveien 2, Billingstad, Norway

Filed May 1, 1970, Ser. No. 33,594

Int. Cl. C12k *1/00*

U.S. Cl. 195—103.5 R **16 Claims**



For microbiological and other laboratory work in which supporting elements carrying an active substance is brought into contact with a substrate there is provided a supporting element of tubular or other shape and adapted to be forced through the substrate to the bottom of the same and thereby wholly or partly to confine an area of the substrate. The element carries the active substance on the side facing the confined area and isolates it from the substrate on the opposite side. The supporting element may comprise magnetic material and be pulled to the bottom of the substrate by magnetic force.

3,791,931

REAGENT AND METHOD FOR DETERMINATION OF LACTATE DEHYDROGENASE

Waldemar Thum, Tutzing; August Wilhelm Wahlefeld, Weilheim; Gotthilf Naher, Tutzing; Wolfgang Gruber, Garatshausen; Hans Mollering, Tutzing; Gunter Weimann, Percha, and Hans Ulrich Bergmeyer, Tutzing, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

Filed Nov. 30, 1971, Ser. No. 203,446

Claims priority, application Germany, Dec. 16, 1970, P 20 61 984.5

Int. Cl. G01n *31/14*

U.S. Cl. 195—103.5 R **8 Claims**

Lactate dehydrogenase is quickly and reliably determined by means of a color test by contacting the test composition with the reagent comprising serum albumin, pig's heart diaphorase and nicotinamide-adenine-dinucleotide, wherein the diaphorase is preferably obtained from the protein fraction of pig's heart insoluble in 1.6 to 2.8M ammonium sulphate by treatment with 0.1 to 0.3 percent weight/volume polyethyleneimine, heating at 70° to 80° C., adsorption on a weakly acidic cation exchanger and subsequent elution.

3,791,932

PROCESS FOR THE DEMONSTRATION AND DETERMINATION OF REACTION COMPONENTS HAVING SPECIFIC BINDING AFFINITY FOR EACH OTHER

Antonius Hermanus Wilhelmus Maria Schuurs, and Bauke Klaas Van Weemen, both of Oss, Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

Filed Jan. 27, 1972, Ser. No. 221,447

Claims priority, application Netherlands, Feb. 10, 1971, 7101728

Int. Cl. G01n *31/14*

U.S. Cl. 195—103.5 R **4 Claims**

The present invention relates to a process for the determination of a component of the reaction between a specific binding protein and the substance being specifically bound by such a protein comprising reacting the component to be determined with its binding partner in an insolubilized form, separating the solid phase of the reaction mixture from the liquid phase, reacting the solid phase with a determined amount of a coupling product of the substance to be determined with an enzyme, and finally determining the enzyme activity of the liquid or solid phase of the reaction mixture obtained.

3,791,933

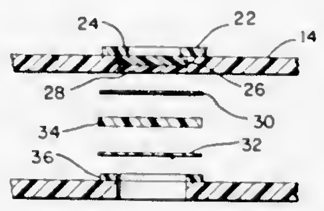
RAPID METHODS FOR ASSAY OF ENZYME SUBSTRATES AND METABOLITES

Rudolph H. Moyer, W. Covina, and Donald J. Sibbett, Cucamonga, both of Calif., assignors to Geomet, Incorporated, Rockville, Md.

Filed Feb. 25, 1971, Ser. No. 118,903. The portion of the term of this patent subsequent to Apr. 16, 1989, has been disclaimed.

Int. Cl. C12k *31/14*

U.S. Cl. 195—127 **11 Claims**



Method and apparatus for quantitating the amounts of enzyme substrates and metabolites present in biological fluids using spot test techniques. The tests utilize both fixed, preselected color standards and substrate and metabolite standards freeze-dried on transparent membranes or in porous pads for comparison. Other reagents including enzymes, dyes, cofactors are also freeze-dried in absorbent pads. The assembly may utilize any or all of the following in various combinations: porous discs of materials such as glass fibre filters to store reagents, to serve as liquid reaction volume measurement, and to assist in removing cells from blood samples; microporous membranes to act as barriers to blood cells; a protein enrichment membrane or a dialysis membrane to restrict passage of large molecules to the indicator zone; and a transparent window which may be a second microporous membrane or impermeable plastic on which indicator dyes are dried. In assembled format, the test plates, slides or discs fulfill all requirements for conducting the selected test: no added instrumentation, controls or other measurements are required.

These test devices may assist in the diagnosis of a number of pathological conditions which give rise to abnormal levels of metabolites or enzyme substrates. Methods for rapid assay of serum cholestrol, uric acid, testosterone, androsterone and galactose have been indicated as examples. A wide variety of other compounds found in biological fluids may also be assayed by similar technology.

3,791,934

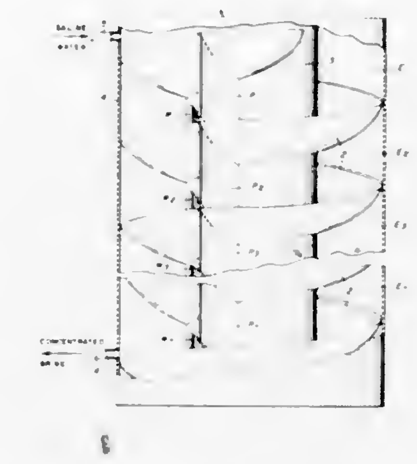
HELICAL MULTISTAGE FLASH DISTILLATION UNIT

Richard N. Webb, Wilmington, Del., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Aug. 9, 1971, Ser. No. 173,332

Int. Cl. B01d *3/02, 3/06*

U.S. Cl. 202—173 **2 Claims**



A continuous, downwardly spiralling multistage flash evaporator passage. The condensing stages, one above the other, are provided in the core around which the evaporator passage winds.

3,791,935

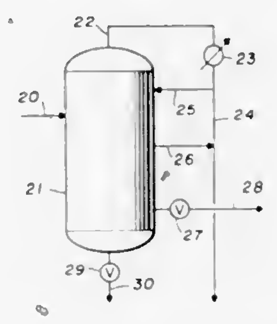
PURIFICATION OF CARBOXYLIC ACIDS

Lloyd S. Eubanks and John T. Payne, Texas City, Tex., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 10, 1971, Ser. No. 197,433

Int. Cl. C07c *51/42*

U.S. Cl. 203—74 **18 Claims**



A process for the removal of halogen contaminants and the drying of aqueous monocarboxylic acids, particularly those produced by the reaction of an alcohol or olefin and carbon monoxide in the presence of the catalytic system comprising a Group VIII metal component and a halogen component containing bromine or iodine and at least a portion of the halogen component being either an alkyl halide and/or a hydrogen halide. The process comprises introducing a monocarboxylic acid stream containing water and the halogen contaminant into the upper half of a distillation column, removing an overhead fraction consisting primarily of the water and alkyl halide charged to said column, removing a stream from the middle portion of said column containing a major proportion of hydrogen halide present in said column, and removing a product acid stream from at or near the bottom of said column, the product acid stream being essentially dry and substantially free of the halogen contaminants charged to said column. The method is particularly applicable to the removal of water and iodine-containing compounds from acetic and propionic acids.

3,791,936

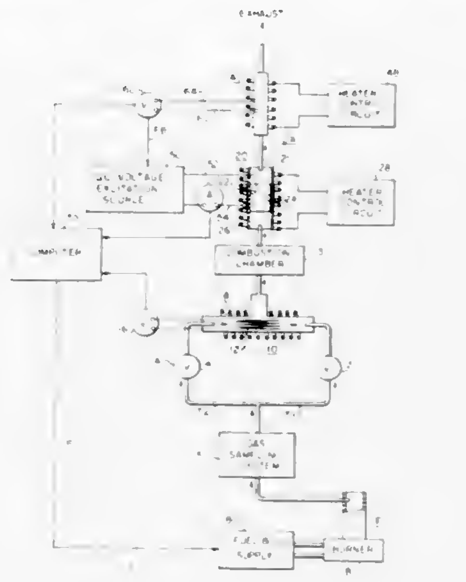
METHOD AND APPARATUS FOR MONITORING THE TOTAL COMBUSTIBLES AND OXYGEN CONTENT OF A GAS

Alfred Pebler and William M. Hickam, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 20, 1971, Ser. No. 173,490

Int. Cl. G01n *27/46*

U.S. Cl. 204—1 T **5 Claims**



The invention pertains to a technique for monitoring both the oxygen and combustibles content of a gas mixture regardless of excess oxygen or excess fuel conditions. The technique comprises the utilization of a catalytic combustion sensor and a solid electrolyte oxygen cell assembly. A catalytic thermopile sensing element causes a reaction to occur between the oxygen and combustible constituents of the gas mixture resulting in depletion of the constituent of lesser quantity and generating an electrical indication of the quantity of the minor constituent. The gaseous mixture is subsequently monitored by the solid electrolyte oxygen cell assembly, which generates an electrical output signal indicative of the excess oxygen or excess combustibles remaining in the gas mixture after the reaction produced by the catalytic thermopile sensing element. Under excess fuel conditions, the solid electrolyte oxygen cell assembly generates a signal which functions to introduce oxygen into the gas mixture in an amount to insure complete combustion. Manipulation of the electrical output signal from the catalytic thermopile sensing element and the electrical output signal of the solid electrolyte oxygen cell assembly by suitable monitoring circuitry provides electrical output signals indicative of both the oxygen and combustibles content in the original gas mixture.

3,791,937

METHOD AND DEVICE FOR REGULATING THE CONTENT IN A GASEOUS MIXTURE OF A GIVEN PURE GAS, ESPECIALLY OXYGEN

Jean Besson, Montfleury, Michael Bonnat, Grenoble, Charles Deportes, Brignoud, and Michel Kleitz, Grenoble, France, assignors to Agence Nationale de Valorisation de la Recherche (Anvar), Paris, France

Filed Oct. 22, 1971, Ser. No. 191,723

Claims priority, application France, Oct. 23, 1970, 7038365

Int. Cl. G01n *27/46*

U.S. Cl. 204—1 R **9 Claims**

Between the gaseous mixture and the reference atmosphere, here the external atmosphere, there is provided a protecting atmosphere of composition close to that of the gaseous mixture. Use is made of the ionic conductive properties of solid electrolytes. The invention is especially

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useful for oxygen pumps and gauges and enables inter-

sitizer and a photosensitive platinum sensitizer. The sensitized surface is exposed to a source of ultraviolet radia-

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3,791,943

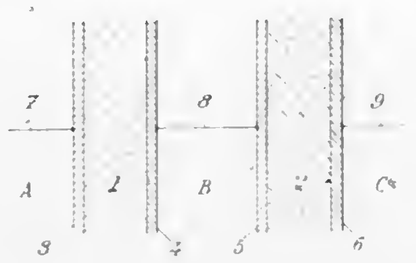
PROCESS FOR AFTER TREATMENT OF ANODIC OXIDE OR CHEMICAL CONVERSION COATINGS

3,791,946

RECOVERY OF SODIUM PERSULFATE SOLUTIONS

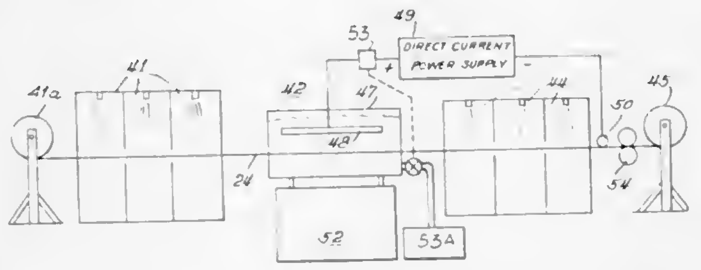
Robert L. Owens, Greensboro, N.C., assignor to Western

useful for oxygen pumps and gauges and enables interfering leakages due to the physical permeability of the solid electrolyte and its electrochemical semipermeability, to be eliminated.



3,791,938
METHOD AND APPARATUS FOR FABRICATING SELECTIVELY PLATED ELECTRICAL CONTACTS

Robert M. Healy, Rte. 2, Box 359, Warrenville, Ill. 60555, and Ralph J. Hovey, 1N 600 Glenrise, Glen Ellyn, Ill. 60137
Original application Apr. 14, 1969, Ser. No. 815,609, now abandoned. Divided and this application Nov. 22, 1971, Ser. No. 201,239
Int. Cl. C23b *5/48, 5/58;* **C23f** *17/00*
U.S. Cl. 204—15 **5 Claims**

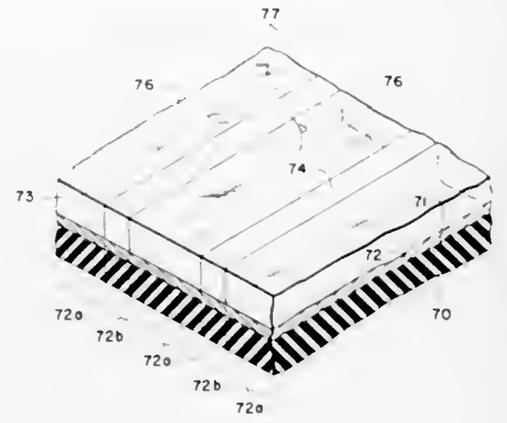


A method and apparatus for making electrical contact members from a continuous sheet or tape of electrically conductive material, the members being provided with precisely located plated wear areas adapted to establish electrical connection with a mating contact. Apparatus is provided for indexing the tape with longitudinally spaced apart locating pilots, and for coating the tape with a resist material in a manner to define precisely located non-coated areas thereon, the non-coated areas corresponding to the wear areas of the contacts. Thereafter, the tape is subject to a selective plating process which plates only the non-coated wear areas with a layer of noble metal. Cleaning apparatus is provided for removing the resist material from the tape, and apparatus is provided for punching and forming the contacts from the tape, the apparatus being operative to precisely fix the plated wear areas of the contacts with respect to the indexing pilots. In this manner, each of the contacts formed is provided with a precisely located plated wear area.

3,791,939
METHOD OF SELECTIVELY DEPOSITING A METAL ON A SURFACE

Anne Marie Ferrara, Princeton Township, Mercer County, and John Thomas Kenney, Lawrence Township, Mercer County, N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.
Filed May 15, 1972, Ser. No. 252,995
Int. Cl. C23b *5/64;* **C23c** *3/02*
U.S. Cl. 204—15 **12 Claims**

A method of depositing a metal pattern on a surface of a substrate is disclosed. A surface of the substrate is sensitized with a photosensitive sensitizer selected from the group of sensitizers comprising a photosensitive gold sensitizer and a photosensitive platinum sensitizer. The sensitized surface is exposed to a source of ultraviolet radiation to delineate an unexposed pattern corresponding to the desired metal pattern. The selectively ultraviolet radiation-exposed surface is then immersed in a suitable electroless metal deposition solution wherein an electroless metal is catalytically reduced on the delineated unexposed pattern.



3,791,940
PROCESS FOR SEALING ANODIZED ALUMINUM

Andrew Alexander, Toledo, Ohio, assignor to Aluminum Company of America, Pittsburgh, Pa.
No Drawing. Continuation of abandoned application Ser. No. 49,944, June 25, 1970. This application May 12, 1972, Ser. No. 252,768
Int. Cl. C23c *7/00;* **C23f** *17/00*
U.S. Cl. 204—35 N **8 Claims**

Improving an anodic oxide coating on aluminum by sealing with an aqueous hydrolyzable metallic salt and then treating with at least one aqueous mineral acid to remove smudge formed during sealing.

3,791,941
GOLD PLATING BATH FOR BARREL PLATING OPERATIONS

Maurice Bick, South Orange, and Jean A. Lochet, Metuchen, N.J., assignors to Auric Corporation, Newark, N.J.
No Drawing. Continuation-in-part of applications Ser. No. 273,860, July 21, 1972, and Ser. No. 288,020, Sept. 11, 1972. This application Oct. 13, 1972, Ser. No. 297,288
Int. Cl. C23b *5/28*
U.S. Cl. 204—46 **14 Claims**

An electroplating bath particularly suited for barrel plating operations. The bath includes in addition to an alkali-gold cyanide, a bath soluble salt of N,N-di-2-hydroxyethylglycine or of glycine, or glycine itself may be utilized. The bath further includes quantities of hydrazine, small amounts of arsenic and/or lead ion, and a buffering agent such as phosphate ion.

3,791,942
PROTECTIVE COATING FOR MAGNESIUM

William McNeill, Southampton, Pa., assignor to Duromag Coatings Inc., Philadelphia, Pa.
No Drawing. Filed Sept. 21, 1972, Ser. No. 291,108
Int. Cl. C23b *9/06*
U.S. Cl. 204—56 M **10 Claims**

A method of producing hard protective black coatings on magnesium and magnesium base alloys. The method includes making the magnesium articles the electrodes and electrolytically treating them under progressively increasing potential in an aqueous solution comprising a chromate, a vanadate, a phosphate and a fluoride. The pH of the solution is maintained within a range of about 5.5 to about 9 with an alkalinity agent yielding non-metallic cations only.

3,791,943
PROCESS FOR AFTER TREATMENT OF ANODIC OXIDE OR CHEMICAL CONVERSION COATINGS OF ALUMINUM OR ALUMINUM ALLOYS

Ikuo Mita, Hiroyuki Kawamura, and Shiro Manaka, Tokyo, Japan, assignors to Tokyo Kaken Kogyo Co, Ltd., Tokyo, Japan
No Drawing. Filed Feb. 22, 1972, Ser. No. 228,295
Claims priority, application Japan, Sept. 8, 1971, 46/68,958
Int. Cl. C23b *11/02*
U.S. Cl. 204—56 **14 Claims**

Anodic oxide or chemical conversion coatings formed on aluminum or aluminum alloys in a conventional manner are subjected to electrolysis in an aqueous solution containing at least one of the compounds selected from the group consisting of calcium and magnesium salts as an electrolyte with use of electric current to produce a cement like substance on the coatings thereby forming a surface which excels in resistance to corrosion and staining.

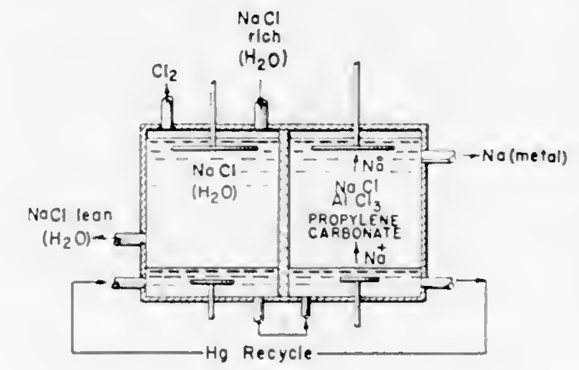
3,791,944
PROCESS FOR THE POLYMERIZATION OF UNSATURATED COMPOUNDS

Raffaele Ercoli, Mauro Guainazzi, and Giuseppe Silvestri, Palermo, Italy, assignors to Snam Progetti S.p.A.
No Drawing. Filed May 12, 1972, Ser. No. 252,879
Claims priority, application Italy, May 13, 1971, 24,467/71
Int. Cl. C08f *1/28, 3/04*
U.S. Cl. 204—59 R **10 Claims**

Alpha olefins are polymerized in an activated, anhydrous halogenated hydrocarbon. The anhydrous halogenated hydrocarbon is activated by passing through it an electric current using an aluminum or aluminum alloy anode. The alpha olefin is then passed into the activated halogenated hydrocarbon and polymerized.

3,791,945
METHOD OF PRODUCTION OF ALKALI METALS AND THEIR ALLOYS

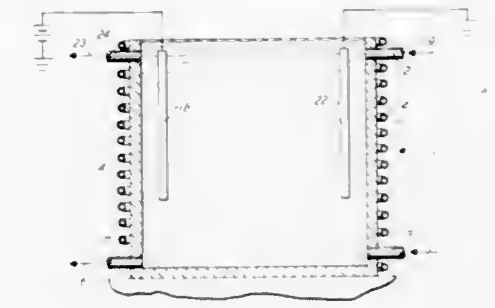
Charles W. Tobias, Orinda, Calif., and Jacob Jorne, Southfield, Mich., assignors to the United States of America as represented by the United States Atomic Energy Commission
Filed Feb. 22, 1973, Ser. No. 334,825
Int. Cl. C22d *1/02, 1/06*
U.S. Cl. 204—59 AM **10 Claims**



An impure amalgam of an alkali metal or mixture thereof is produced by electrolysis. The amalgam is then transferred to an electrolytic cell containing propylene carbonate with an appropriate salt (or salts) of the alkali metal (or metals), e.g. of ClO_4^-, BF_4^-, PF_6^-, Cl^-, Br^-, I^-, with or without added $AlCl_3$. Then, with appropriate voltage, current and other conditions, one or more selected alkali metals is anodically dissolved to yield a pure metal or selected metal mixture by electrodeposition.

3,791,946
RECOVERY OF SODIUM PERSULFATE SOLUTIONS

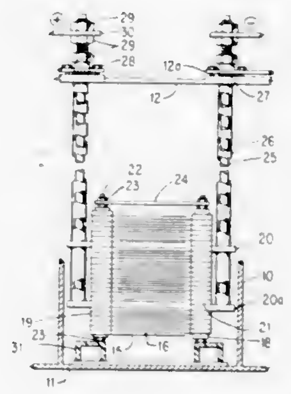
Robert L. Owens, Greensboro, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed Jan. 16, 1973, Ser. No. 324,051
Int. Cl. C01b *15/08;* **C23b** *3/02*
U.S. Cl. 204—82 **6 Claims**



Sodium persulfate which is reusable for etching is recovered from a spent etching solution by lowering concentrations of sodium sulfate and metal sulfate in the solution to acceptable levels. The metal sulfate concentration is lowered by electrolysis thereby plating the metal from the solution and generating sulfuric acid. The sulfuric acid is converted to sodium sulfate by the addition of sodium hydroxide and the concentration of sodium sulfate is lowered by cooling the solution to —5 to +5 degrees centigrade thereby precipitating sodium sulfate from the solution. To lower the activity of the persulfate during plating, the solution is advantageously maintained at —5 to +5 degrees centigrade during plating thereby precipitating the sodium sulfate in two steps.

3,791,947
ELECTROLYTIC CELL ASSEMBLIES AND METHODS OF CHEMICAL PRODUCTION

Richard E. Loftfield, Chardon, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio
Filed Jan. 26, 1972, Ser. No. 220,902
Int. Cl. C01b *11/26*
U.S. Cl. 204—95 **5 Claims**



Electrode assemblies and cells for electrolytic processes, including the production of alkali metal hypochlorite, alkali metal chlorate, and other inorganic and organic chemical products, comprise a diaphragm-less electrolytic cell having at least one assembly of a plurality of planar, parallel, closely spaced foraminous dimensionally stable substantially horizontally disposed anodes and a plurality of parallel foraminous cathodes substantially horizontally disposed, the cathodes interleaved with the anodes in substantially face-to-face closely spaced parallel alignment. Organic chemical products, alkali metal hypochlorite and alkali metal chlorate are produced by placing the assembly of electrodes provided with means for supplying current to the individual anodes and current from

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the individual cathodes, in alkali metal halide solutions, solutions of organic electrolytes and electrolyzing the solutions while maintaining operating parameters suitable for the production of alkali metal hypochlorite and alkali metal chlorate and organic chemical products.

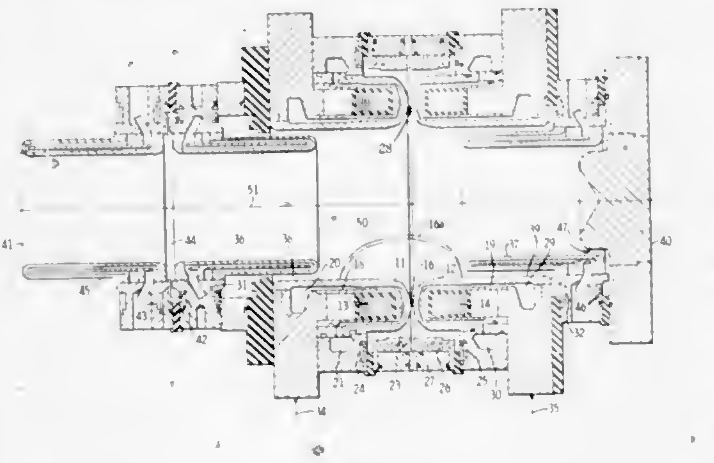
3,791,948
PREFERENTIAL ETCHING IN GaP

Richard Wayne Dixon, Morristown, William Harold Hackett, Jr., Whippany, and Thomas Edward McGahan, North Plainfield, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
No Drawing. Filed Nov. 1, 1971, Ser. No. 194,201
Int. Cl. B23p *1/00*
U.S. Cl. 204—129.75 **4 Claims**

The specification describes a process for etching n-type gallium phosphide in preference to p-type. The n-type material is anodized in a solution of sodium or potassium hypochlorite and hydrochloric acid.

3,791,949
PROCESSES FOR CHEMICAL CONVERSION

Chikara Hirayama, Murrysville, and Maurice G. Fey, Turtle Creek, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Continuation of abandoned application Ser. No. 829,452, June 2, 1969. This application Dec. 9, 1971, Ser. No. 206,401
Int. Cl. C07b *29/06;* **C07c** *3/48;* **C01b** *21/20*
U.S. Cl. 204—171 **7 Claims**

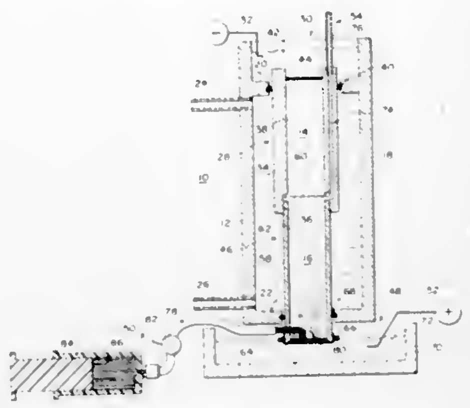


A process for chemical conversion of a process gas into a desired product gas characterized by introducing a process gas at a very high velocity between a pair of longitudinally spaced annular electrodes, elongating an arc between the electrodes and increasing the turbulence within the electrodes forming an arc chamber so that the rate of recombination of the atoms, molecules, and free radicals of the disassociated process gas is increased by chemical recombination occurring at a higher percentage of the total gas, the arc being periodically elongated to a length where the arc voltage exceeds the breakdown voltage between the electrodes so that the gap between the electrodes breaks down, the arc is transferred to the gap, and the process of gap breakdown and arc elongation is repeated cyclically.

3,791,950
ELECTROPHORESIS METHOD

William B. Allington, Lincoln, Nebr., assignor to Instrumentation Specialties Company, Lincoln, Nebr.
Original application Feb. 14, 1972, Ser. No. 226,016. Divided and this application May 11, 1973, Ser. No. 357,561
Int. Cl. B01k *5/00*
U.S. Cl. 204—180 G **11 Claims**

To separate and collect different molecular species in a mixture of the species, the mixture is first electrophoresed in a gel such as a polyacrylamide gel to obtain good resolution of at least some of the different species and then electrophoresed into a collecting medium having bulk flow characteristics such as a density gradient column so that the different species can be scanned and collected using techniques and apparatus that require bulk flow of the medium, with further electrophoresis in the collecting medium providing further separation.



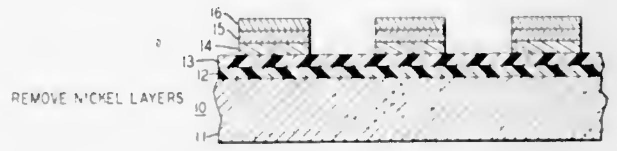
3,791,951
METHOD OF MANUFACTURING A LAYER CONSISTING OF NONCONDUCTING PULVERULENT MATERIALS ON CURVED SURFACES

Norbert Ernst Fritz Hansen, Roetgen, and Walter Fritz Konrad Littmann, Eilderdorf, Germany, assignors to U.S. Philips Corporation, New York, N.Y.
No Drawing. Filed Oct. 26, 1971, Ser. No. 192,572
Claims priority, application Germany, Oct. 28, 1970, P 20 52 916.2
Int. Cl. B01k *5/02*
U.S. Cl. 204—181 **2 Claims**

The invention relates to a method of manufacturing a layer of nonconducting pulverulent materials on bent surfaces by electrophoretic deposition from a dispersion in an apolar medium. Particularly the invention relates to such a method of manufacturing luminescent screens on concave surfaces of fibre-optical plates.

3,791,952
METHOD FOR NEUTRALIZING CHARGE IN SEMICONDUCTOR BODIES AND DIELECTRIC COATINGS INDUCED BY CATHODIC ETCHING

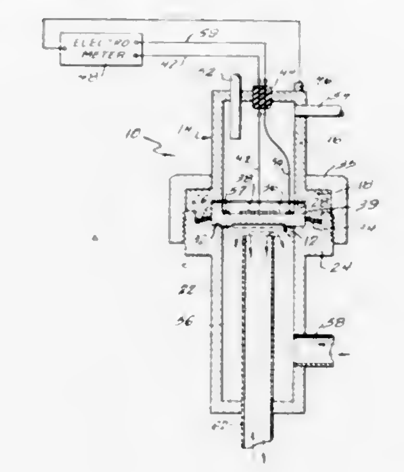
Edward Franklin Labuda, Allentown, and William Dennis Ryden, Whitehall, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed July 24, 1972, Ser. No. 274,487
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **4 Claims**



In the fabrication of semiconductor devices the masked backsputtering of metal layers to define metallization patterns results in a residual positive charge in underlying exposed dielectric films. This charge may deleteriously affect the operation of the resultant device structure. In accordance with this invention, this positive charge is controllably neutralized either by sputtering a thin metal film, for example, of nickel, over the entire surface or by otherwise depositing a thin metal film which then is exposed to a suitable source of radiation. The metal film then is removed conveniently by the same technique which removes the metal backsputtering mask.

3,791,953
SELF-SEALING ELECTROCHEMICAL OXYGEN METER

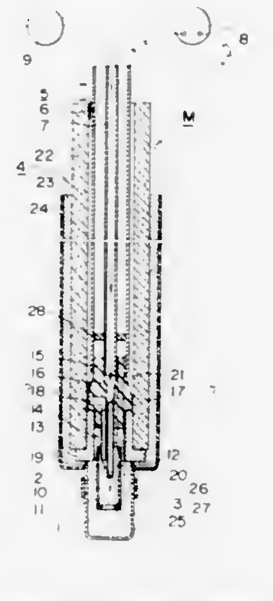
Bertram Minushkin, Greensburg, Pa., and George Kissel, Bayport, N.Y., assignors to the United States of America as represented by the United States Atomic Energy Commission
Filed Oct. 31, 1972, Ser. No. 302,431
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 S **5 Claims**



An electrolytic cell for measuring oxygen activity in liquid sodium in which the solid electrolyte is in the shape of a disc surrounded and supported by an annular spring seal, and incorporating features which provide an additional back-up seal, utilizing the product of chemical reactions between the fluids to be contained for forming a seal in situ.

3,791,954
DEVICE FOR MEASURING OXYGEN CONCENTRATION OF MOLTEN METAL

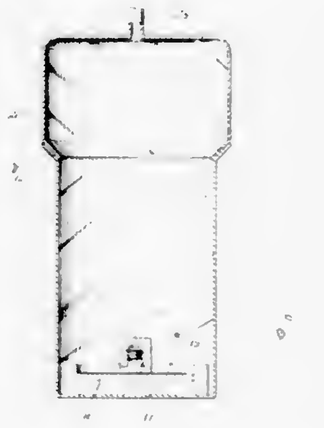
Makoto Noda, Nagoya, and Takeshi Kajita, Ohaza-Yuki, Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan
Filed July 21, 1971, Ser. No. 164,655
Claims priority, application Japan, Aug. 6, 1970, 45/68,293, 45/68,294; Oct. 23, 1970, 45/92,842; May 7, 1971, 46/36,504, 46/36,505
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 S **7 Claims**



A device for measuring oxygen concentration of molten metal by using an oxygen concentration cell, wherein a solid electrolyte is directly or indirectly covered with a material to be carbonized in the molten metal, so that the element may be gradually heated before coming in contact with the molten metal. The electric connection of the solid electrolyte to an indicator may simultaneously be accomplished with its mechanical connection to a standard gas source. A specimen of the clean molten metal can be collected from substantially the same spot where the oxygen concentration is measured.

3,791,955
PREPARATION OF CHALCOGENIDE GLASS SPUTTERING TARGETS

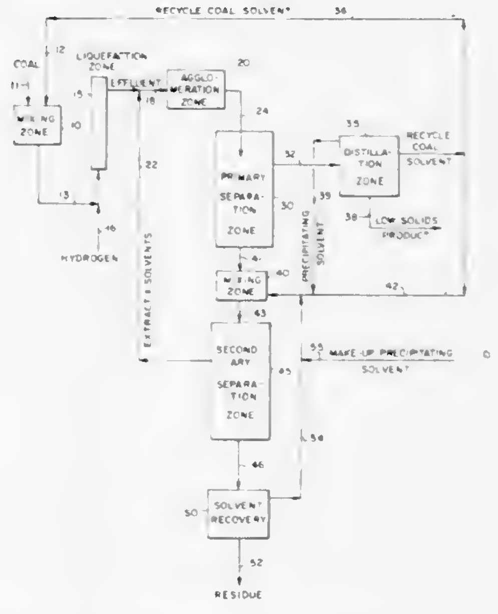
Richard M. Klein, Framingham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.
Filed Dec. 11, 1972, Ser. No. 313,740
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 **3 Claims**



A method of preparing large area chalcogenide glass sputtering targets. These targets are prepared in an evacuated chamber or inert gas atmosphere by heating a boule of chalcogenide in a quartz dish to contour the bottom face of the target. While heating the boule, a weight forces a wire mesh with a stud attached into the top surface of the boule. After a predetermined time to insure good physical bond between glass and mesh, the chamber is cooled to ambient and the sputtering target (chalcogenide glass-mesh-stud) may be removed.

3,791,956
CONVERSION OF COAL TO CLEAN FUEL

Everett Gorin and Conrad J. Kulik, Pittsburgh, and Howard E. Lebowitz, Finleyville, Pa., assignors to Consolidation Coal Company, Pittsburgh, Pa.
Filed Feb. 16, 1973, Ser. No. 333,097
Int. Cl. C10g *1/00*
U.S. Cl. 208—8 **2 Claims**



Production of a low mineral content fuel by coal liquefaction processes which yield as their primary product a

hydrogenation catalyst may have 6–8 %wt. Cl when func-

3,791,963

mixture of liquid and solids, a part of which is suspended in the liquid. The suspended solids are effectively removed with minimum loss of desired product by means of a precipitating solvent which serves three functions, (1) to effect agglomeration of the suspended fines, (2) to prevent redispersal of the fines in the washing operation, and (3) to recover desired product from the rejected solids.

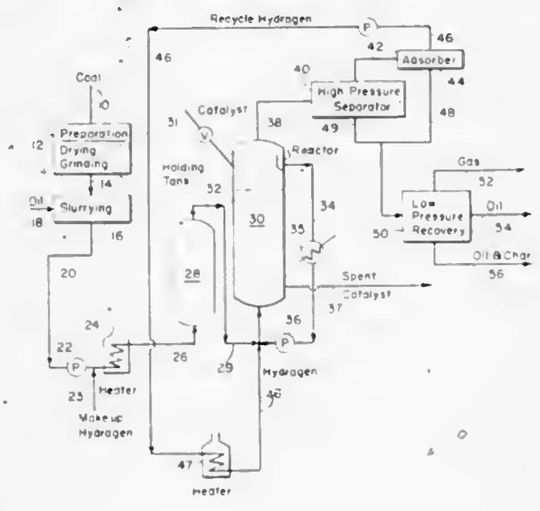
3,791,957
COAL HYDROGENATION USING PRETREATMENT REACTOR

Ronald H. Wolk, Lawrence Township, Trenton County, N.J., assignor to Hydrocarbon Research, Inc., New York, N.Y.

Filed Dec. 13, 1971, Ser. No. 207,231

Int. Cl. C10g *1/06*

U.S. Cl. 208—10 **7 Claims**



In the liquid phase catalytic hydrogenation of coal, improved operation is obtained by initially passing the pressurized and preheated coal-oil slurry containing relatively large coal particles through a pretreatment reactor, wherein the coal particles are partially dissolved to produce fine particles so that a better control of ebullation can be achieved in the final upflow catalytic reactor.

3,791,958
JET FUEL MANUFACTURE

Kenneth L. Dille, Wappingers Falls, George S. Saines, Fishkill, and Alfred Arkell, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Original application Oct. 13, 1971, Ser. No. 80,481. Divided and this application Nov. 6, 1972, Ser. No. 303,732

Int. Cl. C10l *1/04*

U.S. Cl. 208—15 **3 Claims**

Jet fuels which have both a high heat content and an acceptable low temperature viscosity are prepared by the hydroalkylation of mononuclear aromatic hydrocarbon fractions. Benzene, toluene, and Udex extract, and mixtures thereof, are the preferred starting materials. These are hydroalkylated by reaction at about 30°–250° C. under super-atmospheric pressures of about 20–70 atmospheres of hydrogen, thus producing hydroalkylates containing cycloalkyl-substituted benzenes, methylcyclohexyl-substituted toluenes and the like. These are further reduced to the corresponding cycloalkyl-substituted cyclohexanes, together with methylcyclohexyl methylcyclohexanes and methylcyclohexane when toluene is used, and the reduction products are adjusted to a final desired heat content and low temperature viscosity by stripping off or adding methylcyclohexane. The preferred catalyst is finely divided nickel on a support containing both a zeolite and a silica-alumina cracking catalyst.

3,791,959
BLENDED REFRIGERATION OIL COMPOSITION

Ivor W. Mills, Media, and John J. Melchiore, Wallingford, Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 63,303, Aug. 12, 1970, now Patent No. 3,715,302. This application Nov. 18, 1971, Ser. No. 200,185

Int. Cl. C10g *41/00*

U.S. Cl. 208—19 **12 Claims**

A wide boiling range (e.g. for a given VGC) refrigeration oil, having good chemical and thermal stability and good miscibility with fluorinated hydrocarbon refrigerants, comprises a blend of from 50–75 volume percent of a hydrorefined naphthenic oil component and 50–25 volume percent of a wax free paraffinic component (such as a solvent refined and dewaxed paraffinic oil). Preferably, the hydrorefined naphthenic oil component (which can be a blend of two or more hydrorefined oils) has an SUS viscosity at 100° F. in the range of 75–750 SUS and the paraffinic component (which can be a blend) is chosen so that the resulting naphthenic-paraffinic blend has a viscosity at 100° F. in the range of 100–500 SUS (preferably 125–300 SUS, typically 150–250 SUS) and has a maximum natural floc point of −35° F. Preferably the blend contains less than 10 p.p.m. (more preferably less than 5) of basic nitrogen and contains in the range of 15–35 weight percent aromatics. The preferred paraffinic components include dewaxed paraffinic petroleum lubes, wax-free hydrogenated polyolefin oils, hydrocracked lubes and mixtures thereof.

3,791,960
ISOMERIZATION OF PARAFFIN HYDROCARBONS

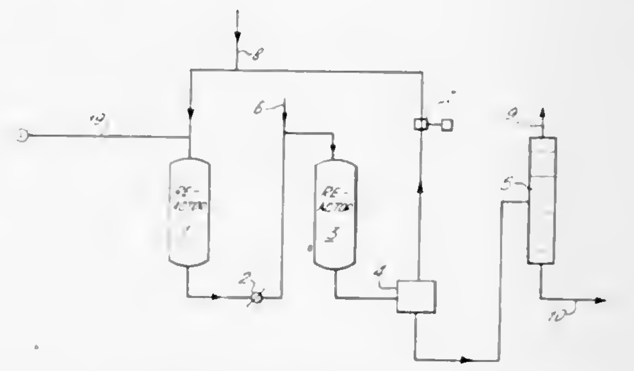
Owen Mansel Davies, Enfield, Martin Frederick Olive, Lightwater, Terence John Cook, Twickenham, and Graham Keith Hilder, Addlestone, England, assignors to The British Petroleum Company Limited, London, England

Filed Mar. 29, 1972, Ser. No. 239,232

Claims priority, application Great Britain, Apr. 19, 1971, 9,787/71; Aug. 10, 1971, 37,437/71

Int. Cl. C10g *39/00*

U.S. Cl. 208—57 **13 Claims**



A two stage hydrogenation-isomerization unit operating in the presence of a chloride activator has a common gas recycle system and the chloride activator is added between the hydrogenation and isomerization stages.

The hydrogenation stage operates at 150–350° C. and the isomerization stage at 100–204° C. but in any case below the hydrogenation stage. Both catalysts comprise a platinum group metal and chlorine or alumina. The isomerization catalyst preferably has from 8–15% wt. Cl; the hydrogenation catalyst may have 6–8 %wt. Cl when functioning solely as a hydrogenation catalyst or 8–15% wt. chlorine when it functions as a combined hydrogenation/partial isomerization catalyst.

The pressures and hydrogen/hydrocarbon mole ratios are the same in both stages being preferably 20–75 bars gauge and 0.5 to 5:1. The space velocities in the two stages are preferably such that the ratios of catalyst are 6:1 to 3:1 vols. of catalyst in the isomerization zone/vol. of catalyst in the isomerization zone/vol. of catalyst in the combined hydrogenation/partial isomerization zone.

3,791,961
COMBINATION REFORMING PROCESS

John H. Sinfelt, Berkeley Heights, N.J., assignor to Esso Research and Engineering Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 883,601, Dec. 9, 1969. This application Dec. 7, 1971, Ser. No. 205,729

The portion of the term of the patent subsequent to Dec. 14, 1988, has been disclaimed

Int. Cl. C10g *39/00*

U.S. Cl. 208—65 **27 Claims**

A conventional naphthene dehydrogenation catalyst, such as a platinum-halogen-alumina catalyst, is used in the initial zone or reactors in a catalytic reforming process; the tail zone or reactors contains a supported Group VIII polymetallic catalyst with platinum as one of the metallic components. In a preferred embodiment, the tail zone contains a platinum-iridium catalyst on a porous support such as alumina. In the tail reactors, conversion of paraffins is of primary importance, along with dealkylation of alkylbenzenes; in the initial reactors the predominant reaction is the conversion of naphthenes to aromatics. The combination process results in the formation of a significantly greater octane number product than is obtained in a conventional reforming process in which platinum-alumina catalyst is used throughout.

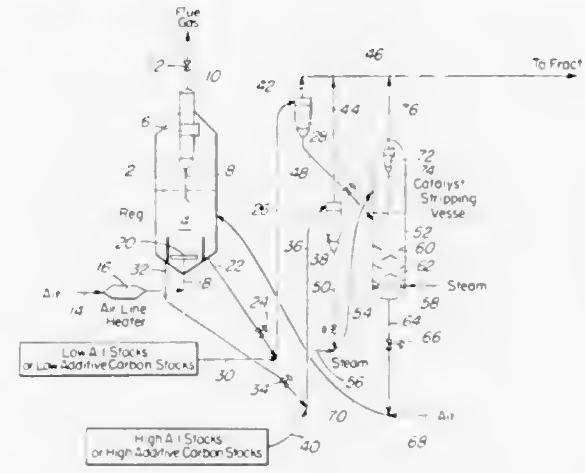
3,791,962
SELECTIVE CATALYTIC CRACKING WITH CRYSTALLINE ZEOLITES

Edward J. Demmel, Pitman, and Hartley Owen, Belle Mead, N.J., assignors to Mobil Oil Corporation

Filed Apr. 22, 1971, Ser. No. 136,452

Int. Cl. B01j *9/20;* **C10g** *37/02*

U.S. Cl. 208—80 **7 Claims**



The invention defined pertains to the catalytic cracking of hydrocarbon charge materials in a dual cracking system which segregates the charge on the basis of aromatic index (AI) rating before contact with a highly active and selective crystalline aluminosilicate cracking catalyst so that material having an AI rating below 15 will be converted under significantly different conditions from material having a higher AI rating.

3,791,963
HYDROTHERMAL METHOD FOR MANUFACTURING A NOVEL CATALYTIC MATERIAL, CATALYSTS CONTAINING SAID MATERIAL, AND PROCESSES USING SAID CATALYSTS

Joseph Jaffe, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Continuation-in-part of application Ser. No. 763,922, Sept. 30, 1968, now Patent No. 3,652,457. This application May 20, 1970, Ser. No. 39,173

The portion of the term of the patent subsequent to Mar. 28, 1989, has been disclaimed

Int. Cl. C10g *11/02;* **B01j** *11/40*

U.S. Cl. 208—111 **11 Claims**

(a) Method for manufacturing a novel catalytic material having a surface area above 200 square meters per gram, a bulk density below 0.85 grams per cc. and a particle density below 1.6 grams per cc., said catalytic material comprising a novel synthetic layered crystalline clay-type aluminosilicate mineral in an intimate admixture with an amorphous cogel comprising silica and alumina, said material being useful as a catalytic cracking catalyst and as a cracking component of a catalyst containing at least one additional component, said method comprising subjecting to autoclave conditions of elevated temperature and pressure a hydrogel or hyrogel slurry, said slurry comprising water, a component selected from fluorine and compounds of fluorine, and an amorphous cogel comprising oxides or hydroxides of silicon and aluminum, said silicon and aluminum preferably being present in said cogel in a silicon-to-aluminum atomic ratio above 1.65, said elevated temperature being in the range 340° to 700° F., for a time not more than any of the times ranging linearly from 36 hours at 340° F. to 6 hours at 700° F., whereby a substantial amount of said synthetic mineral is formed, in an intimate admixture with a substantial amount of unreacted amorphous cogel comprising compounds of silicon and aluminum, and drying said intimate admixture to produce said novel catalytic material; (b) the novel catalytic material so manufactured, comprising said synthetic mineral in said intimate admixture with unreacted amorphous cogel, preferably containing at least 10 weight percent of said unreacted amorphous cogel; (c) catalysts comprising said novel catalytic material; and (d) hydrocarbon conversion processes using said catalysts.

3,791,964
HYDROCARBON CONVERSION PROCESS EMPLOYING A CRYSTALLINE ALUMINOSILICATE AND METHOD OF PREPARING THE SAME

Guenter H. Kuehl, Morrisville, Pa., assignor to Mobil Oil Corporation

No Drawing. Continuation-in-part of application Ser. No. 523,936, Feb. 1, 1966, now Patent No. 3,386,801, which is a continuation-in-part of abandoned application Ser. No. 294,229, July 11, 1963. This application July 5, 1967, Ser. No. 651,108

Int. Cl. B01j *11/82;* **C10g** *11/04*

U.S. Cl. 208—120 **8 Claims**

As a new zeolite, a crystalline aluminosilicate having a crystal structure similar to zeolite A but a silica/alumina mol ratio higher than zeolite A, prepared from a mixed sodium tetramethylammonium system containing phosphate.

3,791,965
PROCESS FOR RE-REFINING USED PETROLEUM PRODUCTS

Ogden Fitzsimons, Kimberton, Pa., Charles O. Radden, Westwood, Mass., and George J. Hindman, Pottstown, Pa., assignors to Petrocon Corporation, Valley Forge, Pa.

Filed Apr. 7, 1972, Ser. No. 241,985

Int. Cl. C10m *11/00*

U.S. Cl. 208—179 **20 Claims**

An ecologically clean process for recovering a valuable light hydrocarbon fuel, one or more lube stocks and an

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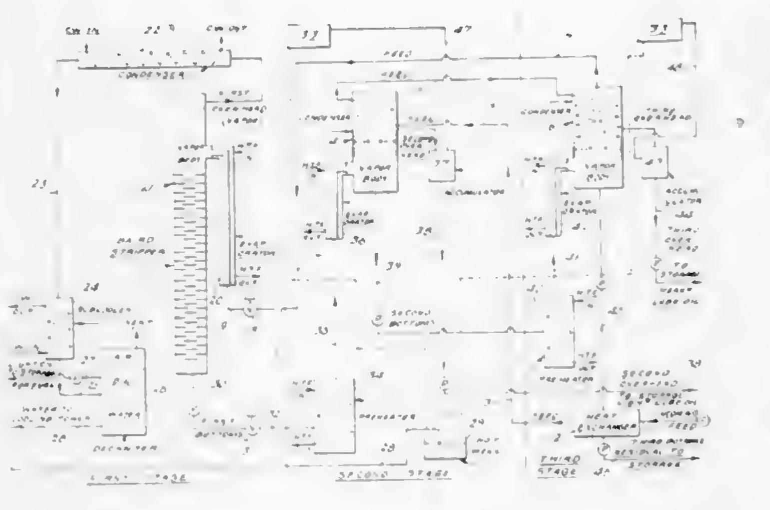
erably sodium/lead, to produce a mixture comprising a

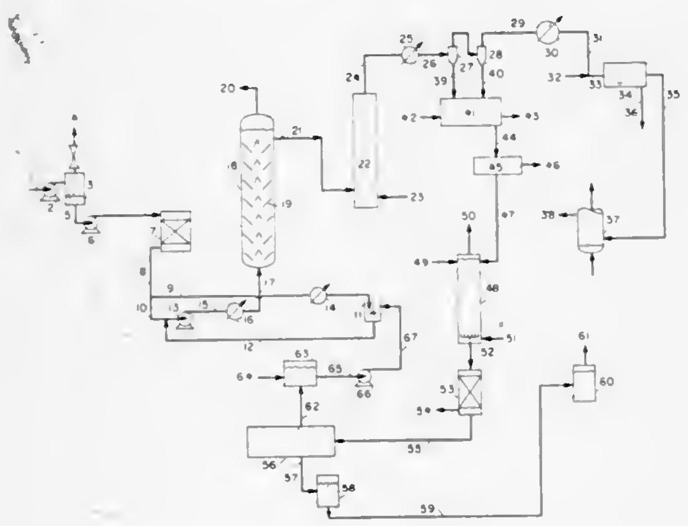
3,791,969

acid, followed by blending with an isobutylene polymer asphalt-like residue, is described in which the raw feed stock consisting of accumulated used petroleum products is first heated by indirect heat exchange in the process itself and then subjected to a first stage stripping operation at atmospheric pressure and a temperature in the range from about 300 to 450° F. to remove the light hydrocarbon, water and volatile contaminants as an overhead and leaving a first bottoms, heating the first bottoms further and subjecting it to one or more additional flash distillations at a pressure in the range from about 1 to 40 torr (mm. Hg absolute) at a temperature in the range from about 590 to about 750° F. to separate one or more lube oil products and leave an asphalt-like residue. The light hydrocarbon product may be used in the process as fuel or sold. The stripped contaminated water is recycled for cooling purposes and either periodically incinerated, or a bleed stream is taken off and continuously incinerated to convert the contaminants to innocuous flue gases.



3,791,966
ALKALI METAL DESULFURIZATION PROCESS FOR PETROLEUM OIL STOCKS

Roby Bearden, Jr., Baton Rouge, La., assignor to Esso Research and Engineering Company
Filed May 24, 1972, Ser. No. 256,438
Int. Cl. C10g *17/00, 19/00*
U.S. Cl. 208—208 M **15 Claims**



Low sulfur-content petroleum oil stocks are prepared by contacting a sulfur-containing oil stock with an alkali metal, preferably sodium, or an alkali metal alloy, preferably sodium/lead, to produce a mixture comprising a low sulfur content oil containing alkali metal salt dispersed therein. The mixture of salts in oil is resolved by contacting the same, in one embodiment of the invention, with 10–80 mole percent H_2O based on total moles of salt in the oil, at a temperature of at least about 610° F., whereupon a salt phase separates from the oil. In a second embodiment of the invention, the contacting is conducted with about 110–200 mole percent H_2O, at a temperature ranging between about 500–750° F. In a latter embodiment, the water-treated mixture is subsequently cooled to below about 250° F. Thus separated the salt is blended with a molten sulfur-rich alkali metal polysulfide and H_2S thereby forming a sulfur-depleted alkali metal polysulfide which is then decomposed electrolytically to form alkali metal and a sulfur-rich polysulfide, which is subsequently reduced in sulfur content.

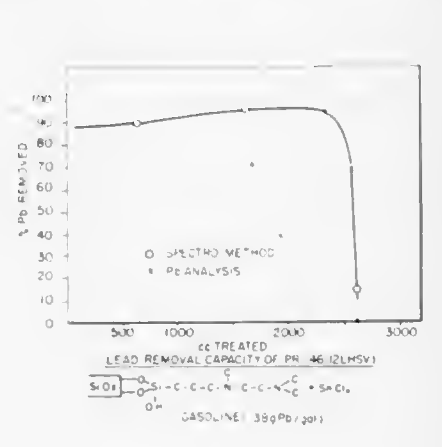
3,791,967
HYDRODESULFURIZATION WITH A POROUS XEROGEL CATALYST CONTAINING HYDROGENATING COMPONENTS AND METAL PHOSPHATE DISPERSION

Joseph Jaffe, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.
No Drawing. Application Feb. 26, 1970, Ser. No. 14,687, which is a continuation-in-part of application Ser. No. 843,207, July 18, 1969, now Patent No. 3,516,927, which in turn is a continuation-in-part of application Ser. No. 671,994, Oct. 2, 1967, now Patent No. 3,493,517. Divided and this application Mar. 27, 1972, Ser. No. 238,677
Int. Cl. C10g *23/02*
U.S. Cl. 208—216 **2 Claims**

Hydrodesulfurization is carried out with a porous xerogel of alumina, silica or mixtures thereof containing: nickel or cobalt; tungsten; and a tetravalent metal phosphate dispersion in which the metal is either titanium, zirconium, thorium, tin, hafnium or cerium.

3,791,968
SORBENT FOR REMOVAL OF HEAVY METALS

Darrell Duayne Whitehurst, Titusville, Stephen Alan Butter, East Windsor, and Paul Gerhard Rodewald, Jr., Rocky Hill, N.J., assignors to Mobil Oil Corporation
Filed Dec. 29, 1972, Ser. No. 319,265
Int. Cl. C10g *17/00*
U.S. Cl. 208—251 **19 Claims**



A novel use for sorbents involving the selective removal of heavy metals from liquid streams has been discovered. More specifically it has been discovered that these sorbents selectively remove alkyl lead moieties from gasoline. The sorbents are comprised of metal halides (preferably tin tetrachloride or antimony pentachloride) bonded to a suitable substrate through tertiary amine or alkyl halide functional groups. The sorbents can be effectively regenerated.

3,791,969
PROCESS FOR PREPARING VERMICULITE PERMSELECTIVE MEMBRANES

Arvind S. Patil, Silver Spring, Rip G. Rice, Ashton, and John W. Kraus, Glenwood, Md., assignors to W. R. Grace & Co., New York, N.Y.
No Drawing. Filed Mar. 22, 1972, Ser. No. 236,970
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 **6 Claims**

A permselective membrane is prepared by providing an aqueous suspension of sodium exfoliated vermiculite, replacing at least part of the exchange sites with ions of a metal of Groups I–A and II–A of the Periodic Table, flocculating the resulting suspension, and dewatering the flocculated mass whereby the vermiculite platelets are aligned into a thin cohesive membrane. The membrane is useful in a variety of selective separation processes, such as water purification, and to process other solvents having soluble ionic contaminants. The membrane may be further modified to provide desiccating properties by incorporating various solid adsorbents, such as silica gel and activated carbon.

3,791,970
SOLID LUBRICANT

Irvin L. Tubb, San Diego, Calif., assignor to General Dynamics Corporation, San Diego, Calif.
No Drawing. Filed July 24, 1972, Ser. No. 274,529
Int. Cl. C10m *7/16, 7/44*
U.S. Cl. 252—12 **2 Claims**

A lubricant in solid form at room temperature comprising 1-hexadecanol (cetyl alcohol) tricresyl phosphate is disclosed. The lubricant is ordinarily used in cast stick, cake or tube form and is either applied to a surface by rubbing the end of the stick on the surface to be lubricated or the tool is coated by inserting it in the lubricant. This lubricant has been found to be highly effective for use with metal working drills, saws, etc. The lubricant is not brittle and adheres to surfaces without powdering. It also exhibits improved lubricity.

3,791,971
LUBRICATING OIL COMPOSITIONS

Warren Lowe, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.
No Drawing. Continuation-in-part of application Ser. No. 142,838, May 10, 1971, which is a continuation-in-part of application Ser. No. 45,567, June 11, 1970, now Patent No. 3,711,406. This application Jan. 5, 1972, Ser. No. 215,643
Int. Cl. C10m *1/10, 1/28, 1/40*
U.S. Cl. 252—33.4 **8 Claims**

Polyoxyalkylene glycols and their reaction products with organic diisocyanate and dicarboxylic acid are combined with alkaline earth metal carbonates dispersed in a hydrocarbon medium to provide lubricating compositions of superior acid neutralization capability and rust inhibition in internal combustion engines.

3,791,972
LUBRICATING GREASE

William A. Myers, La Mirada, Calif., assignor to Southwest Petro-Chem, Inc., Wichita, Kans.
No Drawing. Filed Jan. 13, 1972, Ser. No. 217,661
Int. Cl. C10m *5/08*
U.S. Cl. 252—37.7 **16 Claims**

A lubricating grease of improved properties is prepared by forming an aluminum complex soap in a paraffin oil by sequentially reacting an aluminum alkoxide with an aromatic carboxylic acid and then with a higher fatty acid, followed by blending with an isobutylene polymer and a low viscosity paraffin oil.

3,791,973
GREASE THICKENED WITH LITHIUM SOAP OF HYDROXY FATTY ACID AND LITHIUM SALT OF ALIPHATIC DICARBOXYLIC ACID

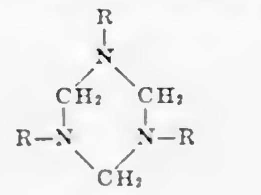
Syed S. H. Gilani, Madison Heights, Mich., and Donald W. Murray, Sarnia, Ontario, Canada, assignors to Esso Research and Engineering Company
No Drawing. Continuation-in-part of abandoned application Ser. No. 118,543, Feb. 24, 1971. This application Feb. 18, 1972, Ser. No. 227,622
Int. Cl. C10m *5/14*
U.S. Cl. 252—41 **10 Claims**

A multipurpose grease having a dropping point in excess of 500° F. is prepared by using as the grease thickener a combination of a lithium soap of a C_{12} to C_{24} hydroxy fatty acid, e.g. 12-hydroxy stearic acid and a lithium soap of a C_2 to C_{12} aliphatic dicarboxylic acid, e.g., azelaic acid, and by employing a particular sequence of steps that includes the separate formation of the individual soaps in the base stock of the grease, the hydroxy fatty acid soap being formed first.

3,791,974
BACTERIAL SPOILAGE INHIBITED METAL WORKING LUBRICANT COMPOSITIONS

Earl E. Borchert, Valley View Village, Ohio, assignor to Ferro Corporation, Cleveland, Ohio
No Drawing. Filed Apr. 6, 1972, Ser. No. 241,843
Int. Cl. C10m *1/06*
U.S. Cl. 252—49.5 **8 Claims**

Metal working lubricant compositions used to cool and lubricate metal in cutting, grinding, rolling, drawing and similar metal working operations are protected against bacterial spoilage during use by the presence of 10 to 3000 p.p.m. of a triazine compound of the formula:



wherein

R is

$$-\left(CH_2\right)_n-O-\left(CH_2\right)_m-CH_3$$

n is the number 2 or 3, and
m is the number 0, 1, 2 or 3.

3,791,975
BIODEGRADABLE LUBRICANTS

Nicholas Halkias, Woodbury Heights, N.J., assignor to Mobil Oil Corporation
No Drawing. Filed June 10, 1971, Ser. No. 151,906
Int. Cl. C10m *3/20*
U.S. Cl. 252—49.5 **10 Claims**

Biodegradable water-in-oil emulsion lubricants are provided, comprising, by weight, a major amount of water dispersed in a continuous phase comprising a biodegradable compound of the general formula: R_nX, in which:

R is a straight-chain alkyl group having from 1 to 18 carbon atoms;
X is a straight-chain ester of a fatty organic acid having from 1 to 20 carbon atoms or benzene; and
n is 1 or 2.

3,791,976

METHOD FOR RAPIDLY OPERATING GROUND EQUIPMENT EMBODYING HYDRAULIC SYSTEM USING ALL SEASON PETROLEUM HYDRAULIC FLUID

Joseph F. Messina, Havertown, and Abraham Mertwoy, Dresher, Pa., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Continuation-in-part of abandoned application Ser. No. 74,142, Sept. 21, 1970. This application Nov. 11, 1971, Ser. No. 197,944

Int. Cl. C09k *3/02*
U.S. Cl. 252—75 **2 Claims**

A single hydraulic fluid petroleum base blend consisting of a highly refined petroleum fraction of a naphthenic coastal crude, said crude being hydrogenated, solvent refined and fractionated, said blend having a viscosity 1.32 centistokes at 98.9° C. and 381 centistokes at —53.9° C. and possessing good oxidation stability, good rust protection and good antiwear properties achieved by addition of tricresyl phosphate, phenyl-1-naphthylamine and barium dinonylnaphthylene sulfonate, is applied to the hydraulic system of ground equipment, and the turret system of said ground equipment is operated continuously for at least 213 hours.

3,791,977

HEAVY DUTY EXOTHERMIC ALL-PURPOSE CLEANING COMPOSITIONS

Selwyn J. Ancel, River Forest, and James O. Gladish, Glenview, Ill., assignors to Chemtrust Industries Corporation, Maywood, Ill.

No Drawing. Filed June 14, 1971, Ser. No. 153,102

Int. Cl. C11d *7/06, 7/16, 7/26*
U.S. Cl. 252—156 **1 Claim**

Heavy duty, exothermic, all-purpose cleaning compositions having utility as general cleaning agents, as hair removal and drain cleaning agents, and as rust removal agents, which comprise, in admixture and as essential active ingredients, an acidic agent and a caustic alkali, which, when contacted with water, act to generate a hot solution capable, among other things, of fluidizing, solubilizing and/or digesting grease, oil, grime, hair and rust. Small proportions of other ingredients such as compatible surfactants, bleaching agents, germicides, and the like, desirably are incorporated in the compositions.

3,791,978

PROCESS OF PREVENTING SCALE AND DEPOSIT FORMATION IN AQUEOUS SYSTEMS AND COMPOSITIONS

Friedrich Krueger, Edingen, and Lieselotte Bauer, Bad Duerkheim, Germany, assignors to Joh. A. Benckiser GmbH, Chemische Fabrik, Ludwigshafen am Rhine, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 36,403, May 11, 1970. This application Nov. 17, 1971, Ser. No. 199,792

Claims priority, application Germany, Nov. 20, 1970, P 20 57 008.5

Int. Cl. C02c *5/06*
U.S. Cl. 252—180 **12 Claims**

Scale formation as well as deposition of incrustations in aqueous systems are prevented by the addition of a composition containing starch degradation products and phosphonic acids, preferably in substoichiometric amounts calculated for the scale and hardness causing compounds present in aqueous systems. Acrylic acid and/or methacrylic acid polymers or copolymers with polymerizable ethylenically unsaturated compounds may also be added.

3,791,979

ACTIVATED CHLORATE

Harold de Vere Partridge, Wilson, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Original application Feb. 16, 1971, Ser. No. 115,730. Divided and this application Dec. 10, 1971, Ser. No. 206,894

Int. Cl. C01b *11/14*
U.S. Cl. 252—187 **6 Claims**

Activated alkali metal chlorate compositions for use in bleaching processes are produced by dissolving an amount of an activator selected from the water soluble salts of silver, manganese, arsenic, hexavalent chromium and vanadium pentoxide in an aqueous solution of an alkali metal chlorate and co-precipitating the activator in homogeneous admixture with the chlorate salt.

3,791,980

PROCESS FOR ESTABLISHING REACTIVE CONTACT BETWEEN REACTIVE INGREDIENTS

Clifton R. Goldsmith, Borger, Tex., assignor to Phillips Petroleum Company

Original application Aug. 3, 1970, Ser. No. 60,533, now Patent No. 3,679,599. Divided and this application Mar. 17, 1972, Ser. No. 235,490

Int. Cl. C09k *3/00, 3/30*
U.S. Cl. 252—188.3 R **4 Claims**

A curing agent (for example, an amine) for an epoxy resin is encapsulated in a readily rupturable thermoplastic material (for example, wax), and admixed with an epoxy resin under a first pressure which is in excess of atmospheric and sufficient to preclude rupture of said readily rupturable thermoplastic material. The resulting admixture is thereafter exposed to a second pressure less than the first pressure, whereby said readily rupturable thermoplastic material is ruptured, thereby causing the mixture of curing agent and epoxy resin to come into reactive contact.

3,791,981

VOLUME REDUCTION OF RADIOACTIVE ION EXCHANGE RESINS FOR DISPOSAL

Calvin Calmon, Springfield Township, N.J., assignor to Aerochem Research Laboratories, Inc.

Filed Apr. 7, 1971, Ser. No. 132,098

Int. Cl. C09k *3/00*
U.S. Cl. 252—301.1 W **12 Claims**

Ion exchange resins which have become contaminated with radioactivate materials, are reduced in volume for purposes of disposal by treating the contaminated resins with certain solvents having a dielectric constant of about 45 or lower. Solvents, such as, methanol, ethanol and acetone may be used to reduce the volume of the contaminated resins prior to storage and/or disposal. The method of this invention as applied to disposal of radioactively contaminated ion exchange resins reduces the space required for storage and/or burial of bulk quantities of this type of radioactive waste material, provides a self-sealing medium within the storage containers to prevent small leaks when the containers are stored in an aqueous medium, and promotes burning of the resin in cases where incineration is desirable.

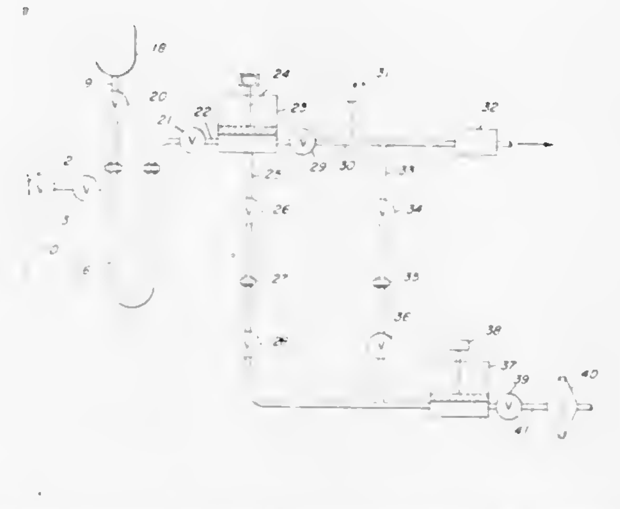
3,791,982

RADIOACTIVE XENON SOLUTION

Robert E. Lewis and Lloyd A. Hanson, Pleasanton, Calif., assignors to General Electric Company

Filed July 19, 1972, Ser. No. 273,095

Int. Cl. C01f *13/00*
U.S. Cl. 252—301.1 R **23 Claims**



An aqueous solution having dissolved therein an isotopic mixture comprising natural xenon and a radioactive isotope of xenon is presented along with a method of preparing the aqueous solution.

3,791,983

SPRAYABLE AND AEROSOLIZABLE WEB-FORMING COMPOSITIONS

Theodore Maierson, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 659,857, Aug. 11, 1967. This application Apr. 22, 1968, Ser. No. 723,285

Int. Cl. B01j *13/02;* **C08d** *9/12;* **C09k** *3/30*
U.S. Cl. 252—305 **11 Claims**

There are disclosed sprayable and aerosolizable web-forming compositions for forming self-supporting, three dimensional webs of randomly associated, joined monofilaments ranging in average diameter from about 1 to 10 microns, the sprayable web-forming compositions comprising a water-insoluble hydrocarbon elastomer, at least one water-insoluble resin of hydrogenated rosins and polyol esters thereof, phenolic resins, hydrocarbon resins or coumarone-indene resins compatible with said elastomer, and solvent compatible with said elastomer and said resin, and the aerosolizable web-forming composition comprising, in addition to the components stated for the sprayable web-forming compositions, a propellant inert to said elastomer, resin and solvent. The sprayable and aerosolizable web-forming compositions may contain encapsulated components, e.g., coloring agents, perfumes or other scents, e.g., insect sex attractants, agricultural chemicals, insecticides, etc. A plasticizer can be included in the aerosolizable formulation to impart increased tackiness to the web over extended time periods. The web-forming polymer solutions or dispersions can be dispensed from various types of dispensing systems and equipment, e.g. from spray guns, portable aerosol cans, etc. to provide an advantageous way of dispensing agricultural treating agents or other encapsulated materials onto plants or other desired repositories or locations without interfering therewith, e.g. with plant growth or metabolic processes thereof.

3,791,984

METHOD AND APPARATUS FOR THE MANUFACTURE OF AN EMULSION

Hans G. Brogli, Gotthelfstrasse 42, Basel, Switzerland, and Werner F. Brogli, Kindergartenstrasse 3, Reinach, Switzerland

Filed May 21, 1971, Ser. No. 145,853

Claims priority, application Switzerland, June 1, 1970, 8,159/70

Int. Cl. B01j *13/00*
U.S. Cl. 252—308 **2 Claims**

The disclosure relates to the manufacture of emulsions. A first liquid, for example a fat or wax, is heated, for example to melt it. A second, cold liquid is gradually introduced into the heated first liquid while stirring. This is made possible by introducing the second liquid in fine distribution into the draw in area of a stirring member running in the heated first liquid, and it permits the attainment of a cool, stable emulsion with no or little additional cooling. The temperature of the finished emulsion after completion of the introduction of the second liquid may be below the limit temperature up to which the emulsion is stable, and/or below the solidification temperature of the first liquid. Also disclosed are apparatus for manufacturing emulsions, comprising a mixing and/or homogenizing tool with a rotatable stirring member. At least one nozzle is disposed at the inlet side of said tool for introducing the second liquid in fine distribution into the draw in area of the stirring member.

3,791,985

LUBRICATING COMPOSITIONS CONTAINING SULFUR CONTAINING PHOSPHATE ESTERS

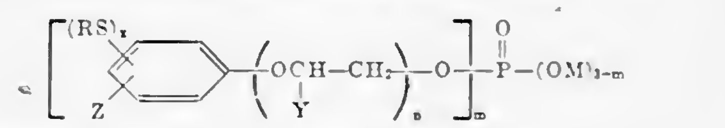
Fred S. Eiseman, Jr., Maplewood, and Leslie M. Schenck, Mountainside, N.J., and John P. G. Beiswanger, Audubon, Pa., assignors to GAF Corporation, New York, N.Y.

No Drawing. Original application Oct. 13, 1970, Ser. No. 80,477, now Patent No. 3,723,578. Divided and this application June 9, 1972, Ser. No. 261,342

Int. Cl. C10m *1/48, 3/42, 1/06*
U.S. Cl. 252—32.7 R **5 Claims**

Sulfur containing phosphate esters of thio ethers of phenols and alkoxylated phenols are described, together with methods for their preparation and their use as lubricants. The sulfur containing phosphate esters described are represented by the general formula:

(I)



$$\left[\underset{Z}{\overset{(RS)_x}{\text{—}}}\!\!-\!\left(\underset{Y}{\underset{|}{OCH}}-CH_2\right)_n-O\right]_m\overset{O}{\overset{\|}{P}}-(OM)_{3-m}$$

wherein:

R is an alkyl group of 1–20 carbon atoms, phenyl or aralkyl
x is an integer of from 1 to 3 inclusive
n is an integer of from 0 to 50 inclusive (preferably 1–20)
m is an integer of 1 to 3 inclusive
Y is hydrogen, methyl or ethyl
Z is hydrogen or alkyl, of 1 to 20 carbons atoms and
M is a cation, e.g. H, alkali metal, alkaline earth metal, heavy metal, ammonium or amino.

These sulfur containing phosphate esters have valuable lubricating properties and exhibit good anti-wear extreme pressure properties both alone or in water or as additives to other lubricants, such as mineral oils, especially for use as cutting oils or other metal working applications, gear lubricants, etc.

3,791,986

PRECONDITIONER CONCENTRATE

Charles D. Mallico, Stratford, Conn., assignor to Enthone, Incorporated, New Haven County, Conn.

No Drawing. Filed Oct. 28, 1971, Ser. No. 193,589

Int. Cl. B01f *17/32*

U.S. Cl. 252—355 **7 Claims**

Surfaces of electrical insulating synthetic resin material, especially reinforced epoxy surfaces, are preconditioned without severly attacking, roughening and/or distorting the surfaces by contacting the surfaces with an acidic solution containing a five-membered nitrogen heterocyclic compound, for example 2-pyrrolidone, until the surfaces are rendered conditionable by a strong acid aqueous oxidizing conditioning solution. The resulting conditionable surfaces are then conditioned by contact with the strong acid aqueous oxidizing solution, followed by electroless metal plating of the surfaces to obtain a smooth chemical reduction metal deposit thereon which is of acceptable appearance and firmly adhered to the surfaces. The invention is especially useful in the preparation of additive-type printed circuit boards.

3,791,987

MINUTE CAPSULES HAVING WALLS OF SILICEOUS MATERIAL-HYDROXY-CONTAINING MATERIAL COMPLEX AND PROCESS FOR THEIR MANUFACTURE

Gene O. Fanger, Worthington, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

No Drawing. Continuation of abandoned application Ser. No. 41,114, May 27, 1970. This application Feb. 3, 1972, Ser. No. 232,321

Int. Cl. B01j *13/02;* **B44d** *1/02*

U.S. Cl. 252—316 **4 Claims**

A process is disclosed for manufacturing minute capsules, en masse, wherein the capsule walls comprise a hardened silicate material. The process includes liquid-liquid phase separation of the wall material silicate from solution as silicic acid in an aqueous capsule manufacturing vehicle by means of a glycol phase-separation-inducing material. Preferred starting materials for the present process include alkali-metal water glass and polyethylene glycol.

The present liquid-liquid phase separation can be considered to be similar to so-called "complex coacervation" of the prior art in that a complex of two polymeric materials are concentrated in the emergent liquid phase. The capsule walls are solidified by reacting the siliceous capsule wall material with an inorganic salt, viz, aluminum sulfate, calcium chloride, magnesium sulfate, iron chloride or magnesium bromide.

3,791,988

DIAGNOSTIC TEST FOR GLUCOSE

Dieter Josef, Pratteln, and Alfred Lampart, Magden, Switzerland, and Pirmm Schwartz, Weil am Rhine, Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Mar. 23, 1972, Ser. No. 237,528

Int. Cl. G01n *33/16*

U.S. Cl. 252—413 **1 Claim**

An improved diagnostic composition for the quantitative determination of glucose in biological fluids comprising glucose oxidase, a phenazin and/or phenoxazin-derivative and a tetrazolium salt as well as the incorporation thereof upon a bibulous carrier are described.

3,791,989

CATALYST REJUVENATION WITH OXALIC ACID

David S. Mitchell, San Rafael, Alan G. Bridge, El Cerrito, and Joseph Jaffe, Berkeley, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 799,124, Feb. 13, 1969. This application Mar. 12, 1971, Ser. No. 123,828

Int. Cl. B01j *11/02, 11/76*

U.S. Cl. 252—413 **1 Claim**

Process for removing vanadium sulfide from used hydrotreating catalyst particles comprising Group VI or Group VIII metals by contacting said catalyst particles with an aqueous solution comprising oxalic acid before burning coke from the used catalyst particles.

3,791,990

OIL ABSORBENT

Karl Otto Paul Fischer, Chilliwack, British Columbia, Canada, assignor to Fischer Holdings Ltd., Chilliwack, British Columbia, Canada

No Drawing. Filed Jan. 3, 1972, Ser. No. 215,165

Int. Cl. B01j *1/22*

U.S. Cl. 252—427 **6 Claims**

An oil absorbent material, specifically peat, having a moisture content of less than ten percent by weight for use particularly in removing oil film from water.

3,791,991

REDUCTION OF COPPER OXIDE WITH PALLADIUM

Virgil L. Seale and Donald G. Ries, Brookhaven, Miss., and Jerry J. Svarz, La Grange, Ill., assignors to Nalco Chemical Company, Chicago, Ill.

No Drawing. Filed June 12, 1972, Ser. No. 261,661

Int. Cl. B01j *11/06*

U.S. Cl. 252—447 **5 Claims**

A method of reducing an aqueous slurry comprising cupric oxide and cupric hydroxide and mixtures thereof which comprises reacting said slurry in the presence of hydrogen with a base and a supported palladium catalyst for a period of about one hour at ambient temperature (40–110° F.), moderate superatmospheric pressure (5–10 atmospheres), and pH control at about 9.0–10.0.

This method produces a convenient product of reduced copper oxide for input to a commercial hydrolysis of nitriles (such as acrylonitrile) to amides.

3,791,992

PREPARATION OF A MAGNESIUM SPINEL CATALYST BASE

Raymond Douglas Feldwick, Timonium, Md., assignor to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Oct. 6, 1972, Ser. No. 295,664

Int. Cl. B01j *11/06*

U.S. Cl. 252—463 **9 Claims**

The present invention is directed to a process for preparing a spinel-containing catalyst base characterized by shrinkage of less than about 3 percent after heating to temperatures in excess of 1500° F. comprising mixing a solution of a soluble acid salt of divalent magnesium with a solution of an alkali metal aluminate; separating and washing the resulting precipitate; exchanging the precipitate with an ammonium compound; followed by washing, drying, forming, and calcination. The catalyst base is especially useful for supporting auto exhaust conversion catalysts.

3,791,993

PROCESS FOR THE PRODUCTION OF A REFORMING CATALYST

Jens Richard Rostrup-Nielsen, Copenhagen, Denmark, assignor to Haldor Topsoe A/S, Soborg, Denmark

No Drawing. Continuation of abandoned application Ser. No. 734,232, June 4, 1968. This application Oct. 16, 1970, Ser. No. 81,534

Int. Cl. B01j *11/22*

U.S. Cl. 252—466 J **8 Claims**

There is provided a process for preparing a catalyst for reforming, particularly steam reforming of hydrocarbons. The process consists fundamentally in mixing intimately a solution of sodium or potassium aluminate, possibly containing excess of base (preferably sodium or potassium hydroxide, respectively) with either a solution of a nickel salt and a magnesium salt, or a solution of a nickel salt containing finely dispersed therein reactive magnesium oxide. The mixing results in coprecipitation of a fine sludge containing intimately mixed aluminium hydroxide, nickel hydroxide and either magnesium hydroxide (if a magnesium salt is used) or magnesium oxide. The sludge also contains a sodium or potassium salt which is removed by washing. The washed sludge is dried and dehydrated at 300–750° C., whereby an intimate mixture of oxides of magnesium, aluminium and nickel is formed. This mixture is pelletted in conventional manner and the pellets or bodies calcined at a temperature of 850–1100° C. The calcination involves conversion of alumina and part of the magnesia into spinel, whereas remaining magnesia during reforming acts as "promoter," i.a. to counteract carbon deposition. The precursor thus obtained contains NiO and can be reduced, preferably by hydrogen, and is thereafter suitable as catalyst containing elemental Ni for reforming reactions.

3,791,994

METHOD OF PRODUCING ADSORPTION COKE FROM HIGH WATER CONTENT BROWN COAL

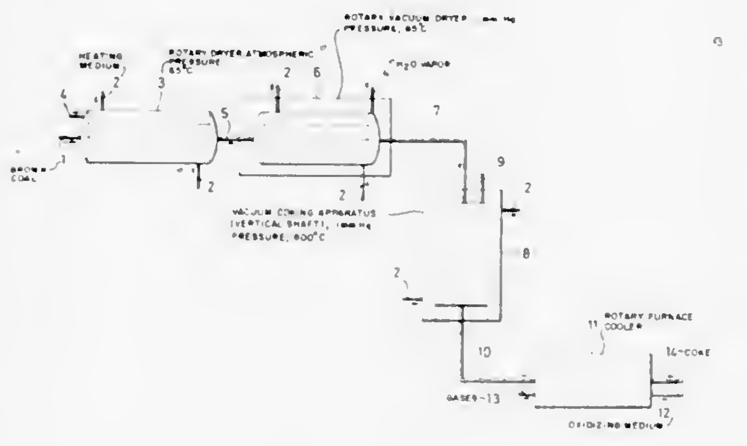
Werner Wenzel, Friedrich Hermann Franke, and Raymund Jäger, Aachen, Germany, assignors to Rheinische Braunkohlenwerke AG., Cologne, and Werner Wenzel, Aachen, Germany

Filed May 19, 1971, Ser. No. 144,803

Claims priority, application Germany, May 19, 1970, P 20 24 210.8

Int. Cl. C10b *47/20*

U.S. Cl. 252—421 **8 Claims**


ROTARY VACUUM DRYER PRESSURE, 85°C
HEATING MEDIUM
ROTARY DRYER ATMOSPHERIC PRESSURE 85°C
H2O VAPOR
BROWN COAL
1
2
3
4
5
6
7
8
9
10
VACUUM COKING APPARATUS (VERTICAL SHAFT), PRESSURE, 800°C
ROTARY FURNACE COOLER
11
14-COKE
GASES-13
12
OXIDIZING MEDIUM

In a method of producing adsorbent materials, such as adsorption cokes from a raw material of high water content, such as raw brown coal, at least one part of the vaporizable components of said raw material are removed by exposing said raw material to a vacuum.

3,791,995

BRAUNITE-GLASS CATALYTIC PARTICLES AND METHOD OF PREPARATION

Dong Myung Chay, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 24, 1971, Ser. No. 201,894

Int. Cl. B01j *11/06*

U.S. Cl. 252—471 **7 Claims**

A ceramic, porous, catalytic fired composition containing 40–80 weight percent of braunite,

$$(MnO \cdot 3Mn_2O_3 \cdot SiO_2),$$

10–50 weight percent of an amorphous binder phase, and 0–20 weight percent of a refractory crystalline phase can be combined with porcelain enamels and applied as a coating to various surfaces to catalyze oxidation reactions. This composition is an effective catalyst for oxidation of food spatter in self-cleaning ovens and for the oxidation of vapors in emission control devices.

ERRATUM

For Class 260—61 see:
Patent No. 3,791,890

3,791,996

DIRECT ACYLAMINOMETHYLATION OF AROMATIC POLYMERS

Richard B. Wuchter, Huntingdon Valley, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Nov. 1, 1971, Ser. No. 194,496

Int. Cl. C08f *27/08*

U.S. Cl. 260—2.1 E **10 Claims**

A novel method of preparing resins is presented which involves the direct acylaminomethylation of uncrosslinked or crosslinked aromatic polymers, for example styrene-containing polymers. Acylaminomethylated crosslinked aromatic polymers are readily hydrolyzed to the corresponding aminomethylated polymers and then optionally quaternized to form the corresponding strong base, quaternary ammonium anion exchange products.

3,791,997

WATER VAPOR PERMEABLE FLEXIBLE SHEET MATERIALS

George Stuart Hathorn and Victor Ralph Cunningham, Dagenham Dock, England, assignors to Porvair Limited, Essex, England

Continuation of abandoned application Ser. No. 697,165, Jan. 11, 1968. This application Nov. 19, 1970, Ser. No. 91,167

Claims priority, application Great Britain, Jan. 11, 1967, 1,611/67

Int. Cl. B29d *7/22, 27/04;* **C08g** *22/04*

U.S. Cl. 260—2.5 AY **16 Claims**

In a method of making water vapor permeable flexible sheet materials, which find uses as replacements for leather, which included two superimposed layers, a substrate layer is formed of a layer of a mixture of powdered removable filter dispensed through a polymer solution in which adheres to a temporary backer, and before the solvent is removed a top coat layer of a similar mix-

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formed on the substrate layer, the polymer is co-

3,792,000

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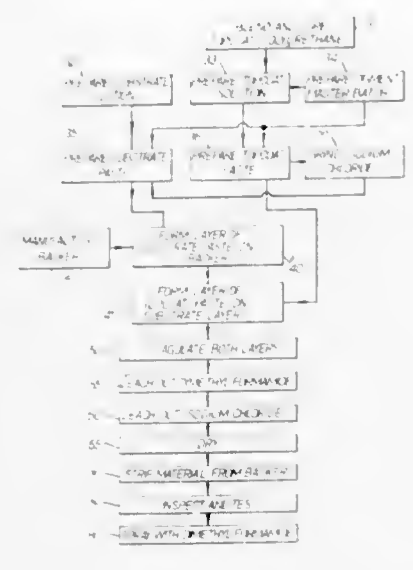
boxyl terminated polybutadiene with a mono-epoxide with

3,792,007

ture is formed on the substrate layer, the polymer is coagulated and the filler leached out from both layers by



suitable liquid treatment, the two superimposed layers are dried and stripped as one layer from the supports.

3,791,998

PASTE TYPE ORGANOPOLYSILOXANE COMPOSITION AND FABRICS COATED THEREWITH

Carl Newton Bruns, Adrian, Mich., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 781,606, Dec. 5, 1968. This application July 19, 1971, Ser. No. 164,117

Int. Cl. C08g *51/04, 51/50;* **C08k** *1/08*
U.S. Cl. 260—2.5 S **9 Claims**

A flowable organopolysiloxane composition comprising an organopolysiloxane polymer having a viscosity between 100,000 and 750,000 centistokes, a curing agent, a hydroxyl-terminated organopolysiloxane, and filler to form a composition having a penetrometer value of between 250 and 350. The composition may be applied to an untreated fabric and thereafter cured at an elevated temperature to form a silicone rubber impregnated fabric.

3,791,999

PROCESS FOR PREPARING A CROSS-LINKED POROUS COPOLYMER

Yutaka Fuchiwaki, Tokyo, and Takashi Nishikaji, Yokohama, Japan, assignors to Mitsubishi Chemical Industries, Limited, Tokyo, Japan

Filed Dec. 16, 1971, Ser. No. 208,689

Claims priority, application Japan, Dec. 19, 1970, 45/114,712

Int. Cl. C08f *15/02, 47/08*
U.S. Cl. 260—2.5 M **10 Claims**

A cyano group-containing cross-linked porous copolymer, which is large in surface area and high in porosity and high in adsorptivity for polar substances, is obtained by polymerizing a monovinyl cyanide, or a monovinylidene cyanide, monomer, with a polyvinyl monomer, in the presence of an organic solvent which is inert to these monomers, and which functions both as a solvent therefor and as a swelling agent for the resulting copolymer, and with a linear monovinyl polymer, which is capable of forming a homogeneous liquid phase with the monomers and the solvent, and thereafter removing the linear polymer from the resulting copolymer by extraction.

3,792,000

ANTIFOULING COMPOSITION AND METHOD OF PREPARATION

Marvin T. Conger, Theodore A. Evans, and Larry A. Gordon, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed June 9, 1971, Ser. No. 151,532

Int. Cl. A01m *1/20;* **C08l** *45/64;* **C09b** *5/14*
U.S. Cl. 260—3.5 **8 Claims**

Antifoulant compositions are made by forming a mixture of an elastomer, a resin and antifoulant, preferably of a tin compound, with the elastomer having a glass transition temperature below ambient temperature and the resin having a glass transition temperature above ambient temperature.

3,792,001

CATALYSIS OF URETHANE FOAMS WITH A MIXTURE OF AN ANTIMONY TRIHALIDE AND EITHER AN ANTIMONY ALCOHOLATE OR AN ANTIMONY CARBOXYLATE

John K. Allen, Batavia, and John A. Cengel, Wheaton, Ill., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Aug. 21, 1972, Ser. No. 282,461

Int. Cl. C08g *22/40, 22/44*
U.S. Cl. 260—2.5 AB **20 Claims**

The catalysis of urethane foams is improved by the use of a mixture of an antimony trihalide and either an antimony alcoholate or an antimony carboxylate. This catalyst mixture is particularly useful in the preparation of rigid urethane-type foams prepared from polyarylpolyisocyanates and free carboxy-containing adduct polyols. The catalyst mixture is also effective in rigid urethane-type foams containing aromatic carboxylic acid derivatives as a third principal component.

3,792,002

HOT MELT PRESSURE SENSITIVE ADHESIVES

Bernhard Krieger, Bergkamen, Manfred Bolze, Bergkamen-Oberaden, and Manfred Drawert, Werne, Germany, assignors to Schering AG, Berlin, Germany

No Drawing. Filed Apr. 12, 1972, Ser. No. 243,423

Claims priority, application Germany, Apr. 17, 1971, P 21 18 796.2

Int. Cl. C08k *1/66*
U.S. Cl. 260—18 N **2 Claims**

Hot melt pressure sensitive adhesives comprising (A) a polyamide resin, (B) a tackifier, and either or both of (C) a further polyamide or polyester amide which functions to retain tack in the adhesives or (D) an ethylene/vinyl acetate copolymer. Polyamide (A) comprises ethylene diamine, certain ether diamines, and a polymeric fatty acid. Preferred tackifiers (B) are the colophonium resins, Component (C) is formed between a polyamine or hydroxylamine and a polymeric fatty acid.

3,792,003

HYDROXY-TERMINATED POLYBUTADIENE, DIISOCYANATE AND TRIOL COMPOSITION

Gonzague L. Duchesne, 3192 Neuville St., Ste. Foy, Quebec, Canada

Filed Sept. 29, 1971, Ser. No. 184,958

Claims priority, application Canada, Sept. 29, 1970, 94,308

Int. Cl. C08f *27/10, 27/12*
U.S. Cl. 260—18 TN **15 Claims**

An elastomeric composition is formed by mixing a hydroxy terminated polybutadiene formed by reacting a carboxyl terminated polybutaliene with a mono-epoxide with a diisocyanate and a polyoxyalkylene triol. The composition is useful as a binder in forming a castable propellant. It also may be used as a low temperature structural material or as an insulator.

3,792,004

HIGH MOLECULAR WEIGHT PRODUCTS CAPABLE OF BEING CROSS-LINKED

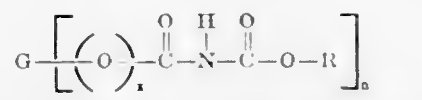
Josef Pedain and Dieter Arlt, Cologne-Buchheim, and Hermann Hagemann, Cologne-Flittard, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 10, 1970, Ser. No. 54,005

Claims priority, application Germany, July 17, 1969, P 19 36 399.6

Int. Cl. C08g *22/08, 22/18*
U.S. Cl. 260—22 TN **5 Claims**

High molecular weight compounds capable of being cross-linked by the application of heat under mild conditions and having the general formula



$$G\left[\left(O\right)_x-\overset{O}{\overset{\|}{C}}-\overset{H}{\overset{|}{N}}-\overset{O}{\overset{\|}{C}}-O-R\right]_n$$

where G is the residue remaining after removal of at least two hydroxyl groups or at least two carboxylic acid groups from a high molecular weight polyhydric alcohol or high molecular weight polycarboxylic acid respectively: R is an aliphatic hydrocarbon radical having 1 to 18 carbon atoms or a trichloromethyl group; x is 0 or 1 and n is an integer equal to the number of hydroxyl groups or carboxylic acid groups removed from G.

3,792,005

LOW MOLECULAR WEIGHT BLOCK COPOLYMERS AND COATING COMPOSITIONS THEREOF

James T. Harlan, Jr., Torrance, Calif., assignor to Shell Oil Company

No Drawing. Filed Feb. 7, 1972, Ser. No. 224,315

Int. Cl. C08c *11/22;* **C08d** *9/12;* **C08f** *19/08*
U.S. Cl. 260—27 BB **9 Claims**

Block copolymers having unexpectedly high tensile strength and low solution viscosity comprise polymers having at least one hydrogenated conjugated diene polymer block having an average molecular weight between 18,000 and 35,000, and at least two monoalkenyl arene polymer blocks having an average molecular weight between 4,000 and 7,500. Coating compositions thereof comprise the above polymers dispersed in a solvent carrier having a Hildebrand solubility parameter between about 7.5 and 9.2 $(cal./cm.^3)^{1/2}$.

3,792,006

WATER EXTENDED VINYL ESTER RESINS

Daniel J. Najvar, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation of abandoned application Ser. No. 762,344, Sept. 16, 1968. This application Sept. 21, 1971, Ser. No. 182,531

Int. Cl. C08f *45/24, 43/02*
U.S. Cl. 260—29.6 NR **16 Claims**

Water extended thermosettable resin compositions are prepared by forming stable water-in-resin emulsions with vinyl ester resins, certain modified vinyl ester resins and vinyl ester/unsaturated polyester resin compositions. The resin phase contains from 30 to 60 percent by weight of an essentially water insoluble monomer copolymerizable with said resins. The emulsions are prepared to contain from 30 to 70 percent by weight water. The novel water-in-resin emulsions are prepared without the need for an emulsifying agent. The vinyl ester resins employed are compounds containing a plurality of terminal unsaturated acid ester groups obtained by reaction of compounds having a plurality of oxirane groups with alpha, beta-unsaturated carboxylic acids.

3,792,007

FLAME RETARDANT LATEX

Edward H. Gleason and Leonard F. Guziak, Monroeville, Pa. (both ℅ Koppers Company, Inc., Koppers Bldg., Pittsburgh, Pa. 15219)

No Drawing. Continuation-in-part of abandoned application Ser. No. 26,419, Apr. 3, 1970. This application Nov. 15, 1971, Ser. No. 198,970

Int. Cl. C08d *7/10;* **C09d** *5/18*
U.S. Cl. 260—29.7 P **4 Claims**

A self-extinguishing polymer composition in latex form has been prepared by the adding from 1 to 10 parts by weight of tris(2,3-dibromopropyl) phosphate in combination with a synergistic amount (0.5 to 3.0 parts by weight) of a salt selected from the group consisting of monoammonium phosphate, diammonium phosphate and triammonium phosphate, to a terpolymer comprising 20–70 parts by weight of an aryl vinyl monomer and 30–80 parts by weight of a conjugated diolefin, and 0.5–10 parts by weight of an α,β-ethylenically unsatuarted carboxylic acid. If desired, a portion of the ammonium salt may be added to the latex during polymerization as well as after the polymerization.

3,792,008

CURABLE ORGANOPOLYSILOXANES

Charles George Neuroth, Blissfield, Mich., assignor to Stauffer Chemical Company

No Drawing. Filed Feb. 10, 1972, Ser. No. 225,295

Int. Cl. C08g *51/34, 51/50*
U.S. Cl. 260—30.6 SB **14 Claims**

An organopolysiloxane composition having improved flow characteristics which comprises an hydroxyl-terminated organopolysiloxane, cross-linking agents containing an organohydrogenpolysiloxane and an organosilicon compound of the general formula $R'_mSi(OR)_{4-m}$ in which R is a hydrocarbon radical having from 1 to 10 carbon atoms, R′ is a monovalent hydrocarbon radical or a halogenated monovalent hydrocarbon radical having up to 10 carbon atoms and m is a number greater than 0 and up to 3, an organotin catalyst and an additive which reduces the viscosity of the composition. These compositions are useful in the preparation of molds where flow properties are essential and upon vulcanization will provide an elastomeric material having improved elongation and tear strength.

3,792,009

VAPOR PERMEABLE COMPOSITIONS

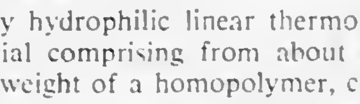
John P. Mudde, Oak Lawn, Ill., assignor to CPC International Inc.

No Drawing. Continuation-in-part of application Ser. No. 266,038, June 26, 1972, which is a continuation-in-part of application Ser. No. 244,251, Apr. 14, 1972, which is a continuation-in-part of application Ser. No. 226,202, Feb. 14, 1972, which in turn is a continuation-in-part of application Ser. No. 122,148, Mar. 8, 1971, all now abandoned. This application May 11, 1973, Ser. No. 359,284

Int. Cl. C08f *45/38, 45/40;* **C09d** *5/00*
U.S. Cl. 260—31.4 R **21 Claims**

The present invention is concerned with a water vapor permeable polymeric composition comprising a substantially homogeneous blend of:

(a) a normally hydrophilic linear thermoplastic polymeric material comprising from about 40 to about 60 parts by weight of a homopolymer, copolymer or graft copolymer of an unsaturated amide of the formula:



$$CH_2=\overset{R^1}{\overset{|}{C}}-\overset{O}{\overset{\|}{C}}-N\begin{matrix}\diagup R^2\\ \diagdown R^3\end{matrix}$$

wherein R^1 is selected from the group consisting of hydrogen and alkyl of up to 4 carbon atoms, R^2 and R^3 are alkyl of up to 5 carbon atoms; and

wherein the R radical in each unit has at least 10 mole

and cure is effected by heating the system. If a two-part system is desired, the metal imidazolate can be included

taining at least one benzene nucleus, and are characterized by a uniplanar axial structure.

(b) a normally hydrophobic polymer comprising from about 60 to about 40 parts by weight of a plasticized polymer of vinyl chloride, the combined weights of said normally hydrophilic and hydrophobic polymeric materials being 100 parts by weight,

said polymeric composition being capable of producing continuous films and foams having improved water vapor transmission properties.

3,792,010
PLASTICIZED POLYESTER SUTURES

David Wasserman, Springfield, and Alan J. Levy, Somerville, N.J., assignors to Ethicon, Inc.

Filed Mar. 27, 1972, Ser. No. 238,552

Int. Cl. C08g *51/42*

U.S. Cl. 260—32.2 R **4 Claims**

A poly [L(—) lactide-co-glycolide] obtained by polymerizing from 10 to 15 mol percent of L(—) lactide and from 85 to 90 mole percent of glycolide is plasticized with from about 10 weight percent to about 15 weight percent of bis-2-methoxyethyl phthalate and extruded to form flexible monofilaments that are sterilized with ethylene oxide. The sterile monofilament sutures have a straight tensile strength of about 65,000 to 72,000 p.s.i.; and a Young's modulus of from about 4.5×10^5 p.s.i. to about 6.8×10^5 p.s.i. The sutures retain up to about 37 percent of their original tensile strength for fifteen days when implanted in living animal tissue.

3,792,011
LOW-COST RESINOUS COMPOSITIONS COMPRISING NON-GLYCIDYL ETHER EPOXIDES

James D. B. Smith, Turtle Creek, and Robert N. Kauffman, Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 14, 1971, Ser. No. 189,090

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 EP **6 Claims**

A resinous composition, suitable as a low cost potting compound, is made from a mixture containing about 90 to 120 parts of a cycloaliphatic or acyclic aliphatic non-glycidyl ether epoxy resin, about 5 to 120 parts of a diglycidyl ether epoxy resin, about 50 to 200 parts of an acid anhydride and about 0.08 to 0.9 part of a quaternary organic phosphonium salt acting as a latent catalyst.

3,792,012
SILICONE RESIN USEFUL IN MOLDING COMPOSITIONS

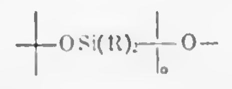
Joseph J. Zdaniewski, Scotia, N.Y., assignor to General Electric Company

No Drawing. Filed Mar. 17, 1972, Ser. No. 235,580

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 SB **26 Claims**

A silicone resin composition having improved flexural strength and thermal shock properties comprising a resinous terpolymer compound having $RSiO_{3/2}$ units, R_2SiO units and



$$-\mathrm{OSi(R)_2}-\mathrm{O}-$$

units where the R to Si ratio is 1.05 to 1.99. The R radical represents monovalent hydrocarbon radicals, halogenated monovalent hydrocarbon radicals where the R radicals in a particular unit are different which resin contains a total alkoxy and silanol content from 2% to 8% by weight and wherein the R radical in each unit has at least 10 mole percent aryl radicals.

A silicone molding composition may be prepared containing 5 to 100% of the above resin and 0 to 95% by weight of any well known silicone molding resin.

3,792,013
PALLADIUM-CONTAINING STABILIZERS FOR POLYOLEFINS

Howard E Dunn, Mount Vernon, Ind., and Ronald D. Mathis, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Oct. 17, 1969, Ser. No. 867,359

Int. Cl. C08f *45/62*

U.S. Cl. 260—45.75 R **6 Claims**

Stabilizers for incorporation in polymers are disclosed, these stabilizers acting to provide a degree of stability to the polymer against the deteriorating effects of ultraviolet light but which do not significantly affect the whiteness or dyeability of the polymer.

3,792,014
PHENOL ANTIOXIDANT-GALLIC ACID ESTER STABILIZER SYSTEM

Kryn G. Ihrman, Farmington, and Robert E. Malec, Birmingham, Mich., assignors to Ethyl Corporation, Richmond, Va.

No Drawing. Continuation-in-part of abandoned application Ser. No. 283,725, Aug. 25, 1972. This application Sept. 15, 1972, Ser. No. 289,536

Int. Cl. C08f *45/58*

U.S. Cl. 260—45.85 B **22 Claims**

Olefinic polymers (e.g., polyethylene) normally subject to accelerated oxidative degradation when used in contact with copper are stabilized for prolonged periods by inclusion of a hydrocarbyl ester of gallic acid (e.g., propyl gallate) together with a phenolic antioxidant for olefinic polymers. The compositions are especially useful for extending the service life of polyolefin copper wire insulation.

3,792,015
PROCESS FOR PREPARING POLYESTER AND COPOLYESTER RESINS

James E. Duddey, Akron, Mancung Hahn, Tallmadge, and Joseph P. Schirmer, Jr., Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed June 19, 1972, Ser. No. 263,833

Int. Cl. C08g *51/58*

U.S. Cl. 260—45.95 H **8 Claims**

Linear polyester and copolyester resins having improved dyeability are prepared by reacting a free dicarboxylic acid and a glycol in the presence of a stabilizing composition and a metallic salt of isethionic acid and polycondensing the esterification product to form high molecular weight resin.

3,792,016
METAL IMIDAZOLATE-CATALYZED SYSTEMS

Brian K. Hill and J. Alan Kehr, St. Paul, Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Jan. 6, 1972, Ser. No. 215,942

Int. Cl. C08g *30/14*

U.S. Cl. 260—47 EN **14 Claims**

Metal imidazolates are catalysts for conventional epoxy resin systems. The combination of a curing agent, epoxy monomer or prepolymer, and metal imidazolate is latent,

and cure is effected by heating the system. If a two-part system is desired, the metal imidazolate can be included in either the epoxy resin part or the curing agent part. Preferred metal ions of the metal imidazolates are the metals of Group VIII and Groups I(B) and II(B).

3,792,017
THERMALLY STABLE QUINOXALINE POLYMERS AND METHOD OF SYNTHESIS

Fred E. Arnold, Centerville, and Frederick L. Hedberg and Robert F. Kovar, Dayton, Ohio, assignors to the United States of America as represented by the Secretary of the Air Force

No Drawing. Filed Oct. 19, 1972, Ser. No. 298,975

Int. Cl. C08g *15/00*

U.S. Cl. 260—47 R **6 Claims**

Thermally stable quinoxaline polymers are prepared by solution polycondensation of certain aromatic heterocyclic fused tetraamines with aromatic dibenzils. The high thermal stability, the high glass transition temperature, or the lack of such a temperature, and the solubility of the polymers in aprotic solvents render them especially useful as adhesives and in high temperature applications such as in the fabrication of plastic composites and protective coatings.

3,792,018
PREPARATION OF CLEAR EPOXY RESINS CONTAINING HIGH MOLECULAR WEIGHT TRI-EPOXIDE FLEXIBILIZERS

Ted J. Logan, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 195,455, Nov. 3, 1971. This application Oct. 20, 1972, Ser. No. 299,491

Int. Cl. C08g *30/14*

U.S. Cl. 260—47 EN **8 Claims**

A process and composition for producing clear, cured epoxy resins, said resins containing specified glycidyl ethers of propoxylated glycerine as flexibilizers, and being cured at room temperature.

3,792,019
FILMS OF POLYAMIDE-IMIDES HAVING A UNIPLANAR AXIAL STRUCTURE

Jean Gattus, La Mulatiere, and Maurice Mallet, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France

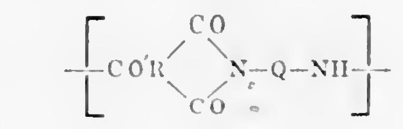
No Drawing. Filed Sept. 3, 1970, Ser. No. 69,493

Claims priority, application France, Sept. 5, 1969, 6930338

Int. Cl. C08g *20/32*

U.S. Cl. 260—47 CP **3 Claims**

Polyamide-imide films having a high elongation at break, and suitable for insulating electrical conductors which are to be subjected to stress, are made from polyamide-imides comprising structural units of formula:



in which R is a trivalent organic radical containing at least two carbon atoms and Q is a divalent radical containing at least one benzene nucleus, and are characterized by a uniplanar axial structure.

They can be made by giving a film of the polyamide-imide a treatment in which (a) it is stretched at 100°–350° C. while it contains at least 1%, preferably 5–30%, of solvent and (b) it is then given a supplementary heat treatment at 100°–350° C., while preventing shrinkage in any planar direction throughout the treatment.

3,792,020
HIGH-TEMPERATURE STABLE MODIFIED AROMATIC AMINE-ALDEHYDE MOLDING POWDERS MODIFIED WITH AROMATIC POLYCARBOXYLIC COMPOUNDS

Rodney M. Huck, Longmeadow, and John R. Le Blanc, Wilbraham, Mass., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of abandoned application Ser. No. 119,536, Mar. 1, 1971. This application Oct. 30, 1972, Ser. No. 302,342

The portion of the term of the patent subsequent to July 18, 1989, has been disclaimed

Int. Cl. C08g *9/06, 15/00*

U.S. Cl. 260—65 **8 Claims**

Thermosettable molding powders of aromatic amine/formaldehyde resin and aromatic polycarboxylic compound which have been processed with heat in a shear field to advance the composition to the stage where further heating will evolve less than 2 percent of the initial weight as volatiles. The product molding powder displays little or no tendency to blister, swell, or distort during molding and post-curing.

3,792,021
PROCESS FOR CROSSLINKING HYDROPHILIC COLLOIDS USING ACROLEIN DERIVATIVES SUBSTITUTED BY AN ONIUM GROUP

Paul Tschopp, Marly, Werner Deuschel, Villars sur Glane, Carlo Boragine, Fribourg, and Rainer Kitzing, Villars sur Glane, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed July 7, 1971, Ser. No. 160,563

Claims priority, application Switzerland, July 7, 1970, 10,299/70

Int. Cl. C08f *3/34;* **C09h** *7/00*

U.S. Cl. 260—73 R **8 Claims**

A process for crosslinking hydrophilic colloids containing amino, imino and/or hydroxyl groups by means of acrolein derivatives substituted by an onium group in the p-position as well as photographic material containing in at least one layer on a support a crosslinked hydrophilic colloid are described.

3,792,022
PERFLUORO ADDITION POLYMERS

Robert J. Jones, Hermosa Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

No Drawing. Filed Oct. 27, 1972, Ser. No. 301,454

Int. Cl. C08g *22/00*

U.S. Cl. 260—77.5 AM **9 Claims**

Highly stable structural polymers are made by reacting a perfluoro vinyl containing reactant with difluoromaleic anhydride in the presence of a catalyst. These linear perfluoro polymers may be modified by including in the backbone chain a perfluoro compound having a pendant oxy structure. Further modification may be obtained by including amine terminated or diisocyanate terminated perfluoro cross-linking compounds. Polymerization by simple addition reaction is made to occur by the application of peroxide catalyst. These linear perfluoro polymers may be used for applications as seals, sealants, films, coatings, and fibers.

3,792,023

PROCESS FOR THE PRODUCTION OF STORAGE-STABLE POLYURETHANE ISOCYANATES

Lothar Havenith, Dietrich Liebsch, and Joachim Zirner, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 30,985, Apr. 22, 1970. This application June 23, 1972, Ser. No. 265,907

Claims priority, application Germany, May 3, 1969, P 19 22 626.7

Int. Cl. C08g *22/16*

U.S. Cl. 260—77.5 AQ **4 Claims**

A process is provided for the production of polyurethane isocyanates which are stable on storage, which dry quickly in the presence of atmospheric moisture and which contain tertiary nitrogen atoms by reacting aromatic diisocyanates or polyisocyanates with polyether alcohols with an NCO/OH ratio of at least 1.57, wherein the polyether alcohols used are of the kind which contain at least one tertiary nitrogen atom with at least five and preferably more than ten ether groups between the tertiary nitrogen atom and the hydroxyl group.

3,792,024

POLYMERIZATION OF BENZIMIDAZOBENZO-PHENANTHROLINE-LADDER POLYMER

Lowell Saferstein, Plainfield, N.J., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Filed July 27, 1972, Ser. No. 275,596

Int. Cl. C08g *20/32*

U.S. Cl. 260—78 TF **14 Claims**

An improved method of forming a benzimidazobenzophenanthroline-ladder polymer is disclosed. An organic tetraamine (e.g., 1,2,4,5-tetraaminobenzene) and a tetracarboxylic acid dianhydride (e.g., 1,4,5,8-naphthalene dianhydride) are reacted in a polyphosphoric acid solvent in the presence of a catalytically effective amount of a metal cation-containing Lewis Acid (e.g., antimony trichloride) to form the polymer.

3,792,025

NOVEL COMPOUNDS AND PROCESS

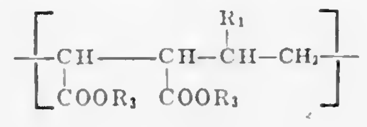
Henri Ulrich, Northford, Fred A. Stuber, North Haven, and Allen J. Broggi, Branford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Dec. 15, 1972, Ser. No. 315,303

Int. Cl. C08f *27/08;* **C08g** *33/00*

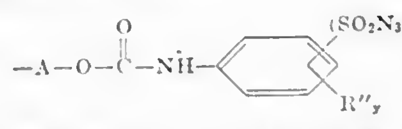
U.S. Cl. 260—78.5 T **4 Claims**

Hydrophobic radiation-sensitive polymers are provided which are characterized by the recurring unit:



$$\left[\begin{array}{c}-\underset{\mathrm{COOR_3}}{\mathrm{CH}}-\underset{\mathrm{COOR_3}}{\mathrm{CH}}-\overset{\mathrm{R_1}}{\mathrm{CH}}-\mathrm{CH_2}-\end{array}\right]$$

wherein R_1=lower-alkoxy or phenyl, one of R_2 and R_3 is hydrogen and the other is



wherein A=alkylene (C_{12-20}), R″=lower alkyl or halogen, x=1 or 2, y=0, 1 or 2, $x+y\leq3$. Salts of the above compounds are disclosed as well as modifications of the above polymers in which some recurring units contain tertiary amino groups.

The polymers are useful in the preparation of photoresists having high resistance to attack by acid etchants. The polymers are also useful in production of lithographic plates and the like which are to be used with oleophilic inks.

3,792,026

HIGH MOLECULAR WEIGHT OLEFIN POLYSULFONE RESINS AND PROCESS FOR THEIR PREPARATION

Bobby Leroy Atkins, William Marvin Welsh, and William Ross Moore, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 693,150, Dec. 26, 1967. This application Sept. 8, 1970, Ser. No. 70,537

Int. Cl. C08f *13/06*

U.S. Cl. 260—79.3 A **10 Claims**

A process for the suspension polymerization of sulfur dioxide and alpha-monoolefinic monomers in water with a suspending agent is described. The resultant high molecular weight copolymers are useful as water repellant coatings for metals, concrete and fabrics. The copolymers are characterized by the fact that they have a peak molecular weight in the range 1.5×10^5 to 2.5×10^6.

3,792,027

NOVEL COPOLYMERS

Hans Peter Panzer, Stamford, William Charles Firth, Jr., Wilton, Anthony Thomas Coscia, South Norwalk, and Lucille Elma Palmer, Darien, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Apr. 14, 1971, Ser. No. 134,057

Int. Cl. C08f *13/06*

U.S. Cl. 260—73 R **4 Claims**

A novel class of acrylamide-sulfur dioxide polymers, a method for their production, glyoxal reaction products thereof and paper treated with said reaction products, are disclosed.

3,792,028

HYDROPHILIC GEL POLYMERS OF VINYL PYRROLIDONE AND HYDROXYL ALKYL METHACRYLATE

Maurice Seiderman, 3306 Deronda Drive,
Hollywood, Calif. 90028

No Drawing. Continuation-in-part of application Ser. No. 92,280, Nov. 23, 1970, now Patent No. 3,721,657, which is a continuation-in-part of application Ser. No. 845,499, July 28, 1969, now Patent No. 3,639,524. This application Dec. 30, 1971, Ser. No. 214,418

The portion of the term of the patent subsequent to Mar. 20, 1990, has been disclaimed

Int. Cl. C08f *17/00*

U.S. Cl. 260—80.72 **8 Claims**

A plastic or resin product is obtained by mixing a comminuted pyrrolidone such as polyvinylpyrrolidone, and

optionally modifiers and additives such as organic methacrylates, and optionally crosslinking agents, and optionally catalysts, and causing polymerization to take place. The inventive product is insoluble in water but is hydratable with water, depending upon the proportions of the above mentioned components, and may take up in its structure as little as 5% by weight of water to as high as 90% by weight of water. The inventive hydrated product is optionally transparent, translucent, or opaque, and produced in any shape or size, depending only on the mold in which it is cast. The transparent product is especially suitable for contact lenses. The translucent and opaque products may be fabricated into membranes with pore sizes that can be made selectively, or cast into useful shapes and for other uses.

3,792,029

PRODUCTION OF COPOLYMERS

Lubor Roubinek, London, and Theodore Roger Ernest Kressman, Watford, England, assignors to The Permutit Company Limited, London, England

No Drawing. Filed Mar. 8, 1971, Ser. No. 122,207

Claims priority, application Great Britain, Mar. 17, 1970, 12,849/70

Int. Cl. C08f *1/11*

U.S. Cl. 260—88.2 C **9 Claims**

In the suspension polymerization of a mixture of two unequally reactive monomers, such as styrene and divinyl benzene, in a suspension medium containing a stabilizer which forms films on globules of the monomer mixture, the proportion of the more reactive monomer in the unreacted mixture in the globules tends to decrease continuously, so that the resultant beads are not homogeneous in composition. The invention improves the homogeneity by adding more monomer mixture in the form of an emulsion as the polymerization proceeds, the emulsion containing a progressively increasing proportion of the more reactive monomer. To enable the emulsified monomers to enter to globules, the stabilizer films are kept thin.

3,792,030

PROCESS FOR THE POLYMERIZATION OF 1,2-DIMETHOXYETHYLENE

Norbert Vollkammer, Troisdorf, and Wilhelm Vogt, Cologne, Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

No Drawing. Filed Dec. 13, 1971, Ser. No. 207,648

Claims priority, application Germany, Dec. 18, 1970, P 20 62 400.4

Int. Cl. C08f *3/34*

U.S. Cl. 260—91.1 R **8 Claims**

A process for the polymerization of 1,2-dimethoxyethylene using halogen containing organo aluminum compounds as polymer initiators is disclosed. The present process enables the preparation of polydimethoxyethylenes having molecular weights in excess of 60,000.

3,792,031

PROCESS FOR IMPROVED ELASTOMERS

Anne C. Udding, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Feb. 22, 1972, Ser. No. 228,231

Claims priority, application Netherlands, June 23, 1971, 7108691

Int. Cl. C08d *5/02*

U.S. Cl. 260—94.7 N **8 Claims**

A process for the modification of elastomeric isoprene polymers into products which can be processed together with a filler to unvulcanized compositions having improved "green strength" comprises reacting such an isoprene polymer with from about 0.01 to about 5% by weight of a mononitrone at a temperature from about 60° C. to about 200° C.

3,792,032

POLYPEPTIDES RELATED TO THE C-TERMINAL HEPTAPEPTIDE OF BOMBESIN AND ALYTESIN

Luigi Bernardi, Roberto de Castiglione, Gian Carlo Fregnan, and Onofrio Goffredo, Milan, Italy, assignors to Societa Farmaceutical Italia, Milan, Italy

No Drawing. Filed Aug. 14, 1970, Ser. No. 63,906

Claims priority, application Italy, July 31, 1970, 28,126/70

Int. Cl. C07c *103/52*

U.S. Cl. 260—112.5 **19 Claims**

Polypeptides of the formula

$$\text{X—Trp—Ala—Val—Gly—His—Leu—Met—NH}_2$$

wherein X is selected from the group consisting of hydrogen, an acyl radical of a carboxylic acid, of an aminoacid, of a dipeptide, its protected derivatives and its salts.

The polypeptides display an activity on the systemic pressure and a stimulating activity on the uterus, colon, ileum and gastric secretion and a hyperglycemic action.

3,792,033

ACTH-TYPE HORMONES WHOSE FIRST AMINO-ACID IS OF D-CONFIGURATION

Beat Iselin, Riehen, Heini Kappeler, Wuerenlos, Bernhard Riniker, Frenkendorf, and Werner Rittel, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 667,078, Sept. 12, 1967, which is a continuation-in-part of application Ser. No. 592,745, Nov. 8, 1966, which in turn is a continuation-in-part of application Ser. No. 478,409, Aug. 9, 1965, all now abandoned. This application May 6, 1969, Ser. No. 822,327

Int. Cl. C07c *103/52*

U.S. Cl. 260—112.5 **29 Claims**

Adrenocorticotropically active peptides containing 16 to 39, especially 18 to 25 aminoacid residues and having as the first aminoacid at the aminoend a D-aminoacid.

In these peptides some aminoacids of the natural sequence may have been exchanged for others, provided that the ACTH-activity remains substantially unaffected as is the case, for example, when the second aminoacid, tyrosine, is replaced by phenylalanine. Also the first aminoacid—which according to the invention is present in the D-configuration (or as the racemic D,L-acid)—may be the D-form of a natural α-aminoacid other than serine, above all, for example, D-alanine, D-proline or D-threonine. Of the new peptides, special mention is deserved by those which contain 18–25 aminoacids, but differ from the sequence of the first 18 to 25 aminoacids to ACTH in that the first aminoacid is D-serine, and particularly those in which the first aminoacid is D-serine and in which the arginine ^{17,18}-radicals are replaced by ornithine or lysine radicals and/or the serine^3-radical is replaced by glycyl, and/or the glutamyl^5-radical by glutaminyl. The new peptides have an enhanced adrenocorticotropic activity.

3,792,034

TRIPEPTIDE AND ACID ADDITION SALTS

Walter Boguth, Riehen, Rolf Studer, Bottmingen, and Ute Achterrath and Hans Kunzi, Riehen, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Mar. 29, 1972, Ser. No. 239,358

Int. Cl. C07c *103/52*

U.S. Cl. 260—112.5 **2 Claims**

L-pyroglutamyl-2,5-diiodo-L-histidyl-L-prolinamide and its acid addition salts are active as thyroidal agents, such as for example, in the treatment of hyperthyreosis. The iodinated tripeptide is conveniently prepared by iodinating l-pyroglutamyl-L-histidyl-L-prolinamide.

3,792,035

MONO-ACETYL DERIVATIVES OF ANTIBIOTIC SF-837 AND SF-837-A_2 SUBSTANCES AND PRODUCTION THEREOF

Shunzo Fukatsu, Tokyo, Tetsuo Ishikawa, Taro Miuro, and Taro Niida, Yokohama, Bunzo Nomiya, Tokyo, and Takemi Koeda, Yokohama, Japan, assignors to Meji Seika Kaisha, Ltd., Tokyo, Japan

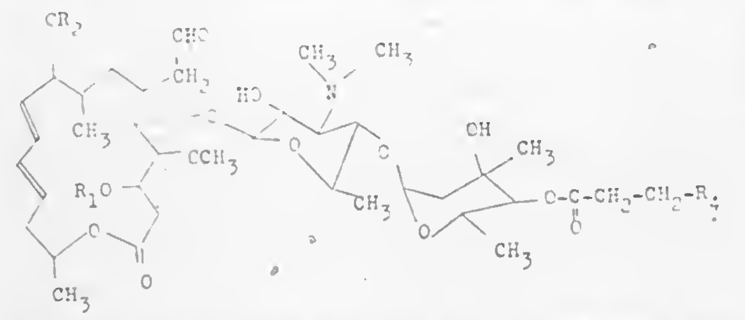
Filed Apr. 21, 1971, Ser. No. 135,858

Claims priority, application Japan, May 4, 1970, 45/37,456

Int. Cl. C07c *129/18*

U.S. Cl. 260—210 AB **3 Claims**

New mono-acetates of antibiotics SF–837 substance and SF–837–A_2 substance represented by the formula



where R_1 is a propionyl group, R_2 is an acetyl group, and R_4 is hydrogen atom or methyl group, may be produced by partially hydrolyzing under non-acidic conditions the di-acetates of SF–837 substance and SF–837–A_2 substance, respectively, which have been derived by acetylating the SF–837 substance and SF–837–A_2 substance in the form of the free bases as prepared through the cultivation of *Streptomyces mycarofaciens* identified as ATCC No. 21454. The mono-acetates of the SF–837 and SF–837–A_2 substances are much more excellent as the anti-bacterial agent than their corresponding free bases and di-acetates.

3,792,036

PTERIDINE-GLYCOSIDES

Wolfgang Pfleiderer, Constance, Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

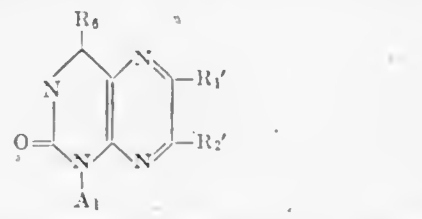
No Drawing. Filed Dec. 24, 1970, Ser. No. 101,391

Claims priority, application Sweden, Jan. 7, 1970, 140/70; Nov. 18, 1970, 17,021/70

Int. Cl. C07c *51/50, 95/04*

U.S. Cl. 260—211.5 R **7 Claims**

Compounds selected from the group consisting of amines of the Formula V



(V)

wherein A_1 stands for a member selected from 1-aldopentosidyl, 1-aldohexosidyl, mono-desoxygenated 1-adopentosidyl, mono-desoxygenated 1-aldohexosidyl, said radicals with free hydroxyl groups, and said radicals with hydroxyl groups esterified by lower alkanoyl, aroyl and said radicals with hydroxyl groups etherified by aryl-lower alkyl, R_1' and R_2' each stands for a member selected from hydrogen, lower alkyl, phenyl, lower alkyl phenyl, lower alkoxy phenyl, halogeno phenyl and trifluoromethyl phenyl, and R_6 stands for a member selected from hydroxy, lower alkoxy, mercapto, lower alkylmercapto, free amino, mono-lower alkylamino and di-lower alkylamino, and their salts are useful as antibacterial agents, especially as agents which are active against viruses. They are obtained by new methods or by methods known per se.

3,792,037

PROCESS FOR PREPARING AMBUTYROSIN

Hiroshi Kawaguchi, Tokyo, Masataka Konishi, Tokohama, and Hiroshi Tsukiura, Tokyo, Japan, assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed Nov. 4, 1971, Ser. No. 195,804

Int. Cl. C07c *47/18*

U.S. Cl. 260—210 R **2 Claims**

The specification discloses a process for preparing ambutyrosin by a semisynthetic procedure comprising the steps of acylating 5-β-D-xylofuranosylneamine or 5-β-D-ribofuranosylneamine.

3,792,038

CARDIO-ACTIVE CARDENOLIDE RHAMNOSIDES

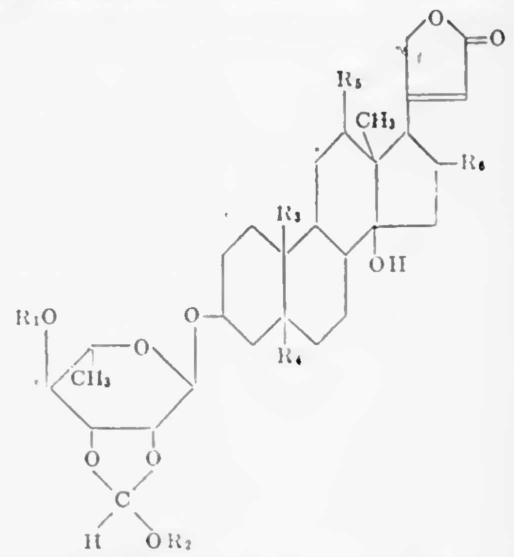
Johannes Hermann Hartenstein, Wittental, Gerhard Satzinger, Denzlingen, and Manfred Franz Herrmann, Gundelfingen, Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Apr. 9, 1973, Ser. No. 349,513

Int. Cl. C07c *173/02*

U.S. Cl. 260—210.5 **5 Claims**

The present invention relates to new cardio-active cardenolide rhamnosides of the General Formula I



(I)

wherein R_1 represents hydrogen, methyl, ethyl, or the acyl residue of a carboxylic acid having from 1 to 4 carbon atoms, the acyl residue being substituted by a methoxy or ethoxy group, if present. R_2 represents a lower alkyl residue, R_3 represents methyl, formyl, or hydroxymethyl, R_4 represents hydrogen or hydroxyl, and R_5 and R_6 represent hydrogen, hydroxyl or acetoxy.

3,792,039

POLY 2′-FLUORO-2′-DEOXYURIDYLIC ACID

Robert Joseph Erickson, Michael Paul Kotick, Lawrence Francis Reverman, and Dan P. Wilson, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Dec. 27, 1971, Ser. No. 212,619

Int. Cl. C07d *51/52*

U.S. Cl. 260—211.5 R **2 Claims**

The synthesis and enzyme inhibition properties of poly 2′-fluoro-2′-deoxyuridylic acid (poly dUfl) is disclosed.

3,792,040

ACYL DERIVATIVES OF O^2,2′ - ANHYDRO-1-(β-D-ARABINOFURANOSYL)-CYTOSINES AND METHODS OF PREPARING

John G. Moffatt, Los Altos, and Alan F. Russell, San Francisco, Calif., assignors to Syntex Corporation, Panama, Panama

No Drawing. Continuation-in-part of application Ser. No. 21,206, Mar. 19, 1970, now Patent No. 3,709,874. This application Mar. 3, 1972, Ser. No. 231,753

The portion of the term of the patent subsequent to Jan. 9, 1990, has been disclaimed

Int. Cl. C07d *51/52*

U.S. Cl. 260—211.5 R **10 Claims**

3′-O-acyl and 3′-O-acyl-5′-O-acyl-derivatives of the salts of $O\text{-}^2$,2′-anhyro-1-(β-D-arabinofuranosyl)-cytosines and methods of preparing such compounds. The compounds are further characterized in that each compound has a higher acyl group at the 3′-O-position and/or the 5′-O-position. The compounds can be prepared by reacting the corresponding 1-(β-D-ribofuranosyl) cytosine with a suitable α-acyloxyacyl halide having the desired acyl subsituent. The compounds are isolated and recovered as pharmaceutically acceptable salts and exhibits anti-viral, cytotoxic and anti-neoplastic activity, and thus are useful for the treatment of mammals where such agents are indicated. The compounds are also useful as intermediates for preparing the corresponding 1-(β-D-arabinofuranosyl)-cytosines.

3,792,041

PROCESS FOR SYNTHESIZING SUCROSE ESTERS OF FATTY ACIDS

Fumiaki Yamagishi, Fumio Endo, Hideki Ooi, and Yoshio Kozuka, Kyoto, Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed Oct. 23, 1970, Ser. No. 83,506

Claims priority, application Japan, Oct. 23, 1969, 44/85,110

Int. Cl. C07c *69/32*

U.S. Cl. 260—234 R **10 Claims**

The improved process for synthesizing sucrose esters of fatty acids comprises the steps of:

(a) preparing a solution of the mixture of sucrose and a fatty acid soap with water, said sucrose being completely dissolved in said solution;

(b) adding to said solution of the mixture a fatty acid ester and a catalyst for the transesterification reaction between sucrose and said fatty acid ester under such temperature elevating and pressure reducing conditions as to avoid hydrolysis of said fatty acid ester in order to form a substantially completely dehydrated, homogeneous melt composition; and

(c) carrying out the transesterification reaction between sucrose and said fatty acid ester in said melt composition at a temperature within the range of 110° to 175° C.

3,792,042

DIHYDRODIBENZO[b,f]AZEPINE DERIVATIVES

Jean Fouché, Bourg-la-Reine, and André Leger, Massy, France, assignors to Rhone-Poulenc S.A., Paris, France

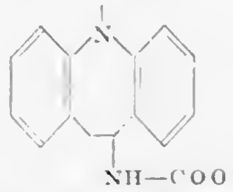
No Drawing. Filed June 22, 1970, Ser. No. 48,450

Claims priority, application France, June 24, 1969, 6921176; Apr. 9, 1970, 7012838

Int. Cl. C07d *41/08*

U.S. Cl. 260—239 D **8 Claims**

New 10,11-dihydrodibenzo[b.f]azepines of the formula:



wherein R represents hydrogen or alkyl of 1 through 5 carbon atoms, and R_1 represents alkyl of 1 through 7 carbon atoms, are useful fungicides.

3,792,043

PROCESS FOR CONVERTING COMPOUNDS CONTAINING A CYCLIC SULFUR GROUP TO ALDEHYDES OR KETONES

Hsin-Lan Wang Chang, Piscataway, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Dec. 2, 1971, Ser. No. 204,303

Int. Cl. C07c

U.S. Cl. 260—239.55 D **9 Claims**

Compounds having a 1,3-dithiolane, 1,3-dithiane, 1,3,5-oxadithiane or 1,3,5-trithiane substituent are converted to aldehyde or ketones by treating with certain organic halides or sulfates.

3,792,044

METHOD FOR DETERMINING GLUCOSE WITH o-TOLUIDINE REAGENT CONTAINING AN ARSENIC COMPOUND

Joseph F. Dooley, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Filed Dec. 1, 1971, Ser. No. 203,840

The portion of the term of the patent subsequent to Dec. 11, 1990, has been disclaimed

Int. Cl. G01n *21/06, 33/16*

U.S. Cl. 23—230 B **4 Claims**

A diagnostic composition containing o-toluidine, thiourea and an oxide of arsenic is used for the quantitative determination of glucose in the body fluids of humans.

3,792,045

PROCESS FOR THE PURIFICATION OF LACTAMS

Ruthild Henn, Domat-Ems, Grisons, and Dirk Deiters, Hans-Joachim Schultze, and Clau Berther, Chur, Grisons, Switzerland, assignors to Inventa AG fur Forschung und Patentverwertung, Zurich, Switzerland

No Drawing. Filed Dec. 22, 1971, Ser. No. 211,102

Claims priority, application Switzerland, Jan. 6, 1971, 99/71

Int. Cl. C07d *41/06*

U.S. Cl. 260—239.3 A **14 Claims**

A process characterized in that raw caprolactam is subjected, in either sequence, to a crystal extraction with an aliphatic or cycloaliphatic hydrocarbon having 5–10 carbon atoms and to distillation under reduced pressure.

3,792,046

PROCESS OF PREPARATION OF 16β-METHYL-9α-FLUORO-STEROIDS

Ivan Villax, 3 Travessa do Ferreiro, Lisbon, Portugal

No Drawing. Filed Aug. 7, 1972, Ser. No. 278,394

Claims priority, application Portugal, Dec. 13, 1969, 52,923

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 R **9 Claims**

Process for preparing betamethasone and its 21-ester derivatives by simultaneously 11β-hydroxylating and 9-brominating 16β-methyl-17α-hydroxy-1,4,9(11)-pregnatriene-3,20-dione, dehydrobrominating the resultant 16β-methyl-9α-bromo-11β,17α-dihydroxy - 1,4 - pregnadiene-3,20-dione in an alkaline medium to obtain the 9,11-epoxy compound, fluorinating the epoxy compound to yield 16β-methyl-9α-fluoro-11β,17α-dihydroxy-1,4-pregnadiene-3,20-dione, diiodinating the latter compound at the 21-position, acylating the 21-diiodo compound to produce the 21-acylate, and hydrolyzing the acylate.

3,792,047

N-(7,2′ - THIENYLACETAMIDOCEPH - 3-EM-3-YLMETHYL)-3″ OR 4″-N-HYDROXYLOWER-ALKYLCARBAMOYL-PYRIDINIUM - 4-CARBOXYLATES

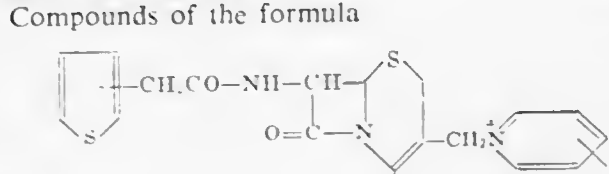
Vincent Arkley, Colombo, Ceylon, and Stephen Eardley, Southport, and Alan Gibson Long, Greenford, England, assignors to Glaxo Laboratories Limited, Greenford, England

No Drawing. Continuation-in-part of application Ser. No. 329,212, Dec. 9, 1963. This application Dec. 7, 1971, Ser. No. 205,743

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **3 Claims**

Compounds of the formula



in which Z is N-(hydroxylower alkyl)-carbamoyl. Of particular importance are N-(7-2′-thienylacetamidoceph-3-em-3-ylmethyl)-3″-N-hydroxymethylcarbamoyl - pyridinium-4-carboxylate and N-(7 - 2′ - thienylacetamidoceph-3-

em-3-ylmethyl)-4″-N-hydroxymethyl carbamoyl-pyridinium-4-carboxylate which are especially suited as long-acting antibiotics giving unusually prolonged serum levels following injection.

3,792,048
PROCESS FOR HYDROLYZING 3-TRIFLUOROMETHYL PHENETHYLAMINES

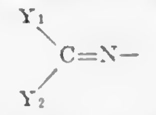
Nikolaus R. Hansl, Omaha, Nebr., assignor to Pacific Research Laboratories, Santa Barbara, Calif.
No Drawing. Filed Oct. 29, 1970, Ser. No. 85,283
Int. Cl. C07d *87/36*
U.S. Cl. 260—247.2 R **8 Claims**

This disclosure relates to a process for hydrolyzing 3-trifluoromethyl phenethylamines to yield the corresponding benzoic acid derivatives. The process is conducted in the presence of an acid, most preferably sulfuric acid in the liquid phase. The benzoic acid compounds produced are intermediates useful in the preparation of m-substituted amino ethyl benzoic acid esters which are active as spasmolytics and psychotherapeutic agents.

3,792,049
2-GUANIDINO-4,6-BIS-AMINO-S-TRIAZINES

Denis Varsanyi, Arlesheim, and Willy Roth, Aargau, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 111,656, Feb. 1, 1971, which is a continuation-in-part of application Ser. No. 672,712, Oct. 4, 1967, both now abandoned. This application Feb. 17, 1971, Ser. No. 116,234
Claims priority, application Switzerland, Oct. 27, 1966, 15,589/66
Int. Cl. C07d *55/22*
U.S. Cl. 260—249.6 **8 Claims**

Novel waxy, monobasic amines disubstituted at the amino nitrogen atom by a 2-guanidino-4-amino-s-triazinyl-(6) group and a 2,4-bis-amino-triazinyl-(6) group or by two 2-guanidino-4-amino-s-triazinyl-(6) groups, are described, in the molecule of which novel compounds the aforesaid guanidino substituent is of the formula



$$\begin{array}{l}Y_1\diagdown\\ \qquad C{=}N-\\ Y_2\diagup\end{array}$$

wherein each of Y_1 and Y_2 as well as each of the substituents in free positions at carbon atoms of the s-triazine nuclei are amino groups substituted by one or two organic radicals or are certain heterocyclic radicals, preferably at least one of the substituents of amino nitrogen atoms in the molecule being a long chain organic radical of at least 10 and up to 22 carbon atoms; the novel compounds have wax-like properties and are useful as components in novel floor care agents, especially in combination with conventional ingredients in compositions for the treatment of floor surfaces, such as natural and synthetic waxes, resins, silicones, inorganic and organic fillers, detergents and other surfactants, pigments, stabilizing agents and the like conventional adjuvants; the aforesaid novel s-triazine derivatives afford to the treated surfaces, among other advantages, high gloss and/or satisfactory antislip effects. They are also useful as waxy components in automobile polishes and in copying layers on carbon paper.

3,792,050
2-OXO-2H-PYRIMIDO[2,1-a]ISOQUINOLINE

Harold Francis Hodson, Hayes, and Anthony Winchester Randall, West Wickham, England, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.
No Drawing. Filed Aug. 26, 1971, Ser. No. 175,329
Claims priority, application Great Britain, Aug. 27, 1970, 41,402/70; Nov. 30, 1970, 56,781/70
Int. Cl. C07d *51/46*
U.S. Cl. 260—251 A **6 Claims**

The compounds 3,4-dihydro-2-oxo-2H-pyrimido{2,1-a}isoquinoline and 3,4,6,7-tetrahydro-2-oxo-2H-pyrimido{2,1-a}isoquinoline and acid addition salts thereof; pharmaceutical compositions containing them; and methods of preparing the compounds, salts and pharmaceutical compositions. The compounds, salts and compositions are useful in the treatment of arthritis.

3,792,051
PERYLENE-3,4,9,10-TETRACARBOXYLIC ACID-BIS-(2-IMIDO-4-METHYLPYRIMIDINE)

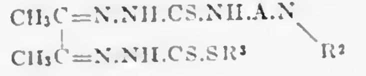
Fritz Graser, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Mar. 17, 1972, Ser. No. 235,657
Claims priority, application Germany, Apr. 2, 1971, P 21 16 048.5
Int. Cl. C07d *51/42*
U.S. Cl. 260—256.4 N **1 Claim**

Perylene-3,4,9,10-tetracarboxylic acid - bis-(2-amido-4-methylpyrimidine) which is useful as a pigment having very good fastness properties.

3,792,052
HYDRAZINECARBODITHIOATE DERIVATIVES AND METAL CHELATES THEREOF

Brian William Sharp, Hornchurch, Dennis Warburton, Upminster, and Kenneth Robert Harry Wooldridge, Brentwood, England, assignors to May & Baker Limited, Dagenham, Essex, England
No Drawing. Filed Nov. 17, 1970, Ser. No. 90,446
Claims priority, application Great Britain, Nov. 18, 1969, 56,500/69
Int. Cl. C07d *27/04*
U.S. Cl. 260—268 R **14 Claims**

The new hydrazinecarbodithioate derivatives of the formula:



$$\begin{array}{l}CH_3C{=}N.NH.CS.NH.A.N\begin{array}{l}\diagup R^1\\ \diagdown R^2\end{array}\\ \quad|\\ CH_3C{=}N.NH.CS.SR^3\end{array}$$

wherein each of R^1 and R^2 represents alkyl, aryl or aralkyl, cycloalkyl of 5 through 8 carbon atoms, or cycloalkylalkyl in which the cycloalkyl moiety contains 5 through 8 carbon atoms and the alkyl moiety contains 1 through 4 carbon atoms, or R^1 represents alkanoyl and R^2 is as hereinbefore defined, or R^1 and R^2 together with the nitrogen atom to which they are attached form a saturated or partially saturated three through eight-membered heterocyclic group, R^3 represents alkyl of 1 through 4 carbon atoms, which may be substituted by at least one alkoxy group of 1 through 4 carbon atoms, and A represents a divalent polymethylene group of 2 through 4 carbon atoms, which may be substituted by at least one alkyl group, and metal chelates and non-toxic acid addition salts thereof, are useful in the prevention and treatment of coccidiosis in chickens and turkeys.

3,792,053
3-(1,2,3,4-TETRAHYDROISOQUINOLINOMETHYL)-3-QUINUCLIDINOL

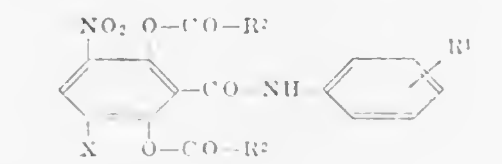
John R. Potoski, Rosemont, and Meier E. Freed, Paoli, Pa., assignors to American Home Products Corporation, New York, N.Y.
No Drawing. Original application July 15, 1970, Ser. No. 55,264, now Patent No. 3,725,410, dated Apr. 3, 1973. Divided and this application Aug. 7, 1972, Ser. No. 278,663
Int. Cl. C07d *33/10*
U.S. Cl. 260—288 R **1 Claim**

This invention is concerned with new and novel derivatives of 3-aminomethyl - 3 - quinuclidinols which are pharmacologically active as CNS depressants useful in the calming of animals. Further, this invention is concerned with methods of producing the new and novel 3-aminomethyl-3-quinuclidinols. Still further, this invention is concerned with 3-methylenequinuclidine oxide which is a new and novel intermediate useful in the production of the new and novel 3-aminomethyl-3-quinuclidinol derivatives of the present invention.

3,792,054
DIACYLOXY-BENZOIC ACID ANILIDES

Heinrich Rushig, Bad Soden, Taunus, Dieter Duwel, Hofheim, Taunus, and Johann Konig, Niederhofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Original application June 5, 1970, Ser. No. 43,949. Divided and this application May 31, 1972, Ser. No. 258,431
Claims priority, application Germany, June 9, 1969, P 19 29 150.0
Int. Cl. C07d *29/30*
U.S. Cl. 260—293.64 **5 Claims**

Diacyloxy-benzoic acid anilides of the general formula



I

in which

X represents hydrogen or halogen.

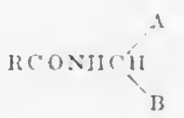
R^1 represents 1 to 3 nitro groups, trifluoromethyl groups and/or halogen atoms,

R^2 represents hydrogen: lower alkyl which may be substituted by halogen, lower alkoxy or phenyl: alkenyl having 3 to 6 carbon atoms; cycloalkyl having 4 to 6 carbon atoms; phenyl: an unsaturated heterocyclic 5- or 6-membered ring: alkyl-amino or dialkyl-amino in which the alkyl groups each contain 1 to 4 carbon atoms or may form together with the nitrogen atom a [illegible]rolidine, piperidine, morpholine or N-methyl-piperazine ring.

3,792,055
HETEROCYCLIC AMIDES

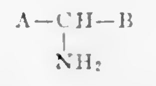
Yoshio Suzuki, Amagasaki, Shunji Aono, Toyonaka, and Hideaki Fukushima, Nishinomiya, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan
No Drawing. Original application Aug. 29, 1969, Ser. No. 854,308, now Patent No. 3,666,774. Divided and this application Oct. 6, 1971, Ser. No. 187,155
Int. Cl. C07d *31/44*
U.S. Cl. 260—295 AM **5 Claims**

A novel fatty acid amide useful as an anti-arteriosclerotic agent which is represented by the formula,



$$RCONHCH\begin{array}{l}\diagup A\\ \diagdown B\end{array}$$

wherein R represents a saturated or unsaturated straight or branched aliphatic hydrocarbon group having 15 to 25 carbon atoms which may bear a hydroxyl group, A represents a lower alkyl group, aryl group or aralkyl group and B represents a hetero-cyclic radical containing a nitrogen, oxygen or sulfur atom, such as, for example, α-(thienyl or pyridyl)-ethyl or benzyl amide of linoleic acid, isostearic acid, linolenic acid, oleic acid or safflower oil. These compounds are prepared by reacting the appropriate fatty acid or reactive derivative with an amine of the formula,



$$\begin{array}{c}A-CH-B\\ |\\ NH_2\end{array}$$

These compounds may be incorporated in foodstuffs or ingested with a suitable carrier.

3,792,056
BRIGHTENING PLASTICS WITH 2-ARYL-5-CYANONAPHTHOXAZOLE BRIGHTENERS

Bennett George Buell, Bound Brook, N.J., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Original application Apr. 13, 1970, Ser. No. 28,146, now Patent No. 3,660,125. Divided and this application Aug. 26, 1971, Ser. No. 175,349
Int. Cl. C07d *85/48*
U.S. Cl. 260—307 D **2 Claims**

Translucent plastics, particularly polyvinyl chloride, cellulose acetate, and polyolefins such as polyethylene are brightened by distributing uniformly therethrough about 0.01% to 0.5% by weight of a 2-aryl-5-cyanonaphthoxazole wherein the 2-aryl moiety is naphthyl, styrylphenyl, anisoylaminophenyl, carboxybenzoylaminophenyl, phenylureidophenyl or acylaminophenyl in which the acyl group is the residue of a higher fatty acid.

3,792,057
SUBSTITUTED INDENOIMIDAZOLES

Norman P. Jensen, Watchung, and Tsung-Ying Shen and Thomas B. Windholz, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.
No Drawing. Filed May 14, 1971, Ser. No. 143,665
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 **3 Claims**

New indenoimidazoles useful in the inhibition of phenylethanolamine-N-methyl transferase.

3,792,058
2-(p-ACETAMINOPHENOXY)-TETRAHYDROPYRAN

Arnold John Repta, Lawrence, Kans., assignor to Warner-Lambert Company, Morris Plains, N.J.
No Drawing. Filed Aug. 11, 1972, Ser. No. 279,900
Int. Cl. C07d *7/04*
U.S. Cl. 260—345.7 **1 Claim**

A relatively tasteless form of p-acetaminophen which is rapidly released under acid conditions in the gastro-intestinal tract is obtained by forming an acylal with tetrahydropyran.

3,792,059
CONTINUOUS PROCESS OF PRODUCING NON-AROMATIC TIN HALIDES THE ORGANIC GROUP HAVING NOT MORE THAN FIVE CARBON ATOMS

Ingenuin Hechenbleikner, West Cornwall, Conn., assignor to Weston Chemical Corp., Division of Borg Warner Corp., Chicago, Ill.
Filed Feb. 24, 1972, Ser. No. 228,831
Int. Cl. C07f *7/22*
U.S. Cl. 260—429.7 **12 Claims**

A continuous process of producing non-aromatic tin halides of not more than five carbon atoms in each organic group, such as alkyltin halides. To simplify the abstract, references will be made to the preferred alkyltin halides. In the process two columns are used. In the first, metallic tin with a large surface, such as tin granules, foil and the like, moves down through the column with a liquid catalyst which is an onium compound prepared by complexing trivalent nitrogen compounds or phosphorus compounds with alkyl halides. At the bottom of the tower alkyl halides are pumped in and flow up, reacting with the tin to form alkyltin compounds, which leave the top of the column and are separated from the onium catalyst by fractional distillation in a second column. The catalyst, carrying dissolved or complexed a small amount of alkyltin halide, is recirculated. There are two variants, one in which the catalyst consists of the onium compound only and the second where there is also present an iodine compound. Without the iodine compound the reaction is somewhat slower, but the cost of the iodine compound is eliminated, so that the choice is an economic one. In both cases the yields of alkyltin compounds are very high and often approach quantitative. The tin compounds are mixtures of monoalkyltin trihalides, dialkyltin dihalides, trialkyltin halides, and tetraalkyltin. The relative proportions of each type of product depends upon the type of catalyst, the temperature of the reaction, and the rate of flow through the apparatus. Under usual conditions, the main product will be dialkyltin dihalides.

3,792,060
2-PHENYLTHIO-4,5-DIHYDROTHIOPHENES

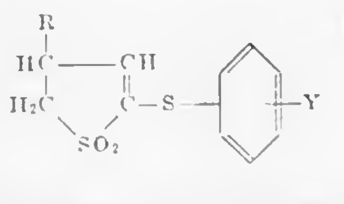
Douglas I. Relyea, Pompton Plains, and Richard J. Sperley, Wayne, N.J., and Ronald B. Ames, Naugatuck, Conn., assignors to Uniroyal, Inc., New York, N.Y.

No Drawing. Original application Oct. 30, 1967, Ser. No. 679,150, now Patent No. 3,563,725, dated Feb. 16, 1971. Divided and this application Sept. 16, 1970, Ser. No. 72,828

Int. Cl. C07d *63/08*

U.S. Cl. 260—332.1 **2 Claims**

New compounds, useful as herbicides, and a method of making them, are disclosed. The compounds have the general formula:



wherein R is hydrogen, chlorine or methyl and Y is hydrogen, an alkyl group of 1 to 8 carbon atoms, chlorine or bromine.

3,792,061
PROCESS FOR THE PRODUCTION OF IMIDOCARBOXYLIC ACIDS

Wilfried Zecher, Cologne, and Rudolf Merten, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 10, 1970, Ser. No. 71,253
Claims priority, application Germany, Sept. 16, 1969, P 19 46 788.0

Int. Cl. C07d *27/52*

U.S. Cl. 260—326 N **10 Claims**

Process for the production of imidocarboxylic acids by reaction of a cyclic dicarboxylic anhydride and a polyamide at a temperature of from 20 to 450° C. The products obtained are suitable for the production of plasticizers and lacquers.

3,792,062
ANILIDE DIOXOLANES AND DIOXANES AND THEIR UTILITY AS HERBICIDES

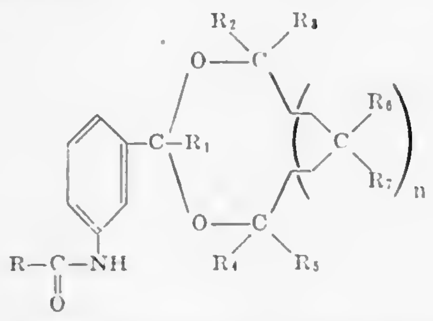
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Oct. 26, 1971, Ser. No. 192,483

Int. Cl. C07d *13/04, 15/04*

U.S. Cl. 260—340.7 **49 Claims**

Substituted anilide dioxolanes and dioxane compounds having the formula



in which R is selected from the group consisting of alkyl and haloalkyl; R_1, R_2, R_3, R_4, R_5 and R_7 each are independently selected from the group consisting of hydrogen and lower alkyl; R_6 is selected from the group consisting of alkyl, haloalkyl, hydrogen, hydroxymethyl, lower alkoxy carbonyloxymethyl, N-lower alkyl carbamoyloxymethyl and N-phenylcarbamoyloxymethyl; and *n* is 0 or 1. These compounds are useful as herbicides.

3,792,063
BIS CHROMONE-2-CARBOXYLIC ACIDS

Hugh Cairns and Dennis Hunter, Loughborough, England, assignors to Fisons Limited, Suffolk, England

No Drawing. Filed May 4, 1970, Ser. No. 34,586
Claims priority, application Great Britain, May 20, 1969, 25,556/69

Int. Cl. C07d *7/34*

U.S. Cl. 260—345.2 **15 Claims**

Bis chromone-2-carboxylic acids and pharmaceutically acceptable derivatives thereof in which the two chromone nuclei are linked by a group —L^1LL^2— in which L^1 is a methylene, carbonyl, carbonyloxy, —SO—, —SO_2— or —NH— group, or a sulphur or nitrogen atom, L is a linking group or bond, L^2 is an oxygen, sulphur or nitrogen atom or an —SO—, —SO_2— or an —NH— group. The compounds are indicated for use in the treatment of allergic asthma and processes for the production of the compounds are described.

3,792,064
NOVEL GLUCURONIC ACID DERIVATIVES AND PROCESS FOR THE PREPARATION THEREOF

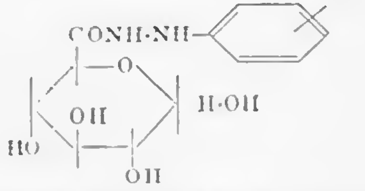
Rokuro Kaifu, Kiyoshige Ochi, Renpei Nagashima, and Yoshikazu Hinohara, Tokyo, Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Oct. 28, 1970, Ser. No. 84,912
Claims priority, application Japan, Nov. 1, 1969, 44/87,372

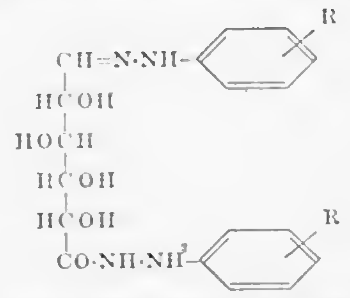
Int. Cl. C07d *7/00*

U.S. Cl. 260—345.7 **6 Claims**

Novel glucuronic acid derivatives of the formula



wherein R is selected from the group consisting of a lower alkyl group, halogen and a lower alkoxy group, which are useful for the prevention of hepato-cellular necrosis, are prepared by reacting a lower alkyl ester of glucuronic acid or glucurono lactone with a correspondingly substituted-phenylhydrazine to produce a substituted-phenylhydrazone of glucuronic acid substituted-phenylhydrazide of the formula



wherein R's are as defined above, and removing the substituted-phenylhydrazono radical at C_1 position.

3,792,065
PRODUCTION OF ANTHRAQUINONE-ALPHA-SULFONIC ACIDS

Heinrich Hiller, Mannheim, and Wolfgang Jentzsch, Frankenthal, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

No Drawing. Filed Jan. 10, 1972, Ser. No. 216,766
Claims priority, application Germany, Jan. 16, 1971, P 21 02 037.1

Int. Cl. C09b *1/00*

U.S. Cl. 260—370 **8 Claims**

Production of anthraquinone-1-sulfonic acid, anthraquinone-1,5-disulfonic acid and anthraquinone-1,8-disulfonic acid which are substantially devoid of mercury in which the sulfonation mixture or the strong sulfuric acid solution is treated at elevated temperature with a nonmetallic reducing agent whose redox potential is from +0.1 to −0.5 volt. After working up, anthraquinone-1-sulfonic acid, anthraquinone-1,5-disulfonic acid and anthraquinone-1,8-disulfonic acid whose mercury content is $1 \times 10^{-4}\%$ by weight and a filtrate having a content of less than $1 \times 10^{-4}\%$ by weight of mercury are obtained.

3,792,066
PROCESS FOR THE PREPARATION OF ACYLATED UNSATURATED LONG-CHAIN COMPOUNDS

Edward S. Rothman, North Hills, and Gordon G. Moore, Willow Grove, Pa., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Apr. 29, 1971, Ser. No. 138,789

Int. Cl. C07c *69/66, 49/20*

U.S. Cl. 260—405 **6 Claims**

Long chain acyl groups are attached to isolated double bonds in fatty acid molecules with retention of the unsaturation by acylating a fatty acid molecule with an acylated enol such as isopropenyl stearate in the presence of an electron deficient catalyst such as aluminum chloride, boron trifluoride or stannic chloride.

3,792,067
CONTINUOUS HYDROGENATION OF FATTY MATERIALS

William A. Coombes, Pittsburgh, and Richard A. Zavada, Uniontown, Pa., John E. Hansen, Waukegan, Ill., William A. Singleton, Memphis, Tenn., and Robert R. King, Sherman, Tex., assignors to Blaw-Knox Chemical Plants, Inc., Pittsburgh, Pa.

Continuation-in-part of abandoned application Ser. No. 118,222, Feb. 24, 1971. This application June 10, 1971, Ser. No. 151,887

Int. Cl. C11c *3/12*

U.S. Cl. 260—409 **16 Claims**

Continuous hydrogenation of fatty materials by cocurrently flowing an oil to be hydrogenated, having a hydrogenation catalyst dispersed therein, and hydrogen through a pipeline reactor, with the hydrogen being introduced in spaced intervals over the length of the reactor. The hydrogen is introduced in a manner to provide highly turbulent two-phase flow, preferably of the bubble type and in an amount required to provide the desired reduction in Iodine Number. The process provides a uniform and consistent product, with high linoleic acid selectivity.

3,792,068
DRY POWDER AEROSOL ANTIPERSPIRANT COMPOSITION INCORPORATING DRY POWDER ANTIPERSPIRANT ACTIVE COMPLEX AND PROCESS FOR ITS PREPARATION

Wilmer L. Luedders, Cincinnati, and Douglas L. Danneman, Forest Park, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 59,693, July 30, 1970. This application Apr. 2, 1971, Ser. No. 130,833

Int. Cl. C07f *7/00*

U.S. Cl. 260—429.3 **7 Claims**

Aluminum chlorhydroxide, zirconyl hydroxychloride and glycine, in a ratio of about 7.5:4.6:2.0 parts by weight are co-dried from an aqueous solution to a moisture of from about 0.5% to about 15% to form a powder antiperspirant active complex for incorporation into powder aerosol antiperspirant compositions.

3,792,069
OXIDATION OF MERCURY TO MERCURIC AND MERCUROUS SALTS

William C. Baird, Jr., Westfield, John H. Surridge, Scotch Plains, and Ronald L. Hartgerink, Edison, N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

No Drawing. Filed Nov. 9, 1971, Ser. No. 197,104

Int. Cl. C07f *3/10*

U.S. Cl. 260—431 **9 Claims**

A process for oxidizing mercury metal to its mercurous or mercuric salts that employs the use of a nitrogen oxide species, $M_w(N_xO_y)_z$ wherein M is one selected from the group consisting of NH_4, tetra C_1–C_6 alkylammonium, tetra C_1–C_6 alkylphosphonium, hydrogen and any metal cation defined by the Periodic Table of the Elements; *w* ranges from 0 to 2, *x* is 1 or 2, *y* ranges from 1 to 5 and *z* ranges from 1 to 4, in the presence of air or oxygen.

3,792,070
BASIC ALUMINUM BROMIDE-POLYOL COMPLEXES AND METHODS OF MAKING SAME

John L. Jones, North Plainfield, and Andrew M. Rubino, New Providence, N.J., assignors to Armour Pharmaceutical Company, Chicago, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 88,206, Nov. 9, 1970. This application June 24, 1971, Ser. No. 156,476

Int. Cl. C07f *5/06*

U.S. Cl. 260—448 R **8 Claims**

Complexes of basic aluminum bromides containing polyhydroxy compounds (polyols) are prepared by heating an aqueous solution of basic aluminum bromide under reflux conditions, mixing the solution with a polyhydroxy compound having at least two carbon atoms which are linked to hydroxy groups, and drying the resulting mixture to a substantially friable solid, preferably by spray drying. The resulting complexes preferably contain about 5 to 20 weight percent of polyol and less than about 17 weight percent water. Such complexes have a high degree of solubility in anhydrous alcohol and an unexpectedly high compatibility with halogenated hydrocarbons. These properties make the complexes suitable for aerosol formulations and particularly antiperspirant compositions.

3,792,071
PROCESS FOR THE MANUFACTURE OF ALKOXYSILANES AND ALKOXY-POLYSILOXANES

Siegfried Nitzsche, Norbert Zeller, Werner Graf, and Ignaz Bauer, Burghausen, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Germany

No Drawing. Filed Dec. 2, 1971, Ser. No. 204,355
Claims priority, application Germany, Dec. 11, 1970, P 20 61 189.6

Int. Cl. C07f *7/18*

U.S. Cl. 260—448.8 R **7 Claims**

An improved continuous process for alkoxysilanes and alkoxypolysiloxanes is disclosed whereby alcohol reactants are introduced into a column below the introduction point of halosilane reactants or in the lowest one-third of the column, temperature is maintained above the boiling point of the alcohol, and the product is removed below the point of introduction of the alcohol.

3,792,072
SILYLATING AGENT

Richard Newton Lewis, Tecumseh, Mich., assignor to Stauffer Chemical Company, Adrian, Mich.

No Drawing. Filed Dec. 30, 1971, Ser. No. 214,407

Int. Cl. C07f *7/08*

U.S. Cl. 260—448.2 E **6 Claims**

A silylating agent is described which comprises a disilazane and an acyloxysilane, and a method for con-

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verting silanols and siloxanols to their trimethylsilyl vidually an integer of up to 2 and at least one carboxyl

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3,792,080

These solutions are prepared by reacting 1,12-diamino-verting silanols and siloxanols to their trimethylsilyl derivatives.

3,792,073

PREPARATION OF SILOXANEOXYALKYLENE POLYMERS

Bela Prokai, Mahopac, and Bernard Kanner, West Nyack, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed May 10, 1972, Ser. No. 252,332

Int. Cl. C07f *7/18*

U.S. Cl. 260—448.8 R **17 Claims**

Process for preparing siloxaneoxyalkylene block copolymers comprising reacting an amino-containing siloxane polymer with a polyoxyalkylene hydroxy compound in the presence of carbon dioxide or by reacting a carbamate-containing siloxane polymer with a polyoxyalkylene hydroxy compound.

3,792,074

2,4,6-CYCLOHEPTATRIEN-1-YL DITHIOCARBAMIC ACID ESTERS

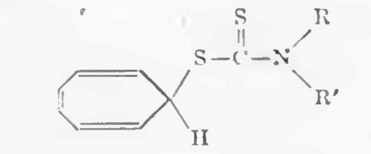
Yoshihachi Watababe, Shiga, and Kentaro Hirai, Kyoto, Japan, assignors to Shionogi & Co., Ltd., Osaka Prf., Japan

No Drawing. Filed May 5, 1972, Ser. No. 250,822

Int. Cl. C07c *155/08*

U.S. Cl. 260—455 A **9 Claims**

Dithiocarbamic acid derivatives represented by the general formula:



wherein R and R′ are the same or different and each represents a hydrogen atom, lower alkyl group, aryl group or, taken together with the nitrogen atom, a 5- or 6-membered heterocyclic ring containing at the most one further oxygen or sulfur atom, being useful as agricultural chemicals having fungicidal action.

3,792,075

CARBONATE ESTERS OF AROMATIC HYDROXY CARBOXYLIC ACIDS

Hiroshi Kaminaka, Kobe, Norio Kotera, Amagasaki, Hiroshi Kuruma, Toyonaka, and Hideki Yanagihara, Takatsuki, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

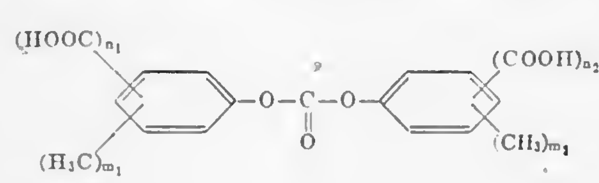
No Drawing. Filed Nov. 29, 1971, Ser. No. 203,036

Claims priority, application Japan, Dec. 5, 1970, 45/107,732; Dec. 17, 1970, 45/114,372

Int. Cl. C07c *65/04, 69/00*

U.S. Cl. 260—463 **2 Claims**

An aromatic polycarboxylic acid of the formula,



wherein n_1 and n_2 are individually zero or an integer of up to 2, and n_1+n_2 is 2 or more, m_1 and m_2 are individually zero or an integer of up to 2, and n_1+m_1 and n_2+m_2 do individually not exceed 3, and the substituted positions of the carboxyl groups are at the 3-, 4- or 5-positions of the individual phenyl groups, provided that, when m_1 and m_2 are individually zero, n_1 and n_2 are individually an integer of up to 2 and at least one carboxyl group is substituted at the 3-, 4- or 5-position of the individual phenyl groups. These compounds are useful as a starting material for producing polymeric materials or as an intermediate for producing, for example, aromatic hydroxycarboxylic acid derivatives.

3,792,076

PROCESS FOR THE PREPARATION OF 4-AMINO-2-METHYLPYRIDINE 5-CARBOXAMIDE

Willy Leimgruber, Montclair, and Manfred Weigele, North Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Aug. 7, 1970, Ser. No. 56,715. Divided and this application Feb. 4, 1972, Ser. No. 223,703

Int. Cl. C07c *121/02*

U.S. Cl. 260—465.4 **5 Claims**

This invention is directed to a process for the preparation of 4-amino-2-methylpyrimidine 5-carboxamine from 2-cyano-3-di(lower alkyl)amino acrolein. The 4-amino-2-methylpyrimidine 5-carboxamide is a known compound which is a valuable intermediate in the synthesis of thiamine.

3,792,077

2,2-DIMETHYLPROPANEDIOL-1,3-DINITRITE

Rudolf Bermes, Ludwigshafen, and Karl Schmeidl, Frankenthal, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

No Drawing. Filed Oct. 4, 1971, Ser. No. 186,513

Claims priority, application Germany, Sept. 4, 1971, P 21 44 420.2

Int. Cl. C07c *77/02*

U.S. Cl. 260—467 **1 Claim**

Nitrites of glycols and glycol derivatives obtainable by esterification with nitrous acid. The compounds are eminently suitable as diazotizing agents, particularly in organic solution.

3,792,078

CYCLODODECYLMETHYL CYCLODODECANECARBOXYLATES

Jack Newcombe, Freehold, Anderson O. Dotson, Jr., New Brunswick, and Jerome Robert Olechowski, Trenton, N.J., assignors to Cities Service Company, New York, N.Y.

No Drawing. Filed May 28, 1971, Ser. No. 148,142

Int. Cl. C07c *69/74*

U.S. Cl. 260—468 R **1 Claim**

Cyclododecylmethyl cyclododecanecarboxylate is disclosed as a novel composition of matter which may be nitrosated with nitrosylsulfuric acid to laurinlactam. The lactam is converted by conventional methods into nylon 12.

Nylon 12 is becoming an increasingly important polymer composition for the manufacture of molded articles, fibers and the like. The present invention relates to a novel ester composition of matter which may be employed in the synthesis of laurinlactam which in turn is used in the manufacture of nylon 12. The present invention also relates to a method for manufacturing such ester compositions.

3,792,079

BENZYL CHRYSANTHEMUMATES

Vincent T. D'Orazio, Kenya, East Africa, assignor to S. C. Johnson & Son, Inc., Racine, Wis.

No Drawing. Filed July 28, 1971, Ser. No. 167,037

Int. Cl. C07c *69/74*

U.S. Cl. 260—468 H **8 Claims**

Esters of certain benzyl compounds and chrysanthemumic acid are useful as insecticides.

3,792,080

PROCESS FOR SUBSTITUTED CYCLOHEXENES AND ITS PRODUCTS

Gerhard Satzinger, Gundelfingen, and Gustav Hechtfischer, Freiburg-Landwasser, Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Feb. 19, 1971, Ser. No. 117,142

Claims priority, application Germany, Feb. 17, 1970, P 20 07 215.5

Int. Cl. C07c *69/74, 69/76*

U.S. Cl. 260—471 A **1 Claim**

The present invention relates to a process for 3r-N-monomethylamino-4 cis-phenyl-4 trans-ethoxycarbonylcyclohexene and its N-substitution products which are generally useful as analgesics.

3,792,081

ESTERS OF HYDANTOIC ACID

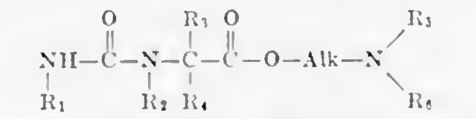
Takeru Higuchi, Lawrence, Kans., and Valentino J. Stella, Forest Park, Ill., assignors to Alza Corporation

No Drawing. Continuation-in-part of abandoned application Ser. No. 197,962, Nov. 11, 1971. This application Apr. 7, 1972, Ser. No. 242,214

Int. Cl. C07c *127/18*

U.S. Cl. 260—472 **8 Claims**

Novel esters of substituted hydantoic acids of the formula:



$$NH(R_1)-C(=O)-N(R_2)-C(R_3)(R_4)-C(=O)-O-Alk-N(R_5)(R_6)$$

wherein R_1 and R_2 are hydrogen or alkyl, R_3 and R_4 are hydrogen, alkyl or phenyl, R_5 and R_6 are hydrogen or alkyl, Alk is alkylene and the pharmaceutically acceptable acid addition salts thereof. The compounds of the formula are useful as anticonvulsants and antiepileptics.

3,792,082

ESTERS OF HALOPHENOXYISOBUTYRIC ACID AND HYDROXY-ALIPHATIC ACID DERIVATIVES

Joseph Nordmann, Paris, Georges Dominique Mattioda, Enghein-les-Bains, and Gerard Paul Marie Henri Loiseau, Sceaux, France, assignors to Ugine Kuhlmann, Paris, France

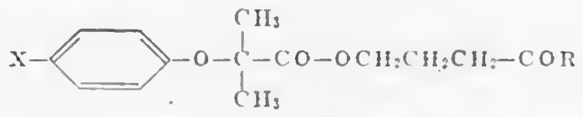
No Drawing. Continuation of abandoned application Ser. No. 838,657, July 2, 1969. This application Aug. 11, 1972, Ser. No. 280,035

Claims priority, application France, July 11, 1968, 158,839; Dec. 24, 1968, 180,371, Dec. 30, 1968 181,928

Int. Cl. C07c *69/76*

U.S. Cl. 260—473 G **4 Claims**

This invention relates to medicaments having the general formula:



in which X represents a halogen atom and R represents an alkoxy or arylalkoxy group or a mono- or di-substituted amino group, the di-substitution possibly being in the form of a ring, which medicaments have hypocholesterolemiant properties; to compositions comprising such compounds and to a process for the treatment of hypocholesterolemia.

3,792,083

MIXED TEREPHTHALIC AND ISOPHTHALIC ACID SALTS OF DODECAMETHYLENE DIAMINE

Alfred Steitz, Jr., Batavia, Ill., assignor to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Oct. 20, 1970, Ser. No. 82,523

Int. Cl. C07c *87/14*

U.S. Cl. 260—501.2 **1 Claim**

Novel mixed dodecamethylene diammonium salt solutions and a process for their preparation are disclosed. These solutions are prepared by reacting 1,12-diaminododecane with terephthalic acid, and isophthalic acid, hexahydroterephthalic acid or 5-tertiary-butylisophthalic acid. These mixed dodecamethylene diammonium salt solutions are useful for the preparation of polydodecamethylene terephthalamide copolymers and fibers. These fibers, when woven into fabric, have improved aesthetic and wash-wear properties.

3,792,084

POLYQUATERNARY AMMONIUM METHYLENE PHOSPHONATES AND USES THEREOF

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, Wilmington, Del.

No Drawing. Filed Mar. 24, 1972, Ser. No. 237,883

Int. Cl. C07f *9/38*

U.S. Cl. 260—502.5 **2 Claims**

Polyquaternary ammonium methylene phosphonates and uses thereof, particularly as scale inhibitors, chelating agents, bactericides, etc.

3,792,085

NON-CATALYTIC OXIDATION OF CYCLODODECANECARBOXALDEHYDE TO CYCLODODECANECARBOXYLIC ACID

Jack Newcombe, Freehold, N.J., assignor to Cities Service Company, New York, N.Y.

No Drawing. Filed Apr. 30, 1971, Ser. No. 139,143

Int. Cl. C07c *51/26*

U.S. Cl. 260—514 R **6 Claims**

Cyclododecanecarboxylic acid is produced by the oxidation of cyclododecanecarboxaldehyde. Unusually high yield of the acid is obtained in high purity by conducting the oxidation reaction at low temperatures in the presence of a lower carboxylic acid (e.g., acetic acid) without the aid of a catalyst.

3,792,086

PROCESS FOR THE PREPARATION OF ACRYLIC AND METHACRYLIC ACIDS

Charles E. Frank and Jawad H. Murib, Cincinnati, Ohio, assignors to National Distillers and Chemicals Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 99,283, Dec. 17, 1970. This application Nov. 10, 1971, Ser. No. 197,495

Int. Cl. C07c *51/32, 57/04*

U.S. Cl. 260—533 N **8 Claims**

Process for the preparation of acrylic or methacrylic acids, involving the vapor phase oxidation of propylene or isobutylene, respectively, at temperatures of up to 300° C. and in the presence of a catalyst composition containing phosphoric acid and a catalytically effective amount of palladium metal. The acrylic or methacrylic acids are selectively produced in the single step vapor phase process.

3,792,087

VAPOR PHASE OXIDATION OF ETHYLENE TO ACETIC ACID

Dorothee M. McClain, Cincinnati, Ohio, Carol A. Heller, Dillsboro, Ind., and Irving L. Mador, Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 99,282, Dec. 17, 1970. This application Nov. 10, 1971, Ser. No. 197,528

Int. Cl. C07c *51/32, 53/08*

U.S. Cl. 260—533 R **5 Claims**

A process for the selective production of acetic acid from ethylene with co-production in minor amounts of acetaldehyde, ethanol and carbon oxides, by reaction of ethylene and oxygen with added water in the feed, in the vapor phase in the presence of a catalyst composition containing phosphoric acid and a catalytically effective amount of palladium metal.

3,792,088

SUBSTITUTED ALPHA,ALPHA-DICHLORO-METHANE-SULFENYL CHLORIDES

Wendell Gary Phillips, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed May 3, 1971, Ser. No. 139,978

Int. Cl. C07c *145/00, 147/06*

U.S. Cl. 260—543 H **6 Claims**

Alpha,alpha - dichloro - methane-sulfenyl chlorides and alpha-chloromethylbenzyl sulfides useful as herbicides and chemical intermediates for herbicides and their method of manufacture.

3,792,089

N-ARYL UREAS

Erich Klauke, Odenthal-Hahnenberg, Engelbert Kuhle, Berg. Gladbach, Helmuth Hack, Cologne-Buchheim, and Ludwig Eue, Cologne-Stammheim, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation of abandoned application Ser. No. 747,486, July 25, 1968. This application Dec. 2, 1970, Ser. No. 94,534

Claims priority, application Germany, Aug. 12, 1967, F 53,224

Int. Cl. C07c *127/18*

U.S. Cl. 260—553 A **3 Claims**

N-(3-chloro - 4 - trifluoromethyl-phenyl)-N′-alkyl and -N′,N′-dialkyl-urea which possess herbicidal properties and which may be produced by conventional methods.

3,792,090

p-HYDROXY-DIPHENYLAMINE COMPOUNDS

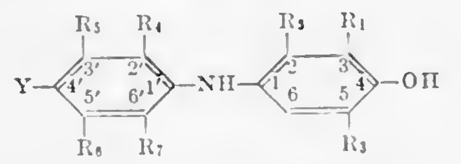
Gregoire Kalopissis, Paris, Andree Bugaut, Boulogne-sur-Seine, and Francoise Estradier, Paris, France, assignors to Societe Anonyme Dite: l'Oreal, Paris, France

No Drawing. Filed Aug. 6, 1970, Ser. No. 61,833

Int. Cl. C07c *91/42*

U.S. Cl. 260—571 **6 Claims**

Diphenylamines having the formula



wherein: Y represents a member selected from the group consisting of a hydroxy and amino, R_1 and R_3, each independently, represent a member selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, a ureido residue, and —NHCOR wherein R is lower alkyl. R_2 represents a member selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, a ureido residue, —NHCOR wherein R is lower alkyl, and $—NHR_8$ wherein R_8 represents a member selected from the group consisting of hydrogen, lower alkyl, lower hydroxyalkyl and carbamylmethyl, with the proviso that when R_2 is $—NHR_8$, R_3 is not hydrogen, R_4, R_5, R_6, and R_7 each independently represent a member selected from the group consisting of hydrogen, halogen, lower alkyl and lower alkoxy, with the proviso that when Y is hydroxy, R_2 is not hydrogen, halogen, lower alkyl or lower alkoxy, and that when Y is amino, at least two of R_1, R_2 and R_3 are other than a hydrogen and R_2 is not hydrogen when R_4, R_5, R_6 and R_7 are all hydrogen and the acid addition salts of said diphenylamines. These diphenylamines are usefully employed in cosmetic compositions for the hair including hair dye compositions and hair setting lotion compositions.

3,792,091

PREPARATION OF ANILINO IODOMETHYL-SULFONES

Aldo Joseph Crovetti, 735 E. Greenview Ave., Lake Forest, Ill. 60045, and Martin Winn, 1263 Carlisle Place, Deerfield, Ill. 60015

No Drawing. Original application July 25, 1969, Ser. No. 845,071, now Patent No. 3,663,623, dated May 16, 1972. Divided and this application Dec. 20, 1971, Ser. No. 215,953

Int. Cl. C07c *147/06*

U.S. Cl. 260—577 **4 Claims**

A method of preparing anilino iodomethylsulfones by reacting iodine monochloride with an anilino sulfonyl acetic acid at a nearly neutral pH.

3,792,092

BIS(2,3-DIMETHYLENEBUTYL)AMINES

Dale Robert Coulson, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Jan. 4, 1971, Ser. No. 103,837

Int. Cl. C07c *87/24*

U.S. Cl. 260—583 H **2 Claims**

Novel polymer-forming bis(2,3 - dimethylenebutyl) amines, e.g. N,N-bis(2,3-dimethylenebutyl)amines are prepared from allene and ammonia or certain amines in the presence of a palladium or rhodium catalyst.

3,792,093

NITRO ETHYL SULFONES

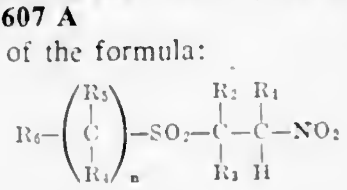
Greg A. Bullock, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 21, 1972, Ser. No. 246,495

Int. Cl. C07c *147/02, 147/06*

U.S. Cl. 260—607 A **10 Claims**

Compounds of the formula:



$$R_6-\left(\begin{array}{c}R_5\\|\\C\\|\\R_4\end{array}\right)_n-SO_2-\underset{R_3}{\overset{R_2}{C}}-\underset{H}{\overset{R_1}{C}}-NO_2$$

where

R_1 and R_2 are hydrogen or alkyl;
R_3 is alkyl or phenyl;
R_4 and R_5 are hydrogen or methyl;
R_6 is a hydrocarbon or substituted hydrocarbon; and
n is 0 or 1;

are useful as fungicides. Typical compounds are:

1-methyl-2-nitroethyl o-tolyl sulfone
1-methyl-2-nitroethyl n-butyl sulfone
1-methyl-2-nitroethyl methyl sulfone
1-phenyl-2-nitroethyl-2-naphthyl sulfone
1-phenyl-2-nitroethyl m-tolyl sulfone
1-phenyl-2-nitroethyl m-methoxyphenyl sulfone.

3,792,094

APPARATUS AND PROCESS FOR PRODUCING METHYL MERCAPTAN

Donald O. Hanson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 13, 1971, Ser. No. 188,724

Int. Cl. C07c *149/02*

U.S. Cl. 260—609 R **6 Claims**

A process for producing methyl mercaptan by reacting methanol and hydrogen sulfide to form a first stream, contacting the first stream with dimethyl sulfide for absorbing the methyl mercaptan and thereafter recovering the methyl mercaptan.

3,792,095

PROCESS FOR PRODUCING SULPHOXIDES

Tamara Petrovna Burmistrova, ulitsa Kosmonavtov 2, kv. 36, Kazan, U.S.S.R.; Tatyana Alexandrovna Bardina, Belyalvo-Bogorodskoe 38, kv. 44; Grigary Davidovich Galpern, Leninsky prospekt 13, kv. 38; and Helena Nikolaevna Karaulova, ulitsa Khersonskaya 7, kv. 393, all of Moscow, U.S.S.R.; and Nonna Alexandrovna Luchai, ulitsa Entuziastov 1, kv. 2; Nikolai Nikolaevich Terpilovsky, ulitsa Dostoevskogo 79a, kv. 20; and Adolf Alexandrovich Khitrik, ulitsa Sibirsky trakt 32, kv. 8, all of Kazan, U.S.S.R.

No Drawing. Filed Sept. 9, 1971, Ser. No. 179,208

Claims priority, application U.S.S.R., Sept. 11, 1970, 1467545

Int. Cl. C07c *147/14*

U.S. Cl. 260—607 A **4 Claims**

A process for producing sulphoxides which comprises oxidizing organic sulphides with hydrogen peroxide under foam-emulsion conditions created by blowing a gas which is inert in respect of the sulphides and hydrocarbons into the reaction mass at a rate ensuring a foaming ratio of at least 2 and at a temperature of 20–115° C., followed by isolation of the desired product. The sulphoxides thus obtained are useful as extraction and flotation reagents in hydrometallurgy and also as desiccants, defoliants, and for treating fungal diseases of animals.

3,792,096

SUBSTITUTED INDANS

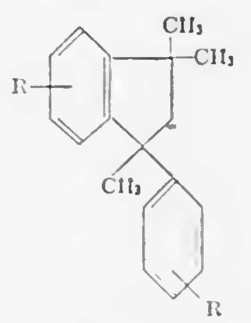
Robert M. Gemmill, Jr., Woodbury, and John W. Schick, Cherry Hill, N.J., assignors to Mobil Oil Corporation

No Drawing. Original application June 24, 1969, Ser. No. 836,161, now Patent No. 3,640,870. Divided and this application Mar. 18, 1971, Ser. No. 125,853

Int. Cl. C07c *41/00, 43/20*

U.S. Cl. 260—612 R **2 Claims**

Lubricant compositions are provided comprising a substituted indan having the structure:



in which R is at least one member of the group consisting of hydrogen, alkyl, phenyl, carboxy alkyl, carboxy phenyl, phenoxy and their thiosubstituted derivatives. The method for the preparation of these substituted indans is also provided.

3,792,097

PROCESS FOR THE PREPARATION OF DIMETHYLDECALINS

Keizo Shimada, Takeo Nishikawa, Toshiaki Harada, and Shizuo Nagahama, Tokyo, Japan, assignors to Teijin Limited, Osaka, Japan

No Drawing. Filed Oct. 25, 1972, Ser. No. 300,808

Claims priority, application Japan, Nov. 2, 1971, 46/86,783; Nov. 8, 1971, 46/88,843

Int. Cl. C07c *3/56, 5/28*

U.S. Cl. 260—666 PY **5 Claims**

In the process for the preparation of dimethyldecalins by catalytically reacting Decalin with ethylene in the presence of a Friedel-Crafts catalyst, the improvement which comprises operating the process in two steps:

(a) A catalytic alkylation reaction of cis-Decalin with ethylene at a temperature ranging between —50° and 50° C., and subsequently
(b) An isomerization reaction of the resulting product system at a temperature ranging between —20° and 80° C. in the presence of a Friedel-Crafts catalyst but absence of ethylene.

3,792,098

CONVERSION OF ALKYLAROMATICS

John T. Brandenburg, Hopewell Junction, and Robert M. Suggitt, Wappingers Falls, N.Y., and Thomas M. Liden, Los Angeles, Calif., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed May 15, 1972, Ser. No. 253,555

Int. Cl. C07c *5/24*

U.S. Cl. 260—668 A **22 Claims**

Alkylaromatic hydrocarbons are converted in the presence of a composite catalyst composed of a hydrogen mordenite, alumina and a sulfided Group VIII metal.

3,792,099

BRANCHED POLYPHENYLENES

Chen-Shen Wang, Naperville, and Arnold N. Wennerberg, Chicago, Ill., assignors to Standard Oil Company, Chicago, Ill.

Continuation-in-part of abandoned application Ser. No. 92,832, Nov. 25, 1970. This application July 31, 1972, Ser. No. 274,586

Int. Cl. C07c *15/12*

U.S. Cl. 260—668 R **22 Claims**

Polyphenylenes which have a substantial degree of branching and double bonding through the meta position are disclosed. These polyphenylenes possess increased solubility and are free from chlorine and similar impurities. They possess a high degree of thermal stability and are fusible. The polyphenylenes disclosed are useful in ablative materials and other polymer applications requiring high thermal stability.

3,792,100

PROCESS FOR THE VAPOR PHASE CATALYTIC ISOMERIZATION OF XYLENES

Takeshi Sonoda, Takeshi Hashiguchi, and Masaki Sato, Kamakura, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 66,857, Aug. 25, 1970. This application June 23, 1972, Ser. No. 265,539

Claims priority, application Japan, Aug. 26, 1969, 44/66,892

Int. Cl. C07c *5/24*

U.S. Cl. 260—668 A **8 Claims**

A process for isomerizing xylenes which comprises contacting xylenes at an elevated temperature with a catalyst composition comprising a partially dealkalized mordenite-containing aluminosilicate, the aluminosilicate having a cation exchange capacity of not less than 60 m. eq./100 g., and containing, on ion exchange sites formed by aluminum atoms constituting the framework of pore structure in the aluminosilicate,

(1) 0.1 to 0.7 equivalent of alkali and alkaline earth metal ion per gram atom of the aluminum,
(2) 0.05 to 0.9 equivalent of at least one metal ion selected from the group consisting of copper, silver and chromium per gram atom of the aluminum and

(3) not more than 0.45 equivalent of hydrogen per gram atom of the aluminum.

3,792,101

PROCESS FOR PRODUCING REACTION PRODUCT OF 1,3-CONJUGATED DIENE COMPOUND AND COMPOUND HAVING TERMINAL VINYL GROUP AND CATALYST USED THEREFOR

Saburo Hattori and Kengo Tatsuoka, Tokyo, Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

No Drawing. Filed Feb. 3, 1971, Ser. No. 112,433

Claims priority, application Japan, Feb. 9, 1970, 45/11,298; Mar. 19, 1970, 45/23,363; Mar. 20, 1970, 45/23,660; May 30, 1970, 45/46,524

Int. Cl. C07c *11/00*

U.S. Cl. 260—677 R **16 Claims**

A reaction product of 1,3-conjugated diene compound and a compound having a terminal vinyl group is produced in the presence of a catalyst prepared by reacting (1) a palladium compound, (2) a compound having an anion selected from tetra- and hexafluoro-complex anion and perchlorate anion and (3) a phosphorous compound selected from a tertiary phosphine and a tertiary phosphite. When the compound having a terminal vinyl group is the same as the 1,3-conjugated diene compound, an oligomer of 1,3-conjugated diene compound is produced. On the other hand, when the two compounds are different, a co-oligomer of said two compounds is produced. When the phosphorous compound is not used or the phosphorous compound is other than phosphorous compound having at least two saturated hydrocarbon groups, an alcohol adduct of said oligomer can be produced when the reaction is in the presence of an alcohol.

3,792,102

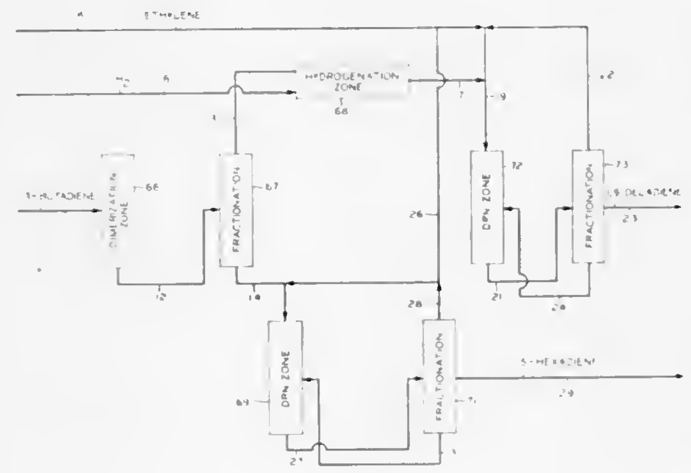
PREPARATION OF 1,9-DECADIENE FROM ETHYLENE AND CYCLOOCTENE

Van C. Vives and Robert E. Reusser, Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Dec. 30, 1971, Ser. No. 213,928

Int. Cl. C07c *3/62, 11/12*

U.S. Cl. 260—680 R **3 Claims**



The olefin disproportionation reaction of mixtures of acyclic and cyclic olefin hydrocarbons to produce dienes is improved by using a consecutive bed catalyst arrangement wherein the first bed is a bed of magnesium oxide and the second bed is a solid olefin disproportionation catalyst. Subsequent to separation of the reaction effluent, the heavier olefin hydrocarbons produced in the consecutive bed reaction zone are returned to the reaction zone at a point intermediate to the two beds to provide conversion of the heavier materials to additional diene product. In addition, a combination process is provided wherein 1,9-decadiene and 1,5-hexadiene are produced from butadiene, ethylene, and hydrogen using dimerization, hydrogenation, and olefin disproportionation steps.

3,792,103

PROCESSES FOR THE DEHYDROGENATION OF ORGANIC FEEDSTOCKS

Darrell W. Walker, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Continuation-in-part of application Ser. No. 140,968, May 6, 1971. This application Mar. 7, 1972, Ser. No. 232,532

Int. Cl. C07c *5/18*

U.S. Cl. 260—680 E **5 Claims**

Organic compounds are dehydrogenated in the presence of molecular oxygen with a catalyst containing at least one of the elements nickel, cobalt or iron in association with tin, phosphorus, and at least one of arsenic, antimony or bismuth together with sufficient combined oxygen to satisfy the valence requirements of the components of the catalyst. Optionally, the catalytic compositions can contain minor amounts of alkali metal such as potassium. Representative of such conversions is the oxidative dehydrogenation of butane to butenes and butadiene. The conversion products are valuable compounds particularly useful as intermediates for the preparation of polymeric materials such as synthetic rubbers and the like.

3,792,104

MANUFACTURE OF ISOPRENE

Herbert Mueller, Frankenthal, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed June 21, 1971, Ser. No. 155,241

Claims priority, application Germany, June 27, 1970, P 20 31 921.5; Dec. 16, 1970, P 20 61 803.5

Int. Cl. C07c *1/24*

U.S. Cl. 260—681 **9 Claims**

Manufacture of isoprene by dehydration of 3-methyl-3-buten-1-ol with acids comprising treating the 3-methyl-3-buten-1-ol with acids, or substances which form acids in aqueous medium, in the presence of water and salts and, optionally, diluents. The said acids or acid-forming substances and salts are selected so that the anion of the acid and/or the anion of the salt are halides. The isoprene product is isolated.

3,792,105

PROCESS FOR THE PURIFICATION OF ISOPRENE

Robert H. Siegmann, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Filed Oct. 11, 1972, Ser. No. 296,712

Claims priority, application Netherlands, Oct. 29, 1971, 7114983

Int. Cl. C07c *7/00*

U.S. Cl. 260—681.5 R **10 Claims**

A process for the removal of allenes and other compounds hindering the polymerization of isoprene from an isoprene-containing C_5 hydrocarbon fraction comprises contacting said fraction with finely dispersed metallic sodium at a temperature in the range between 58 and 62° C.

3,792,106

CONVERSION OF OLEFINS

Robert B. Regier, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Oct. 4, 1971, Ser. No. 186,432

Int. Cl. C07c *3/62*

U.S. Cl. 260—683 D **8 Claims**

A composition comprising tungsten oxide, zinc oxide and silica is a catalyst for converting olefins according to the olefin reaction.

3,792,107

PROCESS FOR DISPROPORTIONATING THE OLEFINS

Vittorio Fattore, S. Donato Milanese, Marcello Mazzei, Milan, and Bruno Notari, S. Donato Milanese, Italy, assignors to Snam Progetti, S.p.A., S. Donato Milanese, Italy

No Drawing. Filed July 21, 1971, Ser. No. 164,916

Claims priority, application Italy, July 29, 1970, 28,016/70

Int. Cl. C07c *3/62*

U.S. Cl. 260—683 D **11 Claims**

A process is disclosed for disproportionating an olefin having from 3 to 30 carbon atoms, wherein the olefin is contacted with a catalyst consisting essentially of an oxide of tungsten and copper or of tungsten and a metal of the 8th group of the periodic system, preferably iron, cobalt or nickel, in which the ratio of metal to tungsten is in the range of 1:3 to 5:1. The catalyst is advantageously supported by a carrier such as silica and its contact with the olefin is effected at a temperature in the range of 400 to 700° C., at a pressure in the range of 1 to 50 atmospheres and for a contact time in the range of 0.1 to 60 seconds.

3,792,108

DISMUTATION OF OLEFINS

Robert P. Arganbright, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

No Drawing. Original application July 23, 1969, Ser. No. 844,207, now Patent No. 3,702,827. Divided and this application Oct. 12, 1971, Ser. No. 188,501

Int. Cl. C07c *3/62*

U.S. Cl. 260—683 D **16 Claims**

Using as a catalyst MoO_3-Re_2O_7 (weight ratio approximately 10:1) on an alumina support it is possible to carry out dismutation reactions of C_2–C_{20} acyclic monoolefins at low temperatures and much smaller amounts of Re_2O_7 than are conventionally necessary, e.g., prior art required 10 percent MoO_3 at 150° C. or 20 percent Re_2O_7 at 38°; whereas the present invention requires 10 percent MoO_3-1 percent Re_2O_7 at 38° C. to give higher conversion and yields. By modifying this catalyst with a small amount of fluoride ion isobutylene which otherwise is subject to oligomerization can be dismutated with C_3–C_{20} acyclic monoolefins. The products are different and more desirable olefins than the starting materials.

3,792,109

ISOMERIZATION OF 1-OLEFINS OR TRANS-OLEFINS TO INTERNAL CIS-OLEFINS

William J. Trepka and John A. Favre, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Sept. 11, 1972, Ser. No. 287,738

Int. Cl. C07c *5/24*

U.S. Cl. 260—683.2 **11 Claims**

The isomerization of 1-olefins or trans-olefins to internal cis-olefins is accomplished by means of a catalyst system comprising an organolithium compound with a potassium salt of a fatty acid or of an alcohol. For example, 1-butene yields cis-2-butene.

3,792,110

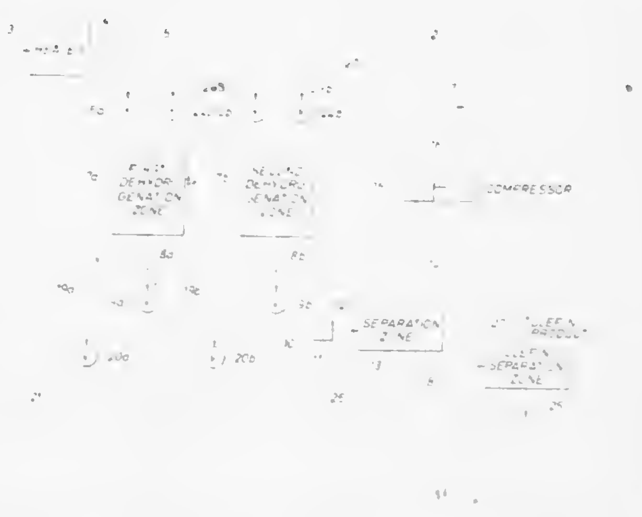
DEHYDROGENATION PROCESS FOR CONVERTING n-PARAFFIN HYDROCARBON INTO n-OLEFIN HYDROCARBON

Charles A. Senn III, Greenville, S.C., and Levi C. Parker, Port Arthur, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 29, 1971, Ser. No. 213,558

Int. Cl. C07c *3/28*

U.S. Cl. 260—683.3 **4 Claims**



A dehydrogenation process wherein n-paraffin hydrocarbon at an elevated temperature, in the presence of molecular hydrogen is contacted with a dehydrogenation catalyst comprising a dehydrogenation component supported upon an inorganic metal oxide base to convert said n-paraffin hydrocarbon into n-olefin hydrocarbon. Such process incorporates an improvement for increasing the selectivity of said catalyst for converting n-paraffin hydrocarbon into n-olefin hydrocarbon, which improvement comprises treating a fresh or freshly regenerated dehydrogenation catalyst, prior to use in the dehydrogenation reaction, with paraffin hydrocarbon and hydrogen in a mole ratio of hydrogen to hydrocarbon of from about 0.5:1 to about 40:1, at a temperature of from about 750° F. to about 1000° F., and a pressure of from about atmospheric to about 50 p.s.i.g. for a period of from about 12 to about 24 hours.

3,792,118

3,792,122

3,792,111

TRANSFER MEDIUM FOR PRODUCING SCRATCH AND SMUDGE RESISTANT MARKS

Charles T. Fellows, Kettering, Stanley R. Hermann, Xenia, and Norman C. Hochwalt, Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

No Drawing. Application Oct. 29, 1970, Ser. No. 85,312, now Patent 3,689,316, dated Sept. 5, 1972, which is a continuation-in-part of abandoned application Ser. No. 54,856, July 14, 1970. Divided and this application Feb. 1, 1972, Ser. No. 222,707

Int. Cl. C08g *37/32, 47/10, 51/28*

U.S. Cl. 260—33.6 SB **12 Claims**

A transfer medium comprising a base having a transferable coating composition thereon. The transferable composition comprises about 3 to 40 percent by weight of polysiloxane rubber gum; about 3 to 40 percent by weight of a polysiloxane resin; about 15 to 70 percent by weight of a thermoplastic aminotriazine-sulfonamide-aldehyde resin; and about 1 to 45 percent by weight of a sensible material. The outer surface of the coating composition has a thin coating of wax.

3,792,112

EPOXIDE-DIMETHYLOL PROPIONIC ACID REACTION PRODUCT WITH AMINE ALDEHYDE CONDENSATE

John Allister Gannon and Arthur Allen Tracton, Toms River, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 789,948, Jan. 8, 1969, and a division of application Ser. No. 90,014, Nov. 16, 1970, now Patent No. 3,707,526. This application Oct. 16, 1972, Ser. No. 298,170

Int. Cl. C08g *45/10*

U.S. Cl. 260—834 **2 Claims**

Coating systems applicable by conventional coating techniques as well as by electrophoretic coating are provided by reacting a hydroxycarboxylic acid such as dimethylolpropionic acid with an epoxy resin and optionally any of a dibasic acid and a diol in the absence of an externally added esterification catalyst and curing the thus obtained product. A variety of coating systems is obtained including water-soluble resins obtained by neutralizing with an amine the reaction product prior to curing.

3,792,113

THERMOPLASTIC POLYMERS CONTAINING POST CHLORINATED VINYL HALIDE-BIS(HYDROCARBYL) VINYL PHOSPHONATE COPOLYMERS

Jagadish C. Goswami, New York, and Jung Il Jin, Irvington, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

No Drawing. Original application Dec. 23, 1970, Ser. No. 101,194, now Patent No. 3,725,359. Divided and this application Sept. 21, 1972, Ser. No. 290,940

Int. Cl. C08f *27/03;* **C08g** *41/04*

U.S. Cl. 260—857 UN **13 Claims**

There are disclosed post-chlorinated copolymers of: (1) one or more vinyl halides; (2) one or more bis(hydrocarbyl) vinylphosphonates; and (3) as an optional component one or more ethylenically unsaturated monomers. These post-chlorinated products have a higher glass transition temperature than the copolymers from which they are derived and are, therefore, of greater utility in many applications such, for example, as in the preparation of polyblends with burning thermoplastics wherein they impart a significant degree of flame retardance without causing substantial reduction in the heat distortion temperature of the resulting polyblends.

3,792,114

COMPOSITION OF POLYSULFONES AND POLYURETHANES

Robert Lauchlan, Granger, and Gray Shaw, South Bend, Ind., assignors to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed Aug. 31, 1972, Ser. No. 285,275

Int. Cl. C08g *41/04*

U.S. Cl. 260—858 **159 Claims**

Blends of a polyarylene polyether resin with a polyurethane elastomer provide thermoplastic compositions characterized by unique properties, particularly, an unusually useful combination of high impact strength, high tensile strength and high flexural modulus.

3,792,115

THERMOPLASTIC RESIN COMPOSITION COMPRISING POLYCARBONATES AND POLYARYLENE ESTERS

Hiroshi Kishikawa, Toyonaka, Kiyoshi Yasuno, Ibaragi, Shuji Kitamura, Toyonaka, Katsuji Ueno, Hirakata, and Haruo Inoue and Nobuhiro Toyota, Takatsuki, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka-fu, Japan

No Drawing. Filed Mar. 8, 1972, Ser. No. 232,919

Claims priority, application Japan, Mar. 8, 1971, 46/12,656

Int. Cl. C08g *39/10*

U.S. Cl. 260—860 **4 Claims**

A thermoplastic resin composition of polycarbonate improved in impact strength and heat deformation resistance which comprises 1 to 99% by weight of polycarbonate resin and 99 to 1% by weight of polyarylene ester on the basis of the total weight of the composition.

3,792,116

FLAME-RESISTANT POLYMERIC COMPOSITIONS CONTAINING BROMINATED ADDUCTS OF ACYCLIC TRIENES

Carlos G. Cardenas, Jacksonville, Fla., and Donnie G. Brady, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Original application Jan. 2, 1970, Ser. No. 416, now Patent No. 3,697,607. Divided and this application Apr. 19, 1972, Ser. No. 245,381

Int. Cl. C09k *3/28*

U.S. Cl. 260—861 **14 Claims**

Flame-resistant polymeric compositions containing novel brominated adducts of acyclic trienes with halocyclopentadienes and with substituted halocyclopentadienes are disclosed. Methods of preparing said novel compounds are also disclosed.

3,792,117

FLAME RESISTANT POLYESTER

William Kolodchin, Warren, and David R. Brackenridge, Royal Oak, Mich., assignors to Ethyl Corporation, Richmond, Va.

No Drawing. Filed Sept. 15, 1971, Ser. No. 180,871

Int. Cl. C08f *1/00*

U.S. Cl. 260—864 **4 Claims**

The flame resistance of polyesters can be enhanced with a phosphazene, i.e., a condensation product of a phosphonitrilic dihalide and 2,3-dibromopropanol. Saturated and unsaturated resins can be used as can thermoplastic and thermosetting materials, linear and cross-linked polymers, and fibers and films.

3,792,118

RESIN COMPOSITION COMPRISING STYRENE RESIN AND A POLYARYLENE ESTER

Hiroshi Kishikawa, Kiyoshi Yasuno, Shuji Kitamura, Katsuji Ueno, Haruo Inoue, and Nobuhiro Toyota, Osaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka-fu, Japan

No Drawing. Filed Mar. 8, 1972, Ser. No. 232,901

Claims priority, application Japan, Mar. 8, 1971, 46/12,657

Int. Cl. C08g *39/10*

U.S. Cl. 260—873 **3 Claims**

A styrene resin composition resistant to heat deformation which comprises 1 to 95% by weight of styrene resin and 99 to 5% by weight of polyarylene ester on the basis of the total weight of the composition.

3,792,119

SOLID, NON-CAKING, FREE-FLOWING STYRENE/MALEIC ANHYDRIDE COMPOSITIONS

Dale R. Dill, St. Louis, Mo., and William O. Springer, Belleville, Ill., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 22, 1969, Ser. No. 860,019

Int. Cl. C08f *29/34*

U.S. Cl. 260—874 **9 Claims**

Solid, non-caking, free-flowing compositions comprising particulate styrene/maleic anhydride polymers subject to caking during storage having dispersed therein an anti-caking amount of a natural or synthetic polymer anti-caking agent which is soluble in water or aqueous alkali and which does not have any substantial tendency to cake during storage.

3,792,120

STABILIZED POLYPHENYLENE ETHER COMPOSITIONS

Robert M. Summers, Arlington, Mass., and Klaus E. Holoch, Roxheim/Pfalz, Germany, assignors to General Electric Company

No Drawing. Filed Oct. 12, 1971, Ser. No. 188,428

Int. Cl. C08g *51/60, 43/00, 43/02*

U.S. Cl. 260—874 **17 Claims**

There are provided stabilized compositions consisting of a major proportion of a thermoplastic resin having a polyphenylene ether component and a minor proportion of a stabilizer consisting of an N,N,N',N''-tetrasubstituted arylphosphonic diamide, alone, or optionally combined with a boron compound.

3,792,121

STABILIZED POLYPHENYLENE ETHER COMPOSITIONS

Visvaldis Abolins, Delmar, and Peter F. Erhardt, Webster, N.Y., and Klaus E. Holoch, Roxheim, Pfalz, Germany, assignors to General Electric Company

No Drawing. Filed Oct. 14, 1971, Ser. No. 189,192

Int. Cl. C08g *23/18, 51/56, 51/60*

U.S. Cl. 260—874 **23 Claims**

There are provided stabilized compositions consisting of a major proportion of a thermoplastic resin having a polyphenylene ether component and a minor proportion of a stabilizer consisting of (i) an organic chelating agent, (ii) a mixture of (i) with a hexaalkylphosphoric triamide, or (iii) a mixture of (i) or (ii) with a boron compound, a hydrazine compound or a mixture of such compounds.

3,792,122

POLYPHENYLENE ETHER RESINS CONTAINING A BUTADIENE-ACRYLIC-STYRENE POLYMER MODIFIER

Harry C. Fromuth, Jr., Trevose, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 859,191, Sept. 18, 1969. This application Apr. 21, 1971, Ser. No. 136,196

Int. Cl. C08f *41/12*

U.S. Cl. 260—876 R **5 Claims**

Polyphenylene ether resins are modified by a mulitple-stage sequentially-produced polymer comprising a first stage polymerized from a monomer mixture comprising at least 40 weight percent butadiene and a final stage polymerized in the presence of a product containing the first stage from a monomer mixture comprising a member selected from the group consisting of alkyl methacrylates, alicyclic methacrylates, alkyl acrylates and mixtures of the foregoing.

3,792,123

THERMOPLASTIC COMPOSITION COMPRISING A POLYPHENYLENE ETHER AND A NORMALLY RIGID RESINOUS PRODUCT OF AN ACRYLIC MONOMER AND DIENE RUBBER

Visvaldis Abolins, Delmar, and Donald L. Reinhard, Albany, N.Y., assignors to General Electric Company

No Drawing. Continuation-in-part of application Ser. No. 873,663, Jan. 3, 1969. This application Aug. 23, 1972, Ser. No. 283,094

Int. Cl. C08f *15/00, 19/00*

U.S. Cl. 260—876 R **24 Claims**

This invention relates to a polyphenylene ether composition having improved impact resistance. The composition comprises a polyphenylene ether and a normally rigid resinous product of an acrylic monomer and a diene rubber, the resinous acrylic-rubber product being present in an amount of from 1 to 25 parts by weight per 100 parts of the total resinous components. The addition of the resinous product of acrylic monomer and diene rubber provides unexpected improvements in toughness of parts molded therefrom, and in a preferred embodiment, these properties are improved without substantially impairing gloss or surface appearance.

3,792,124

BLENDS OF CERTAIN BLOCK COPOLYMERS AND NEUTRALIZED COPOLYMERS OF ETHYLENE AND AN ACRYLIC ACID

Sol Davison and Michael Wales, Berkeley, Calif., assignors to Shell Oil Company

No Drawing. Filed Feb. 24, 1972, Ser. No. 229,176

Int. Cl. C08f *27/04, 29/34*

U.S. Cl. 260—876 B **5 Claims**

Clear polymeric blends with improved adhesion are obtained from a combination of selectively hydrogenated block copolymers and ionomers comprising neutralized copolymers of ethylene and α-β unsaturated acids.

3,792,125

TRANSPARENT HEAT RESISTANT GUM PLASTIC

John M. Wefer, Wayne, N.J., assignor to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed Dec. 2, 1971, Ser. No. 204,368

Int. Cl. C08f *15/40*

U.S. Cl. 260—876 R **4 Claims**

Transparent, heat resistant thermoplastic compositions are prepared from terpolymers of t-butylstyrene, acrylon-

itrile and methylmethacrylate blended with grafts of the

3,792,129

BIS (PHOSPHORYLATED ANTHRALIN) COM-

group consisting of hydrogen and Z^1, provided that when Z^2 is hydrogen then n is zero; and Y is selected from the

barrier walls. The concrete slip form includes opposite sidewalls and open front and rear ends. At least one of itrile and methylmethacrylate blended with grafts of the terpolymers onto polybutadiene rubber or a rubbery styrene-butadiene copolymer.

Transparency as well as good thermal and mechanical properties can be achieved in the gum plastic blends with a wide variety of monomer ratios in the resinous terpolymers.

3,792,126
PROCESS FOR POLYMERIZING VINYL AROMATIC MONOMERS USING NEW RADICAL-TYPE CATALYSTS

Lino Vio, Mazeres-Lezons par Gelos, France, assignor to Societe Anonyme dite: Societe Nationale des Petroles d'Aquitaine, Courbevoie, France
No Drawing. Filed June 21, 1971, Ser. No. 155,214
Claims priority, application France, June 26, 1970, 7023800
Int. Cl. C08f *7/04, 7/06, 1/74*
U.S. Cl. 260—880 R **15 Claims**

The present invention concerns a process for polymerizing monomers and particularly styrene by using new catalysts.

The invention is characterized by the fact that organic silicon derivatives, with a higher temperature stability than the catalysts normally used, are used as catalysts.

The use of these new organic silicon derivatives as catalysts particularly in polymerizing styrene ensures a significant reduction in the residual monomer content of the polystyrene product, and thus allows such a product to be used in contact with foodstuffs.

3,792,127
HYDROGENATED BLOCK COPOLYMERS AND PROCESS FOR PREPARING SAME

George A. Gillies, Berkeley, Calif., assignor to Shell Oil Company, New York, N.Y.
No Drawing. Filed Sept. 22, 1971, Ser. No. 182,867
Int. Cl. C08f *19/08, 27/24*
U.S. Cl. 260—880 B **8 Claims**

Block polymers having substantially improved processability comprise polymers having at least two polymer blocks A, at least one polymer block B and at least one polymer block C, blocks A being independently selected polymer blocks of at least one monoalkenyl arene, block B is a polymer block of at least one conjugated diene and block C comprises a random copolymer block of a conjugated diene and a monoalkenyl arene. Blocks A comprise at least 25% by weight of the total arene units of the block copolymer, block B comprises at least 25% by weight of the total diene units, and block C contains between 4 and 75% by weight of the total diene units and between 4 and 75% of the total arene units. Hydrogenated derivatives of these block copolymers also are contemplated.

3,792,128
FLUOROPOLYMER-CARBOXYLATED STYRENE-BUTADIENE FUNCTIONAL SURFACE COATING COMPOSITIONS

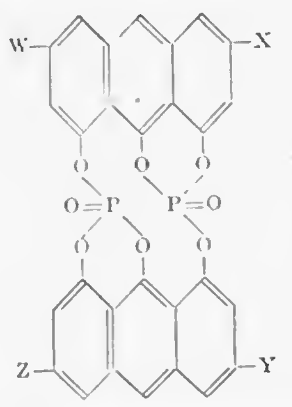
Melville W. Uffner, Media, and Dewey G. Holland, Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
No Drawing. Original application Dec. 15, 1969, Ser. No. 885,290, now abandoned. Divided and this application Dec. 1, 1971, Ser. No. 203,901
Int. Cl. C08d *9/08*
U.S. Cl. 260—890 **15 Claims**

Functional surface coating compositions, prepared by blending a mixture of a fluorine containing polymer and a non-fluorine containing material in aqueous medium, impart solvent, grease and oil resistance to cellulosic materials.

3,792,129
BIS-(PHOSPHORYLATED ANTHRALIN) COMPOUNDS AND PROCESS FOR PREPARING SAME

Charles Aubrey Friedmann, Florence, Italy, Peter Hofer, Liestal, Switzerland, and Winthrop E. Lange, Greenwich, Conn., assignors to Mundipharma AG., Rheinfelden, Switzerland
No Drawing. Filed Sept. 8, 1971, Ser. No. 178,829
Int. Cl. C07d *103/04;* **A01n** *9/36*
U.S. Cl. 260—927 R **14 Claims**

Phosphorylated bis-anthracenetriol compounds of the structure:

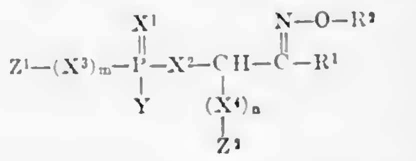


wherein W, X, Y and Z are selected from the group consisting of hydrogen, lower alkyl, halo-alkyl, acetoxi-alkyl, carboxyl, carboalkyloxi, alkyloxialkyl, halogen and nitro wherein said alkyl is from 1 to 3 carbon atoms in chain length, are prepared by phosphorylating appropriate 1,8,9-trihydroxi-anthracene or 3-substituted-1,8,9 - trihydroxianthracene compounds in the presence of an aromatic or aliphatic tertiary amine base, preferably pyridine. The resultant compounds are useful in the treatment of psoriasis, seborrhea, eczema, inflammation and arthritis. Pharmaceutical compositions such as ointments, lotions, shampoos and detergent cakes, beside oral and rectal application forms, containing the aforesaid compounds are described together with methods for their preparation and their use in therapy.

3,792,130
ALKOXYIMINO-PHOSPHORUS COMPOUNDS

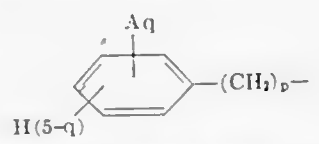
Leonard J. Stach, Riverside, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.
No Drawing. Filed Nov. 29, 1971, Ser. No. 203,006
Int. Cl. C07f *9/08, 9/16;* **A01n** *9/36*
U.S. Cl. 260—944 **6 Claims**

This invention discloses new compounds of the formula

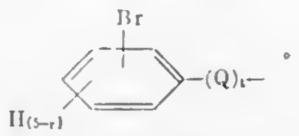


$$Z^1-(X^3)_m-\underset{\displaystyle Y}{\overset{\displaystyle X^1}{\overset{\|}{\underset{|}{P}}}}-X^2-\underset{\underset{\displaystyle Z^2}{|}}{\underset{(X^4)_n}{\underset{|}{CH}}}-\overset{\displaystyle N-O-R^2}{\overset{\|}{C}}-R^1$$

wherein R^1 is selected from the group consisting of alkyl, phenyl, halophenyl, alkylphenyl and alkyl-halophenyl; R^2 is alkyl: X^1, X^2, X^3 and X^4 are independently selected from the group consisting of oxygen and sulfur; m and n are each integers from 0 to 1; Z^1 is selected from the group consisting of alkyl, alkenyl and



wherein A is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio, halogen, nitro, alkylsulfoxide, alkylsulfone and dialkylamino; q is an integer from 0 to 5, and p is an integer from 0 to 3; Z^2 is selected from the group consisting of hydrogen and Z^1, provided that when Z^2 is hydrogen then n is zero; and Y is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio, amino, alkylamino, dialkylamino and



wherein B is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio, halogen, nitro, alkylsulfoxide, alkylsulfone and dialkylamino; r is an integer from 0 to 5; Q is selected from the group consisting of oxygen, sulfur, alkylene, alkyleneoxy and alkylenethio, and t is an integer from 0 to 1.

Also disclosed are insecticidal and acaricidal compositions comprising an inert carrier and an above described compound.

3,792,131
O-METHYL-O-(4-BROMO-2,5-DICHLOROPHENYL) PHENYLPHOSPHONATE

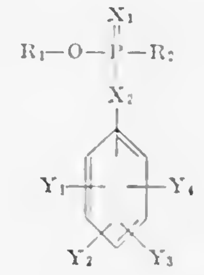
Sidney B. Richter, Chicago, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.
No Drawing. Filed Aug. 3, 1970, Ser. No. 60,716
Int. Cl. A01n *9/36;* **C07f** *9/40*
U.S. Cl. 260—961 **1 Claim**

The subject matter of this application is O-alkyl O-(4-bromo-2,5-dichlorophenyl) phenylphosphonates useful as insecticides and miticides.

3,792,132
PROCESS FOR PREPARING ALKYL PHENYL PHOSPHATE AND PHOSPHOROTHIONATE COMPOUNDS

Donald Norman Bernhart, Mount Pleasant, Tenn., assignor to Stauffer Chemical Company, New York, N.Y.
No Drawing. Filed Dec. 21, 1970, Ser. No. 100,554
Int. Cl. C07f *9/18, 9/12*
U.S. Cl. 260—973 **16 Claims**

A process for producing phosphorus acid esters of the formula:

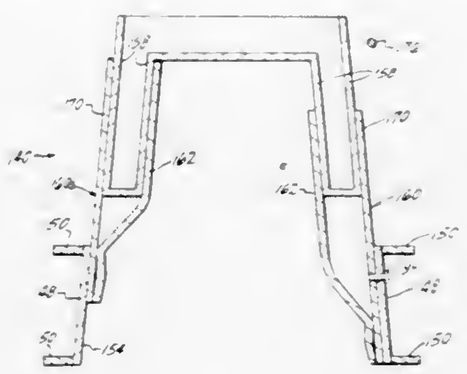


by the reaction of a phenolic compound with a phosphonochloridate, phosphorochloridate, phosphonochlorothioate or phosphorochlorothioate compounds in a reaction matrix consisting essentially of an oxygenated solvent, an amine and a basic metal compound. The reaction matrix can contain substantial quantities of water.

3,792,133
METHOD FOR SLIP-FORMING WALLS OF ASYMMETRICAL TRANSVERSE CROSS SECTION

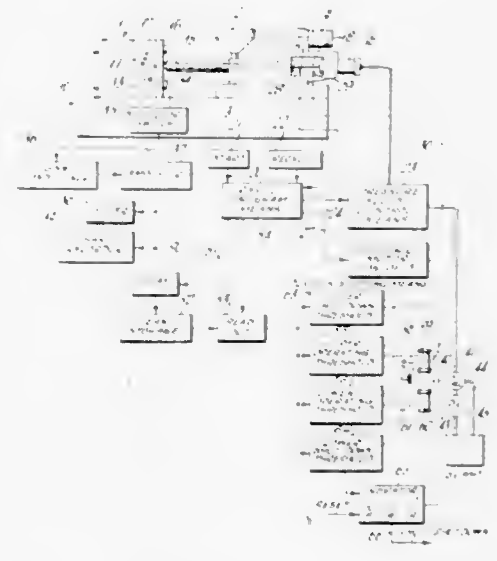
Roy Robert Goughnour, Mason, Mich., assignor to A. C. Aukerman Co., Jackson, Mich.
Filed June 30, 1972, Ser. No. 268,159
Int. Cl. E04b *1/16*
U.S. Cl. 264—33 **3 Claims**

The invention pertains to a method for forming elongated concrete structures, such as walls and the like, by slip forming. In particular, the invention is directed to the concept of slip-forming walls of asymmetrical transverse cross section as required in the forming of highway barrier walls. The concrete slip form includes opposite sidewalls and open front and rear ends. At least one of the sidewalls is vertically adjustable wherein the sidewall configuration being formed thereby may have a height variance with respect to the opposite sidewall being formed. The form includes fixed wall portions associating with the adjustable wall portion and power means permit adjustment of the vertical adjustable wall. It is also within the scope of the invention to provide a form wherein both sidewalls are vertically adjustable, and the form includes means for introducing steel reinforcement into the formed wall, and periodically permitting accessory equipment to be embedded into the wall.



3,792,134
METHOD FOR MONITORING PRODUCT QUALITY IN A PLASTICS INJECTION-MOLDING MACHINE

Donald C. Paulson, Southington, Conn., assignor to Litton Industrial Products, Inc.
Original application July 15, 1969, Ser. No. 841,719, now Patent No. 3,628,901, dated Dec. 21, 1971. Divided and this application Oct. 15, 1970, Ser. No. 81,042
Int. Cl. B29f *1/00*
U.S. Cl. 264—40 **2 Claims**



The invention contemplates control of quality and consistency in products of recycled operation of a plastics injection-molding machine by observing, for each cycle of operation, the peak pressure of plasticized melt and by comparing the observed value against a reference value. The polarity and magnitude of difference between observed and reference values are utilized to effect corrective adjustment on the feed force operative on plasticized melt on a succeeding cycle of the machine. If desired, means responsive to detected inability to effect adequate correction may automatically shut down the machine and indicate the polarity of the failure.

3,792,135
PROCESS FOR MANUFACTURING CELLULOSIC REVERSE OSMOSIS MEMBRANES USING A VERY HIGH TEMPERATURE INITIAL AQUEOUS QUENCH

Barry M. Brown and Elbert L. Ray, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 6, 1972, Ser. No. 215,809
Int. Cl. B29d *27/00*
U.S. Cl. 264—41 **28 Claims**

Improved processes are disclosed for manufacturing cellulosic "reverse osmosis" membranes, which processes involve the utilization of a very hot initial quench bath, in combination with dope compositions that contain acetic acid, formic acid or mixtures thereof, either with or without other organic solvents.

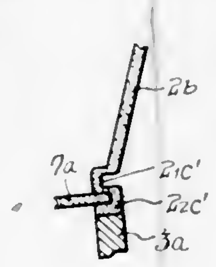
3,792,136
METHOD FOR PREPARING HOLLOW METAL OXIDE MICROSPHERE

Charles R. Schmitt, Oak Ridge, Tenn., assignor to the United States of America as represented by the United States Atomic Energy Commission
No Drawing. Filed Nov. 2, 1971, Ser. No. 195,052
Int. Cl. B29d *27/08*
U.S. Cl. 264—44 **8 Claims**

Hollow refractory metal oxide microspheres are prepared by impregnating resinous microspheres with a metallic compound, drying the impregnated microspheres, heating the microspheres slowly to carbonize the resin, and igniting the microspheres to remove the carbon and to produce the metal oxide.

3,792,137
PROCESS AND APPARATUS FOR FORMING THE BOTTOM STRUCTURE OF A FOAMED THERMOPLASTIC SYNTHETIC RESIN-MADE CONTAINER

Jingo Seto, 6 29-ban 3, 3-chome, Akatsuka Shin-machi, Tokyo, Japan
Filed Feb. 1, 1971, Ser. No. 111,228
Claims priority, application Japan, Feb. 12, 1970, 45/12,368
Int. Cl. B29d *27/00;* **B29f** *5/02*
U.S. Cl. 264—45 **3 Claims**

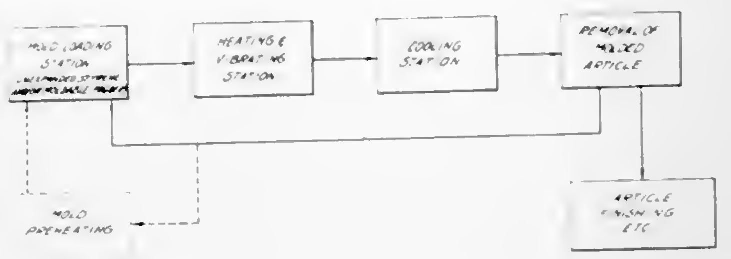


Process and apparatus for the formation of a secure bottom structure of a container wherein a wall-forming piece made from foamed thermoplastic synthetic resin material and a mating bottom-forming material made from thermoplastic or non-thermoplastic material are securely melt joined or mechanically joined together to form the container, with aid of a caulking force exerted on the to-be-joined portions of the wall-forming piece and bottom-forming material in the joining operation.

3,792,138
PROCESS OF MOULDING FOAMABLE MATERIALS BY SIMULTANEOUSLY HEATING AND VIBRATING THE MOLD

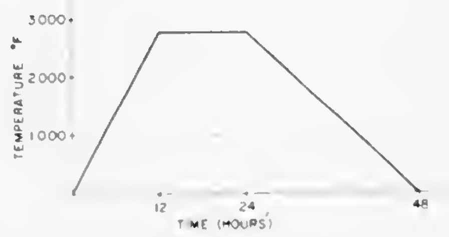
Sidney G. Lammers, Liverpool, N.Y., assignor to Dart Industries, Inc., Los Angeles, Calif.
Filed July 15, 1969, Ser. No. 841,873
Int. Cl. B29d *27/100*
U.S. Cl. 264—46 **8 Claims**

A process for the formation of expandable thermoplastic synthetic resins employs vibration to assure a uniform article construction. The particular article mold cavity is loaded with unexpanded resin beads and is simultaneously vibrated and heated until the beads have been fully expanded. The process further enables a user to create laminations within a molded article by using expandable beads of different densities or other similar moldable materials.



3,792,139
PROCESS FOR FLATTENING ALUMINA SUBSTRATES

Robert N. Weinstein, Granada Hills, Calif., assignor to the United States of America as represented by the Secretary of the Army
Filed Aug. 9, 1972, Ser. No. 279,142
Int. Cl. C04b *41/02*
U.S. Cl. 264—58 **1 Claim**

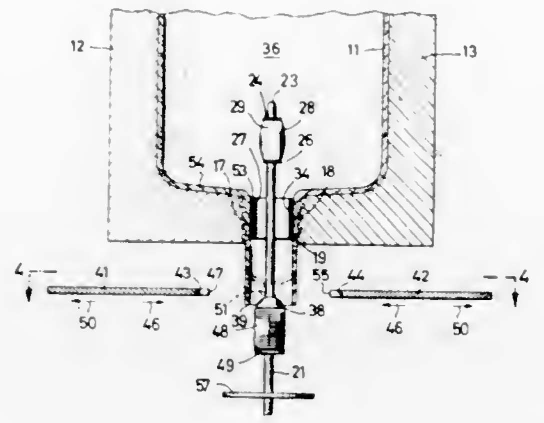


A process for flattening ceramic substrates is disclosed. The process includes positioning the ceramic substrates to be flattened or contoured between high purity ground alumina plates and exerting a predetermined amount of force on the positioned ceramic substrate during an annealing cycle. The annealing cycle includes slowly heating the ceramic substrate from ambient temperature over a time interval of about 12 hours to attain a temperature of about 2580° F., maintaining the ceramic substrate at the specified temperature for about 12 hours until straightening occurs, and thereafer, slowly cooling the ceramic substrate to ambient temperature.

3,792,140
METHOD FOR MOULDING THE WALL OF THE NECK OF AN EXTRUDED HOLLOW BODY

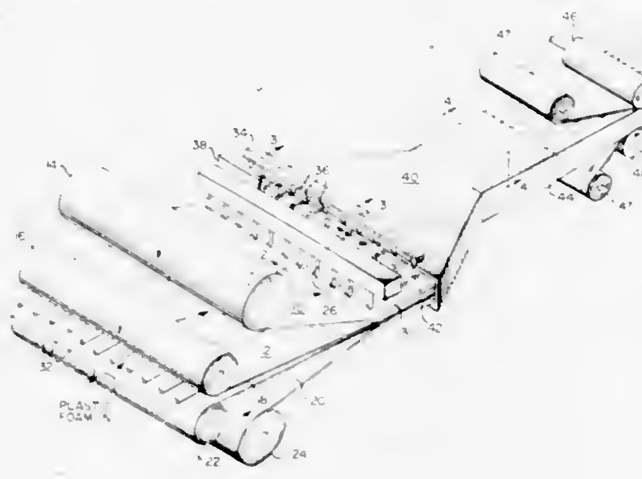
Wolfram Schlemann, Eugen-Nagele-Strasse 17, 714 Ludwigsburg, Germany
Filed Dec. 8, 1971, Ser. No. 206,042
Int. Cl. B29c *17/07;* **B29d** *3/02*
U.S. Cl. 264—98 **2 Claims**

An upwards moving mandrel passes through an outlet hole in the bottom of a pair of blow moulding dies. The mandrel carries two externally inflatable and deflatable bubbles. The first bubble carries a metal reinforcing ring which is positioned in the neck during blow moulding and retained there. The second bubble tears open the end of the extruded tube after it has been turned inward into the hollow body and presses it to adhere against the inner wall of the body.



3,792,141
METHOD OF STRUCTURAL FABRICATION

Worthington W. Offutt, Cathedral City, Calif.
(522 N. Calle Marcus, Palm Springs, Calif. 92262)
Continuation-in-part of abandoned application Ser. No. 47,834, June 19, 1970. This application May 26, 1972, Ser. No. 257,394
Int. Cl. B29d *27/00;* **B32b** *7/08, 31/12*
U.S. Cl. 264—47 **18 Claims**

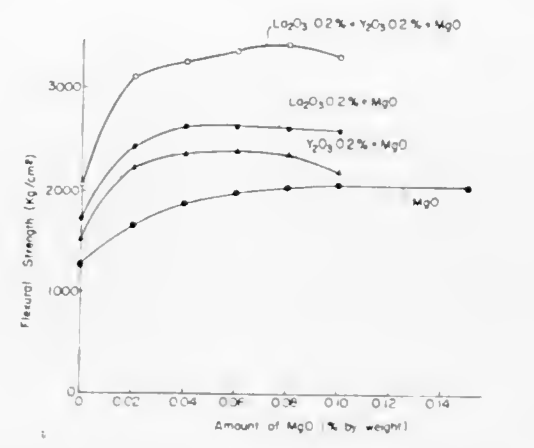


A structural product formed by passing a foam-filled, resin-impregnated fiberglass laminate into a preformed mold or extrusion to shape and cure the material into an insulated, pre-fabricated, lightweight, cellular structure.

3,792,142
UTILIZING MIXTURES OF YTTRIA, MAGNESIA, AND LANTHANUM OXIDE IN MANUFACTURE OF TRANSPARENT ALUMINA

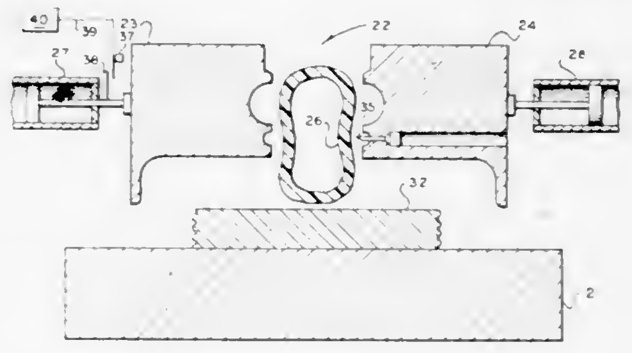
Kazuo Kobayashi, Nagoya, and Masayuki Kaneno, Tokoname, Japan, assignors to NGK Insulators, Ltd., Mizuho-ku, Nagoya, Japan
Filed Aug. 18, 1970, Ser. No. 64,694
Claims priority, application Japan, Aug. 27, 1969, 44/67,338
Int. Cl. C04b *35/10, 35/64*
U.S. Cl. 264—65 **6 Claims**

A method of manufacturing a polycrystalline translucent alumina consisting of a high purity alumina and having excellent optical transmission property for the light in the visible spectrum, thermal shock resistance and mechanical strength which comprises the following steps, calcining alumina powders having a purity of more than 99.0% by weight as a starting material at a temperature of 1,050–1,250° C. in air, adding to said alumina powders 0.05–0.5% by weight of Y_2O_3, 0.05–0.5% by weight of La_2O_3 and 0.01–0.1% by weight of MgO, mixing and then molding said alumina powders added with said additives, sintering at first said molded mixture at a temperature of 1,200-1,450° C. and secondly sintering in vacuum or a reducing atmosphere such as hydrogen or dissociated ammonia gas at a temperature of 1,600–1,800° C.



3,792,143
METHOD FOR BLOW MOLDING A HOLLOW ARTICLE HAVING AN ATTACHED HOLLOW ADJUNCT

Tony E. Branscum, Winfield, Kans., and Bill T. Morgan and Donald L. Peters, Bartlesville, Okla., assignors to Phillips Petroleum Company
Continuation of abandoned application Ser. No. 57,010, June 9, 1970, which is a division of application Ser. No. 643,572, June 5, 1967, now Patent No. 3,585,681. This application Apr. 24, 1972, Ser. No. 247,111
Int. Cl. B29c *17/07*
U.S. Cl. 264—94 **4 Claims**

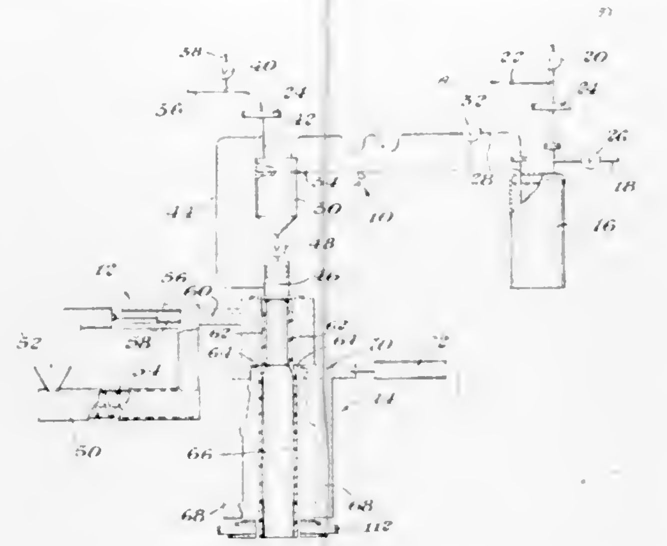


A hollow object having an integral hollow adjunct portion is formed by blow molding. Two mold parts pinch off a portion of the parison to form the adjunct, and the remainder of the parison forms the main body of the blown object.

3,792,144
PACKAGING PROCESS

Francis L. Burkett and Richard J. Lee, Breckenridge, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Original application Oct. 3, 1968, Ser. No. 581,931, now Patent No. 3,464,085, dated Sept. 2, 1969. Divided and this application Feb. 5, 1969, Ser. No. 816,444
Int. Cl. B29c *17/07*
U.S. Cl. 264—96 **4 Claims**

Method for blow molding thermoplastic containers, filling the same with a sterile product immediately upon their formation while the containers are yet in a sterile condition and sealing the filled containers while they still remain sterile. All of the steps are performed while exposing the interior of a parison and the container formed therefrom only to a sterile atmosphere.



3,792,145
TIRE PRODUCTION WITH JET AIR COOLING DURING POST INFLATION

Richard H. Hugger, Ridgewood, and George C. Huang, Kinnelon, N.J., assignors to Uniroyal, Inc.

Continuation of application Ser. No. 9,112, Feb. 9, 1970, which is a continuation of application Ser. No. 596,114, Nov. 22, 1966, both now abandoned. This application Sept. 14, 1971, Ser. No. 180,491

Int. Cl. B29n *5/02*

U.S. Cl. 264—100 **12 Claims**

Improvements in tire manufacture, leading to the production of pneumatic tires characterized by optimized sets of circumferentially substantially uniform thermal, physical and geometrical properties, are disclosed. In the course of the mold cycle in the press, such a tire is heated for a predetermined period of time sufficient to impart to the tire a major portion of the final desired cure state to be achieved during the cure cycle which also includes a post inflation cycle outside the press. During the post inflation cycle, cooling air, preferably air taken from the curing room atmosphere itself, is directed in jet form to be incident initially against the tread region of the tire from the exterior of the latter along the entire circumference thereof, the air thereafter flowing at least in part over the sidewall regions of the tire. The air flow conditions are so selected as to achieve in the vicinity of the initial contact of the cooling air with the tire a tire to air heat transfer coefficient ranging from about 15 to about 70 B.t.u./hr./sq. ft./° F. for effecting a rapid and controlled cooling of the tire, and the duration of the jet air cooling is adjusted to be less than the said heating period in the mold but nevertheless still sufficient, despite the rapid cooling, to enable the remaining minor portion of the desired final cure state to be achieved in the course of the post inflation cycle. This abstract is not to be taken either as a complete exposition or as a limitation of the present invention, however, the full nature and extent of the invention being discernible only by reference to and from the entire disclosure.

3,792,146
METHOD OF PREPARING FILMS OF POLYVINYL ALCOHOL RESINS

Saburo Kawamura, Saizo, Taiji Ozaki, Takatsuki, and Saburo Orii, Nara, Japan, assignors to Kuraray Co., Ltd., Sakazu, Kurashiki, Japan

No Drawing. Filed June 8, 1970, Ser. No. 44,568
Claims priority, application Japan, June 10, 1969, 44/45,540

Int. Cl. B29d *7/02*

U.S. Cl. 264—205 **5 Claims**

Molten polyvinyl alcohol resin containing pure water of a resistivity of at least 500,000 ohm-cm. and having a viscosity of 500 to 1200 poises at 130° C., is extruded through a slit at a temperature of 95 to 105° C. onto a drying roll rotated at a speed 5 to 30 times as fast as the calculated discharge speed of the molten polyvinyl alcohol resin.

3,792,147
USE OF COMPOSITIONS BASED ON DIORGANOPOLYSILOXANES WHICH CAN BE CURED AT ROOM TEMPERATURE TO GIVE ELASTOMERS, AS IMPRESSION COMPOSITIONS

Ernst Wohlfarth, Wolfgang Hechtl, Siegfried Nitzsche, and Paul Hittmair, Burghausen, Germany, assignors to Wacker Chemie G.m.b.H., Munich, Germany

No Drawing. Filed Feb. 10, 1972, Ser. No. 225,296
Claims priority, application Germany, Feb. 12, 1971, P 21 06 651.3

Int. Cl. B29c *1/02*

U.S. Cl. 264—225 **25 Claims**

The compositions based on diorganopolysiloxanes, which can be cured at room temperature to give elastomers, which have hitherto been used, in known manner for the manufacture of moulds suffer from the disadvantage that they do not stay in place, that is to say that they run off vertical or inclined surfaces, if they are not prevented from so doing by means of shuttering, before they are cured and/or that the elastomers produced by curing these compositions cannot always be detached from surfaces which are rough or porous in such a way as not to damage the elastomer without the conjoint use of a release agent.

3,792,148
PROCESS FOR THE PREPARATION OF SHAPED ARTICLES FROM POLYAMIDES

Eckart Reske, Hofheim, Taunus, Ludwig Brinkmann, Frankfurt am Main, and Harald Cherdron, Naurod, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Apr. 14, 1972, Ser. No. 244,281
Claims priority, application Germany, Apr. 16, 1971, P 21 18 510.4

Int. Cl. B29c *25/00*

U.S. Cl. 264—331 **6 Claims**

There is disclosed and claimed a process for the production of shaped articles from polyamides which exhibit

melting ranges near to or above their decomposition temperatures or poor or no solubility at all in solvents or which exhibit both of these properties at the same time, the process which comprises moulding polyamides carrying substituents of the amide nitrogen and thus having reduced melting ranges and/or improved solubility in solvents, and separating (splitting-off) said substituents partially or totally during and/or after moulding.

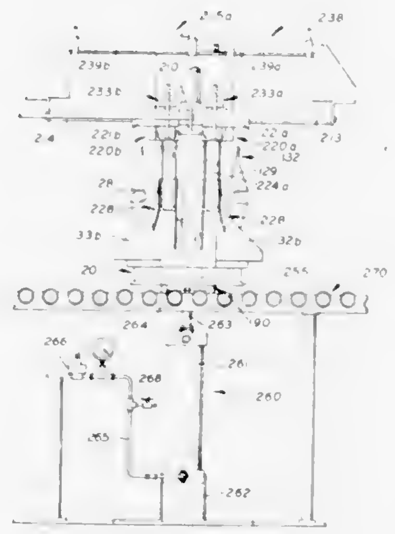
3,792,149
METHOD TO EXTRICATE INTRICATE, CERAMIC SHAPES FROM MULTIPLE PIECE MOLDS

Fred L. Derror, Lucas, Ohio, assignor to Mansfield Sanitary, Inc., Perrysville, Ohio

Original application Oct. 13, 1969, Ser. No. 865,863, now Patent No. 3,671,160. Divided and this application May 3, 1971, Ser. No. 139,350

Int. Cl. B28b *7/08, 7/40*

U.S. Cl. 264—336 **5 Claims**



A method for extricating an intricate ceramic casting from a multiple piece mold. This concept is adapted for use with multiple piece molds which have at least two, opposed, side sections that form a cradle by which the casting may be supported. The cradle is grasped and subsequently positioned at a receiving locus. So positioned, the support for the weight of the casting is shifted from the cradle onto a bat in order that the casting will float within the cradle. Thereafter, the sections of the mold forming the cradle are separated to extricate the casting therefrom. For some ceramic shapes it is highly desirable to invert the cradle prior to the deposit of the casting at the receiving locus. The subject concept includes such a method step.

3,792,150
METHOD OF ROASTING VANADIUM BEARING MATERIALS

John Augustus Maxwell and Michael Wallace Merrill, Soda Springs, Idaho, assignors to Kerr-McGee Chemical Corp., Oklahoma City, Okla.

No Drawing. Filed Mar. 10, 1972, Ser. No. 233,757

Int. Cl. C01g *31/00*

U.S. Cl. 423—68 **9 Claims**

This invention broadly relates to the roasting of vanadium bearing materials and to the recovery of vanadium values from the roasted product. More particularly, the invention relates to an improved process for roasting ferrophosphorus and recovering a high purity vanadium product therefrom.

3,792,151
PROCESS FOR PRODUCING PHOSPHORIC ACID

Everett N. Case, Media, Pa., assignor to Atlantic Richfield Company, New York, N.Y.

Continuation of application Ser. No. 774,960, Nov. 12, 1968. This application Oct. 18, 1971, Ser. No. 190,322

The portion of the term of the patent subsequent to Nov. 9, 1988, has been disclaimed

Int. Cl. C01b *25/16*

U.S. Cl. 423—166 **22 Claims**

A process for the production of phosphoric acid from phosphate rock comprising reacting the phosphate rock with an equilibrated phosphoric acid having a P_2O_5 concentration between about 20 to 50% in an attack stage at a temperature below about 180° F. to dissolve at least about 90% of the phosphate values in the rock and produce a monocalcium phosphate-phosphoric acid-water solution up to about 90% saturated with monocalcium phosphate, reacting sulfuric acid with said solution to produce phosphoric acid and precipitate calcium sulfate, the sulfuric acid being added in an amount essentally stoichiometric with respect to the monocalcium phosphate in the solution, separating the calcium sulfate from the phosphoric acid solution, removing a portion of the phosphoric acid as a product, and recycling the remaining phosphoric acid solution to the attack stage to provide said equilibrated acid.

3,792,152
STABILIZED PHOSPHATE AND DENTIFRICE COMPOSITIONS AND PROCESS FOR PRODUCING SAME

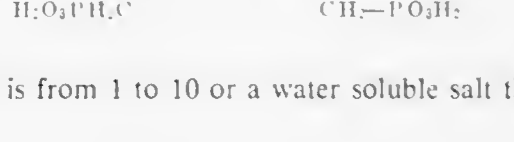
Keun Y. Kim, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Nov. 12, 1971, Ser. No. 198,441

Int. Cl. C01b *15/16, 25/26*

U.S. Cl. 423—311 **6 Claims**

Phosphate salts of metal of Group II of the Periodic Table, especially alkaline-earth metal salts such as dicalcium phosphate, are stabilized against hydrolysis by the incorporation therein of a phosphonic acid of the general formula:



$$(H_2O_3PH_2C)_2N(CH_2)_n-N(CH_2-PO_3H_2)_2$$

wherein *n* is from 1 to 10 or a water soluble salt thereof.

3,792,153
METHOD FOR RECOVERING AMMONIA AND HYDROGEN CHLORIDE FROM AMMONIUM CHLORIDE

Scott Lynn, Walnut Creek, Calif., and Richard C. Forrester III, Oak Ridge, Tenn., assignors to The Regents of the University of California, Berkeley, Calif.

No Drawing. Filed Feb. 28, 1972, Ser. No. 230,082

Int. Cl. C01b *25/06*

U.S. Cl. 423—319 **14 Claims**

Ammonia and hydrogen chloride are recovered from ammonium chloride by interaction with magnesium oxide. The magnesium oxide is not lost in the reaction, but is recycled again and again. The free ammonia and hydrogen chloride find utility in many industrial processes, e.g., the production alkali metal bicarbonates and carbonates, ion exchange regeneration and the like. To be operative in the production process, MgO must be prepared under carefully controlled conditions of temperature.

3,792,154

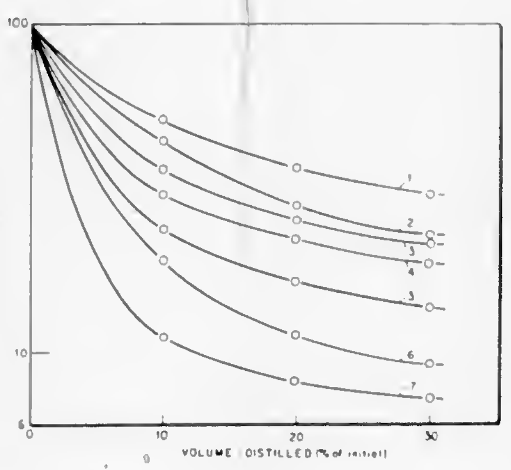
REMOVAL OF IODINE FROM NITRIC ACID SOLUTIONS

George I. Cathers and Calvin J. Shipman, Knoxville, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Mar. 6, 1972, Ser. No. 231,820

Int. Cl. C01b *7/12, 21/38*

U.S. Cl. 423—390 6 Claims



A method for removing radioactive iodine from nitric acid solution by isotopically diluting the iodine and autoclaving the solution prior to separation.

3,792,155

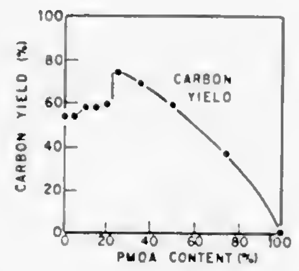
METHOD FOR INCREASING THE CARBON YIELD OF INDENE-DERIVED CARBON PRECURSORS

Wesley E. Smith and Ottis J. Horne, Jr., Oak Ridge, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Apr. 27, 1972, Ser. No. 248,324

Int. Cl. C01b *31/02, 31/04*

U.S. Cl. 423—448 3 Claims



The carbon yield of carbon precursors is substantially increased and the microstructure of graphite prepared from this carbon is reproducibly controlled by the addition of selected quantities of pyromellitic dianhydride to the carbon precursors.

3,792,156

DUAL PRESSURE-DUAL TEMPERATURE ISOTOPE EXCHANGE PROCESS

Dale F. Babcock, Wilmington, Del., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed June 21, 1972, Ser. No. 265,059

Int. Cl. C01b *5/02, 17/16*

U.S. Cl. 423—580 3 Claims

A liquid and a gas stream, each containing a desired isotope, flow countercurrently through two liquid-gas contacting towers maintained at different temperatures and pressures. The liquid is enriched in the isotope in one tower while the gas is enriched within the other and a portion of at least one of the enriched streams is withdrawn from the system for use or further enrichment. The tower operated at the lower temperature is also maintained at the lower pressure to prevent formation of solid solvates. Gas flow between the towers passes through an expander-compressor apparatus to recover work from the expansion of gas to the lower pressure and thereby compress the gas returning to the tower of higher pressure.

3,792,157

STABLE TABLETS CONTAINING BENZODIAZEPINE AND AMITRIPTYLINE

Prabhakar Ranchhordas Sheth, Nanuet, N.Y., and John James Vance, Montvale, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Jan. 10, 1972, Ser. No. 216,780

Int. Cl. B44d *11/08;* **A61k** *9/00*

U.S. Cl. 424—35 8 Claims

Stable, film-coated tablets containing a benzodiazepine, such as chlordiazepoxide, and amitriptyline are described. Also described is a method for producing such tablets by utilizing a heating step.

3,792,158

METAL HALIDE-ESTER REACTION PROCESS AND COMPOSITIONS

Marvin Michael Fein and John James Roderick, Paramus, N.J., assignors to Dart Industries, Inc., Los Angeles, Calif.

No Drawing. Original application May 28, 1971, Ser. No. 148,122, now Patent No. 3,721,693, dated Nov. 3, 1972. Divided and this application Oct. 2, 1972, Ser. No. 294,045

Int. Cl. A61k *7/00*

U.S. Cl. 424—65 5 Claims

New compositions useful as antiperspirants are derived from the reaction of a metal halide Lewis acid with at least

one ester selected from pyrocarbonates, carbonates and ortho formates, with or without subsequent further reaction with an organic hydroxyl-containing compound.

3,792,159

PROCESS FOR PREPARING INJECTIONABLE COMPOSITIONS

Geoffrey Green, Worthing, Brian George Coverell, North Holmwood, and Anthony Michael Pratt, Worthing, England, assignors to Beecham Group Limited, Brentford, Middlesex, England

No Drawing. Filed July 10, 1972, Ser. No. 270,086

Claims priority, application Great Britain, July 13, 1971, 32,780/71

Int. Cl. A61k *23/00*

U.S. Cl. 424—91 6 Claims

This invention is concerned with a process for preparing finely divided micro-particles of tyrosine having an allergen dispersed therein. The micro-particles prepared according to the invention may be suspended in a physiologically acceptable liquid carrier to produce an injectionable composition suitable for use in the desensitization of individuals who are sensitive to the allergen.

3,792,160

METHOD OF TREATING INFLAMMATION AND COMPOSITION THEREFOR

Masao Isono and Katsumi Tomoda, Hyogo, Koichi Miyata, Osaka, Mayima Kazutaka, Hyogo, and Reijiro Kodama, Kyoto, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Application Oct. 9, 1969, Ser. No. 868,280, which is a continuation-in-part of application Ser. No. 641,001, May 24, 1967. Divided and this application Jan. 18, 1972, Ser. No. 218,690

Int. Cl. A61k *19/00*

U.S. Cl. 424—94 4 Claims

A protease which has strong caseinolytic and fibrinolytic activities is abundantly produced by *Serratia sp.* E-15 when the microorganism is cultivated in a medium containing milk casein and soybean meal extract The protease is recovered from the culture medium and purified, and the purified protease is used as an effective anti-inflammatory agent.

3,792,161

BURN OINTMENT COMPRISING SILVER SULFADIAZINE AND COLLAGENASE

Charles L. Fox, Jr., New York, N.Y., assignor to Research Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 38,031, May 18, 1970, now Patent No. 3,761,590, which is a continuation-in-part of abandoned application Ser. No. 653,830, July 17, 1967. This application Nov. 24, 1970, Ser. No. 92,361

The portion of the term of the patent subsequent to Sept. 25, 1990, has been disclaimed

Int. Cl. A61k *19/00, 27/00*

U.S. Cl. 424—94 1 Claim

An ointment made of silver sulfadiazine and collagenase dispersed in a non-aqueous hydrophobic carrier, such as petrolatum, has been found to be useful in burn therapy. The silver sulfadiazine is present in the ointment in an effective antibacterial amount, such as an amount in the range from about 0.1 to about 10.0% by weight based on said ointment. The collagenase is present in the ointment usually in an amount in the range from about 0.01–0.05% to about 2.0% by weight based on said ointment. Petrolatum is preferred as the non-aqueous hydrophobic carrier. When applied in burn therapy the silver sulfadiazine component of the ointment is antibacterial, for example, is effective against *Pseudomonas aeruginosa,* and the collagenase component of the ointment appears to improve or accelerate the separation of the eschar and promotes healing.

3,792,162

ARALKYLTHIOVINYL PHOSPHOROTHIOATES USED AS INSECTICIDES AND ACARICIDES

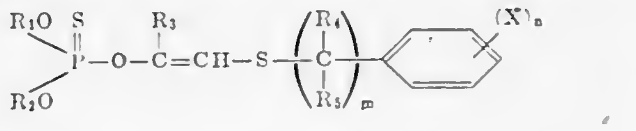
Roger Williams Addor, Pennington, and Thomas Walter Drabb, Jr., Trenton, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 95,908, Dec. 7, 1970, now Patent No. 3,718,718. This application Jan. 6, 1972, Ser. No. 215,905

Int. Cl. A01n *9/36*

U.S. Cl. 424—216 12 Claims

The acaricidal and insecticidal compounds have the formula:



$$\begin{matrix} R_1O & & \\ & \overset{S}{\overset{\|}{P}} & -O-\overset{R_3}{\overset{|}{C}}=CH-S-\left(\overset{R_4}{\underset{R_5}{\overset{|}{\underset{|}{C}}}}\right)_m-C_6H_{5-n}(X)_n \\ R_2O & & \end{matrix}$$

wherein:

R_1, R_2 and R_3 are each lower alkyl,
R_4 and R_5 are lower alkyl or hydrogen,
X is lower alkyl or halo,
m is 1 or 2, and
n is 0 to 3.

The trans and cis isomeric forms of the above compounds as well as mixtures of the trans and cis forms are embraced by the scope of the above formula.

3,792,163

EGG DECORATING DEVICE

Stanley J. Fudro, Minneapolis, Minn., assignor to Toys 'N Things, Inc., Minneapolis, Minn.

Filed May 8, 1972, Ser. No. 251,337

Int. Cl. B43l *9/00, 11/00, 13/00*

U.S. Cl. 33—21 D 15 Claims

Apparatus for decorating eggs and the like. The apparatus includes means for supporting an egg for rotation about its longitudinal axis and an arm member adapted to carry a marking device and arranged for marking movement longitudinally of the egg. Coordinated rotation of the egg and manipulation of the arm member together result in creating decorative marking on the egg.

3,792,164

OPHTHALMIC COMPOSITION COMPRISING WATER-SOLUBLE ALKALOID SALTS OF POLYURONIC ACIDS

Arthur W. Bechtold, Boonton, N.J., assignor to Chemway Corporation, Wayne, N.J.

No Drawing. Continuation-in-part of application Ser. No. 561,325, June 29, 1966. This application Mar. 31, 1970, Ser. No. 24,352

Int. Cl. A61k *27/00*

U.S. Cl. 424—180 1 Claim

Water-soluble salts are provided by reacting in aqueous solution approximately equivalent amounts of a polyuronic acid selected from the group consisting of polymannuronic acid, polyglucuronic acid and polygalacturonic acid and an alkaloid, selected from the group consisting of pilocarpine, atropine, eserine, ephedrine, benoxinate, chlorpheniramine, procaine, tetracaine, cocaine, phenylephrine, homatropine, amphetamine and epinephrine. The water-soluble salts are useful in the preparation of anesthetics, antihistamines, vasoconstrictors, miotics and mydriatics. Of particular importance to the invention, is the fact that when in solution such salts provide a dramatic increase in the duration of therapeutic activity which may be achieved, particularly with regard to miotics and mydriatics.

3,792,165
PHOSPHINE OR PHOSPHITE GOLD COMPLEXES OF THIOMALIC ACID IN TREATING ARTHRITIS

Elizabeth R. McGusty, Philadelphia, and Blaine M. Sutton, Hatboro, Pa., assignors to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Original application Apr. 27, 1971, Ser. No. 137,961, now Patent No. 3,718,679. Divided and this application Nov. 13, 1972, Ser. No. 306,266

Int. Cl. A61k *27/00*

U.S. Cl. 424—215 **7 Claims**

Phosphine or phosphite gold complexes of thiomalic acid having anti-arthritic activity are prepared by reaction of an appropraite phosphine or phosphite gold halide with thiomalic acid.

3,792,166
METHOD OF USING SUBSTITUTED IMIDAZO [2,1-b]THIAZOLES AS ANTHELMINTIC AGENTS

Larry Dean Spicer, Princeton, and John James Hand, Trenton, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 90,141, Nov. 16, 1970, now Patent No. 3,708,490, which is a continuation-in-part of abandoned application Ser. No. 3,220, Jan. 15, 1970. This application Mar. 13, 1972, Ser. No. 234,323

Int. Cl. A61k *27/00*

U.S. Cl. 424—270 **9 Claims**

The preparation of acyl substituted phenylimidazo[2,1-b]thiazoles found useful for the control of helminths in warm-blooded animals, is described.

3,792,167
NAPHTHYL ALKANOLS AND DERIVATIVES THEREOF, METHODS OF USE THEREOF, AND PROCESSES FOR THE PREPARATION THEREOF

John H. Fried and Ian T. Harrison, Palo Alto, Calif., assignors to Syntex Corporation, Panama, Panama

No Drawing. Original application July 2, 1968, Ser. No. 741,904, now Patent No. 3,641,161. Divided and this application Oct. 15, 1971, Ser. No. 189,561

Int. Cl. A61k *27/00*

U.S. Cl. 424—337 **26 Claims**

(β-[2-naphthyl] ethanols optionally substituted at the β-position and/or positions C–1, 4, 5, 7 or 8; and/or position C–6 possess anti-inflammatory, analgesic, anti-pyretic and antipruritic activity.

3,792,168
ETHYNYLENE CONTAINING N-PHENYL CARBAMATES AND THEIR USE AS ACARICIDES AND INSECTICIDES

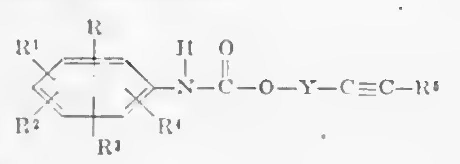
Don R. Baker, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Original application Aug. 1, 1969, Ser. No. 846,920, now Patent No. 3,660,465. Divided and this application Sept. 7, 1971, Ser. No. 178,486

Int. Cl. A01n *9/20*

U.S. Cl. 424—300 **7 Claims**

Compounds of the formula



in which R is
- (a) hydrogen,
- (b) alkyl,
- (c) nitro,
- (d) halo,
- (e) hydroxy,
- (f) alkoxy,
- (g) alkylthio, or
- (h) phenyl,

R^1 is
- (a) hydrogen,
- (b) alkyl,
- (c) nitro,
- (d) halo,
- (e) hydroxy, or
- (f) alkoxy,

R^2 is
- (a) hydrogen,
- (b) methyl,
- (c) halo, or
- (d) alkoxy,

R^3 is
- (a) hydrogen,
- (b) methyl, or
- (c) halo,

R^4 is
- (a) hydrogen,
- (b) methyl, or
- (c) halo,

Y is a divalent lower alkenyl, lower alkynyl or lower alkyl radical either straight or branched chain, and R^5 is an alkyl, cycloalkyl or alkenyl group and their use as acaricides and insecticides.

3,792,169
N-SUBSTITUTED ARYL CARBAMATES AS INSECTICIDES

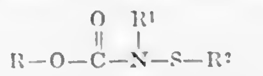
Melancthon S. Brown and Gustave K. Hehn, Berkeley, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Application Sept. 4, 1969, Ser. No. 855,421, now Patent No. 3,663,594, which is a continuation-in-part of abandoned application Ser. No. 764,299, Oct. 1, 1968. Divided and this application Feb. 28, 1972, Ser. No. 230,117

Int. Cl. A01n *9/12*

U.S. Cl. 424—300 **11 Claims**

Insecticidal carbamates of the formula



$$R-O-\overset{\overset{\displaystyle O}{\|}}{C}-\overset{\overset{\displaystyle R^1}{|}}{N}-S-R^2$$

wherein R is aryl or aralkyl of 6 to 20 carbon atoms, R^1 is H or alkyl of 1 to 6 carbon atoms, and R^2 is alkyl of 1 to 10 carbon atoms or monocyclic aryl of 6 to 12 carbon atoms substituted with 0 to 2 alkyl in which the total number of carbon atoms in the alkyl groups combined is 1 to 6, 0 to 2 halogens of atomic number 17 to 35 or 0 to 2 trifluoromethyl.

3,792,170
NOVEL ALKYLSULFINYL DERIVATIVES FOR PAIN, FEVER AND INFLAMMATION

Tsung-Ying Shen and Bruce E. Witzel, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Mar. 14, 1972, Ser. No. 234,659

Int. Cl. A61k *27/00*

U.S. Cl. 424—303 **14 Claims**

Novel alkylsulfinyl derivatives which find use as anti-inflammatory, analgestic and antipyretic agents.

ERRATUM

For Class 424—318 see:
Patent No. 3,792,179

3,792,171
MANUFACTURE OF CHEESE CURD

Lawrence L. Little, 1600 Renoir Lane,
Creve Coeur, Mo. 63141

No Drawing. Continuation-in-part of abandoned application Ser. No. 79,363, Oct. 8, 1970. This application Nov. 13, 1972, Ser. No. 306,161

Int. Cl. A23c *19/02*

U.S. Cl. 426—38 **26 Claims**

Milk is acidified by mixing solid, soluble acid particles therewith that have been coated with a material that will disperse or dissolve in the liquid milk media at a rate to delay dissolution of the acid particles and effect relatively slow and uniform acidification. In another embodiment such particles are added to milk prior to syneresis of the protein content of the milk and prior to any substantial dissolution of the particles so that coated particles are entrapped in the resultant curd and such curd is further acidified after its formation.

3,792,172
ARTIFICIAL FEED FOR WILD SILKWORMS

Minoru Shirota, Tetsuo Fukada, and Mayumi Ogata, Kyoto, Toshiaki Takahashi, Nishinomiya, and Hiromi Yamada, Uji, Japan, assignors to Kabushiki Kaisha Yakult Honsha, Tokyo, and Hiromi Yamada, City of Uji, Japan

No Drawing. Filed Dec. 27, 1971, Ser. No. 212,538
Claims priority, application Japan, Dec. 25, 1970, 45/117,858

Int. Cl. A23k *1/18*

U.S. Cl. 426—72 **1 Claim**

Artificial feeds for wild silkworms consisting of the conventional artificial feed containing leaves willingly taken by them and the unicellular green algae such as chlorella or scenedesmus.

3,792,173
PROCESS OF REDUCING SHRINKAGE AND RETAINING MOISTURE AND JUICES IN MEAT PRODUCTS AND PRODUCTS PRODUCED THEREBY

Elmer F. Glabe, Chicago, Ill., assignor to Food Technology, Inc., Chicago, Ill.

No Drawing. Filed Dec. 22, 1971, Ser. No. 211,033

Int. Cl. A22c *11/00, 18/00*

U.S. Cl. 426—92 **11 Claims**

Shrinkage of meat products is reduced and moisture and juices are retained by coating meat products with a powder consisting essentially of a dehydrated mixture of a sugary syrup, in which the solids are mainly monosaccharides or both mono- and disaccharides, with or without minor amounts of higher saccharides, and a partially gelatinized starch of a type having a gelatinization temperature of at least 150° F. The resultant meat products, upon cooking, not only lose less weight but also have a softer texture and an improved flavor due to greater retention of the natural juices. The invention is especially useful for comminuted meats, for example, sausages, hamburger, frankfurters, and meat loaves, but is also applicable to integral meat units in which the meat has not been comminuted.

3,792,174
FLOUR MIX FOR PREPARING TORTILLAS

Ruben G. Duarte and Manuel George Duarte, both of 1012 Nevada St., El Paso, Tex. 79902

No Drawing. Filed Mar. 10, 1971, Ser. No. 123,021

Int. Cl. A21d *2/00;* **A23d** *1/10*

U.S. Cl. 426—152 **4 Claims**

A culinary mixture is provided from which tortillas may be prepared which comprises a substantial portion of wheat flour together with about 14–16 weight percent shortening, about 1–1.5 weight percent baking powder, about 1–1.5 weight percent salt, about 2–3 weight percent powdered milk, about 2–2.5 weight percent emulsifier, and about .1–.2 weight percent spoilage retarder.

3,792,175
FIBRILLAR SOY WHEY PROTEIN COMPLEX

Edward Emil Schmitt, Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Oct. 21, 1971, Ser. No. 191,271

Int. Cl. A23j *3/00*

U.S. Cl. 426—364 **7 Claims**

A fibrillar soy whey protein complex is produced by contacting soy whey with a polysaccharide solution containing carrageenan at a pH ranging from about 3.85 to about 4.35 with stirring.

3,792,176
METHOD FOR MAKING PASTRY DOUGHS

Eric M. Van Patten, Tinley Park, and Dale H. O'Rell and Leonard B. Kondrot, Chicago, Ill., assignors to American Maize-Products Company

No Drawing. Filed Mar. 2, 1972, Ser. No. 231,415

Int. Cl. A21d *2/00, 8/00*

U.S. Cl. 426—157 **5 Claims**

An improved dough for nonleavened pastries, especially fruit and meat pies, is disclosed. By the addition of from about 1% to about 10% of an unmodified high amylose starch, the pastry dough is made more easy to process and in addition the crusts do not become soggy when baked out.

3,792,177
PHOSPHATE-HYDROGEN PEROXIDE ADDUCT AS A FOOD PRESERVATIVE

Hiromi Nakatani and Kiyoshi Katagiri, Kyoto, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Feb. 5, 1969, Ser. No. 796,891
Claims priority, application Japan, Feb. 7, 1968, 43/7,589

The portion of the term of the patent subsequent to Dec. 8, 1989, has been disclaimed

Int. Cl. A23f *1/06*

U.S. Cl. 426—178 **9 Claims**

By admixing an acid metal phosphate with water-soluble metal phosphate-hydrogen peroxide adducts, the deleterious effects thereof on food products to which they are added as stabilizers due to their alkalinity are overcome.

3,792,178
SOUR CREAM POWDER

Peter P. Noznick, Charles W. Tatter, and Carl F. Obenauf, Chicago, Ill., assignors to Beatrice Foods Co., Chicago, Ill.

No Drawing. Continuation-in-part of applications Ser. No. 825,675, July 8, 1959, Ser. No. 16,652, Mar. 22, 1960, Ser. No. 149,537, Nov. 2, 1961, and Ser. No. 197,837, May 28, 1962, all now abandoned. This application May 10, 1968, Ser. No. 728,317

Int. Cl. A23c *9/12*

U.S. Cl. 426—187 **25 Claims**

Sour cream powder is prepared by adding a coating assisting agent selected from the group consisting of gum acacia, gum tragacanth, corn, wheat and potato starches, acid modified starches, phosphated starches, enzyme modified starches of the previous group, dextrins, pectins, carboxymethyl cellulose, nonfat milk solids, gelatin and casein, homogenizing the mixture and spray drying. Preferably a phosphate is added as a protein peptizing agent. The products with or without the peptizing agent are readily redispersible in water to give stable emulsion.

3,792,179
TRANQUILIZING METHOD EMPLOYING ARACHIDONIC ACID

Walter Joseph Potts, Glenview, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed June 9, 1971, Ser. No. 151,564

Int. Cl. A61k *27/00*

U.S. Cl. 424—318 **1 Claim**

The administration of tranquilizing amounts of a prostaglandin such as PGE_1, PGE_2 and PGA_2 or of a prostaglandin precursor such as arachidonic acid to mammals results in tranquilization as contrasted to generalized depression.

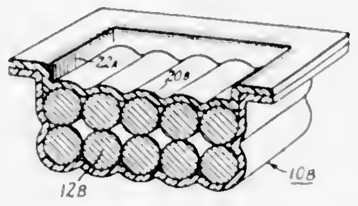
3,792,180
ADDING FAT ADJUVANTS TO FOODS IN AN EBULLIENT FREEZANT

Kavsy D. Dastur, Yorklyn, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed July 30, 1971, Ser. No. 167,835
Int. Cl. A23 *1/00*
U.S. Cl. 426—524 **3 Claims**

A process for adding food adjuvants to foods which comprises contacting the surface of the foods with a dispersion of the food adjuvant in a saturated fluorinated liquid chlorohydrocarbon freezant having a normal boiling point of 5° C. to −50° C.

3,792,181
SEMI-RIGID PLASTIC PACKAGE WITH RECLOSABLE SEAL

Reid A. Mahaffy, Montclair, and Joel A. Hamilton, Englewood, N.J., assignors to Mahaffy & Harder Engineering Company, Totowa, N.J.
Filed Sept. 24, 1969, Ser. No. 860,590
Int. Cl. B65b *25/00*
U.S. Cl. 426—123 **13 Claims**



A package comprising a receptacle cup of semi-rigid plastic having a top of semi-rigid plastic sealed to flanges of the receptacle and formed inwardly to press against the packaged product and hold it in place with or without evacuation of the interior. Different techniques and apparatus are disclosed for forming such packages. Package configurations also are disclosed providing improved reclosable characteristics, wherein the semi-rigid nature of both the top and the cup are utilized to enable the reclosed top to be held securely in place.

3,792,182
MACHINE AND METHOD FOR MAKING A SOFT ICE PRODUCT FORMED OF FROZEN AIR-AND-GELATIN DISPERSION

Poerio Carpigiani, Anzola Enilia, Bologna, Italy
Continuation-in-part of abandoned application Ser. No. 8,529, Feb. 4, 1970. This application Apr. 10, 1972, Ser. No. 242,756
Int. Cl. A23g *5/00;* **F25c** *7/14*
U.S. Cl. 426—250 **10 Claims**

Making an edible frozen food product by subjecting an aqueous solution containing between about 5% and about 30% by weight of gelatin to sufficient heat to bring the solution above its melting and gelation temperatures, maintaining the aqueous solution at a first temperature range T_1 at or above its melting and gelation temperatures while mixing air into said aqueous solution to form a foam, feeding the foam into a refrigerated chamber to precool said foam, and simultaneously further cooling to a second temperature range T_2 below its freezing point annd whiping said foam initially cooled in the refrigerated chamber to produce a soft frozen dispensable food product.

3,792,183
CEREAL COATING COMPOSITION AND PROCESS

Angus Alexander Lyall, Niagara Falls, Ontario, Canada, and Cecil Norton Lundy, Hawthorne, N.J., assignors to Nabisco, Inc., New York, N.Y.
Filed Aug. 10, 1971, Ser. No. 170,510
Int. Cl. A23l *1/10, 1/08*
U.S. Cl. 426—307 **24 Claims**

A syrup solution containing, by weight, 60–85% sugar solids, is made up, and is applied to a cereal base without heating. The sugar solids comprise by weight, based on the total sugar solids, on a dry basis, from about 80% to about 68% sucrose solids and about 20–32% low dextrose equivalent glucose solids. After coating, the product is subjected to substantial heat in a dry apparatus for 20–28 minutes, and the drying is effected with substantial agitation of the coated cereal particles. A hard, glossy, non-hydroscopic transparent cereal coating is obtained which does not crystallize or decrease in glossiness even after extended shelf life.

3,792,184
FREEZING AND THAWING PROCESS FOR REMOVING PRECIPITATING SUBSTANCES FROM PLANT EXTRACTS

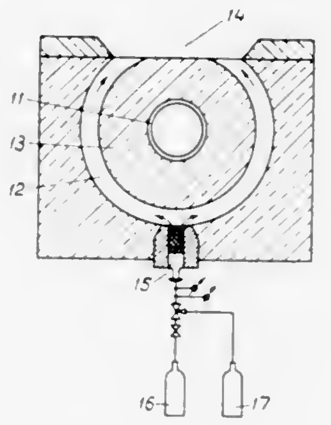
Kaoru Inagami and Hidemoto Kamada, Tokyo, Japan, assignors to The Calpis Food Industry Co., Ltd., Tokyo, Japan
No Drawing. Filed Nov. 4, 1971, Ser. No. 195,636
Claims priority, application Japan, Nov. 14, 1970, 45/100,313
Int. Cl. A23l *1/28*
U.S. Cl. 426—369 **4 Claims**

Plant extracts (such as extracts from cocoa powder or cinnamon powder) which contains colloidal particles have the undesirable precipitating substances therein (such as proteins or high polymer carbohydrates) removed by freezing the extract to −12° C. or lower and then raising the temperature to 5° C. to thaw the extract, the pH of the extract being between 3 and 5. The precipitate is then removed by filtering or centrifuging the extract.

ELECTRICAL

3,792,185
CHANNEL-TYPE INDUCTION FURNACE

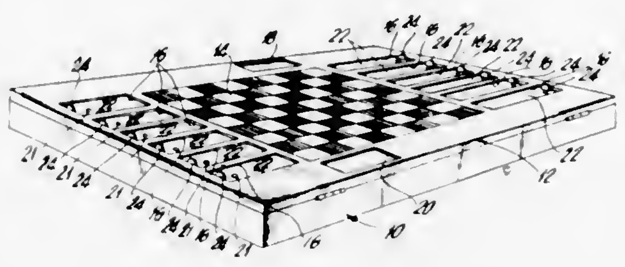
Kare Folgero, Vasteras, and Sven Hellsing, Finspong, both of Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed Aug. 24, 1972, Ser. No. 283,425
Claims priority, application Sweden, Sept. 9, 1971, 11412/71
Int. Cl. F27d *11/06;* **H05b** *5/14*
U.S. Cl. 13—29 **7 Claims**



Channel type induction furnace provided with a nozzle for blowing gas into the channel at a position which prevents formation of oxides and the like due to eddy currents.

3,792,186
GAME APPARATUS

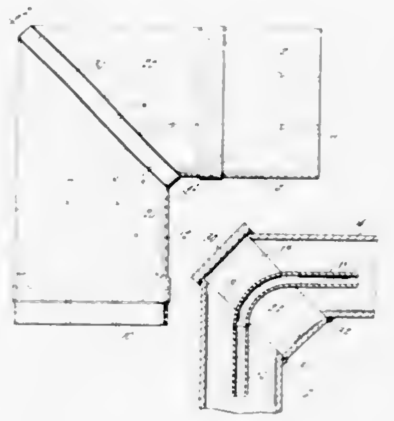
Angelo Principe, 19 Dublin Ln., Hazlet, N.J.
Filed Nov. 6, 1972, Ser. No. 304,339
Int. Cl. G09b *19/22*
U.S. Cl. 35—8 B **5 Claims**



A game apparatus is described herein for self-teaching board games such as chess, checkers and the like. Game pieces and a game board having windows formed therein are provided and a mounting panel is operatively associated with the board for locking an instruction card in spaced relationship beneath the game board. The card is properly positioned, when locked, so as to present instructions through the windows of the game board. Shutter panels are operatively mounted on the board for incrementally exposing portions of the card through the windows. Detents may be provided for locking each shutter into position at each increment between the entirely opened and the entirely closed positions of the shutter.

3,792,187
VOLTAGE GRADING SHIELD FOR SHARP ANGLE TRANSITION JOINT

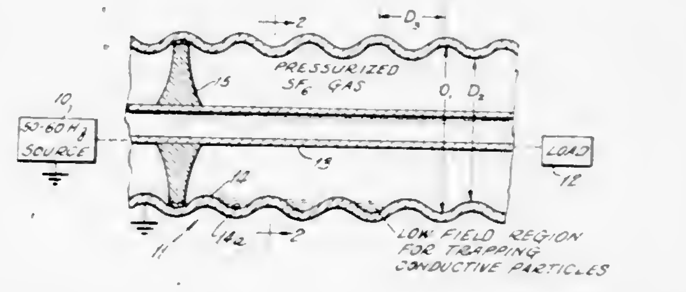
John J. Depcrymski, Greensburg, Pa., assignor to I.T.E. Imperial Corporation, Spring House, Pa.
Filed May 21, 1973, Ser. No. 362,323
Int. Cl. H02g *15/24;* **H01b** *9/04*
U.S. Cl. 174—21 C **11 Claims**



A sharp angle transition joint for rigid coaxial gas-insulated systems is provided by an oval ring formed from a flat strip of conductive material. The ring overlaps the mitered spaced parallel edges of two concentric, outer housings and is welded to the edges of the housings.

3,792,188
CONDUCTIVE PARTICLE TRAP FOR HIGH-POWER, GAS-INSULATED TRANSMISSION SYSTEM

John C. Cronin, Greensburg, Pa., assignor to I.T.E. Imperial Corporation, Philadelphia, Pa.
Filed Aug. 21, 1972, Ser. No. 282,366
Int. Cl. H01b *9/06*
U.S. Cl. 174—28 **4 Claims**



A method of placing a low-frequency, high voltage, gas-filled power transmission system into service by applying a conditioning voltage to the system prior to application of system voltage.

3,792,189
TELESCOPIC CABLE GUIDE

Max Stengel; Werner Kollmer, and Manfred Grassl, all of Munich, Germany, assignors to Messerschmit-Bolkow-Blohm GmbH, Munich, Germany
Filed July 24, 1972, Ser. No. 274,492
Claims priority, application Germany, Feb. 11, 1972, 2206404
Int. Cl. H01b *7/06*
U.S. Cl. 174—69 **7 Claims**

Telescopic guide for conducting a flexible cable between relatively moving parts. For positioning between relatively

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material pipe which serves as the gas pressure vessel for a

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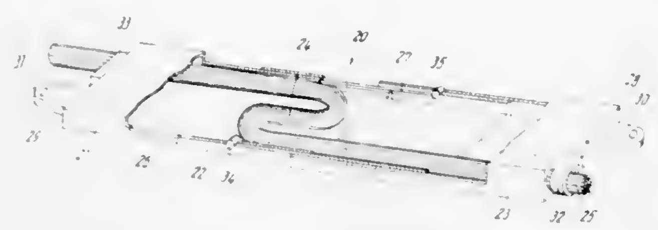
electrical terminals molded or cast in a single piece of an insu-

3,792,196

moving parts, such as an aircraft fuselage and a swingable wing connected thereto, there is provided a housing comprising telescopic parts, said housing being positioned between the relatively moving parts and conducting the cable therethrough. The cable is clamped at either end of the housing and a loop maintained in the cable in at least all positions



other than the fully extended position of the telescopic housing. Pin and slot arrangements between the telescopic parts of the housing provide a positive limit to the extension of the housing and thereby assure that the housing will not be unduly extended and result in either damage to the housing or damage to the cable.

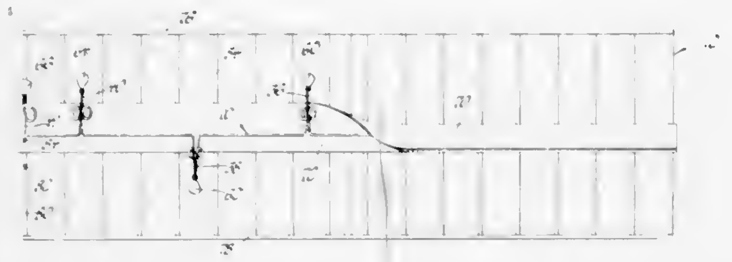
3,792,190
PREASSEMBLED ELECTRICAL WIRING APPARATUS AND METHOD OF INSTALLATION THEREOF

Robert L. Schultz, Tecumseh, Mich.

Filed Nov. 16, 1972, Ser. No. 307,273

Int. Cl. H02g *3/02, 1/00*, **B65d** *85/00*

U.S. Cl. 174—72 R **13 Claims**



A method and apparatus for wiring a building structure including a factory-assembled wiring harness having a trunk cable portion and a plurality of branch cable portions, each branch cable portion having an electrical terminal device, such as a switch or outlet, permanently electrically secured to the end thereof. Installation is facilitated by individually packaging the electrical terminal devices and a portion of the branch cable secured thereto in individual plastic bags, and wrapping the entire harness in an elongate plastic envelope which is then rolled up from one end to the other. In the preferred example, the wiring harness is placed on a grid-like ceiling module and unrolled longitudinally from one end to the other. The envelope is opened and the individual terminal devices are extended outwardly therefrom and tacked in place and left hanging around the outside of the ceiling module. After the ceiling module is disposed on the walls, the electrical terminal device packages are opened to allow the devices to fall to their full vertical extension and secured in place. Outer peripheral notches and protective plates are employed to provide raceways or channels for the electrical wiring

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3,792,191
ENCLOSURE FOR CONDUCTOR OF ELECTRICAL TRANSMISSION SYSTEM

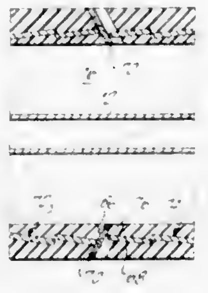
Elijah Robert Perry, Scottdale; John C. Cronin, and Howard W. Graybill, both of Greensburg, all of Pa., assignors to ITE Imperial Corporation, Spring House, Pa.

Filed Dec. 26, 1972, Ser. No. 318,693

Int. Cl. H02g *15/24*, **H01b** *9/04*

U.S. Cl. 174—84 R **5 Claims**

Tubular enclosure for a high voltage conductor: the enclosure comprises a nonconductive glass reinforced plastic material pipe which serves as the gas pressure vessel for a dielectric gas within the pipe; a wound conductive foil electric ground shield is incorporated into the nonconductive layer.



The joint between adjacent housing lengths is sealed with a conductive epoxy; a means on the interior of the joint prevents the bonding adhesive from penetrating inside the housing.

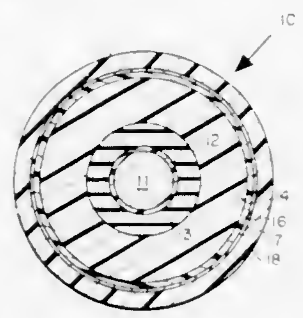
3,792,192
ELECTRICAL CABLE

Walter J. Plate, Rye, N.Y., assignor to The Anaconda Company, New York, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,147

Int. Cl. H01b *7/18*

U.S. Cl. 174—102 SC **16 Claims**



An electric power cable comprises extruded strand shielding and an inner layer of rubber insulation such as ethylene-propylene copolymer or ethylene-propylene-diene terpolymer rubber bonded by cross-linking to an outer layer of cross-linked polyethylene insulation

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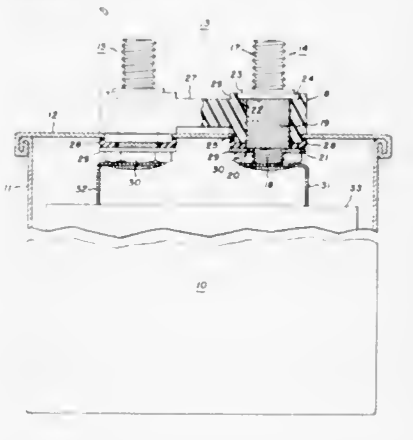
3,792,193
DUAL BUSHING CAPACITOR TERMINAL ASSEMBLY

Frank D. Price, South Glens Falls, and Richard G. Conners, Glens Falls, both of N.Y., assignors to General Electric Company, Hudson Falls, N.Y.

Filed Sept. 14, 1972, Ser. No. 289,174

Int. Cl. H01g *1/14*; **H01b** *17/30*

U.S. Cl. 174—153 R **4 Claims**



A dual bushing terminal assembly is disclosed for capacitors. The dual bushing comprises a pair of separate capacitor electrical terminals molded or cast in a single piece of an insulating material, and the dual bushing assembly is then sealed in a capacitor cover.

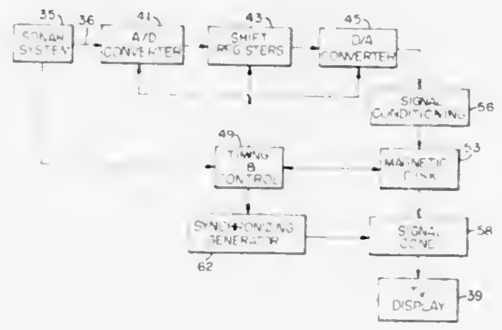
3,792,194
SCAN CONVERSION APPARATUS

Kenneth E. Wood, Annapolis; William F. Parrish, Baltimore, both of Md., and Paul G. Kennedy, Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 5, 1972, Ser. No. 259,625

Int. Cl. H04n *5/02, 5/78, 7/18*

U.S. Cl. 178—6.8 **14 Claims**



A video magnetic disk is utilized in the conversion of side looking sonar or slow scan TV data into a form suitable for displaying as a flicker-free picture on a conventional TV monitor. In the side looking sonar mode of operation, provision is made for displaying the sonar information as a moving window display.

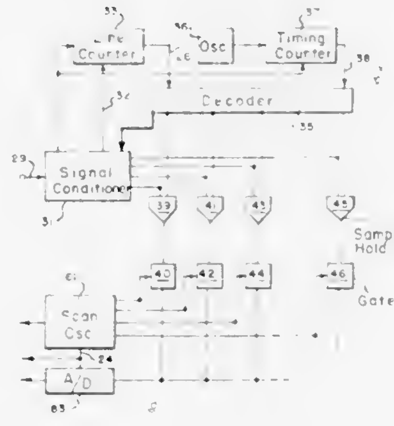
3,792,195
SIGNAL MONITOR FOR RECURRENT ELECTRICAL SIGNALS

Kenneth A. Wilson, Locust Valley, N.Y., and Graham D. Bogel, Woodbury, Conn., assignors to American Chain & Cable Company, Inc., New York, N.Y.

Filed May 25, 1972, Ser. No. 256,917

Int. Cl. H04n *7/02*

U.S. Cl. 178—6.8 **11 Claims**



A television signal monitor for detecting and isolating selected portions of a composite television signal. The isolated portions of the television signal are temporarily stored in analog form in a plurality of parallel aligned sample and hold circuits. The sample and hold circuits are selectively gated by a programable counter-decoder circuit which generates gating pulses of selected duration at predetermined time intervals during the horizontal line intervals. The stored signals are sequentially sampled and converted to binary coded decimal form and then serially fed to a storage circuit or to a utilization circuit.

3,792,196
PICTURE TRANSMISSION SYSTEM

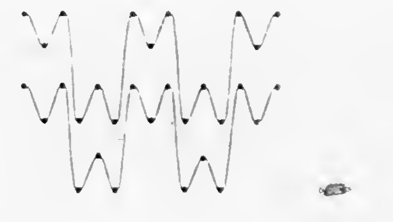
Broder Wendland, Ay/Iller, Germany, assignor to Licentia Patent-Verwaltungs GmbH, Frankfurt am Main, Germany

Filed June 23, 1972, Ser. No. 265,795

Claims priority, application Germany, June 24, 1971, 2131311

Int. Cl. H04n *3/34, 5/04*

U.S. Cl. 178—6.8 **11 Claims**



A television system in which, at both the transmitting end and the receiving end, the picture is scanned by an undulating scanning beam which during each horizontal scanning period scans picture elements lying in a plurality of adjacent rows, the undulating beam tracing a path which alternates between the rows

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3,792,197
SOLID-STATE DIODE ARRAY CAMERA TUBE HAVING ELECTRONIC CONTROL OF LIGHT SENSITIVITY

Sooyoung Chai, Madison Township, Middlesex, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed July 31, 1972, Ser. No. 276,291

Int. Cl. H04n *5/30*

U.S. Cl. 178—7.1 **6 Claims**

A silicon diode array target structure is disclosed in which light sensitivity is electronically controlled. Photons incident upon a target generate hole (minority carrier) electron pairs. A single large area reversed bias P-N junction structure is formed over the entire image area on the light incident side of a conventional diode array target, and the depletion region created by the reverse bias both controls light sensitivity by impeding the movement of minority carriers toward the diode array target and serves as a sink for the minority carriers generated within the depletion region

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3,792,198
PARTITION SYSTEM FOR IMAGE DISPLAYS

Charles C. Hanson, and Lyle T. Lemke, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 28, 1972, Ser. No. 293,200

Int. Cl. H04n *5/72, 7/08*

U.S. Cl. 178—7.91 **5 Claims**

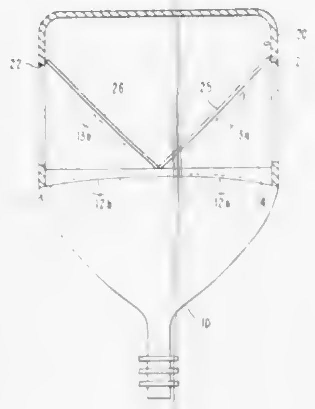
A louvered film is positioned over the screen of an image display device such as a cathode ray tube to divide the screen

discernable only from

3,792,200

tor. If the decoder is in-frame, the threshold detector will in-

aled number and then subsequently retransmits that number into discrete viewable portions discernable only from predetermined viewing angles to enable viewers at different viewing angles to see only one of the viewable portions. In one embodiment, the louvers in the film restrict the viewing angle in a direction normal to the face of the cathode ray tube. A pair of mirrors are positioned at angles with respect to each other and the louvered film whereby viewers facing each other



are restricted to viewing different discrete areas on the cathode ray tube screen. By partitioning the screen into discrete viewing areas, a single display device can function as multiple display devices.

In another embodiment, instead of using mirrors, the louvers in the film are positioned at a different angle for each viewing area whereby side by side viewers see discrete viewing areas from predetermined viewing angles.

3,792,199
REPRODUCER DEVICE FOR FM STEREO MULTIPLEX SIGNALS

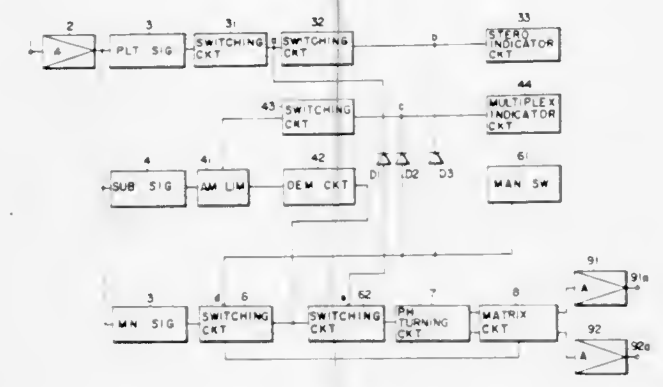
Yoshifumi Saeki, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sept. 14, 1970, Ser. No. 72,086

Claims priority, application Japan, Sept. 13, 1969, 44-72318

Int. Cl. H04h *5/00*

U.S. Cl. 179—15 BT **1 Claim**



A receiving and reproducing device for multiplex broadcast signals whereby a monaural and a stereo signal can be received and further a multiplex signal which contains two independent signals, for example, a Japanese language signal and another language signal can be received and selectively reproduced. When a stereo signal is received, each circuit of this device automatically operates so as to reproduce the stereo signal. When a multiplex signal other than a stereo signal is received, each circuit operates so as to reproduce a main signal or a sub-signal of the multiplex signal according to the predetermined selection.

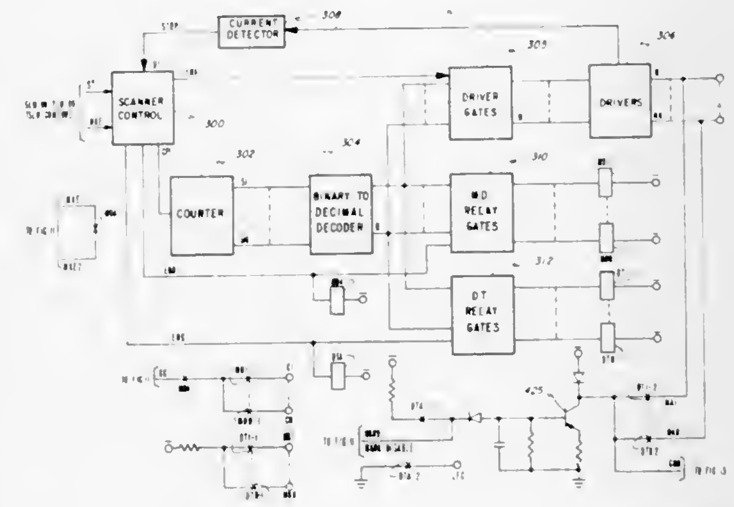
3,792,200
MATRIX SWITCHING NETWORK CONTROL LINK INTERCONNECTION CIRCUIT

Otto Altenburger, Rochester, N.Y., and Robert H. Bansemir, Northlake, Ill., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Division of Ser. No. 153,221, June 15, 1971, Pat. No. 3,729,593. This application Nov. 3, 1972, Ser. No. 303,566

Int. Cl. H04g *3/42*

U.S. Cl. 179—18 GE **3 Claims**



Matrix connector circuits for connection in series with separate groups of control links of a matrix switching network at the point at which the control links define unique paths between circuits connected to opposite ends of the network. The matrix connector circuits initially complete all the control links during the initial scanning steps in a path finding sequence. In the last scanning step, all the matrix connector circuits open all the control links while a selected matrix connector allows the scanning of its control links and allows the application of energization signals to opposite portions of a selected control link to complete the corresponding unique path through the network.

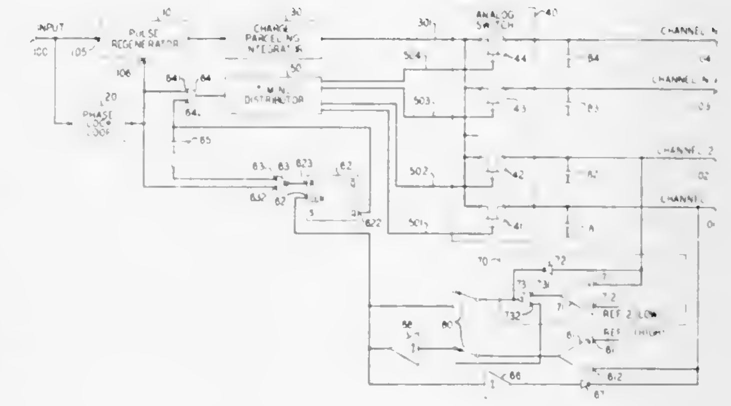
3,792,201
TIME-DIVISION MULTIPLEX FRAMING CIRCUIT

Thomas Lawrence Osborne, Georgetown, Mass., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 15, 1972, Ser. No. 280,796

Int. Cl. H04j *3/06*

U.S. Cl. 179—15 BS **6 Claims**



A framing circuit for use in time-division multiplex decoders utilizes a digital "1" in the first timing slot in each frame of input data to synchronize the decoder. In the decoder, the input signal is demultiplexed into separate information channels which are separately decoded. The output signal of the first channel is then applied to a threshold detector. If the decoder is in-frame, the threshold detector will indicate that the output of the first channel is higher than the reference level of the detector. When the decoder is out-of-frame, the first channel output will vary randomly, falling below the threshold level. This will cause a signal to be generated which will block one of the timing pulses to the demultiplexer, thereby causing the relative channel locations to change by one position. This is repeated until the first framing time slot corresponds to the first decoded channel.

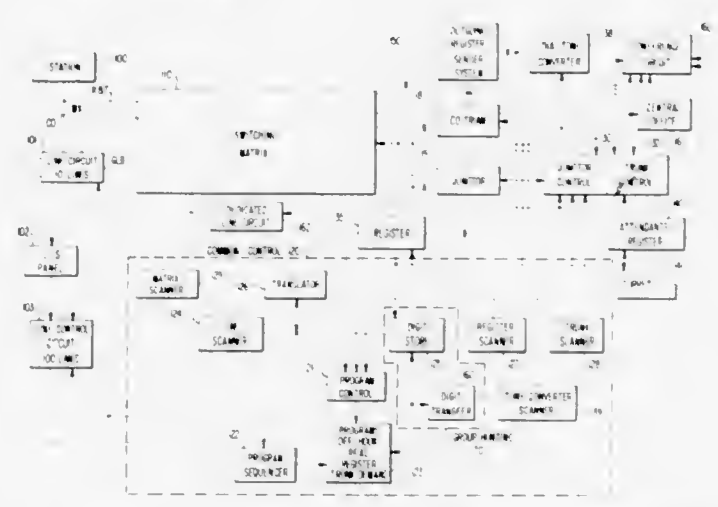
3,792,202
DIAL UP CONFERENCE CIRCUIT

John A. Adams, Jr., Altamonte Springs, Fla.; Ernest D. Lee, Jr., Fairport, and Karl Wichlajew, Penfield, both of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Apr. 26, 1972, Ser. No. 247,832

Int. Cl. H04m *3/56*

U.S. Cl. 179—18 BC **20 Claims**



A conference circuit for an automatic telephone system is provided with a dedicated line circuit in addition to plurality of party stations, each of which is connected to the concentrator matrix of the system. Through the system a conference may be set up by a local party dialing the conference code, by a distant party, connected via a trunk, which has been extended by an attendant to a dedicated line circuit, through the attendant's turret, or by transfer of a trunk connection via a local party and code dialing.

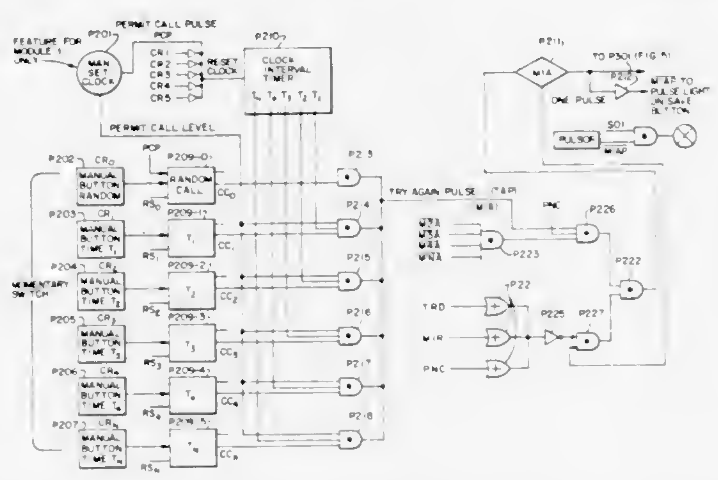
3,792,203
AUTOMATIC REDIAL MEMORY DEVICE FOR TELEPHONES

David B. Martin, Cumberland, R.I., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Mar. 10, 1972, Ser. No. 233,647

Int. Cl. H04m *1/44*

U.S. Cl. 179—90 B **19 Claims**



An automatic redial memory device for use with the telephone system which electronically stores a previously dialed number and then subsequently retransmits that number via the telephone apparatus, either on a timed interval basis or at random times upon the activation of an appropriate select switch. A plurality of shift registers comprise a module register which stores a plurality of dialed telephone numbers comprising a telephone address. Selection circuitry permits the transmission and/or retransmission of the stored numbers at predetermined intervals or at random times by enabling selected ones of a plurality of AND gates to provide transmission pulses.

3,792,204
ACOUSTIC TRANSDUCER USING A PIEZOELECTRIC POLYVINYLIDENE FLUORIDE RESIN FILM AS THE OSCILLATOR

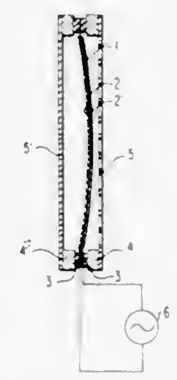
Naohiro Murayama, and Takao Okiawa, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 3, 1971, Ser. No. 204,584

Claims priority, application Japan, Dec. 4, 1970, 45-106710

Int. Cl. H04r *17/00*

U.S. Cl. 179—110 A **6 Claims**



An electrostatic type, electroacoustic transducer having excellent acoustic characteristics is composed of an piezoelectric film of a polyvinylidene fluorine resin having an electroconductive material on the opposite surfaces of the film.

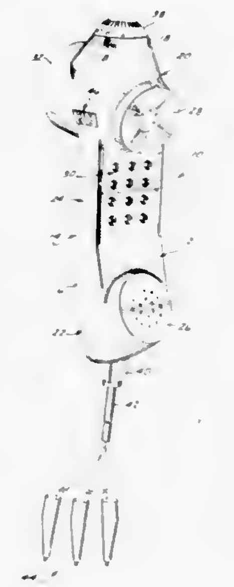
3,792,205
HAND HELD TELEPHONE TEST INSTRUMENT

Orrin B. O'Dea, Garden Grove, Calif., assignor to Communication Mfg. Co., Long Beach, Calif.

Filed June 1, 1971, Ser. No. 148,435

Int. Cl. H04m *3/22*

U.S. Cl. 179—175 **16 Claims**



A hand held telephone test instrument, which is in the general form of a telephone hand set and embodies circuit and

mechanical components for performing the usual hand set functions of dial, talk and monitor, but which utilizes such

necting means, the switch and its actuator, and the setting wheel are also all positioned on this same side. This permits all

tax stamp. A contact element including a contact finger is mounted on a support in a position where it will pass over the area to be covered by the covering strip. If the covering strip is

system, including switch means in the electrical system, each switch means having an actuated and a deactuated position mechanical components for performing the usual hand set functions of dial, talk and monitor, but which utilizes such components in novel combination with additional circuit and mechanical components for selectively performing comprehensive functional tests on telephone switching equipment of both the dial and "Touch-Tone" types, which testing has conventionally required the use of a separate complete "-Touch-Tone" telephone as well as additional test sets which are complex, expensive and much too bulky to be carried by a telephone testman.

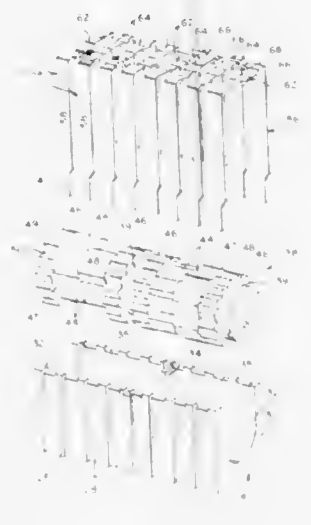
3,792,206
BINARY CODABLE, CAM OPERATED, PIVOTED CONTACT SWITCH ASSEMBLY

Harold Lawrence Purdy, Hummelstown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 13, 1972, Ser. No. 306,113

Int. Cl. H01h *19/62, 1/00*

U.S. Cl. 200—6 B **4 Claims**



This invention relates to a switch having four parts including the housing. More particularly the invention relates to a frame which has 16 positions which can be binary coded. The 16 positions consist of four single pole-double throw contacts all of which are made by stamping and forming a single sheet of metal. The movable contacts are switched from one fixed contact to another by lobes on a rotatable camshaft.

3,792,207
ELECTRIC MOTOR DRIVEN TIMING RELAY WITH COMPONENTS DISPOSED ON ONE SIDE OF SUPPORTING FRAME

Alois Muhling, Pleinfeld; Helmut Schmidt, and Hans Knie, both of Nurnberg, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

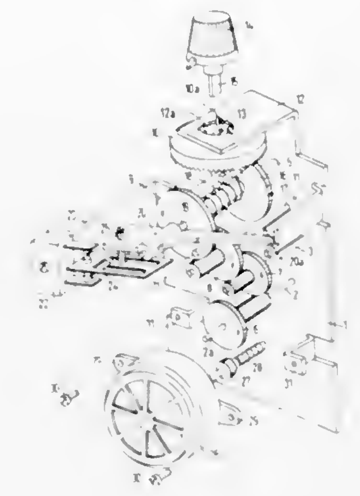
Filed Nov. 30, 1972, Ser. No. 310,879

Claims priority, application Germany, Dec. 4, 1971, 2160301

Int. Cl. H01h *43/10, 9/02*

U.S. Cl. 200—35 R **3 Claims**

An electric motor driven timing relay has a speed-reducing gear train having input and output gears and with all of its gears journaled on shafts fixed to a base plate, the electric motor driving the input gear when energized and the output gear having an element fixed on it which rotates with it through a circular path, an electric switch being provided with an actuator positioned in this rotative path and a setting wheel being provided which releasably connects with the output gear for moving the latter to any of a range of rotative positions from which to start its rotation when the motor is energized. To facilitate assembly of these various parts of the relay, the gear journaling shafts are fixed to the base plate to project from only one side of the base plate and the motor and its connecting means, the switch and its actuator, and the setting wheel are also all positioned on this same side. This permits all of the relay parts to be assembled without reversing the base plate or working on its opposite sides, thus facilitating manual and particularly automated assembling operations.



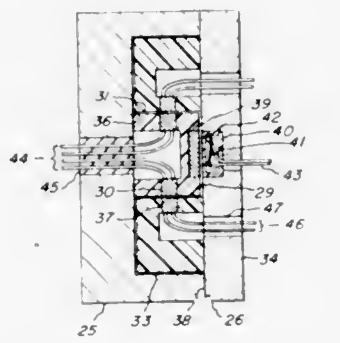
3,792,208
COMMUNICATIONS CONNECTOR APPARATUS UTILIZING RADIANT ENERGY

Bruce L. Meyer, Bloomington, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Nov. 15, 1972, Ser. No. 306,956

Int. Cl. H01r *13/70*

U.S. Cl. 200—51 R **14 Claims**



Connector apparatus for a communications link includes first and second mateable housings defining an interface region therebetween. A plurality of radiation emitting devices are supported by one of the housings and a like plurality of radiation responsive devices are supported by the other housing so that upon application of an electrical signal to a radiation emitting device, the radiation emitting device emits radiation across said interface region to impinge a corresponding radiation responsive device. The level of radiation is representative of the level of the applied electrical signal, and the electrical characteristics of the receiving radiation responsive device are representative of the level of incident radiation.

3,792,209
SWITCH SENSING DEVICE FOR SENSING PRESENCE OF SEAL ON CONTAINERS

Heinz Focke, Verden/Aller, Germany, assignor to Focke & Pfuhl, Verden/Aller, Germany

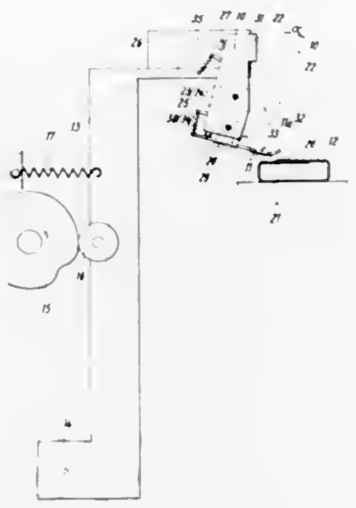
Filed Mar. 17, 1972, Ser. No. 235,771

Claims priority, application Germany, Mar. 19, 1971, 2113316

Int. Cl. H01h *3/16*

U.S. Cl. 200—61.41 **18 Claims**

A device for checking containers for edges of closing parts when the edges are not covered by a covering strip such as a tax stamp. A contact element including a contact finger is mounted on a support in a position where it will pass over the area to be covered by the covering strip. If the covering strip is present the contact finger passes over the edge of the closing part. If, however, the covering strip is absent, the contact finger engages the exposed edge and the engagement causes the activation of an alarm.



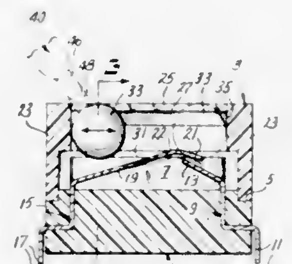
3,792,210
MICROMINIATURE SWITCH CONSTRUCTION

Orrin B. O'Dea, Garden Grove, and Thomas W. Hanneman, Fountain Valley, both of Calif., assignors to Jim C. Garrett, Long Beach; Robert H. Johnson, Marina Del Ray and Jack Shelton, Long Beach, all of, Calif.

Filed Aug. 11, 1972, Ser. No. 279,863

Int. Cl. H01h *3/16*

U.S. Cl. 200—61.59 **11 Claims**



A microminiature switch having a housing base and a housing cover, a pair of contacts in the base with a ball member held in place by the cover for closing the circuit. One contact is at least partially resilient, and has a movable portion overhanging a stationary contact. The ball member is moved by an exterior actuator over an apex of the movable contact to cam it into engagement with the stationary contact.

In another modification the ball bridges two contacts, rather than camming them together.

3,792,211
IMPACT FIRE SAFETY SWITCH

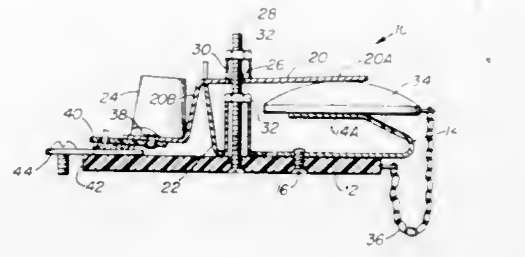
Jesse E. McGuffey, Rt. No. 1, Blue Ridge, Tex.

Filed Mar. 26, 1973, Ser. No. 344,572

Int. Cl. H01h *35/14*

U.S. Cl. 200—61.45 R **4 Claims**

An impact fire safety for use with an engine driven vehicle having a vehicle electrical system and an engine ingnition system, including switch means in the electrical system, each switch means having an actuated and a deactuated position and means of deactuating both switch means on impact of the vehicle.



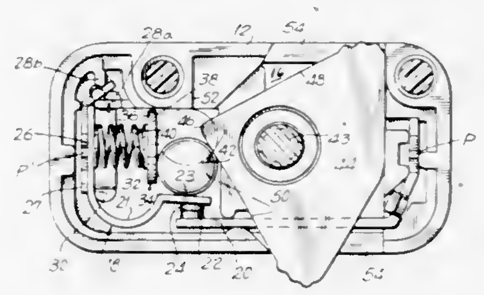
3,792,212
SNAP ACTION ELECTRIC SWITCH

Louis Ludwig, c/o Eagle Electric Mfg. Co. Inc., 23-10 Bridge Plaza S., Long Island City, N.Y.

Filed Aug. 17, 1971, Ser. No. 172,492

Int. Cl. H01h *21/40*

U.S. Cl. 200—68 **1 Claim**



A snap action electric switch including a ball movable between alternate switching positions by a cam for controlling switching conditions. A coiled compression spring presses against the ball in a direction perpendicular to the direction of movement of the ball between said switching positions to assist the cam in snapping said ball to its alternate switching positions and means is provided to permit the ball to move relative to the spring between said switching positions so as to prevent said coiled compression spring from laterally flexing as said ball is moved to its alternate positions.

3,792,213
HIGH-VOLTAGE CIRCUIT INTERRUPTER INCORPORATING SERIES VACUUM INTERRUPTER ELEMENTS

Richard E. Kane, Monroeville, Pa.; Frank L. Reese, deceased, late of Monroeville, Pa., and Blanche C. Reese, executrix, Lansford, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 30, 1970, Ser. No. 85,512

Int. Cl. H01h *33/66*

U.S. Cl. 200—144 B **8 Claims**

A high-voltage circuit interrupter is provided utilizing a plurality of vacuum-type circuit interrupter elements located spatially in series, and having their respective movable contacts simultaneously opened and closed to interrupt and reconnect the connected circuit. The vacuum-interrupter elements are operated by a generally ladder-shaped movable contact assemblage, and the vacuum interrupter elements are preferably disposed in an atmosphere, or environment of a gaseous insulating medium, which is selected for its high dielectric strength to thereby increase the breakdown voltage axially along the units, or elements.

The construction is such that the several vacuum-inter-

withdrawal, the sleeve slides along the probe and blocks the

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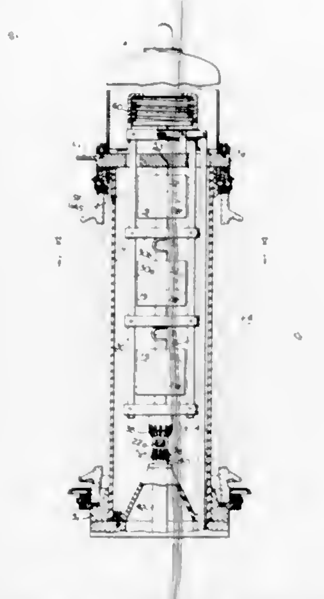
voltage, high current pulses to our impulse coil in the high-

is carried by the housing and is engageable with the plunger, The construction is such that the several vacuum-interrupter elements may be collectively removed, as a unitary assemblage, from a surrounding insulating casing structure for maintenance purposes, when desired. For the lower ratings,

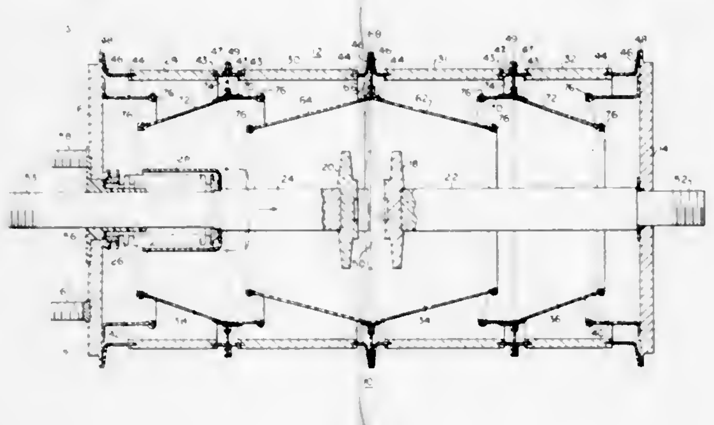


one of the interrupting columnar assemblages may be replaced by a terminal-bushing structure, instead of having a second columnar arc-extinguishing assemblage, involving a plurality of additional vacuum-type interrupting elements.

3,792,214
VACUUM INTERRUPTER FOR HIGH VOLTAGE APPLICATION

Roy E. Voshall, New Alexandria, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 28, 1972, Ser. No. 221,665
Int. Cl. H01h *33/66*
U.S. Cl. 200—144 B **5 Claims**



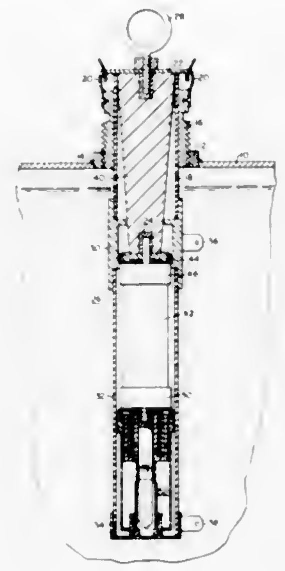
An improved shielding arrangement in a vacuum-type circuit interrupter for increasing the basic insulation level (BIL) and preventing the accumulation of a metallic coating on the internal insulating surfaces which can cause failure of the interrupter.

3,792,215
ELECTRICAL LOAD-BREAK APPARATUS

August I. Keto, Sharon, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 17, 1972, Ser. No. 254,266
Int. Cl. H01h *9/30, 33/00*
U.S. Cl. 200—144 C **10 Claims**

An electrical power disconnect device having an arc-quenching sleeve which extinguishes generated arcs. The sleeve is positioned around a conductor probe which is inserted into a contact structure to provide a current path. The probe is withdrawn from the contact structure to interrupt the current path and disconnect the load. During probe withdrawal, the sleeve slides along the probe and blocks the path of an arc between the probe and the contact structure.

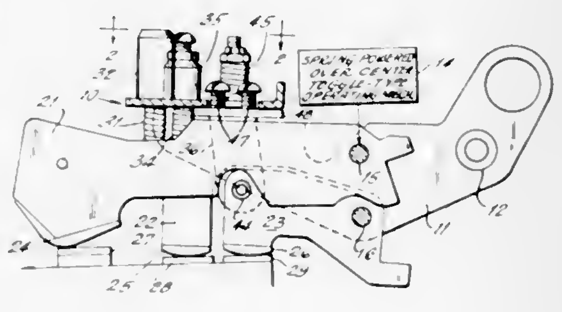


The arc-quenching sleeve is constructed on an insulating material which exhibits arc-extinghishing properties.

3,792,216
ANTI BLOW-OFF MEANS FOR CIRCUIT BREAKER CONTACTS

Carl E. Gryctko, Haddon Heights, N.J., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed July 27, 1972, Ser. No. 275,522
Int. Cl. H01h *33/12*
U.S. Cl. 200—146 R **7 Claims**



The movable contact structure of a very high current capacity molded case circuit breaker is provided with means to prevent blowoff forces from opening the arcing contact prior to opening movement of the contact carrier.

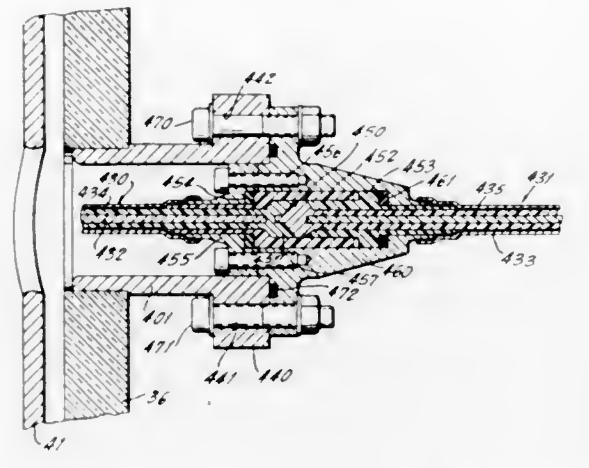
3,792,217
COAXIAL CONDUCTOR CONNECTOR AND GLAND FOR TWO-PRESSURE CIRCUIT BREAKER

Lorne D. McConnell, Chalfont, Pa., and Rolf Mockli, Moillesulaz, Switzerland, assignors to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed May 25, 1972, Ser. No. 256,932
Int. Cl. H01h *33/59*
U.S. Cl. 200—148 B **12 Claims**

A coaxial conductor connector for allowing connection from a low pressure ambient to the high pressure interior of a circuit breaker operated in response to connection of high

voltage, high current pulses to our impulse coil in the high-pressure interior of the breaker. The gland permits easy con-

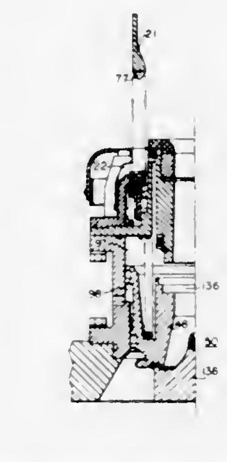


nection and disconnection of the coaxial cable and maintains a pressure seal of the circuit breaker housing when the cable is connected.

3,792,218
GAS OPERATED BLAST VALVE FOR DOUBLE-FLOW INTERRUPTERS

Charles F. Cromer, Trafford; Kue Hong Yoon, Pittsburgh, and Hayes O. Dakin, Jr., Irwin, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 7, 1972, Ser. No. 269,691
Int. Cl. H01h *33/54*
U.S. Cl. 200—148 B **9 Claims**



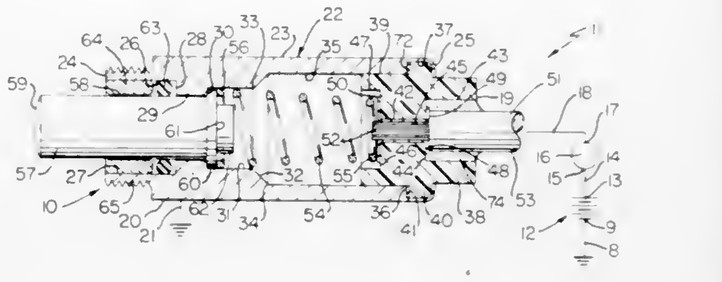
A compressed gas circuit interrupter of the dual pressure type in which one or more pair of contacts are separated in a high pressure gaseous environment, and the high pressure gas exhausts through both of the separable contacts. For each pair of contacts the continued exhaust of gas through the contacts is controlled by a mechanically operated main blast valve and a gas operated auxiliary blast valve. The auxiliary blast valve works in conjunction with the main blast valve and utilizes primarily the internal gas pressure for its operating power and control.

3,792,219
PUSHBUTTON SWITCH WITH COIL SPRING MOVABLE CONTENT WEDGINGLY ENGAGEABLE WITH STATIONARY HOUSING CONTACT

Paul M. Rowley, Bexley, Ohio, assignor to Robertshaw Controls Company, Richmond, Va.

Filed June 30, 1972, Ser. No. 267,891
Int. Cl. H01h *13/52, 1/18*
U.S. Cl. 200—159 R **20 Claims**

An electrical switch construction having a housing and a movable plunger carried by the housing. A compression spring is carried by the housing and is engageable with the plunger, the spring when in one operative position being in wedged relation with the housing to provide an electrical circuit through the spring to the housing at the wedging engagement

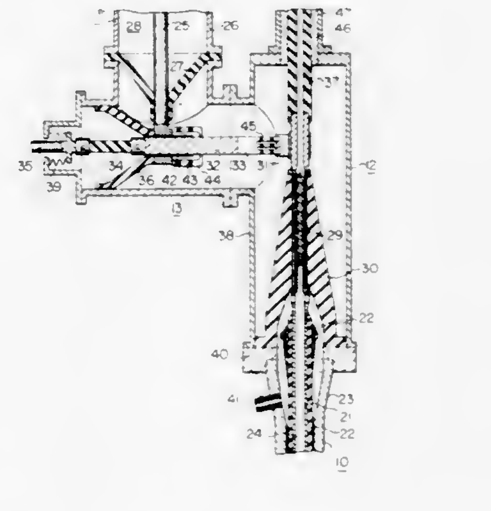


therebetween. The spring, housing and plunger are so constructed and arranged that when the plunger is moved to a certain position relative to the housing, the spring is moved out of its wedging relation with the housing to break the electrical circuit therethrough.

3,792,220
♠ DEVICE FOR CONNECTING EXTREME LOW TEMPERATURE CABLE WITH NORMAL TEMPERATURE ELECTRIC APPARATUS

Yoshio Yoshioka, and Kenichi Okuyama, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 19, 1972, Ser. No. 290,356
Int. Cl. H01h *31/32;* **H02g** *15/22*
U.S. Cl. 200—163 **9 Claims**



A disconnecting switch is provided in the connecting part between a cable kept at extremely low temperature by means of extremely low temperature coolant and an electric apparatus kept at normal room temperature such as a gas-filled duct transmission line, transformer etc., which disconnecting switch is opened when current is interrupted. And the disconnecting switch is housed in a vacuum casing.

3,792,221
DISCONNECT SWITCH

Felix Paal, Niederkaufungen, Germany, assignor to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt am Main, Germany

Filed Apr. 3, 1972, Ser. No. 240,624
Claims priority, application Germany, Apr. 1, 1971, 2115901; Apr. 1, 1971, 7112539
Int. Cl. H01h *31/00*
U.S. Cl. 200—48 V **6 Claims**

An improved electrical disconnect switch of the scissors type whose counter contact is fastened to a rigid current rail.

The counter contact is formed by at least one pair of spaced vertically extending resilient finger-type contacts and the con-

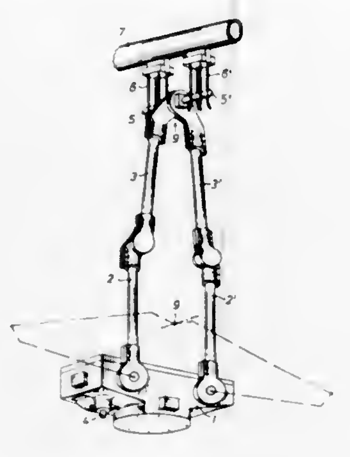
3,792,223
STUD WELDING TOOL AND STUD LOADING DEVICE

3,792,225
WELDING POWER SOURCE

James C. Needham, Saffron, and Peter Boughton, Balsham,

the hood while a second circuit connects a micro-limit switch, operated by the darkened window, to the other contact. When the grip switch is pressed to the first contact the solenoid

The counter contact is formed by at least one pair of spaced vertically extending resilient finger-type contacts and the contact for the scissors mechanism is formed by a horizontally disposed contact bolt which is rigidly fastened to one of the arms of the scissors-type switch at the upper scissors joint thereof and extends from at least one side of the upper scissors joint in a direction parallel to the pivot axis of the joint.



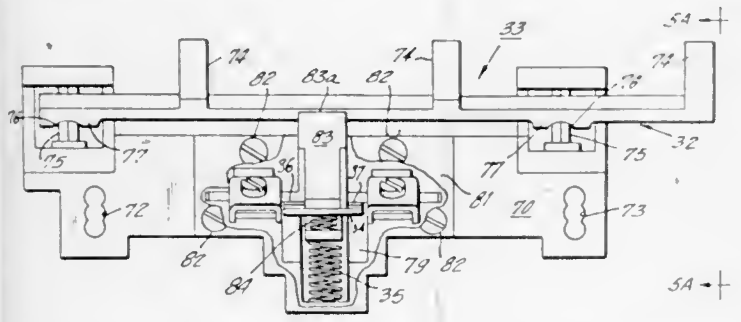
3,792,222
ANTI-SINGLE PHASING DEVICE

Keith Theophil Krueger, Bellefontaine, Ohio, assignor to ITE Imperial Corporation, Philadelphia, Pa.

Filed May 8, 1972, Ser. No. 251,288

Int. Cl. H01h *3/20, 85/00*

U.S. Cl. 200—169 R **5 Claims**



A motor controlling system, including a conventional multipole electromagnetic contactor and associated overload relay means, is provided with motor short circuit protector means in the form of fast acting fused protector units connected in series with the heaters of the overload relay means and the motor windings. Under relatively low fault current conditions, the overload relay means opens the contactor actuating coil circuit, and under severe fault conditions the fused protector units become active to open the energizing circuit for the holding coil of the electromagnet.

At currents in excess of 5.5 to 6.5 times full load motor current, this being the locked rotor current for most motors, the fused protector unit blows faster than the overload relay trips, thereby protecting the branch wire contactor and the overload relay means. Actuation of a fused protector unit causes an ejector pin thereof to operate a common trip bar which, in turn, opens a switch in the coil circuit. This trip bar is part of an anti-single phasing unit that is selectively positionable with respect to the clips which mount the fused protector units, thereby cooperating with fused protector units of different sizes. These clips are provided with integral formations which serve a blocking or non-interchangeability function, thereby preventing oversized fused protector units from being mounted to the clips. The antisingle phasing unit and protector unit holding clips are mounted on one surface of a relatively shallow molded housing having disconnect switch means mounted therein.

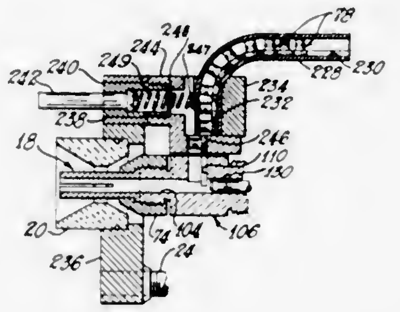
3,792,223
STUD WELDING TOOL AND STUD LOADING DEVICE THEREFOR

Steve Spisak, Elyria, Ohio, assignor to TRW Inc., Cleveland, Ohio

Division of Ser. No. 54,071, June 1, 1970, Pat. No. 3,679,860. This application Jan. 17, 1972, Ser. No. 218,609

Int. Cl. B23k *9/20*

U.S. Cl. 219—98 **3 Claims**



A stud welding tool including a loading device for increasing feed rate of studs into the tool chuck. The loading device is positioned behind the chuck and includes a plunger which feeds the studs to a welding position from a supply magazine adjacent the tool. The studs are positioned for feeding by the loading device in response to engagement of the stud welding tool with the workpiece with each stud being fed for positioning by the plunger prior to the welding operation.

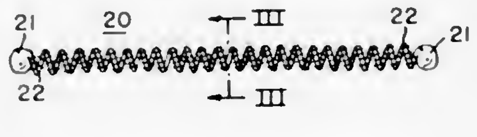
3,792,224
METHOD FOR MAKING NON-TANGLING BEADED FILAMENT COILS

James Petro, Little Falls, and Clair M. Rively, Old Bridge, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 792,988, Jan. 22, 1969, abandoned. This application July 19, 1971, Ser. No. 163,651

Int. Cl. B23k *27/00*

U.S. Cl. 219—121 LM **6 Claims**



The tangling of hellically-coiled wire articles during bulk handling and shipment is prevented by providing integral módules or beads of fused metal at each end of the articles which enclose the severed ends of the wire. In the case of tungsten wire coils that are designed for use in electric lamps and similar devices and are wound on iron mandrels, the fused beads are composed of tungsten-iron alloy and formed in situ during coil manufacture by melting the ends of the mandrel with a concentrated heat source such as a focused laser beam. The tungsten-iron alloy beads remain on the end turns of the coil during the subsequent mandrel-dissolving operation, are ductile and are formed without embrittling the tungsten wire.

Various methods and an apparatus for manufacturing such beaded-end coils on a mass production basis using a CO_2 laser are disclosed.

Since the beads can readily be made larger than the diameter of the coil and be spaced a predetermined distance apart, they provide built-in guides or "reference points" for mounting incandescent lamp type filament coils on their lead wires and thus accurately controlling the lighted-length of the mounted coils.

3,792,225
WELDING POWER SOURCE

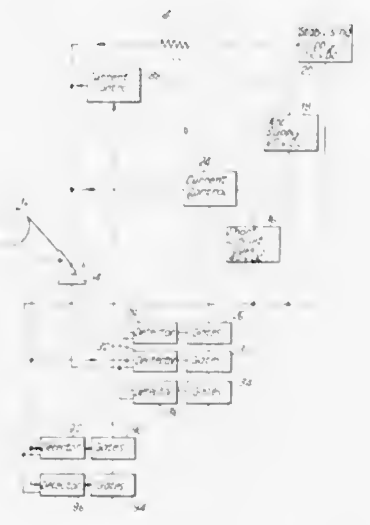
James C. Needham, Saffron, and Peter Boughton, Balsham, both of England, assignors to The Welding Institute, Cambridge, England

Filed Aug. 24, 1972, Ser. No. 283,378

Claims priority, application Great Britain, Aug. 24, 1971, 39695/71

Int. Cl. B23k *9/10*

U.S. Cl. 219—131 R **15 Claims**



Metal arc welding apparatus, primarily intended for short-circuit welding, including a first D.C. power supply for maintaining an arc between a consumable electrode and a workpiece and a control circuit responsive to a short-circuit detector for coupling a second D.C. power supply, substantially without inductance, to the welding circuit after a delay. Preferably a further detector senses the impending rupture of the short-circuit and the control circuit acts to reduce the current before the rupture takes place.

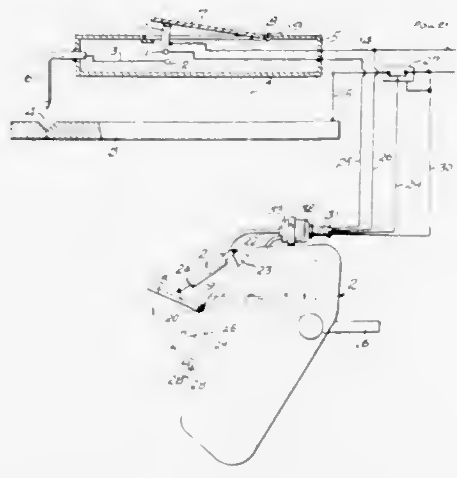
3,792,226
EYE PROTECTOR FOR WELDERS

Clarence C. Bush, Bel Air, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Substitute for Ser. No. 103,975, Jan. 5, 1971, abandoned. This application Aug. 29, 1972, Ser. No. 284,534

Int. Cl. B23k *9/32*

U.S. Cl. 219—147 **3 Claims**



A fail-safe eye protector for welders consisting of a spring loaded, darkened window-hinged over a clear glass window on a welder's hood and an electrode hand holder having a spring loaded grip switch bridging a pair of contacts when fully closed. One contact is in circuitry with a solenoid mounted on the hood while a second circuit connects a micro-limit switch, operated by the darkened window, to the other contact. When the grip switch is pressed to the first contact the solenoid closes the darkened window and when pressed fully closed it bridges both contacts to strike the arc. Full release of the grip switch breaks both circuits and the darkened window opens. A safety switch in the secondary circuit prevents malfunction of the system.

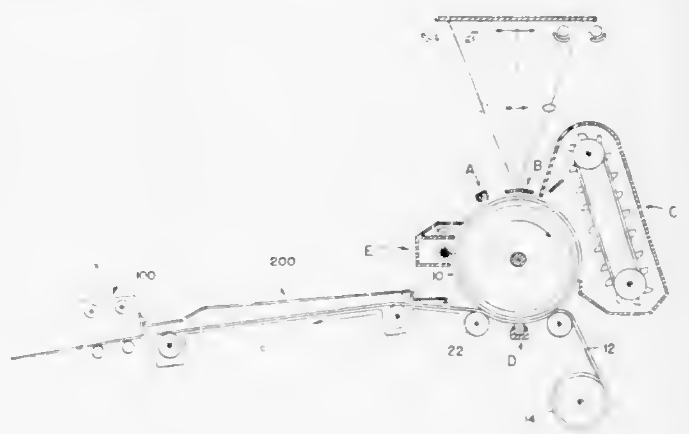
3,792,227
FUSER APPARATUS

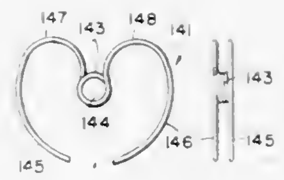
Charles Howard Snowden, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 5, 1972, Ser. No. 250,671

Int. Cl. H05b *1/00*

U.S. Cl. 219—216 **8 Claims**





Support for a lamp used in a fuser apparatus in which the terminal of the lamp is held in a convoluted central portion and is supported by arcuate legs. An electrical connector is attached to the lamp terminal through aligned apertures in spaced arms of the connector which are compressed toward each other by a screw.

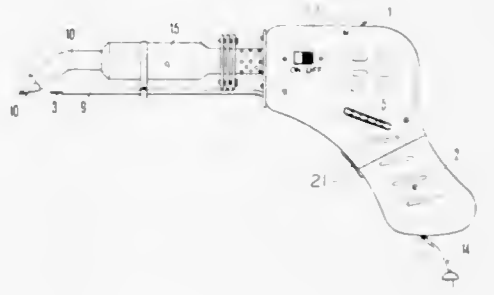
3,792,228
ELECTRIC SOLDERING IRON

Kuo Wei-Cheng, 48 Pa-Teh Road Section 1, Taipei, China /Taiwan

Filed Sept. 20, 1972, Ser. No. 290,646

Int. Cl. H05b *1/00*, **B23k** *3/06*

U.S. Cl. 219—230 **8 Claims**



The soldering iron has a grip with a recess rotatably receiving a roll of wound wire-solder. A guide means extends from the grip toward the point of a heated soldering tip, for receiving the wire solder and guiding it toward the soldering tip. A pair of rotatable interfitting gears have facing and mating annular grooves therein through which the wire-solder passes and as the gears are rotated the solder is fed toward the soldering tip. One of the two gears may be driven by an electric motor in the grip, upon operation of a suitable switch, and the other is spring biased toward the one gear to firmly grip the wire-solder. A manual operator, in the form of a disc having a perforated periphery, is secured to the gear normally driven by the motor and this periphery extends through a slot or opening in a wall of the grip. Wire-solder can be delivered automatically or manually to the pointed head of the tip of the heater through the wire-delivery pipe by closing the motor switch or rotating the periphery of the disk with a finger tip, and the soldering can be conducted easily with one hand.

3,792,229
APPARATUS FOR ELECTROLYTIC HEATING OF LIQUIDS

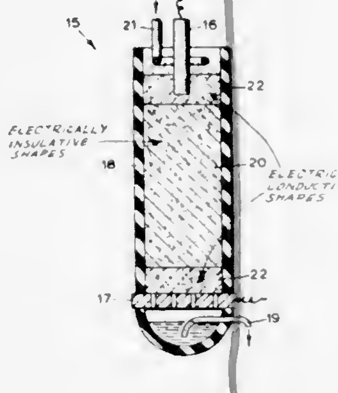
Thomas Hagyard, deceased, late of 61 Bay View Rd., Moncks Bay, Christchurch, New Zealand; Robert Thomas Hagyard, and Cedric Jaques Hagyard, both of Moncks Bay, Christchurch, New Zealand (executors)

Filed Dec. 18, 1970, Ser. No. 99,578

Claims priority, application New Zealand, Dec. 23, 1969, 158834

Int. Cl. H05b *3/60;* **B01j** *9/00*

U.S. Cl. 219—284 **5 Claims**


15
21
16
22
ELECTRICALLY INSULATIVE SHAPES
18
20
ELECTRICALLY CONDUCTIVE SHAPES
22
17
19

An apparatus for electrolytic heating of corrosive and other electrically conductive liquids comprises a plurality of electrically insulating shapes, such as stoneware Raschig rings, disposed between two or more electrodes. The insulating shapes are packed within a non-conductive tower and means are provided for irrigating the shapes with the liquid to be heated so that the liquid flows in a relatively thin film over the insulating shapes to provide a conductive path between the electrodes. The effective surface area of the electrodes is increased by placing between each electrode and the insulating shapes a mass of electrically conductive shapes, such as carbon Raschig rings. An overflow pipe is provided at the bottom of the tower so that the tower is maintained substantially empty of liquid.

3,792,230
GAS-COOLED TORCH LAMP

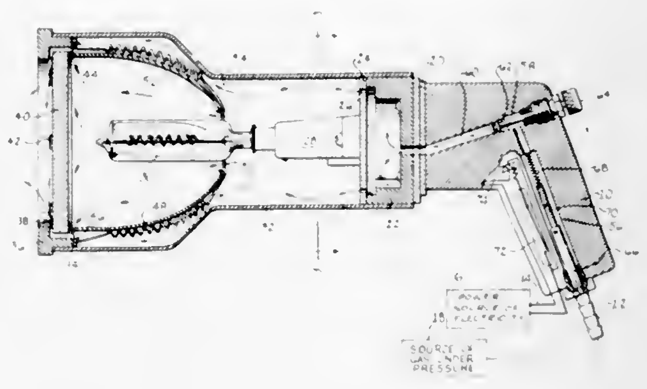
Jimmy C. Ray, Denison, Tex., assignor to Industrial Innovations Inc., Denison, Tex.

Filed Mar. 30, 1972, Ser. No. 239,692

Int. Cl. H05b *1/02, 3/00;* **F21v** *29/00*

U.S. Cl. 219—343 **3 Claims**

An infrared heating device includes a pistol grip handle carrying a lamp and a reflector spaced therefrom for focusing infrared radiation upon work to be heated. A filter is positioned over the front of the reflector for passing only infrared radiation to the work. Means are provided to establish a flow of cooling gas over the exterior and interior of the reflector and over in inner and outer faces of the filter. A flow-responsive switch is provided in the handle for detecting the flow of cooling gas. A solid state switching device (Triac) is connected in circuit with the lamp and actuated by the flow-responsive for energizing the lamp only when a flow of cooling gas is established.



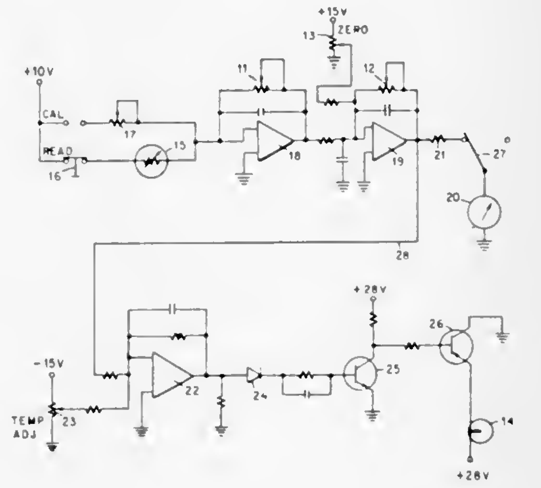
3,792,231
MINIATURE MULTISTATION PHOTOMETER ROTOR TEMPERATURE CONTROL

Wayne F. Johnson, Loudon, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Jan. 11, 1973, Ser. No. 322,645

Int. Cl. H05b *1/02*

U.S. Cl. 219—497 **3 Claims**



A rotor temperature monitoring and control circuit for a Miniature Fast Analyzer is provided. Radiant heat from a heat lamp is directed onto the rotor and, by means of a thermistor positioned in the rotor, closed-loop control of the rotor temperature is achieved. Temperatures within ±0.2 degree centigrade can be maintained at the cuvettes of the rotor.

3,792,232
ELECTRICALLY HEATED WINDOW

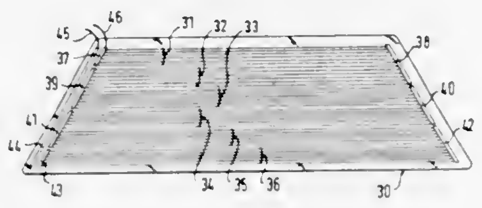
Alex Zarenko, Brand near Aachen, Germany, assignor to Saint-Gobain Industries Vector Hugo, Neuilly-sur-Seine, France

Filed Sept. 27, 1972, Ser. No. 292,807

Claims priority, application Germany, Sept. 28, 1971, 2148243

Int. Cl. H05b *3/06*

U.S. Cl. 219—522 **2 Claims**



A heavy-duty heated window is constructed with a series of heating units each of which has a plurality of heating elements in parallel.

3,792,233
HEATING ELEMENT

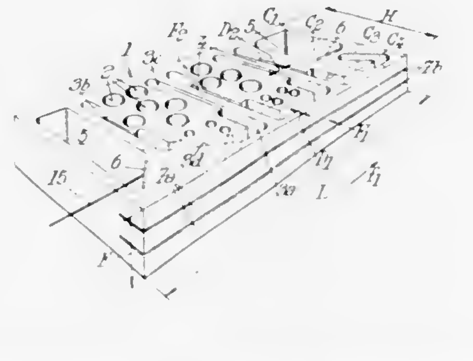
Ann-Marie Anthony, Bellevue; Krzysztof Dembinski, Tige, and Lucien Dupont, Vouzon, all of France, assignors to Agence Nationale De Valorisation De La Recherche (AHVAR), Paris, France

Filed May 17, 1972, Ser. No. 254,034

Claims priority, application France, May 19, 1971, 71.18236

Int. Cl. H05b *3/10*

U.S. Cl. 219—553 **14 Claims**



The heating element is formed of refractory material resistant to oxidation, in the general shape of a parallelepiped. It has, in a direction perpendicular to two opposite surfaces, a nonhomogeneous structure such that when one of the two surfaces concerned is brought to a sufficiently high temperature to become electrically conducting, the other remains at a sufficiently low temperature to be thermally and electrically practically non-conducting. The structure is adapted to withstand movements due to differences in expansion. The element is made either of entirely or partially stabilized zirconia or of a definite compound of the pyrochlore type based on zirconia, of the formula $Zr_2T_2O_5$, T being a metal, especially a rare earth. It has holes and cut-outs formed in the mass of the element in a direction substantially perpendicular to that which unites said two opposite surfaces. The ratio hollow/solid is within a range of about 0.1 to 3.

3,792,234
METHOD AND APPARATUS FOR READING INFORMATION CARRIERS ON A MOVING ARTICLE

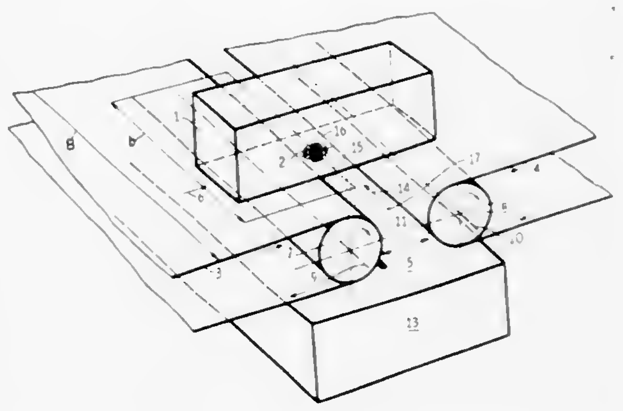
Jakob Sturzenegger, Wolfhausen, Switzerland, assignor to Zellweger Ltd., Uster, Switzerland

Filed Sept. 30, 1971, Ser. No. 185,097

Claims priority, application Switzerland, Oct. 21, 1970, 15598/70

Int. Cl. G06k *7/14, 7/015*

U.S. Cl. 235—61.11 E **6 Claims**



The reading unit is sized to read only over a portion of the conveyor while various types of guides are provided to guide the conveyed articles into the path of the reading zone. The guides can be of the spring biased type or stationary type. Also, the conveyor can be inclined laterally to cause the articles to move to the lower side.

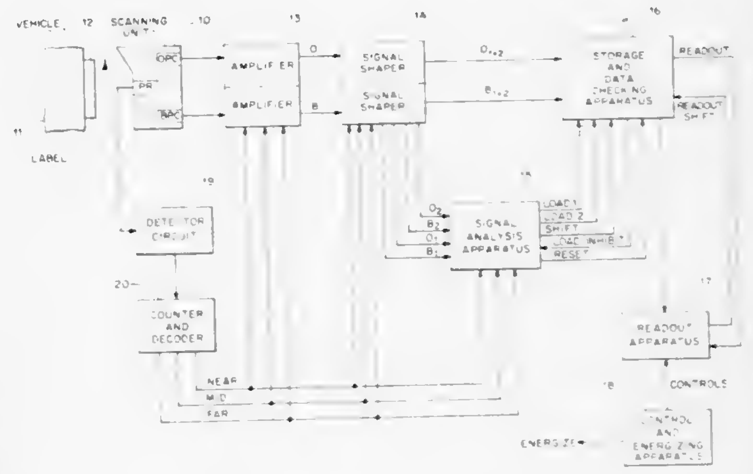
3,792,235
SIGNAL PROCESSING SYSTEM FOR READING INDICIA OVER A WIDE DEPTH OF FIELD

Anthony C. Durante, Burlington, and Frank G. Macey, Shrewsbury, both of Mass., assignors to Servo Corporation of America, Hicksville, N.Y.

Filed Dec. 22, 1971, Ser. No. 210,869

Int. Cl. G06k *7/00, 7/10*

U.S. Cl. 235—61.11 E **5 Claims**

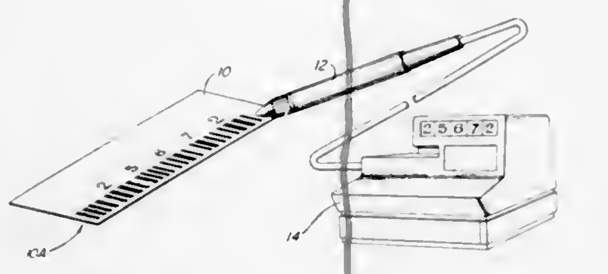


Automatic coded object identification system for reading labels of the type having retroreflective stripes arranged in a vertical array over a wide depth of field to two or more ranges (specifically three in the embodiment described herein). For each vertical scan of the stripes of a lebel by a scanner a set of electrical signals are produced. Each vertical scan also causes one of three processing control signals to be produced in succession. The electrical signals are amplified, shaped, and analyzed to determine if they meet prescribed limits as to pulse-width measurements for proper label-derived signals.

The process control signals control the values of amplification, shaping, and pulse-width measurement limits so that during three successive scans three sets of signals from a label are processed in three different manners. Each of the three process control signals causes the apparatus to optimally process the signals for a label located within a corresponding one of the three ranges. Thus, if a label is within one of the three ranges, the signals produced during one of three scanning operations will be properly processed. When signals are properly processed and found to meet the prescribed limits of pulse-width and other timing criteria, they are stored in a shift register until all the signal data on the label is accumulated. The accumulated data is checked in accordance with pattern recognition and parity checking schemes and if determined to be proper label-derived data it is transmitted to read out apparatus.

3,792,236
RECORD READING SYSTEM

Bruce W. Dobras, Dayton; James L. Vanderpool, Centerville, and Ross C. Humbarger, Fairborn, all of Ohio, assignors to Monarch Marking Systems Company, Dayton, Ohio
Continuation of Ser. No. 104,977, Jan. 8, 1971. This application Mar. 26, 1973, Ser. No. 344,994
Int. Cl. G06k *7/14;* **G08c** *9/06*
U.S. Cl. 235—61.11 E **16 Claims**

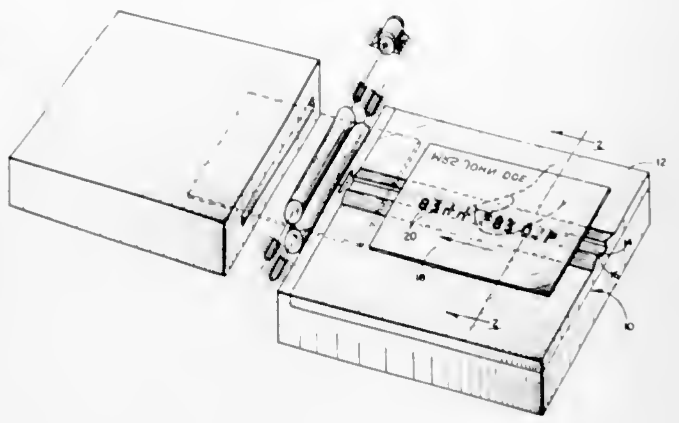


A machine-readable record or label includes alternating areas or bars of different reflectivity whose relative widths are varied to provide a binary coded data record. The record includes start and stop codes between which is recorded a plural character message capable of being read in forward and backward directions. A record interpreting system compares the widths of consecutive bars and, by reference to the sequence in which the bars are read, enters binary "0"s and "1"s into a shift register. The system includes a detector that continuously samples the shift register contents for a start indication and, on detection thereof, stores a start and the direction of reading. This changes the system from a scan mode to a read mode in which the contents of the shift register are transferred to a display only as each complete character code is received. The system includes a reversing and complementing control for reverse read codes and both error and message end detecting means for returning the system from a read mode to a scan mode.

3,792,237
EMBOSSED CARD ORIENTATION DEVICE

Gust A. Olson, Los Angeles, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Dec. 13, 1971, Ser. No. 207,093
Int. Cl. G06k *7/015, 19/06, 13/06*
U.S. Cl. 235—61.11 R **3 Claims**

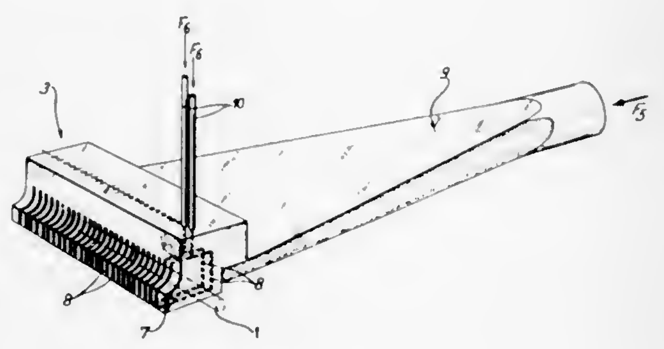
This invention discloses a device for orienting credit cards insuring the embossed account numbers of the credit card will be entering the character scanning apparatus in correct attitude. The orientation device has a top member with a substantially flat surface formed with an accurately dimensioned groove to receive a row of embossed characters on a credit card. The raised portion of the groove tapers at an angle of



about ten degrees to the top surface permitting easy lateral sliding of the character row substantially free of interference with adjacent character rows of the credit card.

3,792,238
PROCESS FOR REGISTERING IN BINARY CODE AND FOR READING AN IDENTIFICATION NUMBER ON A METALLIC PIECE

Alain Jean Samoel, Manosque, France, assignor to Commissariat A L'Energie Atomique, Paris, France
Filed Aug. 7, 1972, Ser. No. 278,386
Claims priority, application France, Aug. 6, 1971, 7128851
Int. Cl. G06k *1/12*
U.S. Cl. 235—61.11 J **4 Claims**



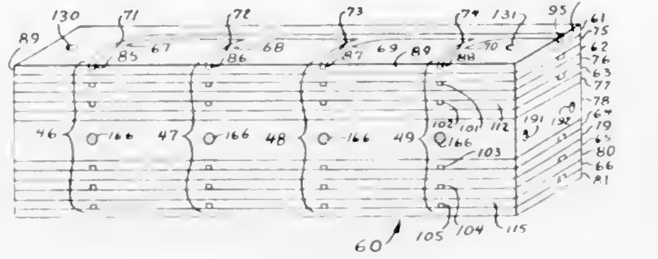
The invention is concerned with a method and apparatus for recording an identification number in binary code and reading it on a metal component such as a fuel element canning tube. A number of microsandblasting jets, each corresponding to one of the binary code numbers of the number to be recorded, are directed to different portions of the component and each jet is deflected before its arrival depending upon whether it corresponds to the number 1 or the number 0. The component is subjected to a reading operation using beams of light.

3,792,239
DEVICE FOR TRANSMITTING WAVELENGTHS OF THE ELECTROMAGNETIC SPECTRUM

Ronald L. Ohlhaber, Evanston, and Donald A. Pontarelli, Chicago, both of Ill., assignors to Northern Illinois Gas Company, Aurora, Ill.
Filed Dec. 30, 1971, Ser. No. 214,267
Int. Cl. G02b *5/14;* **G06k** *7/10*
U.S. Cl. 235—61.12 N **9 Claims**

A device for transmitting wavelengths of the electromagnetic spectrum from one or more sources to detector means, comprising one or more channel plates each having channels therein into which are disposed conduction elements of a

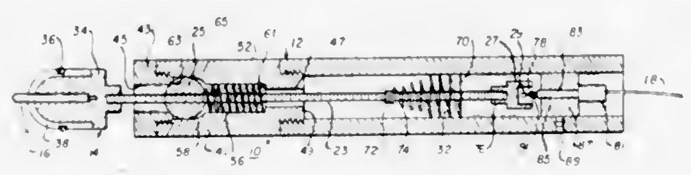
material having a higher index of refraction than the material of the associated plates. The channels and associated conduction elements selectively intersect exterior surfaces of the channel plates such that wavelengths from sources positioned



generally adjacent selected end portions of the conduction elements are guided to the opposite ends of the channels. The device finds application in optical encoder systems, card and punched tape illuminators and readers, and alphanumeric devices and the like.

3,792,240
PROBE AND MARKER ASSEMBLY

Gregory G. Stumpo, 5516 W. Higgins Rd., Chicago, Ill.
Filed June 26, 1972, Ser. No. 266,136
Int. Cl. G06m *11/00*
U.S. Cl. 235—92 PC **5 Claims**

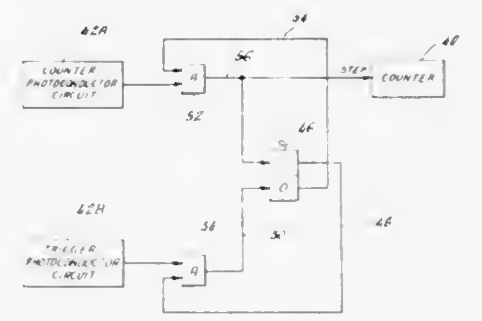


An assembly adapted to mark a surface to be examined and adapted to cause a counter to be advanced when a mark is made on the surface, includes a rod extending at least partially within a tubular housing in axial alignment therewith and rockably mounted intermediate its ends near the front end of the housing, a marking device connected to the front end of the rod and extending from the front end of the housing, a first electrical contact fixedly mounted within the housing near the rear end portion thereof, a second electrical contact mounted on the rear end portion of the rod in axial alignment with the housing spaced from the first contact to engage it when the marking device engages the surface to cause the rod to rock, a coil spring surrounding the intermediate portion of the rod near its rear end portion spaced rearwardly from its rockable connection with the housing to urge the rod resiliently into axial alignment with the housing, the spring having a cylindrical helical portion engaging the inner surface of the housing substantially throughout the length of the helical portion and having an end portion attached to the rod, and first and second electrical connectors for supplying an electrical advance signal to the counter for advancing it, the first conductor being connected electrically to the housing and the second connector being electrically connected to the second contact, the rod, the housing, and the rockable connection being electrically conductive and the rod being connected electrically to the second contact.

3,792,241
COUNTER CONTROL CIRCUIT

James Florence Sullivan, New Fairfield, Conn., assignor to Jovil Manufacturing Co., Inc., Danbury, Conn.
Filed Feb. 3, 1972, Ser. No. 223,100
Int. Cl. B65h *81/02*
U.S. Cl. 235—92 CW **5 Claims**

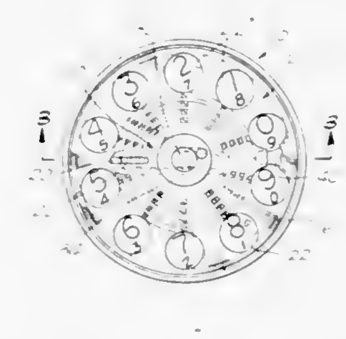
This invention provides a device for controlling the stepping of a counter counting the passage of an object or objects through a selected point. The device includes a pair of detectors, one for detecting the passage of an object through the selected point and one for detecting the passage of the object through a second or trigger point situated prior to said selected point in the path of travel of the object. A bistable device is set to its first state in response to an output from the second point detector when the device is in its second state. The bistable device is reset to its second state and the counter stepped in response to an output from the selected point detector if, at the time the output is generated, the bistable


42A
COUNTER PHOTOCONDUCTOR CIRCUIT
54
56
A
52
STEP
COUNTER
40
46
S
O
42H
TRIGGER PHOTOCONDUCTOR CIRCUIT
58
50
A
48

device is in its first state. Thus, once the counter is stepped, it cannot be stepped again until the object again passes through the trigger point. The generation of spurious count pulses is thus surpressed. For a preferred embodiment, the device is being used in coil winding machine to control the counting of multiple wire turns wound on the coil, and the selected and second points are spaced by a distance greater than the maximum distance between wires to assure that the counter is stepped just once for each turn regardless of the number of wires being wound.

3,792,242
POCKET SIZE MANUAL ADDING MACHINE

Goodwin F. Hanson, 11520 S. Prairie, Hawthorne, Calif.
Filed Jan. 2, 1973, Ser. No. 320,098
Int. Cl. G06c *27/00*
U.S. Cl. 235—117 A **14 Claims**



A small pocket size, manually actuatable adding machine. The machine is circular, of a size to be held in the hand. It is operated by a dial or rotor having ten equally spaced finger holes. It comprises counter wheels overlying each other and stators between the counter wheels. The manual rotor or dial carries a radially movable catch member which can be positioned to engage the periphery of individual counter wheels whereby the rotor can cause any individual wheel to be rotated any predetermined part of a revolution corresponding to a digit to be entered. A unique transfer means comprising stator members between adjacent wheels and a pawl carried by each rotor is provided whereby upon a full revolution of an individual wheel, a step movement is imparted to an adjacent wheel.

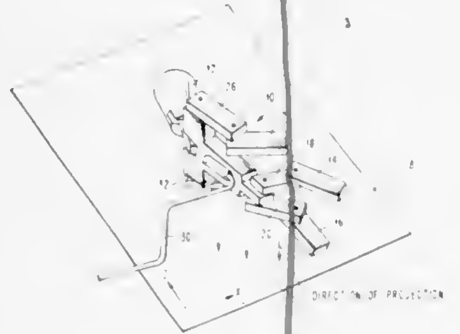
3,792,243
METHOD FOR ENCODING POSITIONS OF MECHANISMS

Arthur Appel, Yorktown Heights, and Arthur J. Stein, Peekskill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,142

Int. Cl. G03b *15/06, 29/00*

U.S. Cl. 235—151 **10 Claims**



There is disclosed herein a method of digitizing two or three dimensional mechanisms in varied positions. If the object to be encoded is a fixed model, then such model in its fixed position is encoded. If the object is a movable mechanism, then the mechanism can be encoded in several positions whereby there can be provided a set of the mechanism's motions. The method includes the steps of providing a plurality of coordinates pickup points on the object or mechanism to be encoded. These points are sensed in Cartesian coordinates orientation, using a capacitance tablet, for example, to provide the Cartesian coordinates information for each of the sensed points. The Cartesian coordinates information is suitably provided to a digital computer interactive graphics device combination wherein, utilizing the Cartesian coordinate points information of the sensed points, a displayable projection of the object or mechanism can be calculated and such projection can be displayed on the screen of the interactive graphics device. Where it is desired to encode a three-dimensional mechanism, the encoding information can be obtained in perpendicular capacitance tablet planes or in poses displaced by 90° to enable the providing of X, Y and Z coordinates information. In addition, if the mechanism is of a movable type, then it can be encoded in different positions and, in the computer, the encodings for these different positions can be extrapolated to enable the calculations of a series of displayable projections which form an animated sequence. The projections can be calculated, using the Cartesian coordinates information, to provide either two- or three-dimensional projections.

3,792,244
CIRCUIT FOR PH VALUE REGULATION

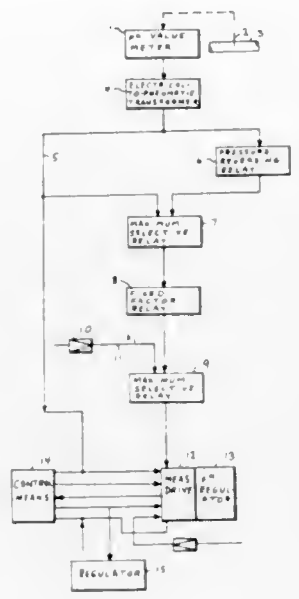
Karl Wilke, Do-Aplerbeck, Germany, assignor to Fridrich Uhde GmbH, Dortmund, Germany

Filed June 2, 1972, Ser. No. 259,150

Int. Cl. G06f *15/46*

U.S. Cl. 235—151.3 **4 Claims**

Regulation of pH value of solutions along a titration curve. The pH value is measured to obtain a linear signal which is conveyed in inverted form in one path and non-inverted form in another path to a means for selecting its output from the path having the maximum value. This output is stretched, clipped and used to drive a pH regulator in a hyperbolic manner.



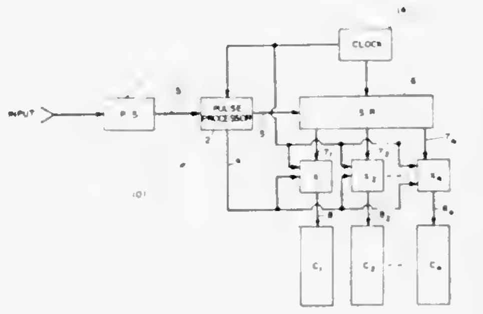
3,792,245
DOUBLE-SCALED AUTOCORRELATOR

Lon Hocker, Newton, and Irl W. Smith, Jr., Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 21, 1972, Ser. No. 282,649

Int. Cl. G06f *15/34;* **G06g** *7/19*

U.S. Cl. 235—181 **13 Claims**



A double-scaled autocorrelator which includes means for eliminating spurious correlations which occur in the system because of the double scaling. The autocorrelator system includes a pulse shaper to receive an incoming signal. In one system, the pulse shaper is connected to a pulse processor comprising a single presettable scaler which is preset each clock period by a random court generator, thereby removing spurious correlations. In another system, the pulse shaper is connected to a pulse processor comprising two phase-independent scalers to perform that function. The system contains a shift register connected to receive as one input the output of the scaler (or the first of the two scalers), the output of each unit of the shift register being connected as an input to a clocked multiplier another input to which is derived from the scaler (or the second of the two scalers). The system further includes a plurality of counters, each to receive as an input an output from one of the multipliers. Furthermore, the system may include provision to subtract from each counter the input to the last counter, and it may include provision for clocking the channels at successively slower rates.

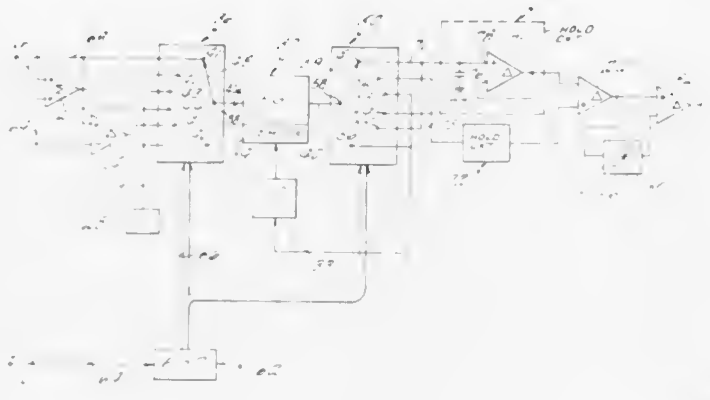
3,792,246
VECTOR ANGLE COMPUTER

Dennis R. Gilbreath, Seymour, Conn., and Sheldon D. Kralstein, Forest Hills, N.Y., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Nov. 10, 1972, Ser. No. 305,635

Int. Cl. G06g *7/22, 7/26, 7/78*

U.S. Cl. 235—186 **6 Claims**



An output voltage proportional to the angle of a vector is provided by apparatus including a logarithmic function generator. The output voltage is proportional to the difference between the logarithm of one of two orthogonal components of the vector and the logarithm of the sum of the components. A nonlinear network may be used for providing a correction signal to correct a known deviation of the output voltage. A calibration voltage is periodically applied to the input of the function generator which, in response thereto, provides an error voltage which is fed to an integrator which drives a heater included as an integral part of the function generator, resulting in changes of the temperature of the function generator to change its transfer characteristics in a manner tending to reduce the error voltage to zero.

3,792,247
TUBULAR LAMP FITTINGS

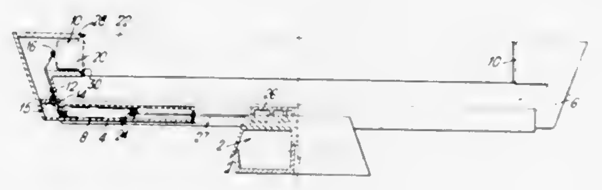
Victor Frederick Beuttell, Malmesbury, England, assignor to Linolite Limited, Wiltshire, England

Filed Sept. 13, 1971, Ser. No. 179,654

Claims priority, application Great Britain, Sept. 22, 1970, 45,096/70

Int. Cl. H05b *33/02*

U.S. Cl. 240—51.11 R **4 Claims**



A lighting fitting to accommodate tubular electric filament lamps of alternative lengths. The lamp holders are mounted at the end of inwardly biased telescopic arms. The holders comprise a socket in which is mounted a resilient contact which is less stiff than the inward bias of the holders so that the different lengths of end caps of different tubular lamps are completely covered by the sockets. The arms are biased by means of electrically conducting springs which connect the contacts in the holders to terminals.

3,792,248
MEANS FOR CONTROLLING ILLUMINATION OF CONTROL OR SERVICE ELEMENTS ON MOTOR VEHICLE

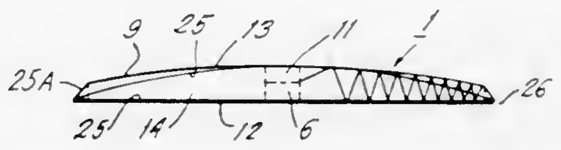
Gunter Dietz, Wuppertal-Barmen, Germany, assignor to GEBR Happich GmbH, Wuppertal-Elberfeld, Germany

Filed Aug. 1, 1972, Ser. No. 276,903

Claims priority, application Germany, Sept. 7, 1971, P 21 44 588.5

Int. Cl. F21 ; B60q *3/04*

U.S. Cl. 240—1 EL **11 Claims**



A light guide for illuminating display elements in a vehicle, which elements are on the dashboard, or the like; the guide comprises a light source, and a light guide positioned over both the elements to be illuminated and the light source; the light guide has an exterior surface which is spaced away from the elements being illuminated and which curves gradually toward the surface to be illuminated along the direction away from the light source thereby to concentrate light in the light guide body remote from the source; in certain embodiments, a prismatically shaped light guiding body intersects the principal light guide for concentrating light at a particular display element.

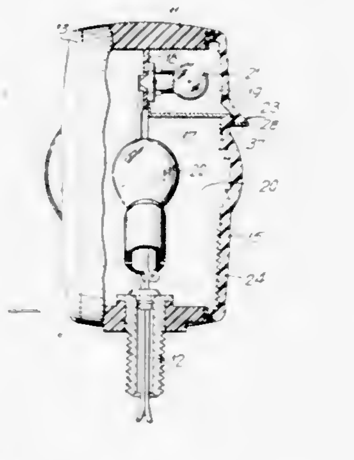
3,792,249
SIGNAL LAMP AND LENS

Kenneth J. Scowen, Springfield, N.J., and Elliott Goldbaum, Brooklyn, N.Y., assignors to Signal-Stat Corporation, Brooklyn, N.Y.

Filed Dec. 27, 1972, Ser. No. 318,953

Int. Cl. F21q *1/00*

U.S. Cl. 240—106.1 **10 Claims**



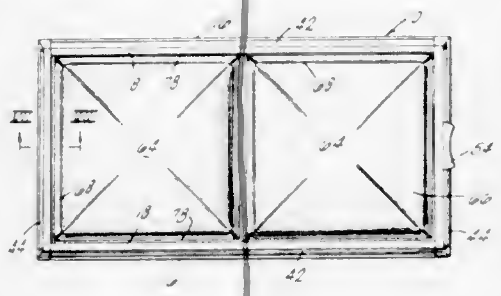
A signal lamp for providing a plurality of signals, constructed with more than one independently illuminated compartment, having a single lens covering the compartments, wherein light from one signal compartment is prevented from being transmitted within the lens material and falsely illuminating the portion of the lens covering a second compartment. By means of an optical light trap located in the lens at the intersection of the lamp compartments, the piping of light through the lens is prevented. The invention is also concerned with the lens construction.

3,792,254

3,792,250
LIGHT FIXTURE WITH REMOVABLE LENS

Eugene L. Kilbourn, and James T. Baker, both of Marshall, Mich., assignors to Progressive Dynamics, Inc., Marshall, Mich.

Filed May 5, 1970, Ser. No. 34,792
Int. Cl. B60q *3/02*
U.S. Cl. 240—7.1 3 Claims

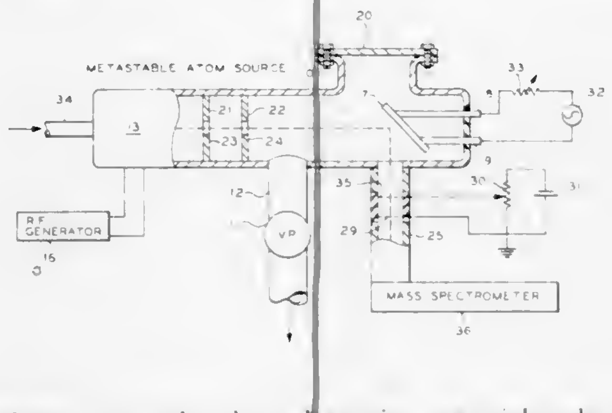


A surface mounted light fixture particularly suitable for use with recreational vehicles and watercraft wherein the fixture includes an extruded body member having end caps affixed to the body member ends. The body member is of a concave configuration receiving electrical lamps, and the lateral edge regions of the body member include lens retaining grooves for retaining a lens or lenses disposed over the body member. The lens is of a rectangular configuration, including transversely disposed base and wall regions, and is so shaped that the lens may be manually deformed for readily assemblying and disassemblying the lens to the body member for lamp replacement or cleaning.

3,792,251
SURFACE ANALYSIS

Thomas W. Schmidt, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 8, 1971, Ser. No. 132,413
Int. Cl. B01d *59/44*
U.S. Cl. 250—41.3 4 Claims



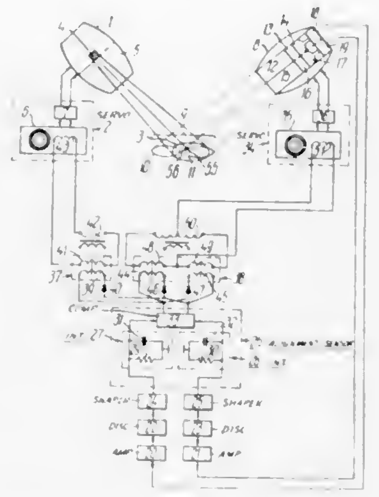
Surfaces are analyzed to determine materials adsorbed thereon by directing a beam of atoms or molecules excited to metastable levels onto the surface. Ions of the adsorbed material which are produced are analyzed, such as by a mass spectrometer.

3,792,252
APPARATUS FOR DETERMINING THE LEVEL AND PROFILE OF A MATERIAL

Vadim Nikolaevich Afanasiev, Bolotnikovskaya ulitsa, 40, korpus 4, kv. 23; Vladimir Olegovich Gaiduchik, Mariupolskaya ulitsa, 4, kv. 47, and Pavel Lukich Gruzin, ploschad Pryamikova, 6, kv. 21, all of Moscow, U.S.S.R.

Filed Nov. 23, 1970, Ser. No. 91,631
Int. Cl. G01n *23/10*
U.S. Cl. 250—43.5 FL 2 Claims

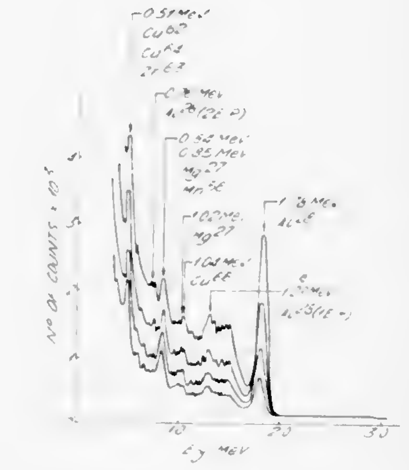
An apparatus for determining the level and profile of materials, in which a collimated radiation source has a servo and produces a beam of hard electromagnetic radiation reflected from an irradiated zone on a surface being gauged and picked up from a receiving zone by a collimated detector also having a servo. The two servos are controlled by individual amplifiers in accordance with signals received from an electrically connected means for sensing relative alignment between the irradiated and receiving zones, one amplifier accepting signals corresponding to the amount of misalignment between the two zones with only one sign, according to the magnitude of which it brings down the speed of the associated controlled servo, and the other amplifier accepting signals corresponding to the amount of misalignment between the two zones.



3,792,253
METHOD AND APPARATUS FOR DETECTION OF COPPER

Alan Wilson Wylie, Nunawading; Peter Lewis Eisler, East Hawthorn, and Paul Huppert, North Balwyn, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Filed Sept. 23, 1971, Ser. No. 183,213
Claims priority, application Australia, Nov. 18, 1970, 3236/70; Sept. 24, 1970, 2447/70
Int. Cl. G01t *1/18*
U.S. Cl. 250—83.3 R 15 Claims



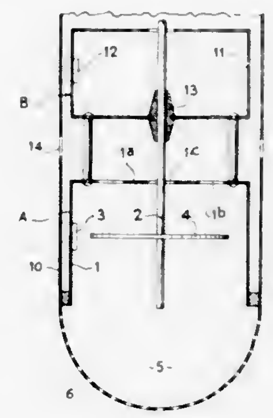
A method and apparatus for the detection and estimation of copper in an ore body which involves irradiation of the body with a flux of fast neutrons to convert Cu^{63} to Cu^{62}; and detection and measurement of the 0.511 MeV peak in the gamma radiation emitted by the body due to the Cu^{62}.

A double-shielded detector for monitoring neutron fluxes is also disclosed.

3,792,254
IONIZATION CHAMBER IN PARTICULAR FOR A FIRE DETECTION DEVICE

Daniel Marie Pierre Lecuyer, Le Pecq, France, assignor to Vigifeu, Aubervillias, France

Continuation-in-part of Ser. No. 790,235, Jan. 10, 1969, abandoned. This application July 15, 1971, Ser. No. 162,963
Int. Cl. G01t *1/18*
U.S. Cl. 250—83.6 FT 8 Claims

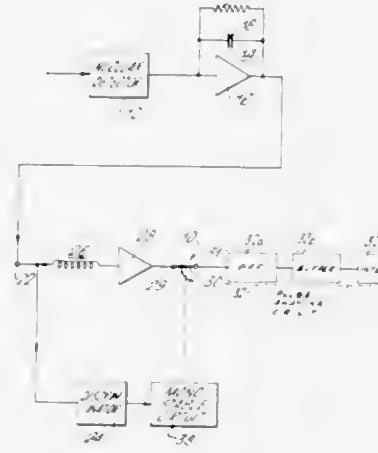


An ionization detection chamber, in particular for a fire detecting apparatus, of the type comprising an ionizing source and two electrodes each of which constitutes an ion collecting electrode of a given sign. In order to minimize the variation of the ion collection current when the surrounding pressure increases, the chamber further comprises at least one ion collecting member integral with one of the electrodes, said collecting member extending towards the ionizing source in the radiation beam of the latter.

3,792,255
RADIATION DETECTION CIRCUITRY WITH DELAY SAMPLING

Graham White, Abingdon, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Jan. 20, 1972, Ser. No. 219,458
Claims priority, application Great Britain, Feb. 5, 1971, 4078
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 R 8 Claims

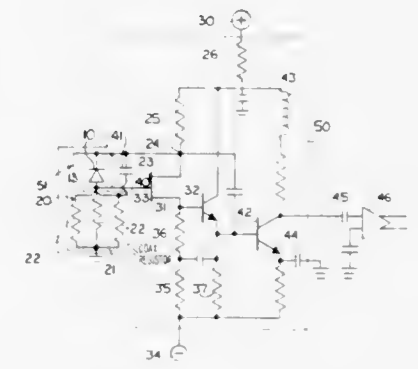


A signal processing arrangement for shaping the signals produced by a nuclear particle detector having a variable collection time, comprises a signal shaping circuit in the form of a differentiating circuit which is connected to receive the signals to be shaped via a delay line, an amplifier, and an electronic switch. A discriminator circuit triggers a monostable circuit at the beginning of each input signal to be shaped, and the monostable circuit thereupon holds the electronic switch open for a predetermined length of time longer than the greatest collection time of the particle detector. In this way, input signals are not applied to the shaping circuit until after they have risen to their maximum level.

3,792,256
INPUT CIRCUIT FOR OPTICAL SIGNAL RECEIVER

Stephen W. Harting, Los Angeles, Calif., assignor to Computer Transmission Corporation, Los Angeles, Calif.

Filed June 19, 1972, Ser. No. 263,822
Int. Cl. H04b *9/00*
U.S. Cl. 250—199 7 Claims



This disclosure involves an improved input circuit for receivers for optical energy and particularly receivers designed to respond to data modulated optical energy. The input circuit employs a light responsive diode connected in series with a capacitance balanced coaxial resistor.

The coaxial resistor employs a stable carbon resistor connected as the series resistor with the diode and an outer encircling capacitance compensating resistor connected in the feedback path from a field effect transistor.

In another embodiment, a coaxial resistor is connected between the output and inputs of an operational amplifier. In another embodiment the light responsive diode is enclosed in a shield except for the face of the diode exposed to incoming signal.

3,792,257
LATERAL PHOTODETECTORS

Keith L. Gardner, Los Angeles, and Kenneth B. La Baw, China Lake, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 31, 1972, Ser. No. 240,109
Int. Cl. H01i *15/00*
U.S. Cl. 250—211 J 5 Claims

Lateral photodetectors modified such that the resistivity of the photodetector wafer is selectively varied as a function of lateral position to achieve X, Y linearity (rectilinearity).

3,792,258

3,792,260

tically spaced apart therefrom, and two photoelectric transducer elements disposed on the other side of the slit and verti-

ment in the passage and adapted to receive a film negative; and a power system for positioning the table in the exposing

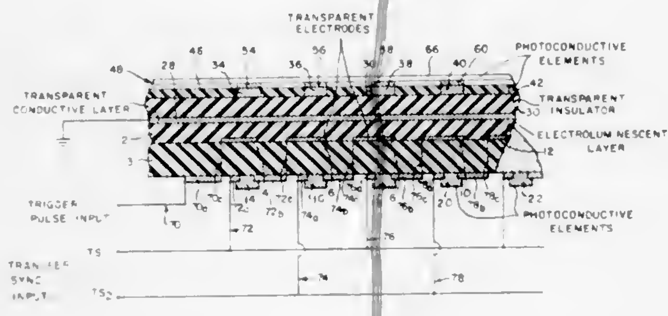
3,792,258
PHOTOCONDUCTIVE SWITCHING SCANNER APPARATUS

Lawrence S. Sliker, 196 Willson Rd., Welland, Ontario, Canada

Filed May 3, 1972, Ser. No. 249,931

Int. Cl. H03k *21/00;* **H01j** *31/50*

U.S. Cl. 250—213 A **8 Claims**



Improved high-speed scanner apparatus including a layer of energy emitting material, a plurality of spaced electrodes arranged adjacent said layer of energy emitting material, and means for sequentially energizing said electrodes to activate corresponding portions of said emissive layer. The invention is characterized in that the means for sequentially energizing the electrodes includes, for each electrode, normally disabled conductor means containing a normally non-conductive photoconductive element, said element being arranged for operation to a conductive enabling condition by the activation of a portion of the energy emitting layer associated with the next preceding electrode. Transfer synchronizing means are provided for supplying stepping pulses to the appropriate electrodes during the conductivity decay period for which the conductor means associated with the respective electrodes are in the enabled condition, whereby extremely rapid, accurately controlled scanning operation is obtained.

3,792,259
ELECTRO-OPTIC DEVICE COMPRISING AN OPTIC IMAGE RELAY AND METHOD OF MANUFACTURING SAME

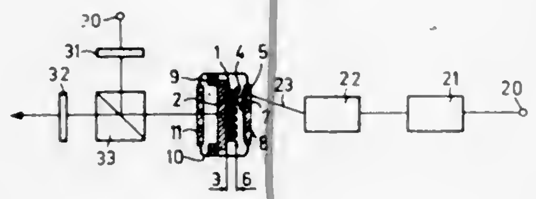
Jacques Donjon, Yerres; Jean-Pierre Hazan, St. Maur, and Gerard Joseph Marcel Marie, L'Hay Les Roses, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 28, 1972, Ser. No. 238,836

Claims priority, application France, Mar. 31, 1971, 7111319

Int. Cl. H01j *39/12*

U.S. Cl. 250—213 VT **4 Claims**



An electro-optical device including a writing beam, a reading beam and an optic relay comprising a plate of a material having double refraction.

According to the invention, a direct voltage is applied between the faces of the plate, the information being written by modulation of the writing beam.

Application in information processing, display of data and the projection of images.

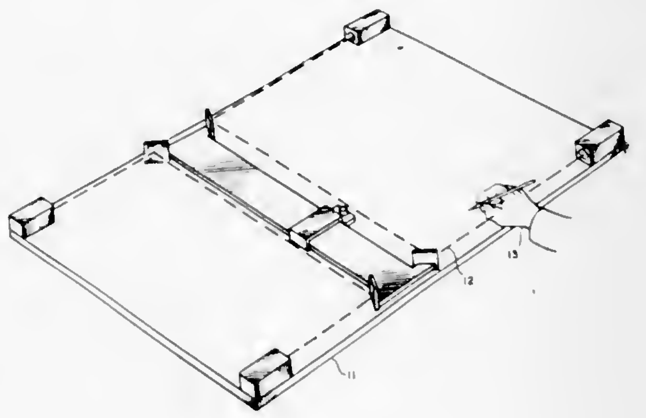
3,792,260
PHOTO-ELECTRIC PROTECTION SYSTEM FOR PLOTTER

Edward J. Stewart, Walnut, and James B. Olson, Anaheim, both of Calif., assignors to California Computer Products, Inc., Anaheim, Calif.

Filed Mar. 14, 1973, Ser. No. 341,091

Int. Cl. H01j *39/12*

U.S. Cl. 250—215 **1 Claim**



Mirrors mounted on the moving component of a machine direct the light beam of a photo-electric system for purposes of safety or control. The photo-electric components can then be mounted to stationary components of the machine.

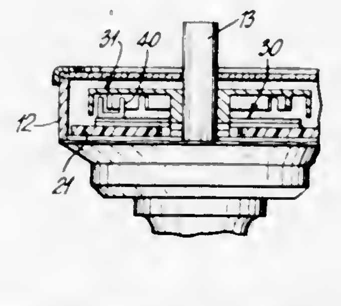
3,792,261
ADAPTABLE PHOTOELECTRIC AUTOMOTIVE DISTRIBUTOR COMBINATION

Robert E. Canup, Chester, and Earl W. McPeak, Jr., Richmond, both of Va., assignors to Texaco Inc., New York, N.Y.

Filed Aug. 16, 1972, Ser. No. 281,064

Int. Cl. G01d *5/36*

U.S. Cl. 250—233 **13 Claims**



A combination adaptable to replace conventional breaker points of an automotive distributor. It includes a printed circuit unit having a photoelectric contact breaker assembly attached and electrically connected to it. The unit is designed for mounting on the breaker plate. The distributor has a shutter that includes an inner flange with openings to cooperate with the photoelectric assembly, plus an outer peripheral flange, all to be attached to the distributor rotor.

3,792,262
SCANNING INITIATION POSITION DETECTING DEVICE

Mutsuo Ogawa, Tokyo, and Yoshiaki Satake, Sagamihara, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

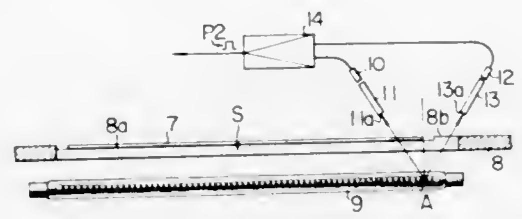
Filed Nov. 22, 1972, Ser. No. 308,928

Claims priority, application Japan, Nov. 25, 1971, 46/110461

Int. Cl. G01b *7/04*

U.S. Cl. 250—223 R **10 Claims**

A device comprising a light source disposed on the upper or under side of a slit formed in an original support table and vertically spaced apart therefrom, and two photoelectric transducer elements disposed on the other side of the slit and vertically spaced apart therefrom, the transducer elements being arranged such that light from the same portion of the light source is incident upon them and one of them serving as a detecting element while the other serves as a reference element. As an original is fed to the original supply table, the position at which scanning of the original is initiated is detected accurately and positively irrespective of variations in the types of originals and irregularities in the intensity of light from the light source.



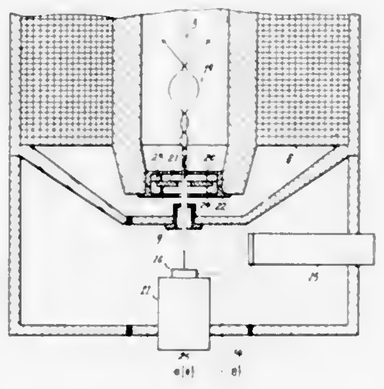
3,792,263
SCANNING ELECTRON MICROSCOPE WITH MEANS TO REMOVE LOW ENERGY ELECTRONS FROM THE PRIMARY ELECTRON BEAM

Hiroshi Hashimoto, and Susumu Takashima, both of Tokyo, Japan, assignors to Nihon Denshi Kabushiki Kaisha, Akishima, Japan

Filed Sept. 13, 1972, Ser. No. 288,688

Int. Cl. H01j *37/26;* **G01n** *23/22*

U.S. Cl. 250—311 **5 Claims**



In scanning electron microscopes, the beam of primary electrons generated by an electron gun contains low energy stray electrons as it passes through the condenser lens system on route to the specimen. The stray electrons adversely affect the secondary electron image. By incorporating a retarding electrode maintained at negative potential as described in this specification, the undesirable stray electrons are removed from the beam of primary electrons on the basis of the energy difference between the two groups of electrons.

3,792,264
PHOTOGRAPHIC APPARATUS

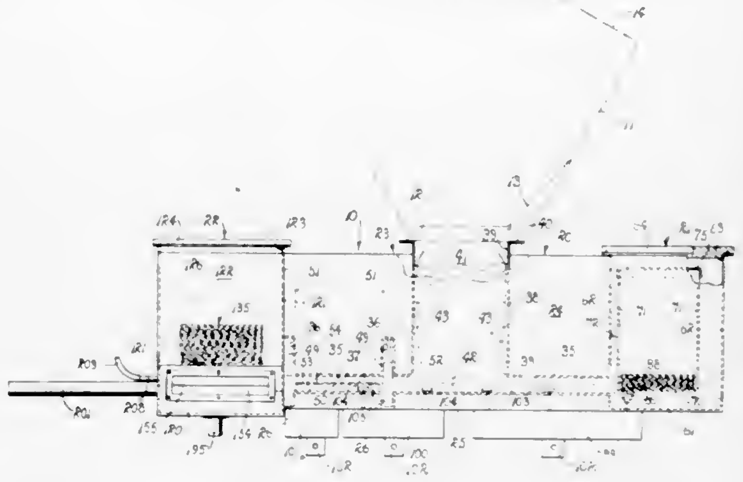
Thomas G. Lacey, 5250 N. Sixth St., Apt. E, Fresno, Calif.

Filed Dec. 27, 1972, Ser. No. 318,933

Int. Cl. H01j *37/36*

U.S. Cl. 250—311 **6 Claims**

A photographic apparatus having a housing defining an exposing chamber adapted to be mounted in evacuated photographic alignment with an electron microscope, the housing further defining a developing chamber and a passage interconnecting the chambers; a transporting table mounted for movement in the passage and adapted to receive a film negative; and a power system for positioning the table in the exposing chamber for exposure of a negative received thereon, motivating the table to the developing chamber, removing the negative from the table, and developing a film positive from the exposed negative.



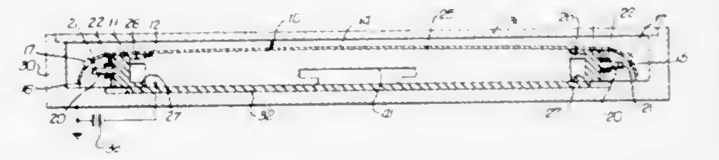
3,792,265
ENHANCEMENT OF IMAGES IN ELECTRON RADIOGRAPHY

Eric P. Muntz, Pasadena, and Murray S. Welkowsky, Los Angeles, both of Calif., assignors to Xonics, Inc., Van Nuys, Calif.

Filed Oct. 20, 1972, Ser. No. 299,378

Int. Cl. G03g *13/22, 15/22*

U.S. Cl. 250—315 **8 Claims**



An X-ray system for producing visual images on a dielectric sheet by producing an electrostatic charge image on the sheet and then delivering oppositely charged particles to the charged sheet. Apparatus and process for increasing the electrostatic charge voltage between exposure and development, by producing the electrostatic charges in a high capacitance, low voltage configuration with the electrode and sheet in contact, and then converting to a low capacitance, high voltage configuration with the electrode and sheet spaced from each other prior to developing the visual image.

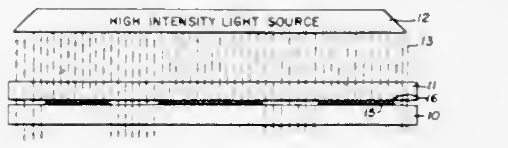
3,792,266
THERMOGRAPHIC RECORDING USING VAPORIZABLE MATERIAL AND COLORED PARTICLE DEVELOPMENT

Robert W. Gundlach, Victor, N.Y.

Continuation of Ser. No. 110,711, May 17, 1961, abandoned. This application Nov. 26, 1971, Ser. No. 202,675

Int. Cl. G01d *15/10*

U.S. Cl. 250—318 **18 Claims**



Process of reproducing the image pattern of an original having a vaporizable material at least in the image areas by heating the image areas to cause the material to vaporize and con-

3,792,269
SLIT SCREEN FOR X-RAY APPARATUS USED IN

two detectors, at least one of which is arranged stationarily at one side of the path of the web, along with a comparison

tector and an output signal filter in the form of a funnel-type optical filter between the cathode ray tube of the detector and ing the image areas to cause the material to vaporize and condensing the vaporized material on the surface of a receiving sheet placed in contact with the original. The material is vaporized in the image areas by exposure to infrared radiation. The condensed latent image of material on the receiving sheet is visualized by the application of colored particles which adhere to the material. The visualized image may subsequently be transferred to another sheet.

3,792,267
AUTOMATIC X-RAY EXPOSURE DEVICE

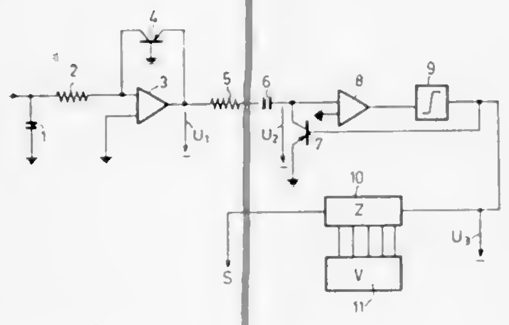
Kurt Westerkowsky, Hamburg, Germany, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed Dec. 3, 1971, Ser. No. 204,476

Claims priority, application Germany, Dec. 18, 1970, 2062633

Int. Cl. H01g *1/28*

U.S. Cl. 250—322 **8 Claims**



An automatic X-ray exposure device includes a radiation detector which supplies an output current proportional to the amount of X-ray energy impinging upon the film. An integrating circuit is responsive thereto to produce a signal corresponding to the accumulated X-ray energy on the film. A logarithmic amplifier is connected to the integrating circuit so as to derive a control signal proportional to the logarithm of the integrated signal. The control signal is used to automatically terminate the X-ray exposure.

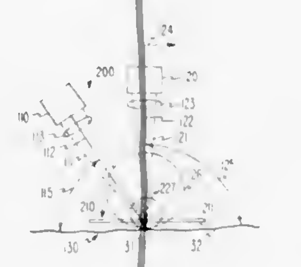
3,792,268
DOCUMENT SCANNER HAVING OPTICAL DIFFUSION MEANS

Brian Kenneth Bjerke, and Michael McHugh Siverling, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 6, 1972, Ser. No. 215,868

Int. Cl. G08c *9/06*

U.S. Cl. 250—219 Q **14 Claims**



An illumination provides incident radiation to a document lying in an object plane. A photodetector converts nonspecular reflections from the plane into an electrical signal. To prevent unwanted specular reflections, from plastic mail-piece windows or uneven documents, for degrading the signal-to-noise ratio, an optical diffuser is located adjacent the object plane. Both the incident and the reflected radiation pass through the diffuser, which may be a ground-glass flat.

3,792,269
SLIT SCREEN FOR X-RAY APPARATUS USED IN DETERMINING CRYSTAL TOPOGRAPHY

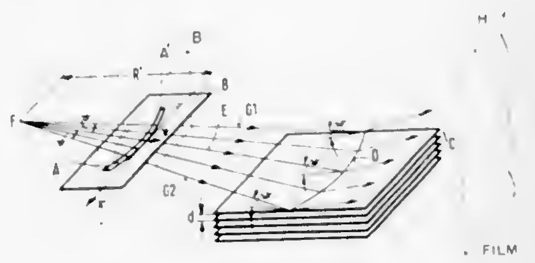
Heinrich Grienauer, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Nov. 25, 1970, Ser. No. 92,591

Claims priority, application Germany, Nov. 26, 1969, 1959226

Int. Cl. G01n *23/20*

U.S. Cl. 250—272 **3 Claims**



In an X-ray apparatus for examining crystal planes with the method of X-ray topography, in the path of the primary X-ray beam there is disposed a slit screen, the slit of which has a curved shape.

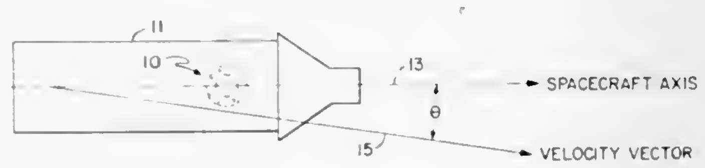
3,792,270
SPACECRAFT VELOCITY COMPONENT SENSOR

Robert E. Elmore, Tulsa, Okla., assignor to Avco Corporation, Tulsa, Okla.

Filed June 17, 1970, Ser. No. 46,901

Int. Cl. G01c *21/24;* G01p *5/20*

U.S. Cl. 250—83.3 R **9 Claims**



An omnidirectional sensor to detect changes in spacecraft attitude is disclosed. The sensor provides the capability of sensing through 360° the direction of the craft velocity component in its own principal plane when coupled with an even 2(n+1) port array. The sensor compensates for undesirable effects of intrinsic isotropic velocities of charged particles used in attitude sensing and the undesirable effects of electromagnetic radiation and energetic charged particles which ordinarily degrade accuracy.

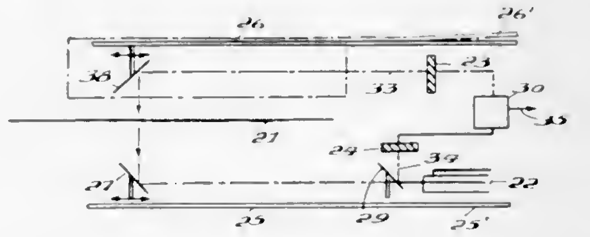
3,792,271
MEANS FOR DETERMINING MOISTURE CONTENT AND/OR SURFACE WEIGHT

Henry Sandblom, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Continuation-in-part of Ser. No. 236,315, March 20, 1972, abandoned. This application June 30, 1972, Ser. No. 268,116

Int. Cl. G01t *1/16*

U.S. Cl. 250—347 **6 Claims**



An arrangement for determining moisture content, surface weight or other properties of travelling paper webs includes two detectors, at least one of which is arranged stationarily at one side of the path of the web, along with a comparison device to which the detectors are connected. Light is supplied to the fixed detector by a stationary mirror, and to the other detector by a mirror system which is movable across the web.

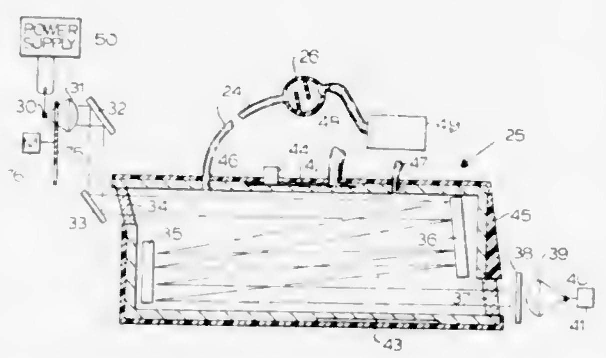
3,792,272
BREATH TEST DEVICE FOR ORGANIC COMPONENTS, INCLUDING ALCOHOL

Richard A. Harte, Redwood City; Edwin A. Amstutz, Santa Clara; Achille M. Bigliardi, III, San Jose, and William M. Johnson, Palo Alto, all of Calif., assignors to Omicron Systems Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 212,522, Dec. 27, 1971, abandoned. This application Jan. 12, 1973, Ser. No. 323,295

Int. Cl. G01n *21/26*

U.S. Cl. 250—343 **20 Claims**



A system for detecting volatile components in a vapor, e.g., alcohol, in the breath of a human subject. A ray of frequency-modulated and collimated light of suitable near infrared wavelength from a source such as a laser or a quartz-halogen lamp, collimated with quartz lenses and appropriate optical interference filters passes through the vapor sample via a path of fixed length and free from light losses except those caused by the volatile components being detected, and strikes a radiant energy detector, setting up an electrical signal which is amplified, electronically processed, filtered, and displayed. The concentration of alcohol or other test vapor affects the amount of energy able to pass through the sample to the detector. The detector determines the energy absorbed by the sample and transmits the result to a readout device, meter, or permanent recording means. The sample can be collected by taking an alveolar (deep lung) sample of the subject's breath The system determines, through Henry's law, the blood content of alcohol, ketones, aldehydes, various anesthesias and the like. This system is also applicable to determine combustible gases, for example, in coal mines.

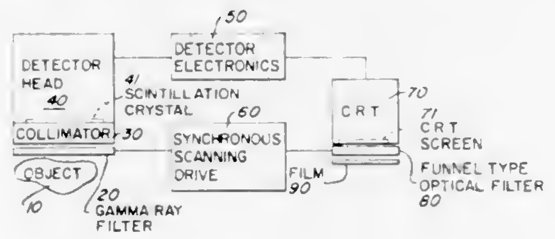
3,792,273
SCINTILLATION CAMERA WITH IMPROVED RESOLUTION

Lowell C. Bergstedt, Schaumburg, Ill., assignor to G. al. Searle & Co., Chicago, Ill.

Filed Feb. 10, 1972, Ser. No. 225,055

Int. Cl. G01t *1/20*

U.S. Cl. 250—71.5 S **3 Claims**



An Anger-type scintillation camera system fitted with a gamma ray filter between the object under study and the detector and an output signal filter in the form of a funnel-type optical filter between the cathode ray tube of the detector and an image recording film. The gamma ray filter and funnel-type optical filter scan in synchronism so that the total radioactivity distribution in the object is documented on the film.

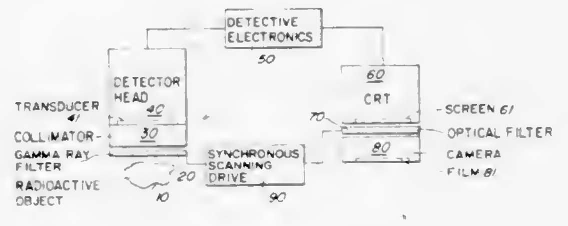
3,792,274
SCINTILLATION CAMERA WITH IMPROVED RESOLUTION

Agne Larson, Vastra Frolunda, Sweden, assignor to Nuclear-Chicago Corporation, Des Plaines, Ill.

Filed Oct. 19, 1971, Ser. No. 190,618

Int. Cl. G01t *1/20*

U.S. Cl. 250—368 **10 Claims**



An Anger-type scintillation camera system fitted with a gamma ray filter between the object under study and the detector and an output signal filter, in mechanical or electrical form, associated with an image recording film. The gamma ray filter and output signal filter scan in synchronism so that the total radioactivity distribution in the object is documented on the film.

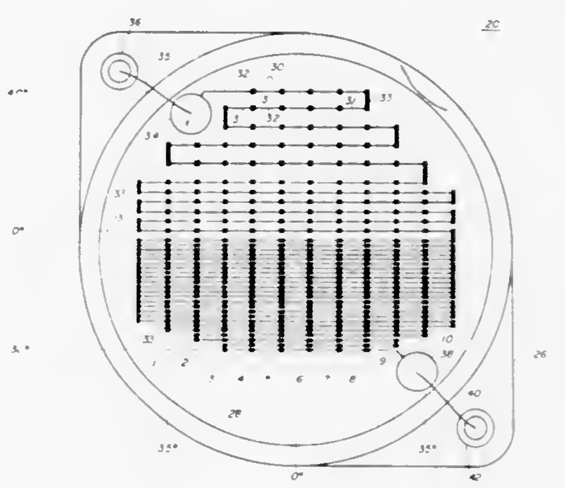
3,792,275
INFRARED INTRUSION SENSOR

Richard F. Leftwich, Pound Ridge, N.Y., and Robert T. Ensor, Redding, Conn., assignors to Barnes Engineering Company, Stamford, Conn.

Filed Dec. 26, 1972, Ser. No. 317,983

Int. Cl. G01t *1/16*

U.S. Cl. 250—338 **7 Claims**



An infrared intrusion sensor is provided to detect a human target anywhere in a 20 × 20 foot area. A wide angle portrait-type lens of germanium is utilized to provide reasonably uniform imaging over the field of view of approximately 70° × 70°, while still focusing on a flat image plane. This allows the use of a flat, extended thermopile detector having all active junctions which are arranged in columns to cover the desired area, and connected so that the columns alternate in a positive-negative configuration. The detector junctions have different sizes and spacing, with the junction concentration being roughly inversely proportional to the square of the range.

3,792,278

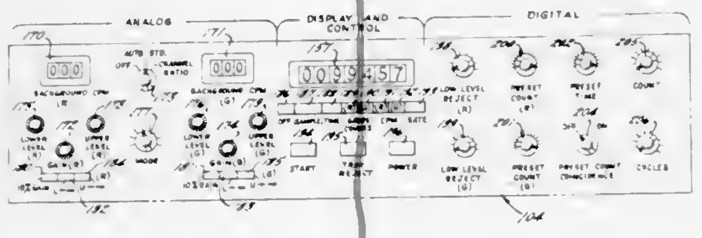
3,792,280

hibits exoelectron emission during optical, thermal or radia-

3,792,276
METHOD AND APPARATUS FOR PROGRAMMING LIQUID SCINTILLATION SPECTROMETERS

Joseph R. Toman, Naperville, and Edmund Frank, Chicago, both of Ill., assignors to Packard Instrument Company, Inc., Downers Grove, Ill.

Filed Oct. 12, 1971, Ser. No. 188,359
Int. Cl. G21h *5/00*
U.S. Cl. 250–369 **9 Claims**

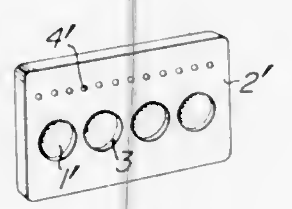


In an automatic scintillation counting device adapted to detect and measure the radioactivity of a multiplicity of samples supplied in trays or other sets, provisions are made for automatically changing one or more of the analog counting parameters, or analog-plus-digital parameters, for each set. The changes are effected automatically as each sample set comes into counting position, thereby permitting unattended automatic counting of samples requiring entirely different counting parameters. At the analyst's option, two or more sets may be counted under conditions established for one of the sets. Provisions are also made for retaining the operation of the master, or front panel, control when it is unnecessary to vary the counting program parameters for particular sets.

3,792,277
APPARATUS FOR INDIVIDUALLY MEASURING A PLURALITY OF DOSIMETER ELEMENTS FIXED IN A SINGLE FRAME

Tadaoki Yamashita; Osamu Yamamoto, both of Hirakata; Hajimu Oonishi, Neyagawa; Hidetsugu Kawabata, Kobe, and Saburo Kitamura, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 26,676, April 8, 1970, abandoned. This application Oct. 13, 1971, Ser. No. 188,802
Claims priority, application Japan, Aug. 9, 1971, 46-60428
Int. Cl. G01t *1/11*
U.S. Cl. 250–369 **1 Claim**

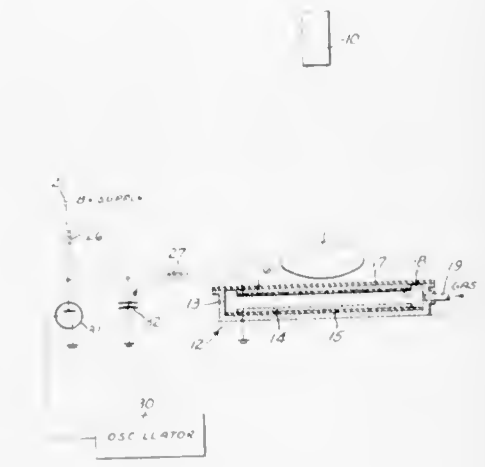


A thermoluminescence dosimetry system in which a composite thermoluminescence dosimeter having a plurality of thermoluminescent elements fixed in a single frame and a thermoluminescence readout instrument are combined to efficiently, simply and reliably analyze the doses of radiant rays.

3,792,278
ELECTRON RADIOGRAPHIC IMAGING CHAMBER WITH CURRENT ENHANCEMENT

Andrew P. Proudian, Chatsworth, Calif., assignor to Xonics, Inc., Van Nuys, Calif.

Filed Nov. 10, 1972, Ser. No. 305,339
Int. Cl. G01t *1/18*
U.S. Cl. 250–382 **4 Claims**

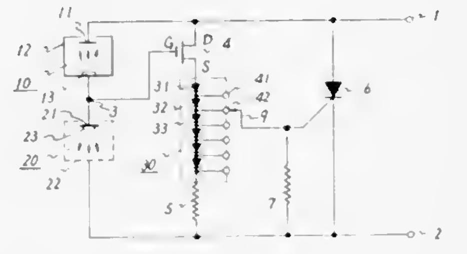


An improved imaging chamber for an electron radiographic system with a d.c. potential and an a.c. potential in the radio frequency range connected across the electrodes to provide increased current collection while reducing interelectrode discharge problems.

3,792,279
IONIZATION SMOKE DETECTOR

Koju Sasaki, Tokyo, Japan, assignor to Nittan Company, Limited, Tokyo, Japan

Filed Oct. 29, 1971, Ser. No. 193,901
Claims priority, application Japan, Nov. 19, 1970, 45-114352
Int. Cl. G01t *1/18*
U.S. Cl. 250–83.6 R **1 Claim**

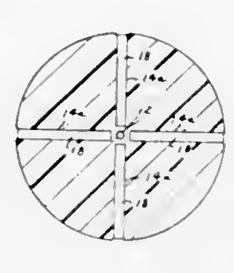


An ionization smoke detector having at least one ionization chamber open to ambient air and connected to a voltage supply, a field effect transistor having a source-drain path connected to said supply and a gate interconnected with said chamber to sense the voltage across the chamber, the source-drain path having a plurality of series connected diodes in series therewith and terminals connected to the junctions between the diodes in order to obtain a desired output voltage from the transistor upon the detection of smoke.

3,792,280
ISOTROPIC NEUTRON SPECTROMETER

Harley V. Piltingsrud, Idaho Falls, Idaho, assignor to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed Nov. 3, 1972, Ser. No. 303,438
Int. Cl. G01t *3/00, 1/11*
U.S. Cl. 250–390 **4 Claims**

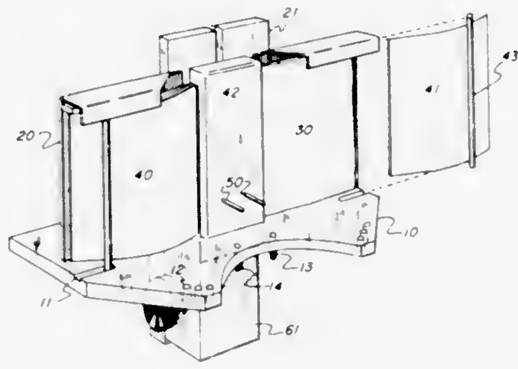


An isotropic neutron spectrometer having a plurality of radial polyethylene rods positioned in bore holes angularly spaced around a polyethylene sphere with thermoluminescent dosimeter pairs positioned at spaced intervals along the rods. A TLD pair is also located in the center of the sphere.

3,792,281
APPARATUS FOR PRODUCING PANORAMIC DENTAL ARCH X-RAY PHOTOGRAPHS

Robert Schwartz, 1271 Westfield Ave., Rahway, N.J., and Morris Goldberg, 14 Vanderventer Ave., Port Washington, N.Y.

Filed Oct. 16, 1972, Ser. No. 297,900
Int. Cl. G01n *21/00*; **H01j** *37/00*
U.S. Cl. 250–444 **8 Claims**



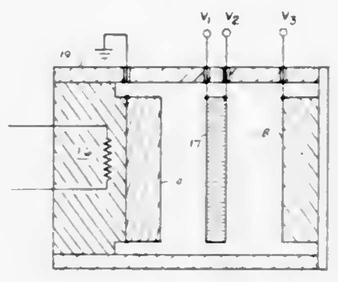
Panoramic X-ray photographs of the upper and lower dental arches are secured with a portable film holder apparatus that is used in conjunction with an independent X-ray unit. The film holder is composed of a photographic plate holder assembly used in combination with a sectional shield assembly. The shield assembly is adapted to engage the photographic plate holder assembly to cover a unitary photographic plate positioned within the holder assembly and to assist in the formation of a panoramic X-ray photograph from at least three sequentially secured X-ray photographs taken of various portions of the dental arch structure.

3,792,282
STIMULATED EXOELECTRON EMISSION DOSIMETER HAVING HIGH SPATIAL RESOLUTION

Peter F. Braunlich, Bloomfield Hills, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sept. 27, 1971, Ser. No. 184,153
Int. Cl. G01t *1/02*
U.S. Cl. 250–459 **10 Claims**

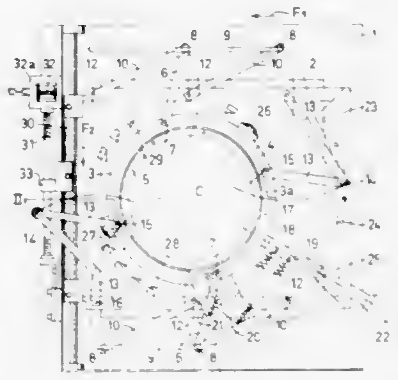
A dosimeter having high spatial resolution is described. The inventive dosimeter includes a sample of a material which exhibits exoelectron emission during optical, thermal or radiation stimulation after having been exposed to the type of radiation the detection of which is desired. Exoelectrons emanating from the sample are detected by a microchannel plate (MCP) which releases a large number of electrons for each electron it receives. The electrons emanating from the output surface of the microchannel plate impact a detection surface which yields a visual indication in response to the impacting electrons. Because microchannel plates multiply electrons in well defined channels the spatial distribution of electrons leaving the surface of the sample is preserved at the output surface of the MCP. The spatial distribution of electrons impacting the detection surface is thus identical to that of the electrons emanating from the surface of the sample material. Accordingly, the spatial distribution of the radiation to which the sample was originally exposed is duplicated across the detection surface, thereby making it possible to determine both the intensity and spatial distribution of the radiation to which the sample was subjected.



3,792,283
DEVICE FOR CENTERING AN X-RAY FILM CASSETTE

Jacques Lebra, Colombes, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 30, 1972, Ser. No. 302,112
Claims priority, application France, Nov. 18, 1971, 71.41259
Int. Cl. H01j *37/22*
U.S. Cl. 250–468 **5 Claims**



A device for centering the film cassette in an X-ray apparatus by means of two double systems of rods which together comprise four clamping members which can be symmetrically displaced towards the cassette, each of said rod systems being individually elastically coupled to a common operating member.

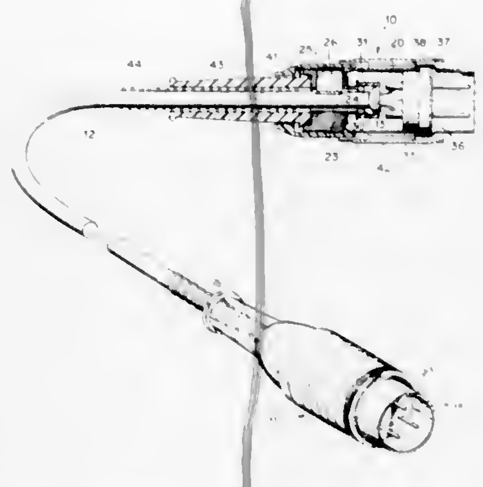
3,792,284
ELECTRO-OPTIC TRANSMISSION LINK

Oscar J. Kaelin, Harvard, Mass., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Oct. 13, 1972, Ser. No. 297,317
Int. Cl. G02b *5/14*
U.S. Cl. 250–551 **7 Claims**

An electro-optic link for transmitting signals including a length of flexible fiber optic light guide, a light emitting diode

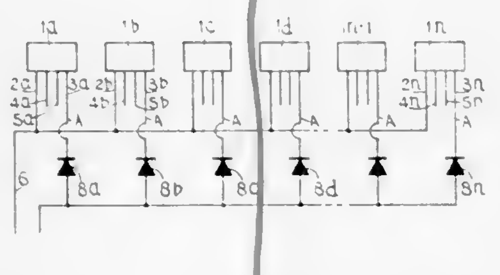
(LED), and a photo-diode. One end of the light guide and the LED are mounted in fixed relationship in a first coupling having electrical connector pins for mating with a receptacle in one unit of a system. The other end of the light guide and the photo-diode are mounted in fixed relationship in a second coupling having electrical connector pins for mating with a receptacle in another unit of the system. The electro-optic link provides a unitary structure for transmitting signals from one unit of a system to another unit. Electrical signals from the one unit are converted to light signals by the LED, the light signals are transmitted by the flexible fiber optic light guide to the photo-diode, and are reconverted to electrical signals by the photo-diode for utilization in the other unit.



3,792,285

ELECTRONIC CIRCUIT INSTALLATIONS

Brian John Procter, Stevenage; Colin Sidney Osborne, Sandy, and Ignacy Krajewski, Hitchin, all of England, assignors to International Computers Limited, London, England
Filed Aug. 23, 1972, Ser. No. 283,075
Claims priority, application Great Britain, Aug. 25, 1971, 39,869/71; Mar. 28, 1972, 14,405/72
Int. Cl. H02j *3/14*
U.S. Cl. 307—38 **4 Claims**



The circuits of a multicircuit installation using common power feeders, are tested by being electrically isolated from the other circuits, individually activated and tested

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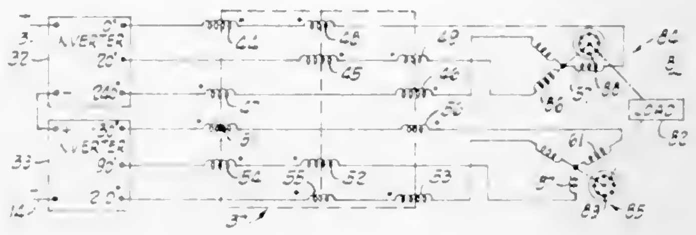
3,792,286

COMBINING INVERTERS FOR HARMONIC REDUCTION

Udo H. Meier, Luzern, Switzerland, assignor to Reliance Electric Company, Cleveland, Ohio
Filed Oct. 12, 1971, Ser. No. 187,974
Int. Cl. H02j, H02m
U.S. Cl. 307—58 **36 Claims**

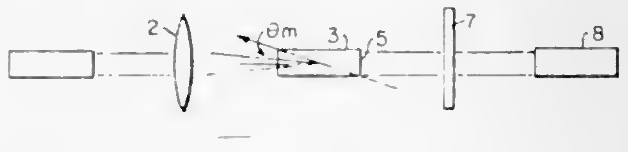
A plurality of polyphase inverters are connected in circuit to substantially common polyphase loads through a polyphase reactor. Windings from each phase of each inverter are provided on the reactor to cancel the component of flux of the fundamental frequency within the reactor and to have the reactor substantially absorb the NP±1 harmonics where N is the number of inverters and P is the number of phases. For two three-phase inverters this substantially cancels the fifth and seventh harmonic voltages within the reactor applying a true 12-step voltage wave to each of the two common three-phase loads with nothing smaller than the 11th harmonic voltage supplied to each load. The two inverters are phase displaced by 360°/2NP which normally at a 30° phase angle would be a voltage loss of 3 ½ percent applied to the load yet this reactor connection applies 100 percent voltage to the loads and the load power factor is reflected directly to each inverter. The loads may be DC isolated, permitting series connection of the inputs of the inverters from a single high voltage DC supply.



3,792,287

NON-LINEAR OPTICAL CRYSTAL AND DEVICES

George W. Roland, Monroeville, and John D. Feichtner, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 17, 1971, Ser. No. 181,409
Int. Cl. H03f *7/00*, **H02m** *5/00*
U.S. Cl. 307—88.3 **25 Claims**

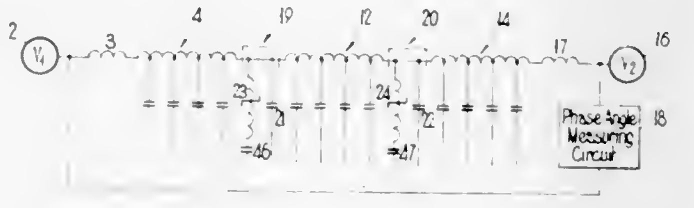


A compound of the formula Tl_3AsSe_3 is disclosed. It can be made into large, optically useful crystals which are birefringent and display nonlinear optical properties in the infrared. A harmonic generator, an optical parametric oscillator, and an optical frequency upconverter incorporating this crystal are also disclosed.

3,792,288

A. C. POWER TRANSMISSION SYSTEMS

Erich Siegfried Friedlander, Sutton Coldfield, England, assignor to Associated Electrical Industries Limited, London, England
Filed Aug. 9, 1972, Ser. No. 278,927
Int. Cl. H02j *3/24*
U.S. Cl. 307—102 **5 Claims**

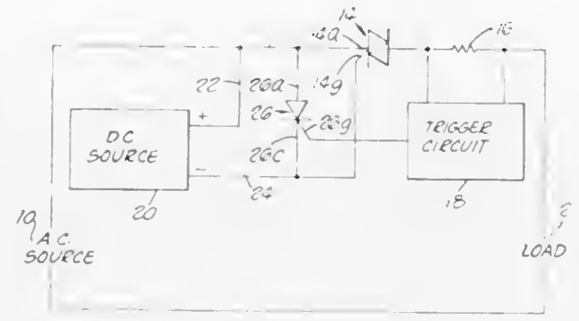


An alternating current power transmission system having a transmission line and at least one saturated reactor connected in shunt with the transmission line, in which there are provided control means for controlling the current voltage characteristic of the reactor to give a positive damping of oscillations induced in the system as a result of a disturbance occurring in the system.

3,792,289

SOLID STATE CIRCUIT BREAKER

Abdollah Kazem, 1236 E. Edinger Suite H, Santa Ana, Calif.
Filed July 3, 1972, Ser. No. 268,529
Int. Cl. H02h *7/00*
U.S. Cl. 307—125 **6 Claims**

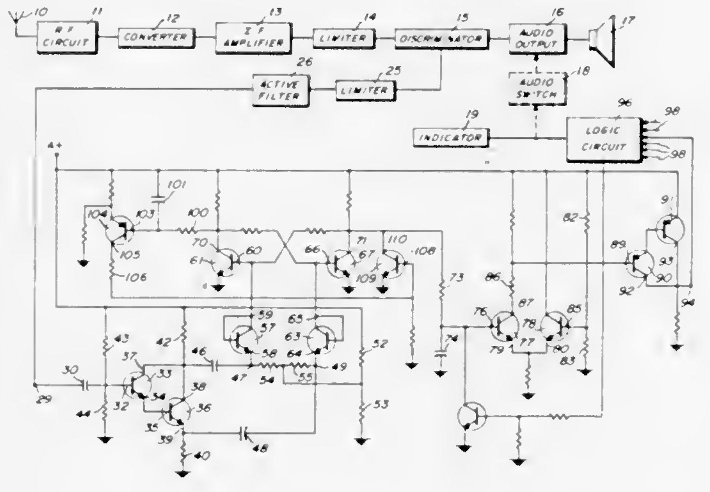


A fast acting circuit for controlling alternating electric current by placing an impedance element in series between the source and the load and sensing the voltage developing across the element with a trigger circuit where the output of the trigger circuit is coupled to a solid state latching device and also coupled in series with the current source whereby AC current in excess of a pre-selected amount causes the trigger to actuate the latch to interrupt the current flow from the source, the latch maintaining the interruption until manually reset.

3,792,290

TONE DETECTOR WITH CONSTANT DETECTION RESPONSE TIME

John Race Brocker, Batavia, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Feb. 20, 1973, Ser. No. 334,186
Int. Cl. H03k *5/20*
U.S. Cl. 307—233 **13 Claims**

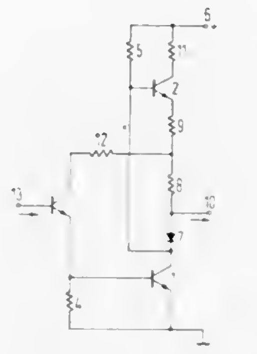


A detector for detecting any one of the particular tone frequency signals in a range of tone frequency signals and which has a constant detection response time includes a converter operative in response to the particular tone frequency signals coupled thereto exceeding a predetermined threshold to develop square wave signals having substantially a 50% duty cycle. An integrator, coupled to the converter integrates the square wave signals to develop an integration voltage. The integration voltage reaches a predetermined amplitude level in response to the square wave signals in the constant detection response time causing actuation of a switching circuit which develops a detection signal.

3,792,291

CIRCUIT ARRANGEMENT FOR IMPROVING THE SHORT CIRCUIT RESISTANCE OF THE SLOWER INTERFERENCE-FREE LOGIC CIRCUITS

Heinz Zietemann, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Sept. 18, 1972, Ser. No. 290,130
Claims priority, application Germany, Sept. 28, 1971, P 21 48 437.7
Int. Cl. H03k *17/00*
U.S. Cl. 307—239 **6 Claims**

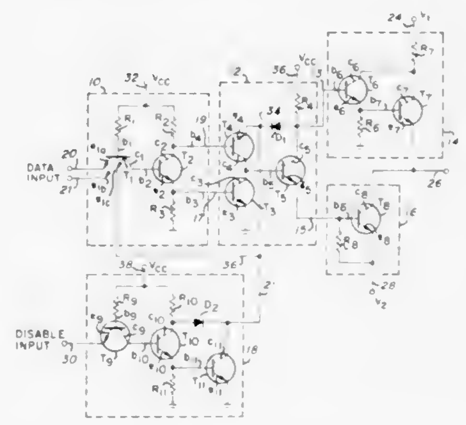


The emitter-collector paths of two transistors of an amplifier are connected in series by way of a series circuit of two resistors and a diode having the same conductivity direction as that of the transistors. The connecting point of the collector of the first transistor with the diode is located at the base of the second transistor and the connecting point of the diode with the first resistor is located at the output terminal of the amplifier. The connecting point of the two resistors is connected by way of a further resistor to the collector of the third transistor whose emitter is connected to the base of the first transistor and which is controlled at its base to render one of the first transistors conductive while the other is nonconductive. In case of a short circuit at the output of the amplifier and in case of a conductive second transistor, the short circuit current creates, at the resistors between the second transistor and the diode, such a voltage that the Zener voltage of the diode is achieved. The diode becomes conductive in the reverse direction and lowers the voltage at the base of the second transistor. Therefore the second transistor transfers to the unsaturated condition and the current is limited by the second transistor and the serially connected resistors.

3,792,292

THREE-STATE LOGIC CIRCUIT

Ury Priel, Cupertino, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.
Continuation of Ser. No. 108,359, Jan. 21, 1971, abandoned. This application June 16, 1972, Ser. No. 263,680
Int. Cl. H03k *19/08, 19/28, 19/38*
U.S. Cl. 307—209 **10 Claims**



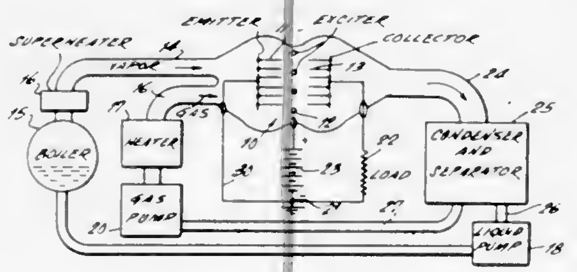
An improved three-state logic circuit for selectively providing active sourcing, active sinking or high impedance isolation of the circuit output terminal so as to develop "true" output, "false" output or third state, high impedance output signals. A first T²L data input circuit selectively drives, through a buffer stage, an active pull-up circuit and an active pull-down circuit in response to logic input signals, and a second T²L output disable circuit cooperates with the buffer stage to selectively disable the active pull-up and pull-down circuits in response to a disable signal.

ERRATUM

For Class 307—66 see:
Patent No. 3,792,314

3,792,293
ELECTROSTATIC GENERATOR WITH CHARGING AND COLLECTING ARRAYS

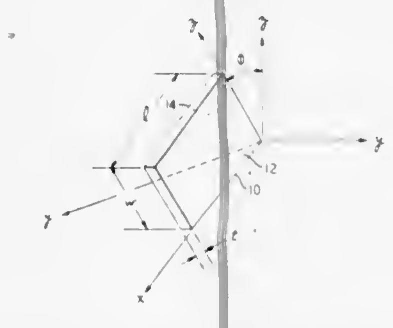
Alvin M. Marks, 149-61 Powells Cove Blvd., Whitestone, N.Y. Continuation-in-part of Ser. No. 16,048, March 3, 1970, abandoned. This application Nov. 22, 1971, Ser. No. 200,766
Int. Cl. H02n
U.S. Cl. 310—5 **8 Claims**



A device is described for transducing heat-kinetic power into electrical power using a charged aerosol, which flows through a sheet conversion space having emitting and exciter arrays to charge and form droplets at the entrance plane and a collector array to discharge the droplets at the exit plane and to supply electrical power to load, which results in increased efficiency with greater output power and current at a smaller voltage.

3,792,294
RECTANGULAR AT-CUT CRYSTAL PLATE

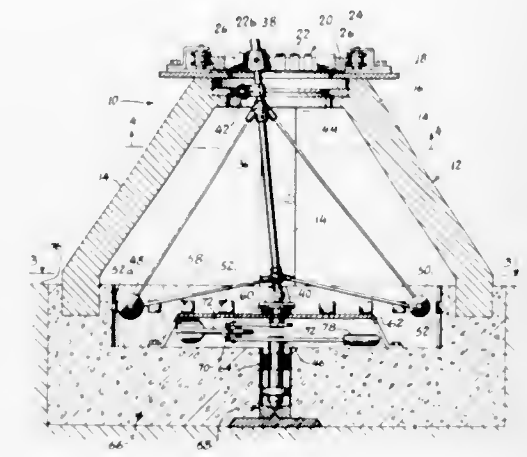
James Jerome Royer, Hanover, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Oct. 19, 1972, Ser. No. 299,084
Int. Cl. H01v *7/00*
U.S. Cl. 310—9.5 **7 Claims**



Rectangular AT-cut quartz crystal plates designed for the frequency range of 1 to 6 MHz have width-to-thickness ratios chosen from the ranges 2.5 to 3.5, 5.5 to 7, 8.5 to 10, and 11.5 to 13.5 to avoid length-width shear resonances and thus eliminate unwanted resonances near the desired thickness-shear resonance. These rectangular AT-cut plates offer significant manufacturing and packaging advantages over existing AT-cut plates.

3,792,295
ELECTROMAGNETIC DRIVE SYSTEM

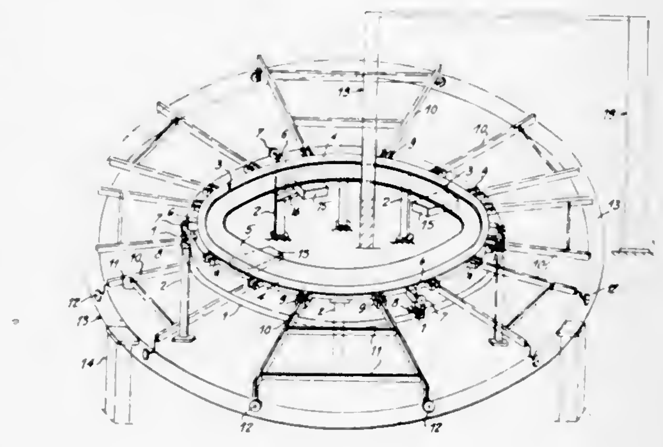
Frank Garbi, 48-21 40th St., Long Island City, N.Y.
Filed May 2, 1972, Ser. No. 249,560
Int. Cl. H02k
U.S. Cl. 310—46 **6 Claims**



A machine for generating compressive energy from kinetic energy, comprising a plurality of weights mounted for rotation on a shaft which is disposed at an angle with respect to the axis of rotation. The shaft, and the weights mounted thereon, are driven about the axis of rotation by an electromagnetic drive comprising a segmented annular electromagnet, each segment of which is energized in advance of a magnetically sensitive element on the shaft to rotate the element, shaft and the weights about the axis. By suitable crankshaft linkage, the rotational motion is transmitted to linear motion of pistons which yield the compressive energy to be generated.

3,792,296
AUTOMOTIVE STRUCTURE FOR REVOLVING STANDS

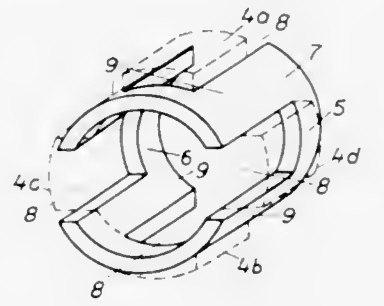
Pierre Albert Lefebvre, Sille-le-Guillaume, France, assignor to G.M.T. S.A., Le Mans, France
Filed Nov. 9, 1971, Ser. No. 197,041
Claims priority, application France, Nov. 9, 1970, 7040208
Int. Cl. H02k *41/02*
U.S. Cl. 310—166 **13 Claims**



A rotary stand comprises an annular track, an annular rotor revolvably mounted on said track including an armature ring cooperative with at least one inductor fixed relative to said track, said rotor having attached thereto carriages movably supported on an annular runway concentrically surrounding said track.

3,792,297
RELUCTANCE MACHINE HAVING EQUALIZING WINDINGS

Vilmos Torok, Nordanvindsgatan 6, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed Dec. 30, 1971, Ser. No. 213,938
Claims priority, application Sweden, Dec. 31, 1970, 7017849
Int. Cl. H02k *3/16*
U.S. Cl. 310—183 **3 Claims**



A reluctance machine has a stator with a plurality of stator poles arranged tangentially one after the other and carries at least one stator winding. The rotor has a plurality of pole pairs equally angularly spaced. The rotor has an equalizing winding composed of coils in the form of a hollow cylinder of conductive material provided with longitudinal slots extending alternately from opposite ends receiving the rotor poles, the parts of the cylinder between the slots being joined at alternate ends by arcuate parts, the induced voltages in the coils counteracting each other

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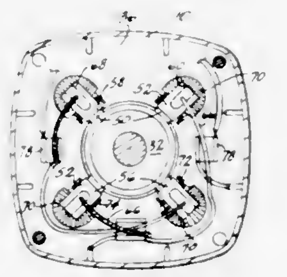
3,792,298
ELECTRIC MOTOR BRUSH CARD

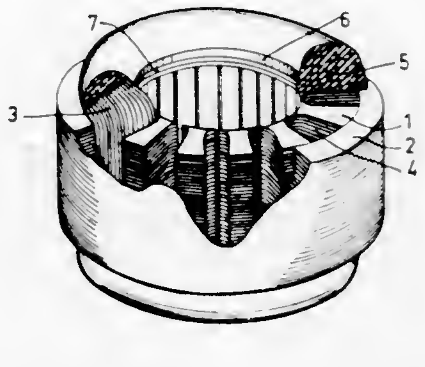
Lyle J. Hamman, Eaton Rapids, Mich., assignor to Eaton Stamping Company, Eaton Rapids, Mich.
Filed Aug. 24, 1972, Ser. No. 283,525
Int. Cl. H02k *13/00*
U.S. Cl. 310—242 **9 Claims**



The invention pertains to electric motor brush structure wherein a planar dielectric support in the form of a card is mounted within a motor housing in a plane perpendicularly disposed to the motor armature axis. A plurality of brush holders are mounted upon the card concentrically arranged about an armature receiving opening defined therein, and the brush holders are of a sheet metal construction of U-cross-sectional configuration having open ends and slots defined in base and leg portions for receiving a brush conductor and portions of a coil tension spring which engages a brush slidably received within each holder for biasing the brush radially inwardly into engagement with the armature commutator.

3,792,299
STATOR FOR ELECTRIC MOTORS

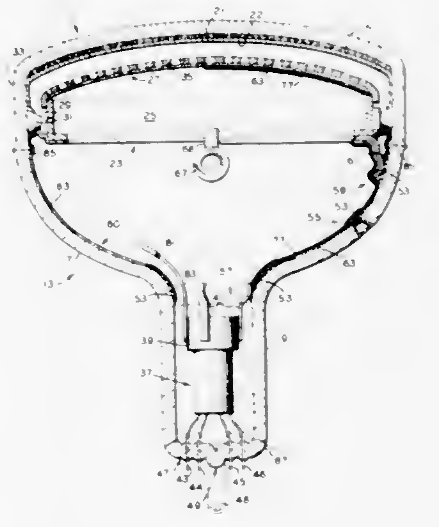
Stig Lennart Hallerback, Vastra Frolunda, Sweden, assignor to SKF Industrial Trading and Development Company N.V., Amsterdam, Netherlands
Filed May 17, 1972, Ser. No. 254,302
Int. Cl. H02k *1/12*
U.S. Cl. 310—258 **2 Claims**



An electric rotary machine having a stator and a rotor, an annular air gap between the stator and the rotor, said stator comprising an outer annular yoke and a plurality of radially directed stator teeth circumferentially spaced apart to define a plurality of openings between adjacent teeth and extending the full radial depth of the teeth, stator windings in the openings between the stator teeth and a moulding adjacent axial ends of the stator forming an insulation for the stator windings and locating and holding together the stator teeth and stator windings as a rigid assembly, the inner ends of said teeth being formed with pointed tooth shoulders wherein adjacent shoulders are closely spaced apart to provide a narrow gap therebetween.

3,792,300
CATHODE RAY TUBE HAVING A CONDUCTIVE METALLIC COATING THEREIN

David Benda, Geneva, N.Y., and Donald R. Kerstetter, Emporium, Pa., assignors to GTE Sylvania Incorporated, Seneca Falls, Del.
Filed June 15, 1972, Ser. No. 263,297
Int. Cl. H01j *29/46*
U.S. Cl. 313—85 R **7 Claims**



An improved color cathode ray tube of the shadow mask type is provided wherein localized areas of a primary conductive substance are disposed on the interior surface of the envelope funnel and neck portions separately covering the high voltage button and gun assembly contact areas. A substantially continuous secondary reflective coating of gas-sorbtive electrically conductive metallic material, providing advantageous life performance results, is disposed over the back surface of the shadow mask and over the interior surface of the funnel portion to provide a final anode coating effecting a peripheral unipotential field for the tube and electrically connecting the mask-screen area and the aforementioned localized primary coated areas. A thin tertiary film of high-efficiency gas-adsorbing getter material is disposed over at least a portion of the secondary conductive coating material.

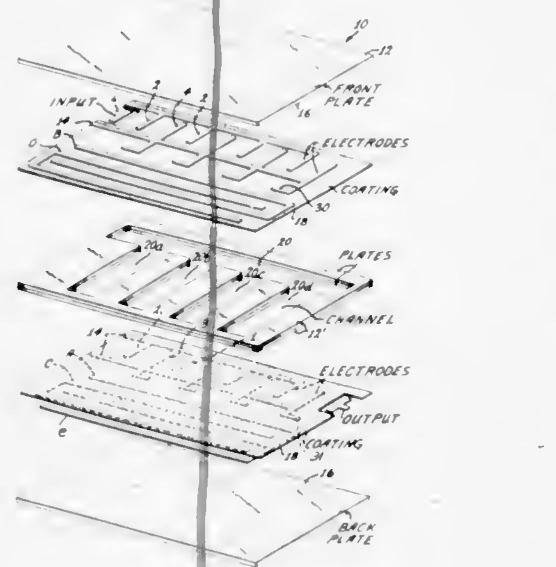
3,792,301
TWO DIRECTIONAL PLASMA CHARGE TRANSFER DEVICE

Clarence W. Kessler, Oakwood, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Aug. 28, 1972, Ser. No. 284,396

Int. Cl. H01j *61/06*

U.S. Cl. 313—188 **3 Claims**



A Two Directional Plasma Charge Transfer Device utilizing an ionizable gas in an enclosure having a primary channel and a plurality of secondary channels extending laterally therefrom, an input electrode which can be directly or capacitively coupled to the gas, a plurality of transfer electrodes coated with a dielectrical material on opposite internal walls of the enclosure offset from one another throughout the length of the channels and arranged so that upon application of input signals, the gaseous discharge transfers successively between subsequently offset transfer electrode pairs by the transfer of the electric charge on the wall coating of the electrode which results from the gaseous discharge, first along the primary channel and subsequently laterally from the direction of its original travel so that the device may be used preferably as a graph display or as a two directional shift register.

3,792,302
VHF SLOW WAVE STRUCTURE

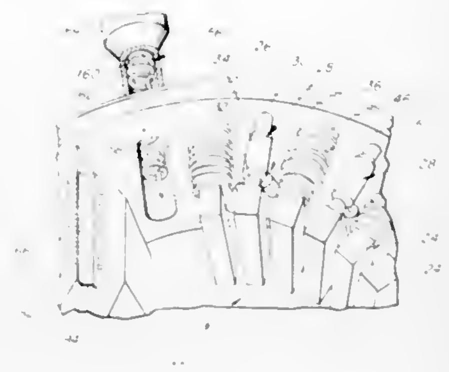
Arthur H. Downing, Woburn, and Hans-Joachim Krahn, Burlington, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 22, 1972, Ser. No. 317,586

Int. Cl. H01j *25/34*

U.S. Cl. 315—3.6 **4 Claims**

A very high frequency electromagnetic energy device with a slow wave structure is disclosed having impedance matching means and lumped as well as distributed elements for energy propagation. An embodiment comprises a backward wave oscillator device incorporating elements used at microwave frequencies together with lumped capacitance and inductance elements to provide a device operative in a frequency range of, illustratively 100 to 200 MHz.



3,792,303
CATHODE-RAY TUBE WITH DEFLECTION AMPLIFICATION AND POST-DEFLECTION ACCELERATION

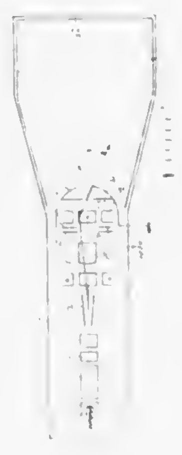
Andre Albertin, and Bernard Chartier, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Nov. 1, 1971, Ser. No. 194,737

Claims priority, application France, Oct. 30, 1970, 70.39262

Int. Cl. H01j *29/70*

U.S. Cl. 315—17 **6 Claims**



In a cathode-ray tube that includes a slotted post-deflection acceleration electrode and, upstream thereof, an adjacent quadrupolar lens for deflection amplification, in order to correct image distortion, there are provided two slotted correcting electrodes disposed at either side of said quadrupolar lens. The correcting electrode situated between the secondary acceleration electrode and the quadrupolar lens is at the same potential as the secondary acceleration electrode, while the correcting electrode upstream of said quadrupolar lens has a slot with a configuration similar, but oriented perpendicularly to that of the slot provided in the post-deflection acceleration electrode.

3,792,304
SCALED GRAPHIC LINE DISPLAY ON CATHODE-RAY TUBE WITH UNIFORM BRIGHTNESS

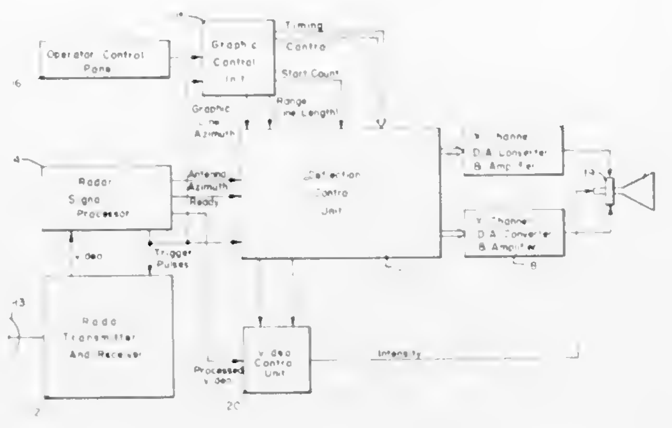
Rudolph Dalena, Placentia, Calif., and Donald F. Walker, Boulder, Colo., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed July 24, 1972, Ser. No. 274,548

Int. Cl. H01j *29/72*

U.S. Cl. 315—18 **5 Claims**

In a radar PPI display system, uniform brightness is maintained for graphic lines displayed between radar sweeps by generating every graphic line at the same rate regardless of range scale selected. Range data for each graphic line is scaled as a function of range scale in a range counter which counts down clock pulses at a fixed rate, thus scaling each graphic line as a function of range scale.



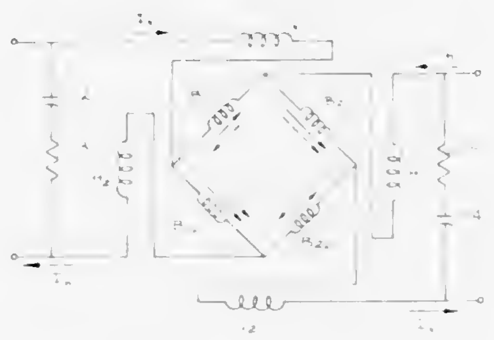
3,792,305
DEFLECTION YOKE WITH BRIDGE-CONNECTED WINDINGS

John W. Lister, Portsmouth, Va., assignor to General Electric Company, Portsmouth, Va.

Filed Dec. 23, 1971, Ser. No. 211,341

Int. Cl. H01j *29/70*

U.S. Cl. 315—22 XY **11 Claims**



A yoke assembly having windings for producing magnetic fields to deflect an electron beam in a predetermined manner. A first and a second set of windings are disposed upon a core for deflecting the electron beam in a vertical and a horizontal sense, respectively. A set of four auxiliary windings is disposed upon the core about points where the horizontal and vertical deflection windings would ordinarily overlap. The auxiliary windings are then connected in series to form a closed, four-sided loop or bridge. The bridge is connected in series with both the first and the second set of deflection windings such that the windings of the first set are coupled to opposing nodes of the bridge, and the windings of the second set are coupled to the other, remaining nodes. The effective resistances across the newly-connected first and second sets of windings are substantially decreased while the inductances thereof are virtually unchanged so that the L-R ratios thereof are substantially improved.

In one embodiment, the first and second sets of windings are distributed in patterns characterized by relatively low fifth-order and higher harmonics. In still another embodiment, each auxiliary windings has turns of an additional adjacent auxiliary winding interposed intermediate its ends.

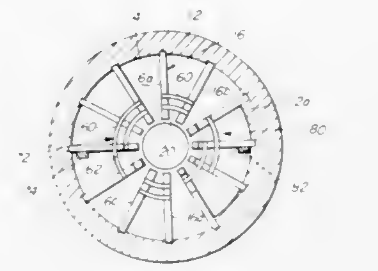
3,792,306
MULTISIGNAL MAGNETRON HAVING PLURAL SIGNAL COUPLING MEANS

William A. Smith, Winchester, and John R. Butler, Lexington, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 4, 1972, Ser. No. 312,180

Int. Cl. H01j *25/50*

U.S. Cl. 315—39.57 **10 Claims**



A crossed field microwave energy device of the magnetron type is provided with a reentrant cavity resonator circuit having isolated groupings of elements to simultaneously yield separate resonant frequencies through energy exchanging relationship with a common electron space charge circulating in the interaction region adjacent to the circuit. In an illustrative embodiment two frequencies, f_1 and f_2, are provided by interaction with group of strapped anode vanes interrupted by intermediate inactive drift regions. The tube is operated under either pulsed or continuous wave conditions. Separate output antenna means couple energy from each circuit to a utilization load.

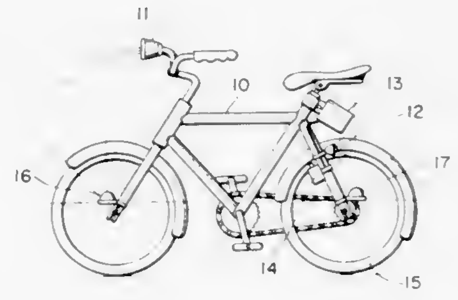
3,792,307
BICYCLE SAFETY LIGHTING GENERATOR-BATTERY SYSTEM

Donald L. Baker, 530 Alma Real Dr., Pacific Palisades, Calif.

Filed July 26, 1972, Ser. No. 275,196

Int. Cl. B62j *5/00*

U.S. Cl. 315—77 **5 Claims**



A generator-battery circuit connects to the head and tail lights and in the preferred embodiment of the invention, auxiliary safety lights. The generator is driven from the bicycle wheel to energize the lights when the bicycle is traveling above a given speed. The battery circuit connects in bucking voltage relationship with the generator circuit and includes a series connected diode such that the battery is effectively disconnected when the generator is energizing the lights. On the other hand, when the bicycle slows below the given speed or is motionless, the battery voltage exceeds the generator voltage and energizes the lights. The auxiliary safety lights are mounted on the front and rear portions of the bicycle and provide 360° illumination in azimuth when the bicycle is stationary or traveling at low speeds

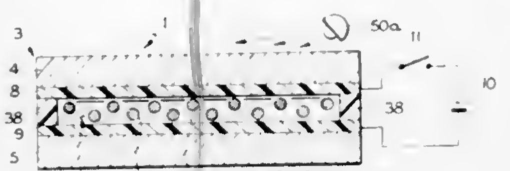
3,792,308
ELECTROPHORETIC DISPLAY DEVICE OF THE LUMINESCENT TYPE

Isao Ota, Osaka, Japan, assignor to Matsushita Electric Industries Co., Ltd., Kadoma, Osaka, Japan

Filed June 8, 1970, Ser. No. 44,023

Int. Cl. H05b *33/00, 43/00*

U.S. Cl. 315—150 **39 Claims**



An electrophoretic display and/or recording device of the luminescent type in which a luminescent electrophoretic suspension layer including a dispersion of at least one electrophoretic material in a finely divided powder form suspended in a suspending medium is interposed between a pair of electrodes. Said suspension layer includes at least one luminescent component therein and emits luminescent light when radiation flux or electric field is applied thereto. An electric field is imposed across the electrophoretic suspension layer to change the luminescent property of the suspension layer by changing the spatial distribution of the electrophoretic material in the suspending medium eletrophoretically.

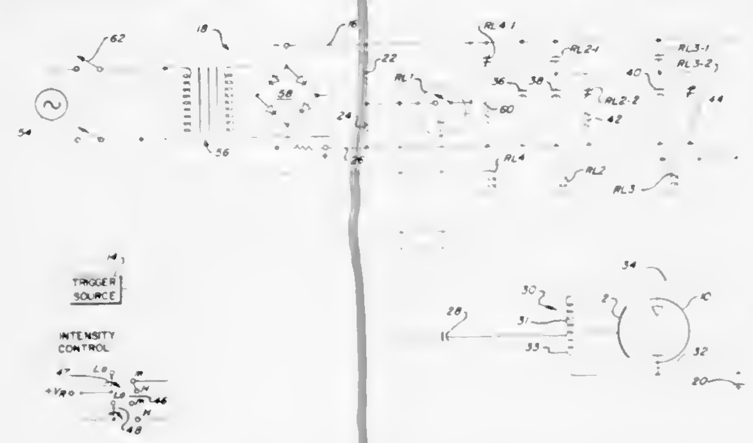
3,792,309
STROBE LIGHT INTENSITY CONTROL

Clement J. McDonald, River Forest, Ill., assignor to Multi Electric Mfg. Inc., Chicago, Ill.

Filed Aug. 30, 1972, Ser. No. 285,091

Int. Cl. H03b *41/00*

U.S. Cl. 315—200 A **9 Claims**



A strobe light circuit in which the light intensity of the strobe lamp is varied by adding or removing selected flash capacitors in circuit with the lamp to increase or decrease surge current through the lamp. The circuit connection between each of the flash capacitors and the strobe lamp is controlled by a double-pole, double-throw relay with a normally open relay contact in series with the flash capacitor to enable it to charge and discharge and a normally closed contact across the flash capacitor to discharge it when it is not being used to provide a portion of the surge current. Both contacts are connected at the low side of the power line to minimize electrical arcing and are mechanically linked together such that the conducting set of contacts always breaks contact before the nonconducting set of contacts closes. Intensity control switches are provided to energize the relay coils for the selected capacitors. One flash capacitor is always connected across the strobe lamp to maintain a minimum light intensity, and this capacitor is discharged through a normally closed relay contact when power for the entire circuit is interrupted.

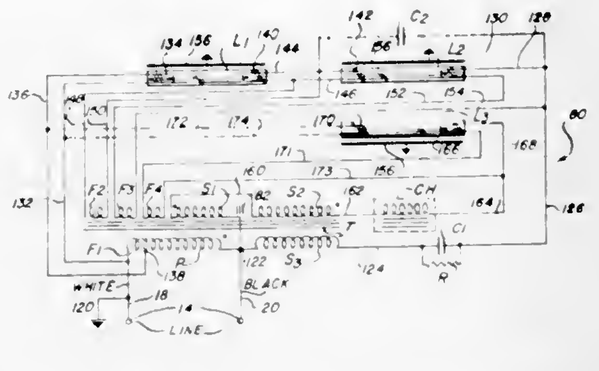
3,792,310
THREE-LAMP LEAD LAG RAPID START BALLAST APPARATUS

Joseph A. Crawford, Chicago, Ill., assignor to Advance Transformer Co., Chicago, Ill.

Filed Dec. 12, 1972, Ser. No. 314,399

Int. Cl. H05b *41/16*

U.S. Cl. 315—257 **17 Claims**



A ballast for rapid start gaseous discharge lamps to ignite and operate three such lamps from a source of a.c. voltage greater than the igniting voltage of the lamps comprising a lead side made up of two lamps in series with a shunting condenser across one lamp and an operating condenser in series with both lamps, the lamps and operating condenser being connected across an autotransformer including primary and secondary windings additive but loosely coupled; and a lag side made up of one lamp in series with the same primary winding and two secondary windings, the latter secondary windings being connected additive with the primary winding and together therewith in series with a choke and the single lamp. The primary and all secondary windings and filament windings are mounted on the same core with all filament windings, primary winding and one of the lag side secondary windings closely coupled to one another but loosely coupled relative to the remaining secondary windings. The latter two are closely coupled to one another. The lead side lamps start first and current flow in the lead circuit increases voltages in the lag side secondaries raising the lag side open circuit voltage to aid in the starting of the lag lamp.

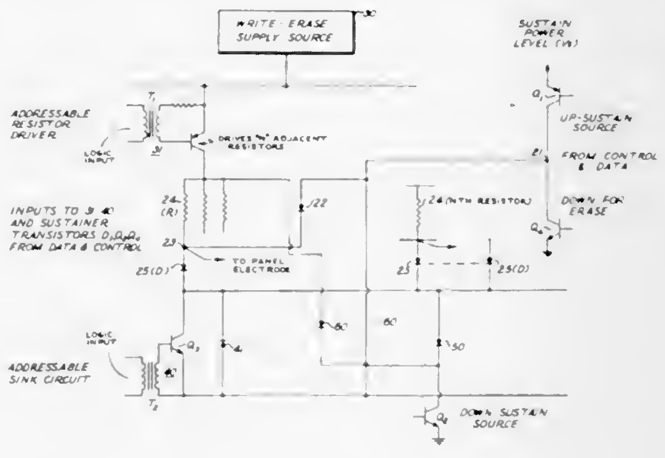
3,792,311
SPLIT-SUSTAINER OPERATION FOR GASEOUS DISCHARGE DISPLAY PANELS

Ray L. Trogdon, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed June 7, 1972, Ser. No. 260,687

Int. Cl. H05h *37/00*

U.S. Cl. 315—169 TV **6 Claims**



There is disclosed an improved sustainer supply system that allows more economical addressing techniques for gaseous discharge display panels. There is particularly disclosed a sustainer supply system wherein the panel discharge currents need not be carried by the addressing drive circuitry. According to the invention each panel electrode or conductor line is addressable by a resistor-diode addressing matrix. The invention provides an addressable sink circuit which sinks current from any diode resistor combination.

3,792,312
DEVICE FOR CREATING ELECTROSTATIC CHARGE OR DISCHARGE

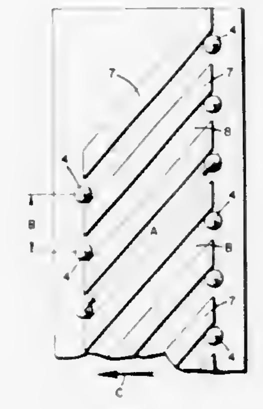
Gerhard Marx, Hahn, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Sept. 14, 1972, Ser. No. 289,053

Claims priority, application Germany, Sept. 17, 1971, P 21 46 539.4

Int. Cl. H01t *19/04*

U.S. Cl. 317—2 F **5 Claims**



A device for electrostatically charging or discharging surfaces of a web or sheet material or charging photoconductive insulating layers comprising two mounted rows of needles which are separated from one another but parallel to one another with each row being of a different electrical potential. Within each row the distance between adjacent needles remains constant. Furthermore each needle of one row is coordinated at an acute angle with a needle of the other row by separating walls extending from one row of needles to the other row of needles. The angle between coordinated needles is below 45°. The needle distance is about three needle thicknesses with the needle thickness ranging between about 0.1 to 1 mm. Preferably the device includes a counterelectrode having an electrical potential equal to one row of needles.

3,792,313
TIMING CONTROL CIRCUIT FOR SOLID STATE PROTECTIVE RELAYS FOR PROVIDING NOVEL CONTROL OF THE PICKUP AND TIMING CIRCUITS PROVIDED THEREIN

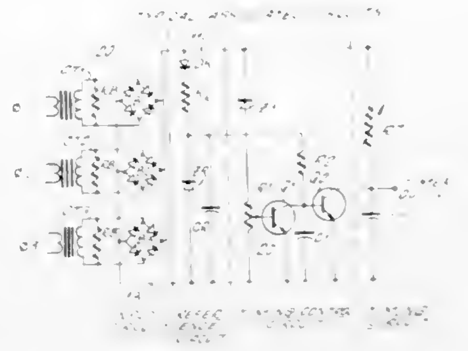
Richard Conrad, Levittown, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Oct. 2, 1972, Ser. No. 293,913

Int. Cl. H02h *3/08*

U.S. Cl. 317—27 R **4 Claims**

A static relay having sensing, reference, pickup and timing circuits and comprising a novel timing control circuit. The pickup circuit functions to initiate operation of the timing circuit when a predetermined threshold level of overload conditions exist. The novel timing control circuit functions to prevent the timing circuit from being reset due to momentary dips below the aforesaid threshold level while providing means



for rapid reset of the timing control circuit when the input being monitored remains below the threshold.

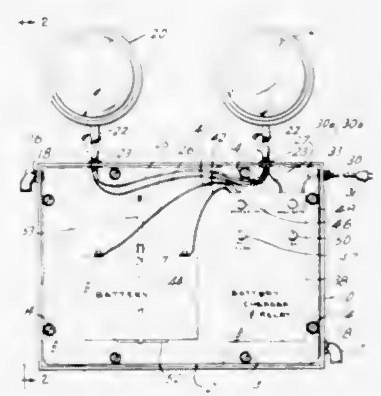
3,792,314
EMERGENCY LIGHT APPARATUS

J. Michael Epstein, 4730 Briarbend, Houston, Tex., and Robert B. Sisson, 5406 Starling, Houston, Tex.

Filed May 30, 1972, Ser. No. 257,855

Int. Cl. H02j *9/00*

U.S. Cl. 307—66 **6 Claims**



Emergency light apparatus including a sealed, non-corrosive housing for control elements and battery elements, and having fail-safe lighting elements mounted therein. The front of the housing is transparent. Testing of the apparatus may be accomplished without opening of the housing, so that the internal components will remain protected.

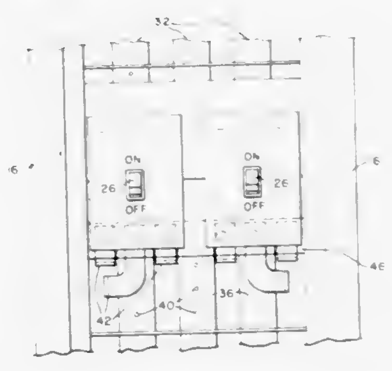
3,792,315
METAL ENCLOSED SWITCHGEAR WITH SANDWICHED LOAD BLOCK SUPPORTS

John G. Salvati; Louis N. Ricci, both of Beaver Falls, and Dominic Colista, Ambridge, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 1, 1973, Ser. No. 337,244

Int. Cl. H02b *1/04*

U.S. Cl. 317—112 **6 Claims**



Each section of a three-phase metal enclosed switchgear unit or assembly is provided with main through horizontal bus

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aid in the fusing thereof. The polycrystalline fusible links do

those present at thermal equilibrium of the semiconductor are conductors and vertical risers or section bus. The front portion of each switchgear section is divided into a plurality of stacked enclosures in which single or dual circuit breakers can be mounted. A sandwiched load side support assembly using two identical load block supports is provided for positioning and bracing load side connectors extending from dual mounted circuit breakers.

3,792,316
PROTECTION DEVICE FOR A POWER ELEMENT OF AN INTEGRATED CIRCUIT

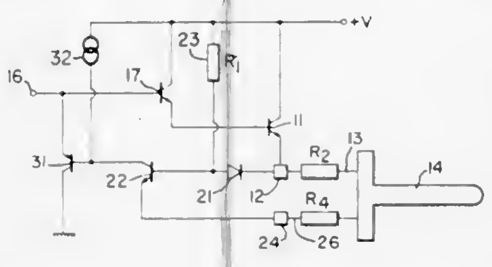
Arnaldo Bondini, Cesena, and Bruno Murari, Monza, both of Italy, assignors to Societa'Generale Semiconduttori S.p.A., Milano, Italy

Filed Oct. 18, 1972, Ser. No. 298,676

Claims priority, application Italy, May 15, 1972, 68512 A/72

Int. Cl. H02h *9/02, 9/04*

U.S. Cl. 317—31 **8 Claims**



A protection device for a power element of an integrated circuit. The main feature of this protection device is that of measuring the output current, directly on the calibrated wire of connection to the outside rheophore; such wire being inside the integrated circuit, processing the current and the output voltage across the power element so as to give a signal to a threshold circuit, which limits the output current.

3,792,317
ELECTRICAL REGULATING SYSTEM

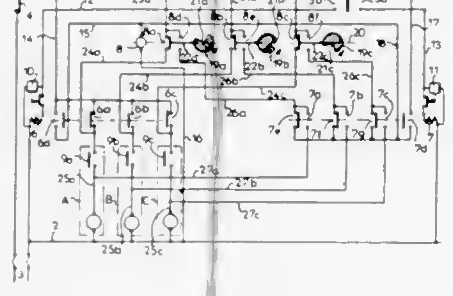
Maurice Laks, 61, Avenue Henri Barbusse, Gagny, France

Filed Dec. 18, 1972, Ser. No. 316,040

Claims priority, application France, Dec. 20, 1971, 7145692

Int. Cl. G05b *13/02*

U.S. Cl. 317—157 **4 Claims**



An electrical regulating system which enables *n* energy-generating units to be put into and taken out of service in dependence upon variations in a physical value, with permutation of these units, this system comprising an apparatus for controlling the aforementioned value combined with a double-pole contactor with three positions, one of which is a neutral intermediate position, so as to close a first circuit when the aforementioned value exceeds a predetermined upper limit, and to close a second circuit when the value falls below a predetermined limit, distinguished by the fact that it comprises a first relay and a second relay whose windings are incorporated in the first circuit and in the second circuit, respectively, and a programmer with *n* cams driven integrally by a single motor, these cams, associated with as many contact sets, becoming operative one after the other for positions of the programmer staggered angularly by 360°/*n*, each of them only remaining operative during an angular displacement of less than this value, and further by the fact that each relay comprises a contact which, when the winding of this relay is excited, causes the motor of the programmer to be fed with current, and a set of *n* contacts respectively associated with the various units and combined in such a way that, with those of the programmer, they control the entry into service of the aforementioned units, in the case of the second relay, and their removal from service in the case of the first relay.

3,792,318
COOLING APPARATUS FOR FLAT SEMICONDUCTORS USING ONE OR MORE HEAT PIPES

Paul Fries, Erlangen, and Konrad Moritz, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jan. 30, 1973, Ser. No. 328,028

Claims priority, application Germany, Feb. 1, 1972, 2204589

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 317—234 R **10 Claims**

An improved cooling apparatus for flat semiconductors in which the semiconductor is held between two base members each having one or more heat pipes inserted in holes formed therein. Heat is conducted by the vaporized working fluid in the heat pipe from the end inserted into the base member to other end which contains cooling fins which condense the vapor, which in liquid form then returns by capillary action through a wick.

Also shown is an embodiment which permits locating the cooling fins remote from the semiconductor to take advantage of more favorable cooling conditions.

3,792,319
POLY-CRYSTALLINE SILICON FUSIBLE LINKS FOR PROGRAMMABLE READ-ONLY MEMORIES

Frederick Tsang, Santa Clara, Calif., assignor to Intel Corporation, Santa Clara, Calif.

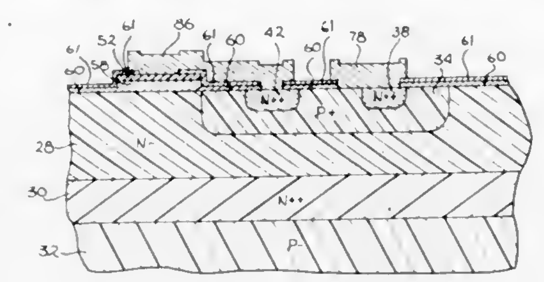
Filed Jan. 19, 1972, Ser. No. 218,988

Int. Cl. H01l *11/00, 15/00*

U.S. Cl. 317—235 R **5 Claims**

Programmable read-only circuits (e.g., memories) using doped polycrystalline silicon fusible links deposited to the top surface of an insulating (e.g., silicon oxide) layer over an integrated circuit and connected in circuit through windows in the insulating layer and/or by a metallization layer. The fusible link may be covered with a protective oxide layer which may be a perforated-like layer in the region of the fusible links to

aid in the fusing thereof. The polycrystalline fusible links do not require a corresponding portion of the substrate area and are more easily fabricated and subsequently fused than prior art devices because the manufacturing processing for the fusible link is very similar to the manufacturing process for the rest of the semiconductor memory and the insulating layer provides a substantial thermal isolation between a fusible link and the substrate therebelow during fusing. The term "-fusible" as employed herein refers to electrical energization of electrically continuous links resulting in said link becoming discontinuous electrically.



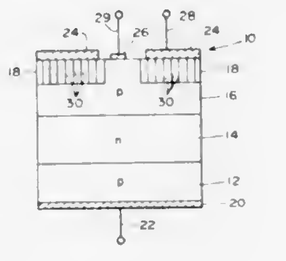
3,792,320
SEMICONDUCTOR SWITCH DEVICES HAVING IMPROVED SHORTED EMITTER CONFIGURATIONS

Jerald L. Hutson, 901 Newberry, Richardson, Tex.

Filed May 22, 1972, Ser. No. 255,449

Int. Cl. H01l *13/00*

U.S. Cl. 317—235 R **12 Claims**



The specification discloses a semiconductor body including a plurality of semiconductor layers of one conductivity type interleaved with layers of the opposite conductivity type to form a plurality of P-N junctions. Electrodes are connected to ones of the semiconductor layers to form a semiconductor switching device. An array of closely spaced apart shorting columns of one conductivity type extend from an interior P-N junction through an outer semiconductor layer having the opposite conductivity type. The shorting columns are spaced apart over substantially the entire area of the outer semiconductor layer to enhance the commutating and static dv/dt of the device and to enable the device to be utilized for higher frequency applications and with higher inductive loads. The specification discloses the use of the shorting column arrays for asymmetrical regenerative switches and for symmetrical semiconductor switches such as the triac.

3,792,321
PIEZOELECTRIC SEMICONDUCTOR DEVICES IN WHICH SOUND ENERGY INCREASES THE BREAKDOWN VOLTAGE AND POWER OF CAPABILITIES

Franz Seifert, Neuwaldeggerstrasse 47, Vienna, Austria

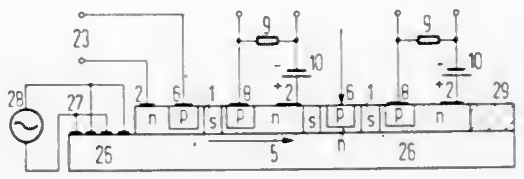
Filed Aug. 22, 1972, Ser. No. 282,766

Claims priority, application Austria, Aug. 26, 1971, 7492; Dec. 31, 1971, 11305

Int. Cl. H01l *11/00, 15/00*

U.S. Cl. 317—235 R **15 Claims**

This invention relates to electronic devices including a semiconductor member wherein charge carriers in addition to those present at thermal equilibrium of the semiconductor are injected into the semiconductor and are transported by means of controlled sound waves for the purpose of controlling, amplifying or distributing electrical charges or for converting optical images into electrical signals.



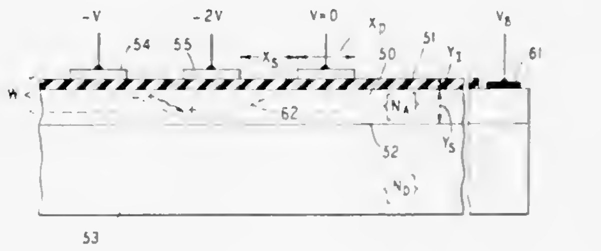
3,792,322
BURIED CHANNEL CHARGE COUPLED DEVICES

Willard Sterling Boyle, 1 Magnolia Pl., Summit, N.J., and George Elwood Smith, 65 Summit Rd., Murray Hill, N.J.

Continuation-in-part of Ser. No. 131,722, April 6, 1971, abandoned. This application Apr. 19, 1973, Ser. No. 352,513

Int. Cl. H01l *11/14*

U.S. Cl. 317—235 R **11 Claims**



The specification describes charge coupled devices in which the storage layer is internally charged so that the energy level profile across the thickness of the layer has a maxima in the middle of the layer. Injected carriers can then be stored and transferred in the bulk region of the semiconductor. If the energy level of the maxima exceeds the surface energy of the valence band by an amount exceeding the Boltzmann expression for thermal excitation, then the stored carriers remain isolated (statistically) from the surface states. The storage layer can be appropriately charged by biasing the layer to remove the mobile carriers. Residual fixed charge bends the energy band if the boundaries are fixed to appropriate barriers. The most convenient structure appears to be a large area *p-n* junction for the lower (buried) barrier with the usual MIS surface barrier. An MISIM structure is predictably similar. Multichannel structures are proposed such as N-P-N-P-N in which the isolated P-channels serve simultaneously as storage layers. Simultaneous use of both channels with controlled interconnection suggests many potential applications for logic circuits and the availability of convenient crossovers.

3,792,323
WOUND CAPACITOR

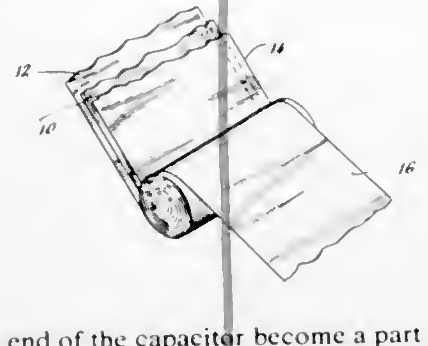
Robert Michael Stockman, Danbury, Conn., assignor to American Radionic Co., Inc., Danbury, Conn.

Filed May 14, 1973, Ser. No. 360,056

Int. Cl. H01g *1/14*

U.S. Cl. 317—260 **9 Claims**

There is disclosed a wound capacitor which is designed to open an external circuit upon capacitor failure. This is accomplished by dividing the foil at each end of the capacitor into two regions. A lead is then connected to each region so that the completed capacitor has a total of four leads. The two leads at each end of the capacitor become a part of the external circuit. A capacitor failure thereby causes an open in the external circuit.



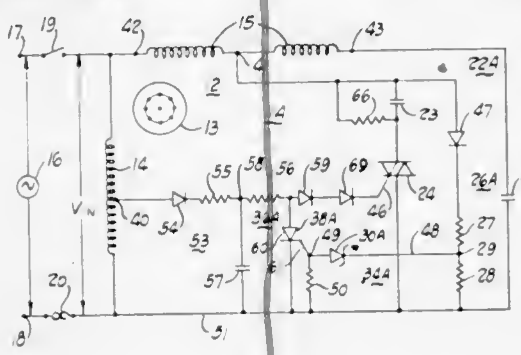
3,792,324
SINGLE PHASE MOTOR STARTING CIRCUIT

Julio F. Suarez, Chagrin Falls, Ohio, and Boris Mokrytzki, Murrysville, Pa., assignors to Reliance Electric Company, Cleveland, Ohio

Filed Oct. 30, 1972, Ser. No. 302,343

Int. Cl. H02p *1/44*

U.S. Cl. 318—221 E **19 Claims**



A single phase motor is started by energizing the main winding and also energizing the starting winding through a bidirectional solid state switch. A condition of the starting winding circuit is sensed such as current or voltage and compared with a reference means and when the sensing signal exceeds the reference means, the conduction through the solid state switch is terminated and remains terminated until the motor is deenergized. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

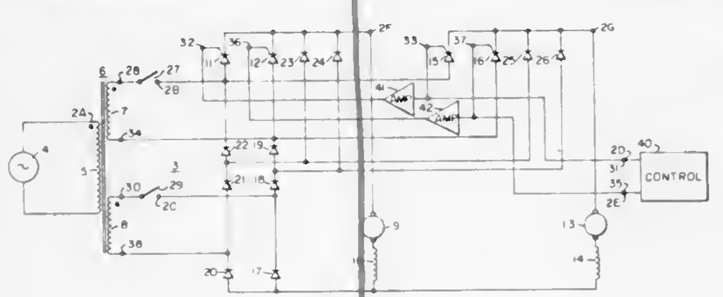
3,792,325
THYRISTOR CONTROL FOR A PLURALITY OF MOTORS

Karl W. Berger, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 30, 1973, Ser. No. 346,550

Int. Cl. H02p *5/12*

U.S. Cl. 318—79 **8 Claims**



A plurality of motors, such as traction motors, are provided voltage from at least one voltage source. In the thyristor control circuit, a given thyristor provides current to a load, for example at least one motor, having a current capacity no greater than the current capacity of the given thyristor.

3,792,326
CHOPPER-CONTROLLED SCHEME FOR INFINITE FIELD WEAKENING OF SERIES MOTORS

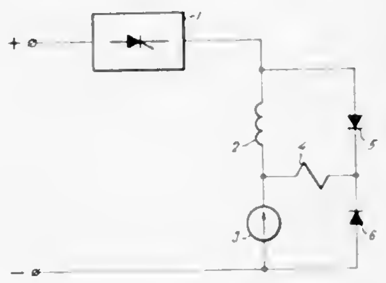
Antonin First, Praha, Czechoslovakia, assignor to CKD Praha, oborovy podnik, Praha, Czechoslovakia

Filed Mar. 30, 1971, Ser. No. 129,366

Claims priority, application Czechoslovakia, Apr. 6, 1970, 2278-70

Int. Cl. H02k *5/16*

U.S. Cl. 318—138 **9 Claims**



Circuit arrangement for starting and controlling the running of series connected motors comprising a chopper circuit, and a blocking diode arranged serially with the motor and a source of current. The blocking diode is connected to one pole of the field winding and arranged conductively for running current. A resistor shunts the diode.

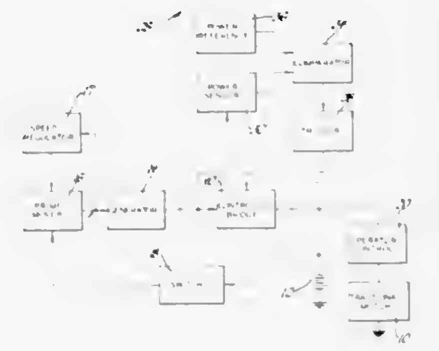
3,792,327
HYBRID ELECTRICAL VEHICLE DRIVE

Lindsey Earl Waldorf, 3888 Loch Alpine Dr., Ann Arbor, Mich.

Filed Oct. 5, 1972, Ser. No. 295,052

Int. Cl. H02p *5/16;* **B60l** *11/02*

U.S. Cl. 318—139 **12 Claims**



A vehicle electric drive is provided including a traction motor powered by a battery or, alternatively, by a constant power generator. When the voltage on the battery is above a first predetermined level the battery alone supplies electric power to the motor. When the battery voltage falls below a second predetermined level, a switch sensing the battery voltage starts an internal combustion engine to drive the generator; the power from the generator is effective to supply the traction motor and, simultaneously, recharge the battery. The recharging power applied to the battery equals the difference between the fixed power from the generator and the variable power to the traction motor. When the engine is running, it operates under the constant load of the generator; the engine is also operated at a constant speed. This constant speed-constant load engine operation permits the engine to be designed and adjusted to minimize exhaust pollutants.

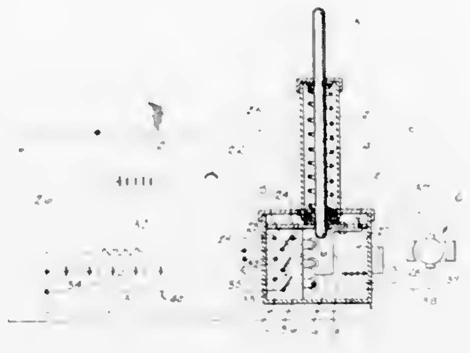
3,792,328
D.C. MOTOR SPEED CONTROL

Leonard T. Woloszyk, Greendale, Wis., assignor to Lakeside Manufacturing Inc., Milwaukee, Wis.

Filed Feb. 23, 1973, Ser. No. 335,054

Int. Cl. H02p *5/06*

U.S. Cl. 318—139 **10 Claims**



A speed control for a D.C. motor has a resistance connectable in series with an energy source and the motor armature for starting the motor, a series of voltage dropping diodes connectable in parallel with the resistance for slow speed operation, and switching connections for effectively removing the resistance and the diodes from the armature circuit for high speed operation. Dynamic braking of the motor is also provided when the motor armature is disconnected from the energy source.

3,792,329
SPINNING TURBINE HAVING SPEED-CONTROLLED BRAKEABLE ELECTRIC DRIVE MOTOR

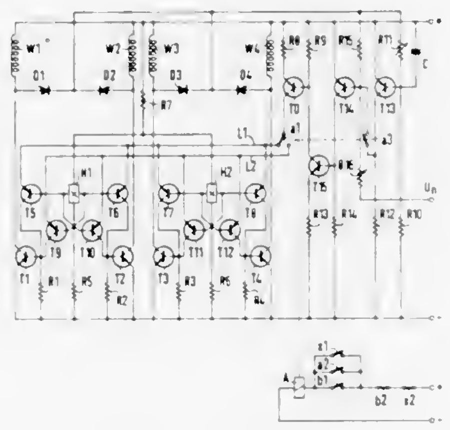
Hans Kuhnlein, Grossgrundlach, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Jan. 19, 1972, Ser. No. 218,957

Claims priority, application Germany, Feb. 13, 1971, 2106898

Int. Cl. H02p *3/20*

U.S. Cl. 318—210 **6 Claims**



A spinning turbine has a speed-controlled brakeable electric drive motor. The drive motor is a commutatorless DC motor, the stator field of which can be reversed for braking. After the stator field is reversed, the stator current is turned off after a given speed is reached. The spinning turbine of the invention is used for the "open-end" spinning process.

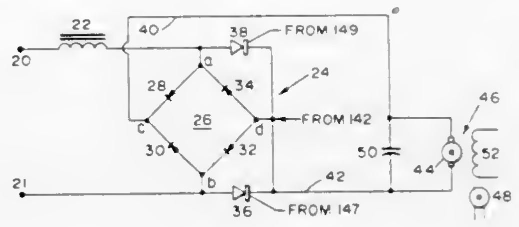
3,792,330
DIRECT CURRENT MOTOR DRIVE

Allen E. Ottoson, Westboro, Mass., assignor to Vee-Arc Corporation, Westboro, Mass.

Filed Sept. 14, 1972, Ser. No. 288,900

Int. Cl. H02p *5/16*

U.S. Cl. 318—269 **7 Claims**



A system in which a DC motor maintains a constant preset speed under changes of load, the preset speed being variable at will. The system includes a constant-current supply, with diverter means to divert varying amounts of current from the motor circuit depending on the motor speed in comparison with a speed setting.

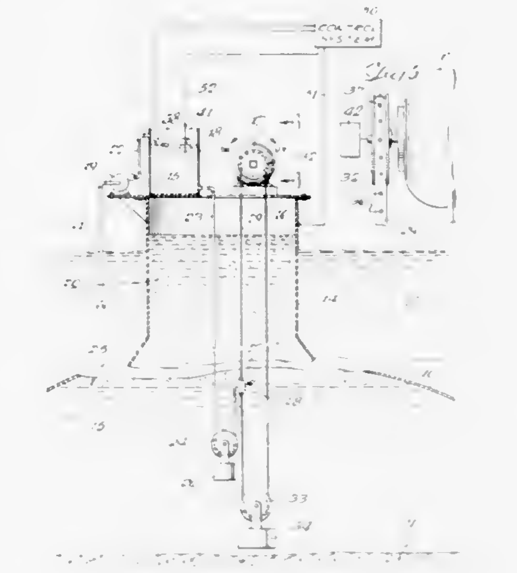
3,792,331
INTERFACE GAGING SYSTEM FOR UNDERWATER OIL STORAGE TANKS

Ivan Lee Wissmiller, Glen Ellyn, Ill., and Dan Haston Lundy, Huntsville, Ala., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed May 8, 1972, Ser. No. 251,053

Int. Cl. G05d *9/00*

U.S. Cl. 318—482 **8 Claims**



An interface gaging system for underwater oil storage tanks employs a flexible conduit through which a stream of electrically conductive seawater passes, emerging from the end of the conduit through an orifice such as a spray head or nozzle. The spray head is located in the storage tank and raised and lowered by a motor controlled by a sensing system which determines when the spray head is situated in salt water by the closing of an electrical circuit including the stream of seawater in series with the main body of seawater. When the spray head is located in the nonconductive oil, the circuit is open rather than closed, thus activating a control which drives the spray head in the appropriate direction to seek out the interface between the oil and water phases, and to stop when it is reached. The height of the spray head above the tank bottom then represents the oil level in the vessel.

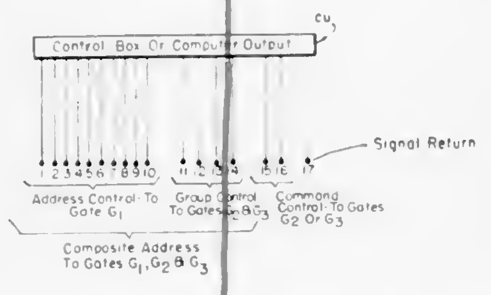
3,792,332
INTERFACE FOR MULTIPLEX MOTOR CONTROL SYSTEMS

Howard J. Fuller, Shrewsbury, Mass., assignor to Worcester Controls Corporation, West Boylston, Mass.

Filed Aug. 14, 1972, Ser. No. 280,301

Int. Cl. G05b *11/32*

U.S. Cl. 318—562 **16 Claims**


Control Box Or Computer Output
CU
Signal Return
1 2 3 4 5 6 7 8 9 10
11 12 13 14
15 16
17
Address Control To Gate G1
Group Control To Gates G2 & G3
Command Control To Gates G2 Or G3
Composite Address To Gates G1, G2 & G3

A process control interface unit comprises first, second, and third AND gates each of which has a plurality of input terminals and at least one output terminal. A computer or control box selectively energizes different ones of a plurality of parallel control lines to designate a control function to be performed. The input terminals of the first gate are coupled to selected ones of said control lines respectively; the output terminal of the first gate is coupled in parallel to an input terminal of each of the second and third gates; other selected ones of the lines are coupled in parallel to all but one of the remaining input terminals of each of the second and third gates; a further selected one of said lines is coupled to the remaining input terminal of the second gate; and a still further selected one of said lines is coupled to the remaining input terminal of said third gate. At least one controller is coupled to the output terminals of the second and third gates to perform a desired control function.

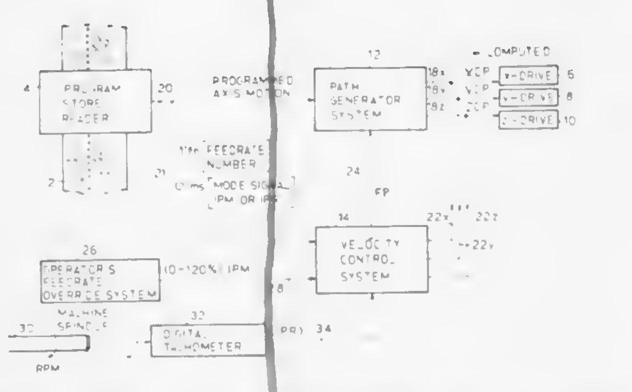
3,792,333
FEEDRATE CONTROL SYSTEM FOR NUMERICAL CONTROL APPARATUS

Hymie Cutler, 16230 Santa Rosa, Detroit, Mich.

Filed Dec. 29, 1972, Ser. No. 319,316

Int. Cl. G05b *19/24*

U.S. Cl. 318—571 **10 Claims**



A feedrate control system for numerical control equipment comprises at least two drives having mutually orthogonal axes of motion, and apparatus for generating axis command pulses supplied to the drives to produce a resultant movement in accordance with a predetermined path and velocity programmed in a program store. The apparatus includes a path generator system operative to generate a train of axes command pulses for each axis to be supplied to the respective drives, and a velocity control system operative to compare the generated axes command pulses with feedrate command data and to produce feed pulses controlling the path generator system. The velocity control system comprises means for converting the feedrate command data to a train of feedrate command pulses; a feedrate command register; an axis command register for each axis; and an error register, two error registers being provided in a three-axis system. The system further comprises means effective upon the occurrence of each axis command pulse for adding the count of the respective axis register into the error register; means effective upon the occurrence of each feedrate command pulse for subtracting the count of the feedrate command register from the error register; and means enabling the path generator system to generate axis command pulses only when the count in the error register is negative.

3,792,334
FERRO DEVICE FOR THE AUTOMATIC CONTROL OF X-Y DISPLACEMENTS IN X-RAY EXAMINATION

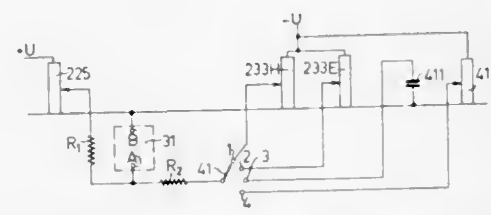
Serge Rouge, Montrouge, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 17,392, March 9, 1970, abandoned. This application Aug. 17, 1972, Ser. No. 281,343

Claims priority, application France, Mar. 10, 1969, 69.06691

Int. Cl. G05b *19/24*

U.S. Cl. 318—579 **8 Claims**



An X-ray radiating apparatus which includes an automatic device for controlling the simultaneous displacements of the radiating and recording parts of the apparatus, the device comprising a platform adapted to revolve with constant angular speed, along a diameter of which is displaced a finger driving parallelograms holding the apparatus and various coding members corresponding to the curves to be traced. The actuation of a coder determines the displacements of the finger.

3,792,335
STEPPING MOTOR CONTROLLED IN RESPONSE TO DATA FROM A TAPE

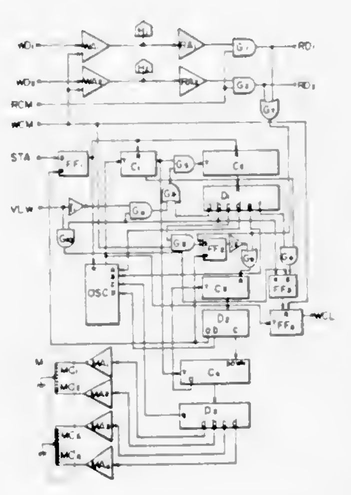
Toshio Katagiri; Tokuji Suga, both of Neyagawa; Shoji Omiya, Shijonawate, and Isamu Matsuda, Yao, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 1, 1972, Ser. No. 276,931

Claims priority, application Japan, Aug. 7, 1971, 46-59675; Dec. 20, 1971, 46-120347; Dec. 24, 1971, 47-4372; Dec. 24, 1971, 47-4472; Dec. 24, 1971, 47-4672

Int. Cl. G05b *19/40*

U.S. Cl. 318—685 **8 Claims**



In a stepping data recorder which employs a stepping motor as a capstan drive motor and in which data is stored on magnetic tape fed stepwise at a rate of several steps per piece of data, the starting and stopping characteristics are improved by appropriately driving the stepping motor so that the magnetic tape moves smoothly.

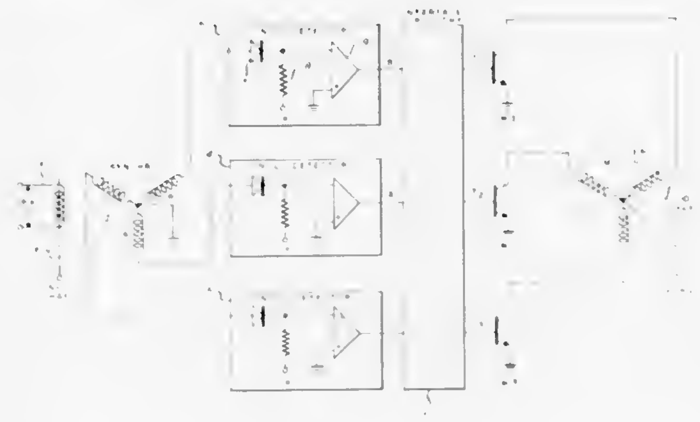
3,792,336
LINEAR TO STEP MOTION CONVERTER

Pierce C. Roselle, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed June 4, 1971, Ser. No. 150,070

Int. Cl. G05b *11/12*

U.S. Cl. 318—696 **7 Claims**



The invention comprises a conversion system for transforming an analog input signal into an incremental digital output signal. A synchro, responsive to the input analog signal provides signal nulls at specific input signal values. The signals obtained thereby are used as control signals to energize individual coils of a stepper motor. A display attached to the rotor of the stepper motor will rotate in step fashion and provide an indication of the input signal.

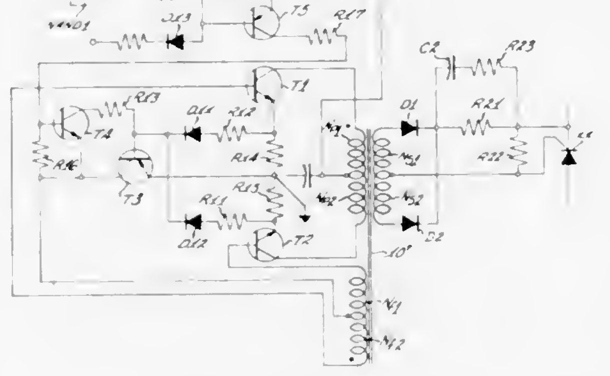
3,792,337
D. C. TO D. C. CONVERTER

Thomas P. Gilmore, Wauwatosa, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Feb. 20, 1973, Ser. No. 334,151

Int. Cl. H02m *3/32*

U.S. Cl. 321—2 **15 Claims**



A D.C. to D.C. converter has a transformer with a magnetic core which is not of square loop material, a control transistor between the midtap of the transformer feedback winding and the grounded emitters of the first and second switching transistors for completing base drive circuits thereto, a current limit emitter resistor for each switching transistor, and a diode for coupling the voltage developed across the emitter resistor to the base of the control transistor. When the converter is oscillating and the core approaches saturation, a spike of current is generated which flows through the emitter resistor of the conducting switching transistor and develops a voltage which biases the control transistor off to thereby remove base drive to the switching transistors. The resulting decay in flux in the core reverses the polarity of base drive to the switching transistors. In a preferred embodiment for generating an SCR firing signal, a full wave rectifier is connected to the transformer output winding, a voltage divider is connected across the rectifier output, the voltage developed across a first portion of the voltage divider may be coupled to the SCR gating circuit, and the series arrangement of a capacitor and resistor is connected across the remainder of the voltage divider. The capacitor is initially discharged and forms a low impedance shunt to said remainder of the voltage divider so that the SCR firing signal developed across the first portion thereof has a steep leading edge and decays in magnitude with time to a constant value as the capacitor changes, whereby the average power rating of the SCR gating circuit is not exceeded.

3,792,338
SELF-CONTAINED TRANSFORMER-RECTIFIER ASSEMBLY

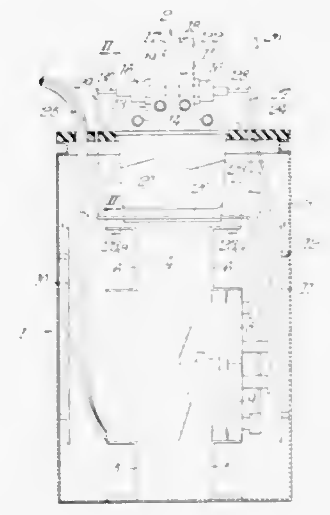
Louis Barthelemy, Maisons-Laffitte, France, assignor to Societe Industrielle Nouvelle De Fabrication Pour L'Automobile Et Le Cycle S.I.N.F.A.C., Courbevoise, France

Filed May 31, 1972, Ser. No. 258,368

Claims priority, application France, June 8, 1971, 7120736; Apr. 13, 1972, 7213050

Int. Cl. H01f *27/12*; **H02m** *7/00*

U.S. Cl. 321—8 C **16 Claims**



A self-contained transformer-rectifier assembly comprises a transformer received in a tank filled with oil. A massive heat sink mounted on the tank has fins which project downwardly into the oil. An electrically insulating coolant such as water is circulated in passages formed in the portion of the heat sink which is out of the tank. Solid-state rectifier elements, such as silicon diodes, are carried by the heat sink.

3,792,339
CONTROL DEVICE FOR AN INVERTED CONVERTER

Christian Kublick, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

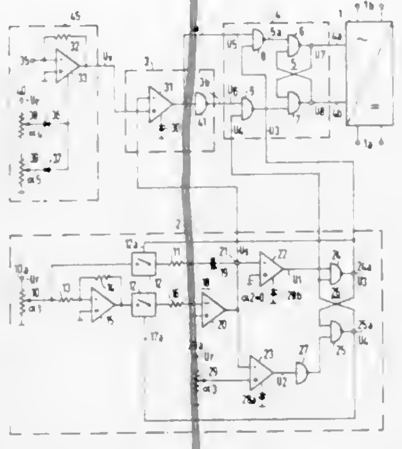
Filed Mar. 12, 1973, Ser. No. 340,074

Claims priority, application Germany, Mar. 16, 1972, 2212791

Int. Cl. H02m *7/00*

U.S. Cl. 321—18 **13 Claims**

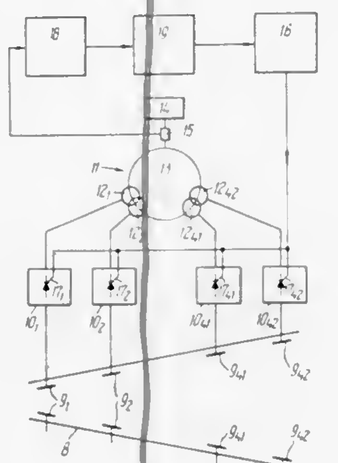
This invention is an improved control device for an inverted converter. Pulses for the control of the inverted converter are derived from a sawtooth voltage produced by a sawtooth voltage generator. The sawtooth voltage generator also produces auxiliary pulses, which represent the time of the reversal points of the sawtooth voltage. The duration between reversal points corresponds to a half-period of the sawtooth voltage. These auxiliary pulses and pulses derived from the sawtooth voltage generator by a comparator stage are applied to a switching circuit having a memory stage. The switching circuit produces at its output pulse trains containing only one pulse per period of the sawtooth voltage. By means of the control device according to this invention, interruptions in the pulse train supplied to the inverted converter due to sudden changes in the voltage supply are avoided.



3,792,340
METHOD OF AND APPARATUS FOR CONTROLLING THE PERFORMANCE OF A D.C. MAGNETOHYDRODYNAMIC GENERATOR

Vladislav Solomonovich Sheinkman, Angarskaya ulitsa, 61, kv. 18; Sergei Illarionovich Pischikov, Angarskaya ulitsa, 61, kv. 20, and Boris Nikolaevich Sergeenkov, Federativny prospekt, 42, kv. 10, all of Moscow, U.S.S.R.

Filed Sept. 27, 1972, Ser. No. 292,805
Int. Cl. H02k *45/00*
U.S. Cl. 322—7 **6 Claims**



The present invention relates to a method of and an apparatus for controlling the performance of a D.C. magnetohydrodynamic (MHD) generator.

The invention consists in that the performance of the MHD-generator is controlled by means of maintaining the preset value of its electrical load factor, to which end said apparatus performs in succession three functions:

shapes a control signal to periodically vary voltages across the electrodes of the MHD-generator in a discrete manner,

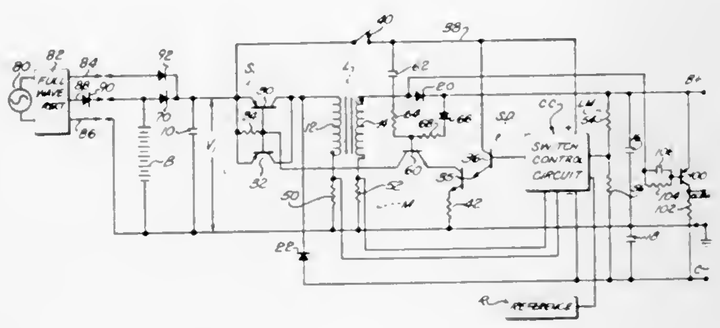
determines changes of the MDH-generator active power within every time interval equal to the cycle of discrete variations of voltages across the electrodes and

shapes a control signal according to the active power change within said time interval to vary voltages across the electrodes of the MDH-generator so as to maintain the preset electrical load factor.

3,792,341
POWER SUPPLY CIRCUITRY HAVING BASE DRIVE INHIBIT CONTROL

Robert Clarence Kime, Jr., Fairview Park, Ohio, assignor to Keithley Instruments, Inc., Solon, Ohio

Filed Dec. 22, 1971, Ser. No. 210,908
Int. Cl. G05f *1/58*
U.S. Cl. 323—22 T **5 Claims**

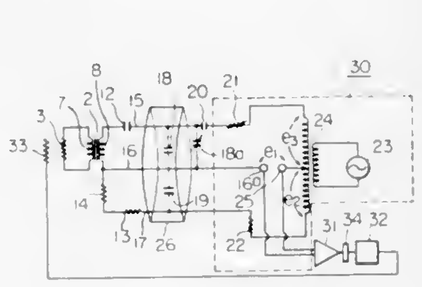


A D.C. power supply circuit having a series semiconductor for supplying energizing current to a load in accordance with base drive current supplied thereto from a drive circuit. Base drive inhibiting means are interposed between the semiconductor and the base drive circuit for inhibiting base drive current as the output voltage decreases in magnitude below a desired level. Circuitry is also employed for controlling the drive means to alternately turn on and turn off the semiconductor means acting as a series switch in a switching regulator circuit, and output circuitry serves for providing clock pulses at a frequency dependent upon the switching frequency of the semiconductor means.

3,792,342
APPARATUS FOR MEASURING THE RESISTANCE OF A VARIABLE RESISTANCE ELEMENT LOCATED IN A ROTATING BODY

Shozo Ogawa, Otsu; Kiyoshi Ametani, Tokyo, and Kenro Samejima, Takatsuki, all of Japan, assignors to Toray Engineering Co. Ltd., Osaka, Japan

Filed Sept. 8, 1972, Ser. No. 287,529
Int. Cl. G05d *23/00*
U.S. Cl. 323—68 **29 Claims**

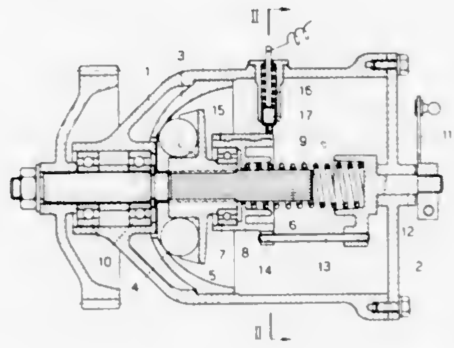


Characteristic features in the apparatus according to the invention mainly consist of improvement of a rotary transformer, a bridge circuit and a detecting means. With these features the measurement of the value of the resistance of a variable resistance element provided in a rotating body can be carried out with a high degree of accuracy independent of the effect of leakage impedance or temperature variation of the rotary transformer. Further, the above-mentioned measurement is carried out easily, and with both high reliability and interchangeability. Also, the control of a plurality of heat rollers utilized in the apparatus can be easily carried out with a central controlling apparatus.

3,792,343
REGULATOR BASED ON THE CONTROL OF A MEMBER HAVING VARIABLE IMPEDANCE SURFACE-CHARACTERISTICS, PARTICULARLY FOR FEED ADJUSTMENT IN I.C. ENGINES

Gian Paolo Garcea, Milan, Italy, assignor to Alfa Romeo S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 856,432, Sept. 9, 1969, abandoned. This application May 24, 1972, Ser. No. 256,511
Claims priority, application Italy, Sept. 14, 1968, 21257/68
Int. Cl. H01c *7/00*
U.S. Cl. 323—82 **8 Claims**

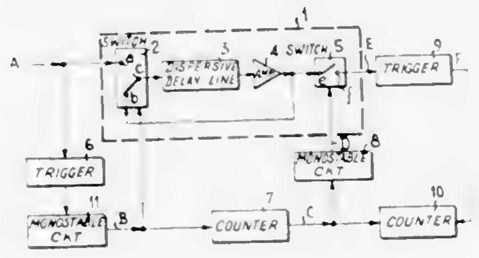


A regulator, particularly for an internal combustion engine, includes a member with variable impedance surface characteristics, contacted by a tracer element. The member has such a material composition and distribution at its surface as to feature a varying impedance characteristic across its surface layer, the varying impedance characteristic representing the value of a function of two independently varying physical quantitites. The regulator has means to impart relative displacement between the member and the tracer element, in two different directions of the surface of the member, the magnitudes of the displacements being respectively proportional to the two independently varying physical quantities. The tracer element and the member are connected as part of an indicating circuit which senses the varying impedance characteristic depending on the changing point of contact betwen the tracer element and the member to give an output signal proportional to the value of the known function of the two independently varying physical quantities.

3,792,344
SYSTEM FOR PROCESSING ELECTRICAL SIGNALS INCLUDING MEANS FOR EFFECTIVELY INCREASING THE LENGTH OF A DELAY LINE

Joel Guyot, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 20, 1972, Ser. No. 236,099
Claims priority, application France, Mar. 23, 1971, 7110135
Int. Cl. G01r *23/02*
U.S. Cl. 324—77 D **10 Claims**

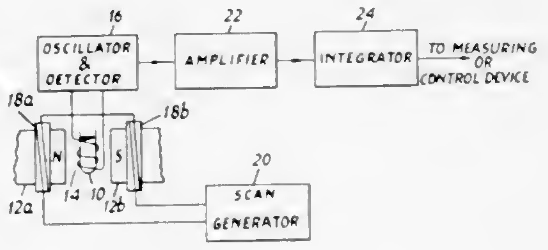


A system for processing electrical signals in different ways operating on the theory of an artificial increase in the length of a dispersive delay line. The system comprises a dispersive circuit having a controlled input switch for partially injecting a signal into a dispersive line and connecting the output of the delay line to its input to circulate the injected signal. An output switch connects the delay line to a load. A rhythm generator controls the input and output switches in order that the signal being processed circulates *n* times through the line prior to application to the load circuit.

3,792,345
CHECKING AND CALIBRATION OF APPARATUS INCORPORATING A RESONANT CIRCUIT

Francis Hawkins, Newport Pagnell, England, assignor to Newport Instruments Limited, Newport, Pagnell, England

Filed Apr. 14, 1972, Ser. No. 244,089
Claims priority, application Great Britain, Apr. 16, 1971, 9628/71
Int. Cl. G01n *27/78*
U.S. Cl. 324—.5 R **11 Claims**

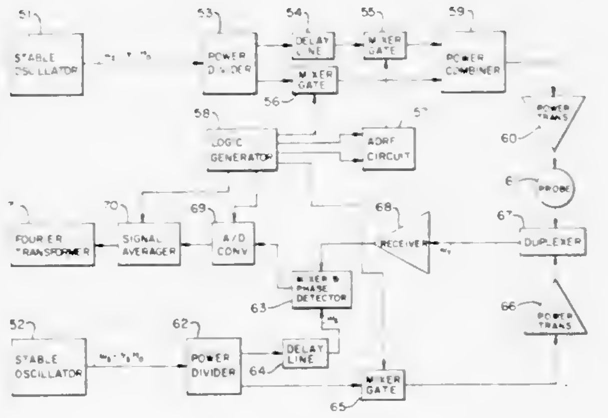


In the use of spectrometric apparatus incorporating a resonant circuit an artificial signal is generated for checking, calibration or measurement purposes. The artificial signal is generated by periodically switching a resistance into and out of circuit with the resonant circuit, preferably also biasing out the normal resonance signals. It is particularly applicable to the monitoring of on-line flow systems.

3,792,346
PROTON-ENHANCED NUCLEAR INDUCTION SPECTROSCOPY

Michael G. Gibby, Arlington, Va.; Alexander Pines, Berkeley, Calif., and John S. Waugh, Lincoln, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

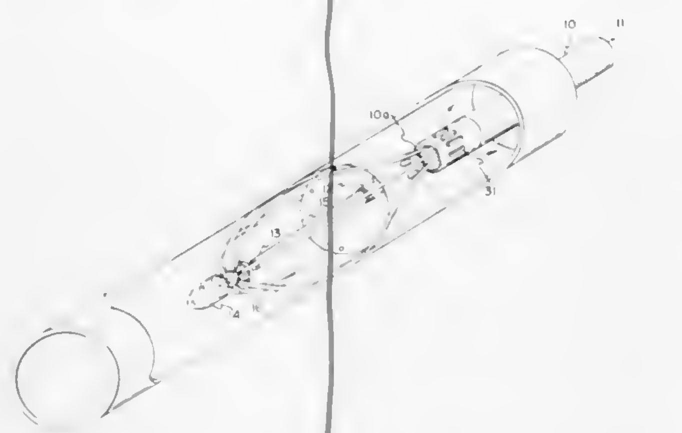
Filed Nov. 20, 1972, Ser. No. 308,212
Int. Cl. G01n *27/78*
U.S. Cl. 324—0.5 R **31 Claims**



A method is described for the detection of the natural magnetic and/or electric quadrupole reasonance frequencies of isotopically rare or chemically dilute nuclei in the presence of at least one abundant nuclear spin species. The free induction decay of the dilute nuclei is directly detected after an applied r.f. field at the Larmor frequency of the dilute nuclei is removed. A high resolution spectrum of the dilute nuclei is obtained by applying an r.f. field at the Larmor frequency of the abundant spin system during the detection interval.

3,792,347
OIL WELL TOOL FOR MEASURING PERCENT OIL

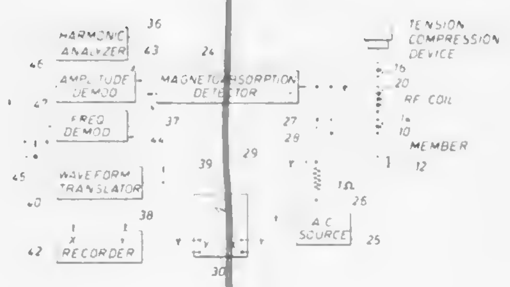
Jack S. Hawley, 925 Delaware, Berkeley, Calif.
Filed May 17, 1972, Ser. No. 254,175
Int. Cl. G01n *27/42;* **G01v** *3/00*
U.S. Cl. 324—30 R **8 Claims**



A tool for measuring the percent of oil in an oil/water mixture in an oil well. A plurality of electrodes are arranged in a substantially coextensive array in the flow path of the produced mixture at varying levels. Electrical arrangements are provided whereby a statistical analysis of the number of electrodes immersed in oil at a given moment may be integrated on a go-no go basis, the electrodes being either insulated when in oil or conducting to ground when in water. The number of electrodes so insulated by oil droplets being converted into an analogous electrical signal. Errors due to variations in the resistance and galvanic offset voltage in the water are compensated for.

3,792,348
METHOD OF DETERMINING STRESS IN A FERROMAGNETIC MEMBER USING MAGNETOABSORPTION

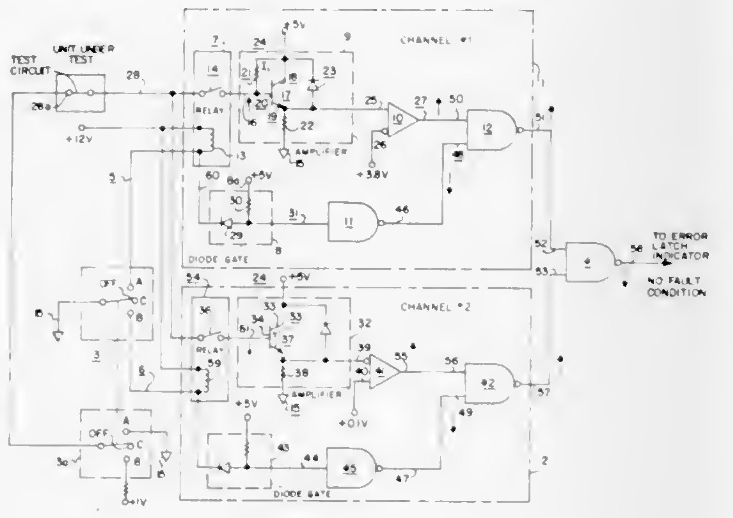
William L. Rollwitz, 213 Halbert Cir., San Antonio, Tex.; John Arambula, Rural Rt. No. 3, Austin, Tex., and John P. Claassen, 5800 Thames Dr., Lawrence, Kans.
Continuation-in-part of Ser. No. 64,620, Aug. 17, 1970, abandoned, which is a continuation of Ser. No. 654,800, July 20, 1967, abandoned. This application Nov. 19, 1971, Ser. No. 200,548
Int. Cl. G01r *33/12*
U.S. Cl. 324—34 ST **3 Claims**



Magnetoabsorption apparatus for indicating changes in stress in ferrous materials and nonferrous materials including a ferrous film joined thereto, an inductively coupled radio frequency field coupled to the ferrous material, a means for applying the field in a manner to use the reversible relative permeability as a function of the stress in the member, the stress being indicated by use of a magnetoabsorption detector calibrated in stress units, and indicative of the direction, ampliutde, and type of stress.

3,792,349
DUAL CHANNEL, DUAL POTENTIAL OPEN-CIRCUIT TEST APPARATUS

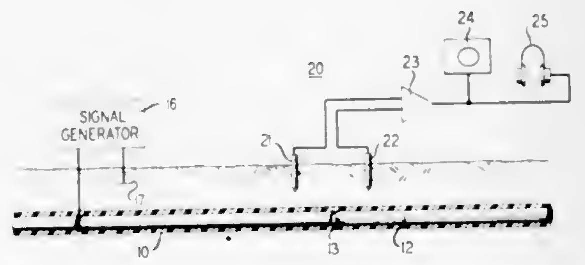
Charles R. Bobbitt, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.
Filed Oct. 25, 1972, Ser. No. 300,605
Int. Cl. G01r *31/02*
U.S. Cl. 324—51 **3 Claims**



A detector network for the indentification of discontinuities in integrated circuit lead connections in the presence of two different potentials such as positive or negative test pulses or different steady state voltages.

3,792,350
DETECTION OF METALSHIELD FAULTS IN BURIED CABLE

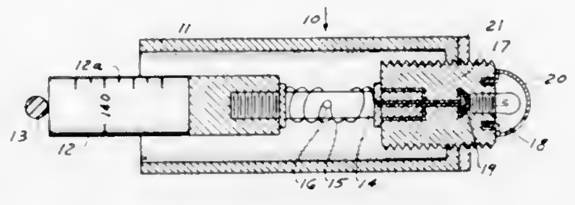
Fred Christian Bossler, Union, and William Harold Kent, Jr., Berkeley Heights, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Mar. 15, 1972, Ser. No. 234,800
Int. Cl. G01r *31/08*
U.S. Cl. 324—52 **3 Claims**



The electric field configuration generated by exciting a cable shield with an ac signal is detected by an earth prod in directions that are respectively perpendicular and parallel to the cable axis with respect to a ground plane. The field components in the vicinity of an open in the shield exhibit characteristic changes that are extensive and readily detectable with conventional amplifying equipment. Cable locating methodology is also disclosed.

3,792,351
ABSORPTION FREQUENCY METER HAVING SHIELDED INDUCTOR

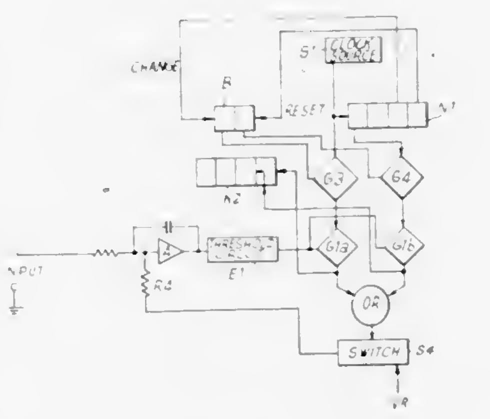
Frank E. Ireland, 7425 S.W. 34th Street Rd., Miami, Fla.
Filed Mar. 10, 1972, Ser. No. 233,409
Int. Cl. G01r *23/00*
U.S. Cl. 324—81 **10 Claims**



An absorption frequency meter having a high-Q circuit comprising a resonant circuit having variably adjustable concentric capacitive plates, electrically in series with an inductance means and an indicating means, said capacitive plates providing electromagnetic shielding for said inductance means.

3,792,352
ANALOG-TO-DIGITAL CONVERTER UTILIZING DIFFERENT FEEDBACK EFFECTS TO OBTAIN ACCURACY AND RESOLUTION

Eric Metcalf, and Howard Anthony Dorey, both of Fainborough, England, assignors to The Solartron Electric Group Limited, Farnborough, England
Division of Ser. No. 495,071, Oct. 12, 1965, abandoned. This application Sept. 10, 1970, Ser. No. 71,263
Int. Cl. G01r *17/06, 1/00, 19/26*
U.S. Cl. 324—99 D **4 Claims**

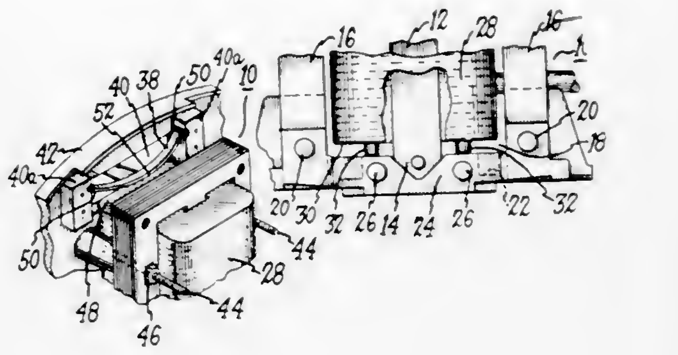


An analog-to-digital converter provides improved resolution without attendant loss of accuracy or speed of operation over known converters. This is achieved by providing slow-acting feedback to the integrating circuit for increasing resolution. The fast-acting feedback consists of quanta of charge of defined magnitude and the slow-acting feedback is derived from the fast feedback either by smoothing or by reducing the frequency of the quanta.

3,792,353
INDUCTION WATTHOUR METER POTENTIAL COIL MOUNTING

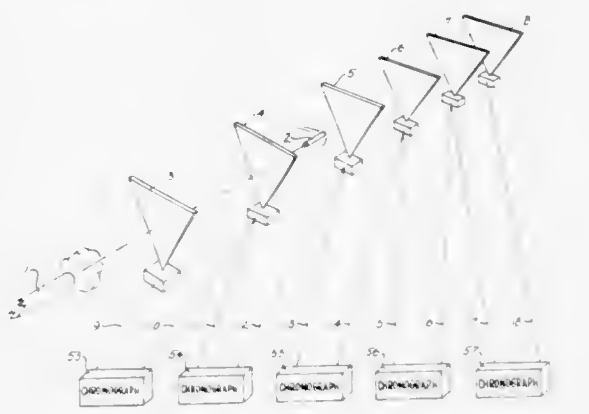
Alexander Loika, Jr., Somersworth, N.H., assignor to General Electric Company
Filed Aug. 23, 1972, Ser. No. 283,195
Int. Cl. G01r *11/02*
U.S. Cl. 324—137 **4 Claims**

The potential coil of an induction watthour meter is encapsulated in an electrically insulating resinous material and mounted on the winding leg of the potential electromagnetic or core of the meter. The lower end of the encapsulated coil which is closest to the voltage pole face is provided with plastic bosses which contact the bottom pole piece of the potential core. The upper end of the coil is movably held by a spring member between the top of the encapsulated coil and a recess in the watthour meter frame, the potential core being mounted on such meter frame. Alternatively, a spring member is mounted on the top of the potential core pressing against the top of the encapsulated coil.



3,792,354
VELOCITY MEASURING SYSTEM

William Francis Slaght, Courcelette, Quebec, Canada, and Julien F. Boutin, Lake Worth, Fla., assignors to Her Majesty the Queen in right of Canada as represented by the Minister of National Defence
Filed Feb. 4, 1972, Ser. No. 223,669
Int. Cl. G01p *3/66*
U.S. Cl. 324—178 **9 Claims**



A system and method for determining the relative velocities of a projectile at different portions of its path in which a plurality of signalling detector stations are arranged at predetermined intervals along such path, a common receiving station is arranged to receive signals from the detector stations through a common communication channel and has a memory unit capable of storing pulses corresponding to the signals received, and a calculator capable of analyzing adjacent pairs of the pulses which have been produced by passage of the projectile over two or more of the path intervals monitored by the detector stations to determine the relative velocities of the projectile as it traverses the path intervals monitored by different pairs of detector stations. This information is valuable for example in studying retardation properties of a projectile.

3,792,355
ORTHOGONAL TRANSFORMATION CIRCUIT USING HADAMARD MATRICES

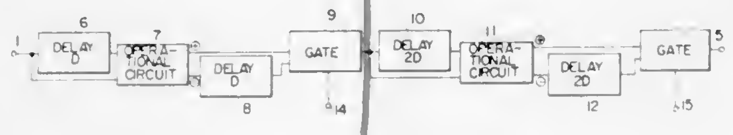
Masachika Miyata, Kodaira, and Takahiko Fukinuki, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 10, 1971, Ser. No. 206,691

Claims priority, application Japan, Dec. 11, 1970, 45-109527; May 21, 1971, 46-34008

Int. Cl. H04j *3/18*

U.S. Cl. 325—42 **16 Claims**



An orthogonal transformation circuit in which unit transformation circuits are connected in cascade in accordance with a desired order of transformation. Each unit transformation circuit comprises a first delay circuit which delays discrete signals by a fixed time, an arithmetic circuit which provides the sum and difference between input and output signals of the delay circuit, a second delay circuit which delays the difference signal of the arithmetic circuit by the same delay time as that of said first delay circuit, and a gate circuit which provides output signals such that the sum signal from the arithmetic circuit and the difference signal from the second delay circuit are alternated at a fixed time interval.

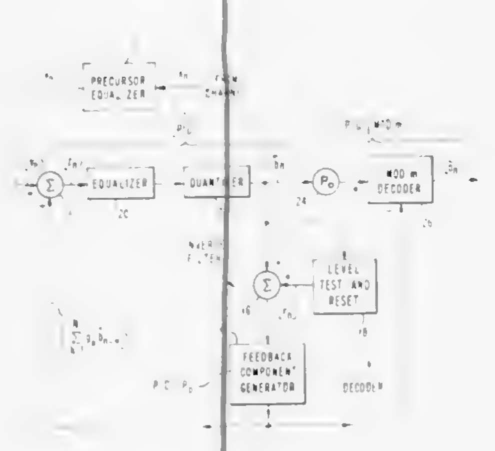
3,792,356
RECEIVER STRUCTURE FOR EQUALIZATION OF PARTIAL-RESPONSE CODED DATA

Hisashi Kobayashi, Ossining, and Donald Tao-Nan Tang, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1971, Ser. No. 212,578

Int. Cl. H04b *3/14*

U.S. Cl. 325—42 **10 Claims**



The present invention relates to a new receiver structure for the equalization of partial-response or correlative level coding systems in which the main equalizer and quantizer are embedded inside the inverse filter. The main embedded filter primarily accomplishes equalization of signal distortion in the tail portion of the received signal. According to a further aspect of the invention, a separate precursor equalizer may be utilized in front of the receiver structure in situations where the front end or precursor intersymbol interference is not negligible. According to one additional aspect of the invention where the number of precursor interference terms is small, a certain amount of precursor equalization may be included in the inverse filter portion of the main receiver structure. The receiver structure has a wide variety of applications and will function well with a number of different correlative coding schemes. Further, the main equalizer embedded within the receiver structure may be of the fixed, automatic or adaptive type as are well known in the art. The source of the correlatively encoded data containing undesired intersymbol interference due to characteristics of the channel or noise may be either a transmission line or, for example, a magnetic recording and pickup system utilizing the NRZI recording scheme.

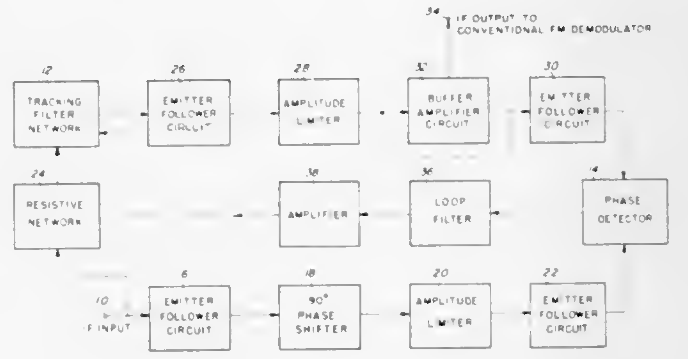
3,792,357
PRE-EMPHASIS LOOP FILTER FOR IMPROVED FM DEMODULATOR NOISE THRESHOLD PERFORMANCE

Norris C. Hekimian, 1517 Baylor Ave., Rockville, Md., and Walter Mack, 6523 32nd St., Falls Church, Va.

Continuation-in-part of Ser. No. 889,432, Dec. 31, 1969, abandoned. This application May 24, 1972, Ser. No. 256,240

Int. Cl. H04h *1/62*

U.S. Cl. 325—46 **8 Claims**



The performance of a noise threshold extension circuit for an FM demodulator is substantially improved by the incorporation of a pre-emphasis-type filter in the control loop of the circuit, which filter "matches" the frequency response characteristic of the loop to that of the modulating signal. The threshold extension circuit preferably includes a steerable, narrowband tracking filter which tracks the FM signal so that extraneous noise is filtered out.

3,792,358
SINGLE CYCLE TRANSMITTER

Edward A. Lewis, Harvard; John E. Rasmussen, Concord, both of Mass., and James R. Stahmann, Miramar, Fla., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

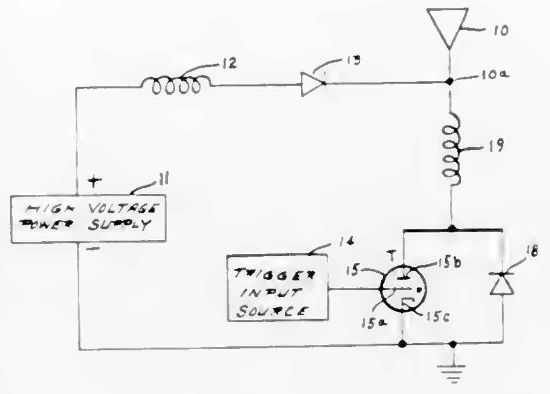
Filed Dec. 15, 1972, Ser. No. 315,745

Int. Cl. H04b *1/04*

U.S. Cl. 325—128 **2 Claims**

A single cycle transmitter at low and very low frequencies operates with an electrically short antenna. The transmitter produces an extremely short pulse of approximately one cycle

duration. In response to a trigger signal, the transmitter's thyratron directly switches the antenna driving voltage,



producing the first half cycle of a radiation pulse. The second half cycle is produced when diodes conduct. During this time, the thyratron deionizes, cutting off radiation.

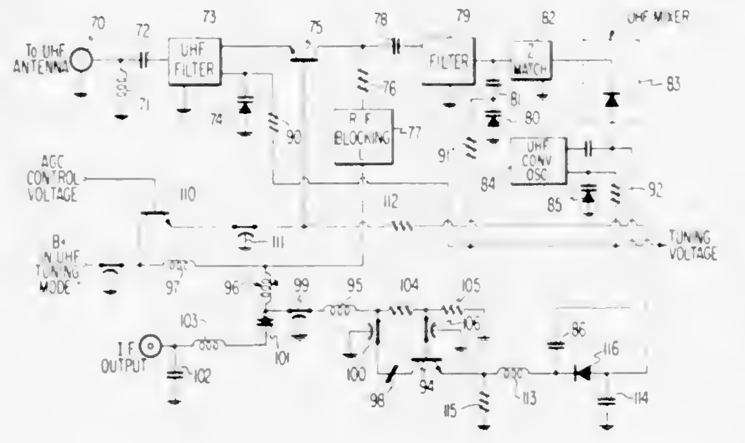
3,792,359
HIGH FREQUENCY AUTOMATIC GAIN CONTROL CIRCUITS

David John Carlson, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 14, 1971, Ser. No. 133,806

Int. Cl. H04b *1/16, 1/18*

U.S. Cl. 325—319 **8 Claims**



A common base amplifier used for high frequency amplification has an automatic gain control voltage applied thereto to vary the gain in a reverse mode. As the gain of the transistor is decreased, a unilateral current conduction device, coupled to the emitter electrode or input of the amplifier, is caused to conduct. The conduction of the unilateral device causes the voltages between the electrodes of the amplifier to remain constant, while further causing additional impedance shunting of the transistor to maintain the input impedance of the amplifier relatively constant during AGC operation.

3,792,360
MULTI-FREQUENCY SIGNAL GENERATOR

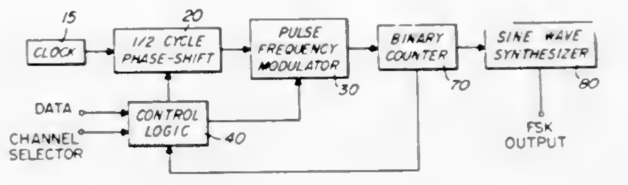
Earl F. Carlow, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 14, 1972, Ser. No. 280,620

Int. Cl. H03b *19/00*

U.S. Cl. 328—14 **17 Claims**

The time taken to count up a binary counter is made adjustable by selectively phase-shifting a series of pulses passing into the counter and originating from a fixed frequency clock. The electronic pulses originating from the clock pass through a phase-shifting network, the shifting being responsive to and dependent upon digital data input in the form of electronic signals. A control circuit controls the phase-shifting network to produce a total counter cycle time that is representative of



the digital data input. The output of the counter serves as an input to a sine wave synthesizer for providing an output sine wave of a frequency directly related to the state of the input digital data signal.

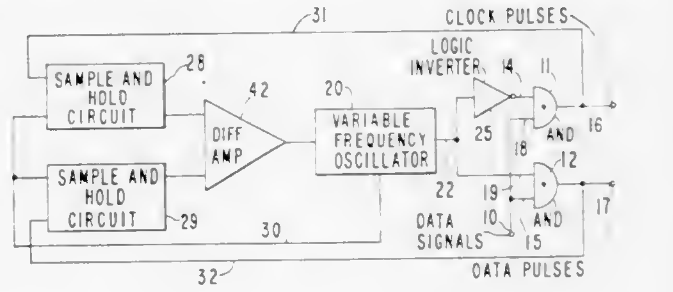
3,792,361
HIGH SPEED DATA SEPARATOR

Frank J. Sordello, San Jose, and Robert L. Cloke, Santa Clara, both of Calif., assignors to Itel Corporation, San Francisco, Calif.

Filed Aug. 23, 1972, Ser. No. 283,106

Int. Cl. H03k *5/153, 5/18*

U.S. Cl. 328—63 **6 Claims**



This invention involves a circuit capable of phase locking onto a data input signal for the separation of the clocking and data segments of the signal.

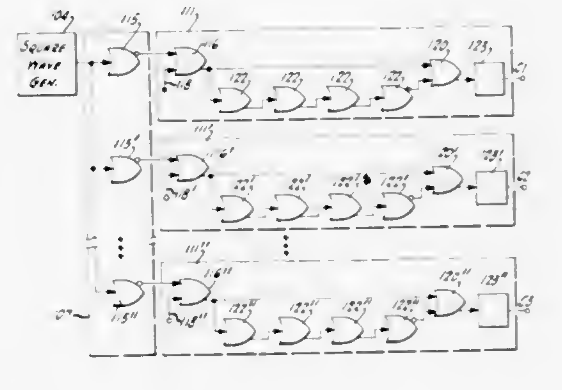
3,792,362
CLOCK APPARATUS AND DATA PROCESSING SYSTEM

Glenn D. Grant, San Jose, Calif., assignor to Amdahl Corporation, Sunnyvale, Calif.

Filed Oct. 30, 1972, Ser. No. 302,222

Int. Cl. H03k *5/159*

U.S. Cl. 328—72 **13 Claims**



Disclosed is a clock apparatus for use in a data processing system. The clock pulse width is made substantially equal to the maximum latch delay (MLD) plus the clock skew (CS) for obtaining the minimum number of circuits relative to the maximum clock frequency.

3,792,363

CONTROLLABLE EDGE SHARPENING SYSTEM FOR TIME SEQUENTIAL SIGNALS

Radames K. H. Gebel, and Henry E. Fettis, both of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 26, 1972, Ser. No. 247,775
Int. Cl. H03k *5/12;* **H04b** *1/12*
U.S. Cl. 328—164 **4 Claims**

A time sequential signal having deficient leading and trailing edge characteristics is modified by a system having a third order network with a transfer function represented in the Laplace domain by

$$F_{\mathrm{R}}(s)=\frac{e_o}{e_i}=\frac{\dfrac{(1+s\tau_1)}{(1+s\tau_2)(1+s\tau_3)}}{1+K_{\mathrm{F}}\dfrac{(1+s\tau_1)}{(1+s\tau_2)(1+s\tau_3)(1+s\gamma)}}$$

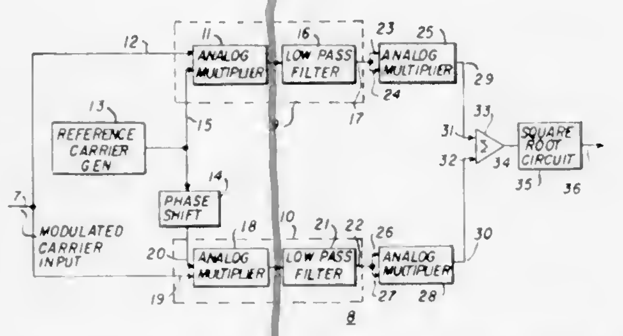
where s is the Laplace variable in sec^{-1}, τ_1, τ_2, τ_3, γ are time constants in seconds, and K_F is an attenuation factor, with e_o being the output and e_i the input signal. This system provides an improved signal having leading and trailing edge characteristics suitable for utilization.

3,792,364

METHOD AND APPARATUS FOR DETECTING ABSOLUTE VALUE AMPLITUDE OF AM SUPPRESSED CARRIER SIGNALS

James W. Ananias, Springfield, Ill., assignor to Sangamo Electric Company, Springfield, Ill.

Filed Aug. 3, 1972, Ser. No. 277,634
Int. Cl. H03d *1/52;* **H04l** *27/22*
U.S. Cl. 329—50 **14 Claims**



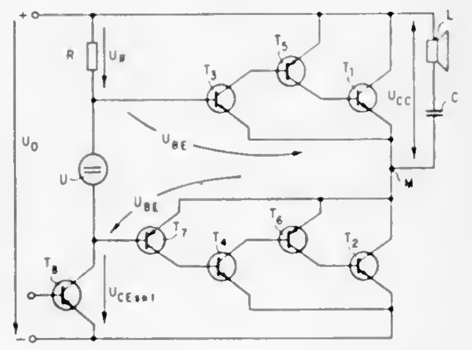
Apparatus for detecting the absolute value amplitude of amplitude modulated suppressed carriers includes first and second product detectors which use quadrature phases of a locally generated reference carrier to product detect the modulated carrier producing first and second vector components of the amplitude of the information signal, and an output circuit for obtaining the vector sum of the two components of the information signal amplitude to thereby provide a signal which is proportional to the absolute value amplitude of the information signal. In one embodiment, the vector sum of the two components of the information signal amplitude is obtained by amplitude modulating quadrature phases of a high frequency carrier in separate amplitude modulators, summing the amplitude modulated signals thus produced, and demodulating the resultant signal to translate the high frequency carrier back to the base-band and thereby recover the amplitude information.

3,792,365

PUSH-PULL OUTPUT STAGE CIRCUIT

Erich Ellbogen, Langenbach Bayern, Germany, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 18, 1972, Ser. No. 218,765
Claims priority, application Germany, Jan. 20, 1971, P 21 02 553.6
Int. Cl. H03f *3/18, 3/26*
U.S. Cl. 330—15 **6 Claims**



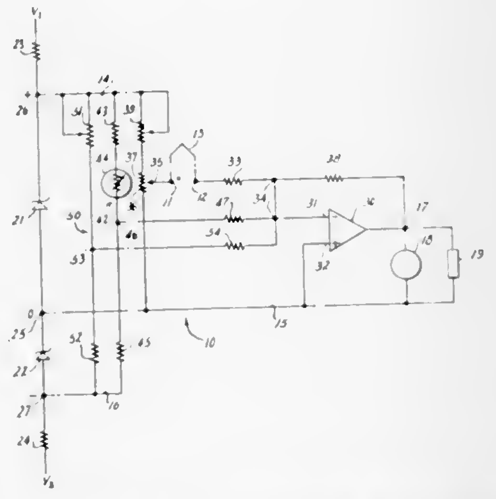
Disclosed is an amplifier circuit including a pair of series-connected output transistors of one conductivity type, a pair of driver transistors of the one conductivity type and a pair of coupling transistors of opposite conductivity type; wherein the base electrodes of the output transistors are respectively coupled to the collector electrodes of the coupling transistors, and the base electrodes of the coupling transistors are respectively coupled to the collector electrodes of the lower transistors; thereby forming push-pull branches of the amplifier.

3,792,366

METHOD AND APPARATUS PROVIDING INDEPENDENT ADJUSTMENTS AND COMPENSATIONS IN CONDITION SENSITIVE MEASURING OR CONTROLLING CIRCUITS

Eugene R. Jornod, Rockford, Ill., assignor to Barber-Colman Co., Rockford, Ill.

Filed Sept. 13, 1972, Ser. No. 288,657
Int. Cl. H03f *3/68*
U.S. Cl. 330—22 **10 Claims**



Potentials, produced by independent half-bridges, are algebraically summed in various proportions with a condition

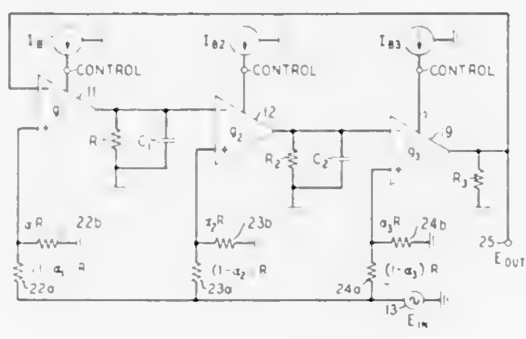
sensitive millivolt potential to provide an input to an amplifier producing an output potential as a function of the summed input potential.

3,792,367

ACTIVE CONTROLLABLE FILTER CIRCUIT USING VARIABLE TRANSCONDUCTANCE AMPLIFIER

Paul Egon Fleischer, Little Silver, and Dan Hilberman, Middletown, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed May 1, 1972, Ser. No. 249,090
Int. Cl. H03f *1/24*
U.S. Cl. 330—98 **6 Claims**



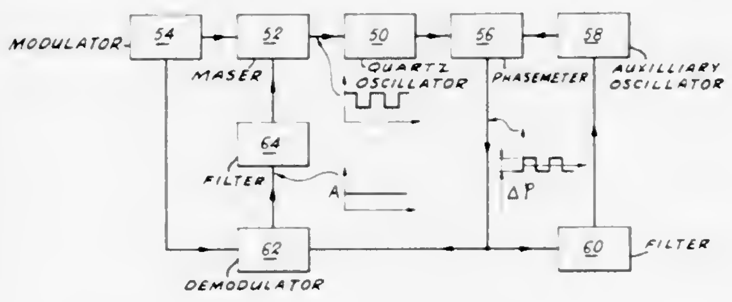
An RC active filter circuit wherein the active elements of the circuit are realized by controllable transconductance amplifiers. The transfer response of the filter circuit is readily variable by altering signals applied to the control terminals of the transconductance amplifiers.

3,792,368

METHOD OF TUNING THE OSCILLATION FREQUENCY OF THE RESONANT CAVITY OF A MASER OSCILLATOR TO THE TRANSITION FREQUENCY OF STIMULATED EMISSION OF THE ACTIVE MEDIUM OF SAID MASER

Claude Audoin, Ivry, France, assignor to Agence Nationale de Valorisation de la Recherche Anvar, Courbevoie, France

Filed Aug. 1, 1972, Ser. No. 277,079
Claims priority, application France, Aug. 6, 1971, 71.28912
Int. Cl. H03b *3/12*
U.S. Cl. 331—3 **8 Claims**

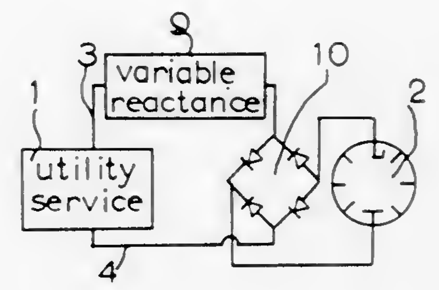


The method consists in periodically modulating the level of oscillation of the maser ; in detecting the phase variation of the maser oscillation with respect to the oscillation of a reference oscillator, namely the variation which takes place only in the event of mismatch of the resonant cavity of the maser and results from the modulation ; and in correcting the mismatch.

3,792,369

VARIABLE REACTANCE CONTROLS FOR AC POWERED HEATING MAGNETRONS

Melvin L. Levinson, 1 Meinzer St., Avenel, N.J.
Continuation-in-part of Ser. Nos. 739,778, June 25, 1968, and Ser. No. 841,507, July 14, 1969, and Ser. No. 202,314, Nov. 26, 1971. This application Sept. 13, 1972, Ser. No. 288,714
Int. Cl. H03b *9/10;* **H05b** *9/00*
U.S. Cl. 331—71 **9 Claims**

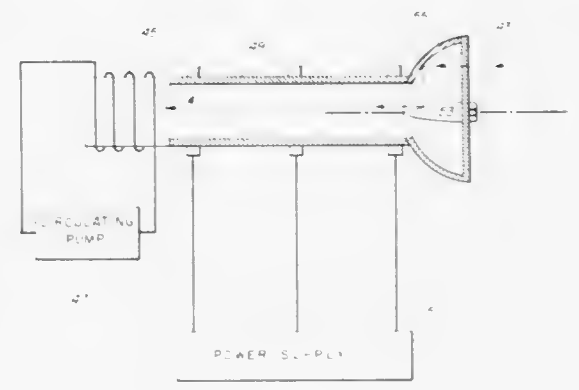


A variable reactance combined in series with a magnetron where, when said variable reactance is a variable capacitive reactance, means are provided for DC operation of said magnetron and AC operation of said capacitive reactance; where variable reactance can be a fixed reactance and variable reactance combination; and where said variable reactance provides the regulation required by said magnetron over normal voltage variations of an electric utility service.

3,792,370

IMPROVED OPTICAL CAVITY FOR A LASER

Irving Goldstein, 31 Peacock Farm Rd., Lexington, Mass., and Werner R. Rambauske, 170 Acton St., Carlisle, Mass.
Continuation of Ser. No. 203,81 ;, Dec. 1, 1971. This application Aug. 11, 1972, Ser. No. 279,914
Int. Cl. H01s *3/08*
U.S. Cl. 331—94.5 **2 Claims**



A catoptric lens arrangement which is adapted to use with high power radiant energy, as from a laser, is shown. The entrance mirror of the contemplated lens arrangement has a convex reflective surface so that the radiative flux density at the entrance mirror is less than the radiative flux density in a laser beam. The various mirrors in the contemplated lens arrangement further are arranged so that each such mirror may be conductively cooled with aperture blockage reduced to a minimum or eliminated altogether.

3,792,371
GAS LASER

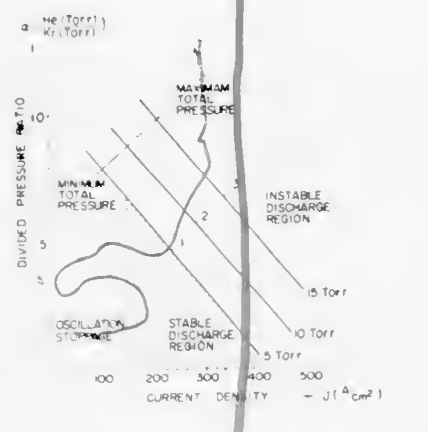
Shunsuke Tomiyama; Akira Hashimoto, both of Tokyo, and Manabu Yamamoto, Odawara, all of Japan, assignors to Hitachi, Limited, Tokyo-to, Japan

Continuation-in-part of Ser. No. 832,662, June 12, 1969, abandoned. This application Oct. 22, 1971, Ser. No. 191,927

Claims priority, application Japan, June 21, 1968, 43-43290

Int. Cl. H01s *3/22, 3/09*

U.S. Cl. 331—94.5 **3 Claims**



A large, continuous laser oscillation output of Kr⁺II gas can be obtained by exciting a mixture gas of krypton and helium filled in a capillary discharge tube at a total mixture gas pressure of less than 10 Torr with a direct current of 150 to 400 A/cm² in current density, the mixing ratio of helium with respect to krypton being from 0.5 to 5 times as high as that of krypton, and the gas-filled discharge tube being disposed between a pair of reflectors.

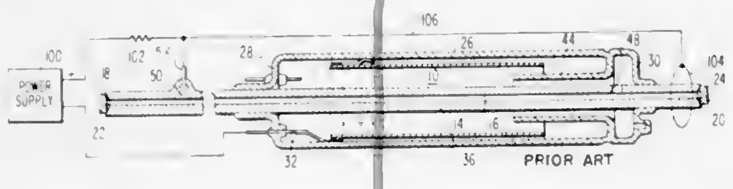
3,792,372
MEANS FOR ENSURING STARTING OF GAS LASER

John Thomas Mark, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed June 12, 1972, Ser. No. 261,779

Int. Cl. H01s *3/09, 3/22*

U.S. Cl. 331—94.5 **5 Claims**



By employing a serially-connected, resistance of 20 to 500 megohms between an additional starting electrode and the anode of a gas laser tube, the starting of a discharge between the anode and cold cathode thereof is ensured without the danger of tube-destroying parasitic oscillations.

3,792,373
METALLIC VAPOR LASER ASSEMBLY

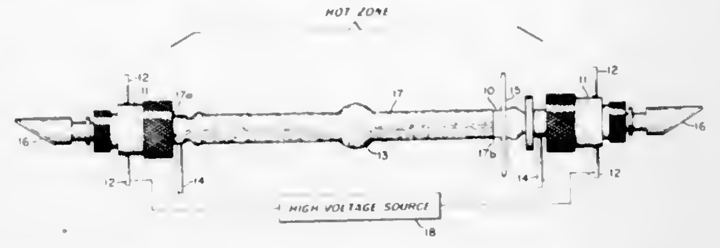
Daniel E. Altman; Glidden J. Barstow, and Myer Geller, all of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 21, 1972, Ser. No. 274,126

Int. Cl. H01s *3/02, 3/22*

U.S. Cl. 331—94.5 **7 Claims**

A metallic vapor laser assembly has an enclosed central section of tubular heat-resistant material in which a selected metallic element may be maintained in its vapor state and also in contact with an electrode at each end; the electrodes are connected to a source of electrical energy to raise the metallic vapor to a state of excitation causing laser energy emission. A first pair of suitably transmissive windows maintained at an elevated temperature, are positioned to retain the metallic vapor in the central section. A second pair of windows which may be preferably positioned at the Brewster angle, are supported outwardly along the axis of the laser energy emission defining closed end sections which are contiguous to the closed central section; the end sections are evacuated to facilitate maintaining the second set of windows at a temperature substantially lower than the elevated temperature of the central section and the first pair of windows, and to prevent leakage of air past the inner set of windows into the enclosed central section containing the metal vapor.



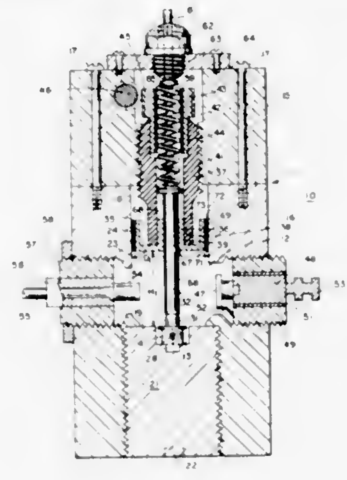
3,792,374
WIDEBAND MECHANICALLY AND ELECTRONICALLY TUNED NEGATIVE RESISTANCE OSCILLATOR

Richard C. Havens, and James W. Taylor, both of Scottsdale, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed June 26, 1972, Ser. No. 266,334

Int. Cl. H03b *7/06*

U.S. Cl. 331—107 R **10 Claims**



A wideband mechanically and electrically tunable negative resistance oscillator is disclosed wherein a low Q cavity is coupled to a high Q cavity at one end thereof by a narrow gap. A negative resistance R.F. diode is disposed in the low Q cavity in good heat conducting relationship with a massive heat sink. At the other end of the high Q cavity there is the mechanical frequency adjusting structure for tuning the high Q cavity over a wide frequency range. At one side of the high Q cavity, there is a varactor diode for electrically tuning the high Q cavity over a relatively small frequency range. At the other side of the high Q cavity there is a power take out structure

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3,792,375
SUPPRESSION OF SPURIOUS BIAS CIRCUIT OSCILLATIONS IN IMPATT OSCILLATORS

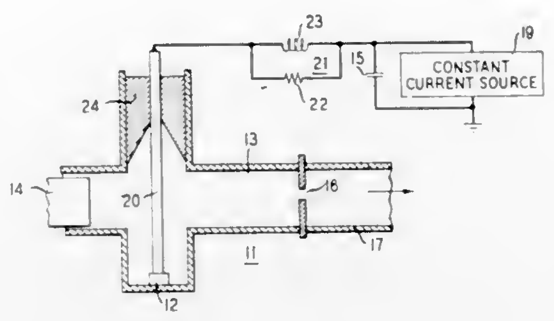
Charles Arthur Brackett, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 8, 1972, Ser. No. 304,629

Int. Cl. H03b *1/04, 7/14*

U.S. Cl. 331—96 **11 Claims**

Spurious oscillations in the dc bias circuit of an Impatt oscillator are suppressed by including in the bias circuit a filter which is external of the microwave resonator. The filter includes an inductance for shunting a dissipative resistance and for providing a low-loss path for the dc bias current. Specific design criteria for the filter are disclosed.



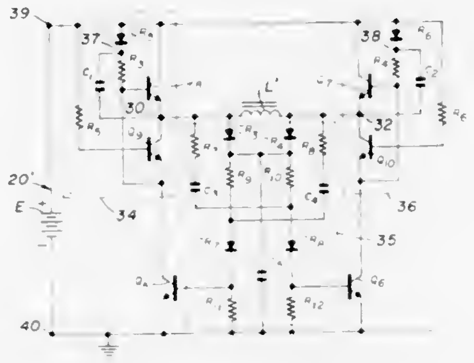
3,792,376
HIGH EFFICIENCY TRANSISTOR ASTABLE MULTIVIBRATOR

Richard H. Pederson, Marshalltown, Iowa, and Robert O. Gregory, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 18, 1972, Ser. No. 245,225

Int. Cl. H03k *3/282*

U.S. Cl. 331—113 R **4 Claims**



Disclosed is a high efficiency oscillator circuit for use in a field transmitter of a process control system. The oscillator includes first and second current drive output transistors cross-coupled through a load to first and second current sink transistors, respectively, and these transistors are operatively biased for astable switching so that the first output and the first current sink transistors simultaneously conduct in one state of the oscillator and the second output and the second current sink transistors simultaneously conduct in another state of the oscillator. First and second series cut-off transistors are connected, respectively, between the first and second current sink transistors and each side of the load, and these latter transistors insure that one of the output transistors is clamped off when the other output transistor is biased into conduction. Turn on drive circuitry connected to each of the output transistors includes a pair of capacitors which discharge, respectively, into the pair of output transistors to alternately drive same into saturation as the circuit is switched. As a result, pairs of output and series cut-off transistors are simultaneously biased to saturation in series across the power supply, and thereby minimize voltage drops across the power supply and maximize the operational efficiency of the circuit.

3,792,377
TEMPERATURE COMPENSATED QUARTZ OSCILLATOR CIRCUIT

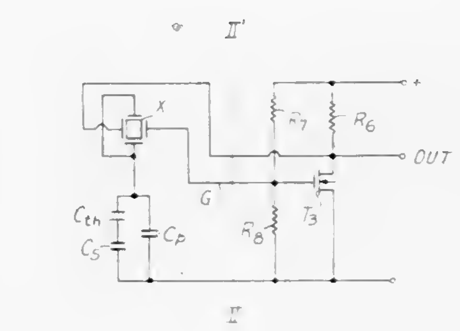
Kinji Fujita, and Hiromitsu Mitsui, both of Takagi, Japan, assignors to Kabushiki Kaisha Suwa Seikasha, Tokyo, Japan

Filed Dec. 27, 1971, Ser. No. 212,269

Claims priority, application Japan, Dec. 28, 1970, 45/120055

Int. Cl. H03b *5/36*

U.S. Cl. 331—116 R **4 Claims**



A quartz oscillator having a four-terminal quartz vibrator, two of the four terminals being connected with a compensating device for compensating the temperature coefficient of the quartz vibrator frequency, the other two terminals being connected with an active circuit including at least one MOS transistor.

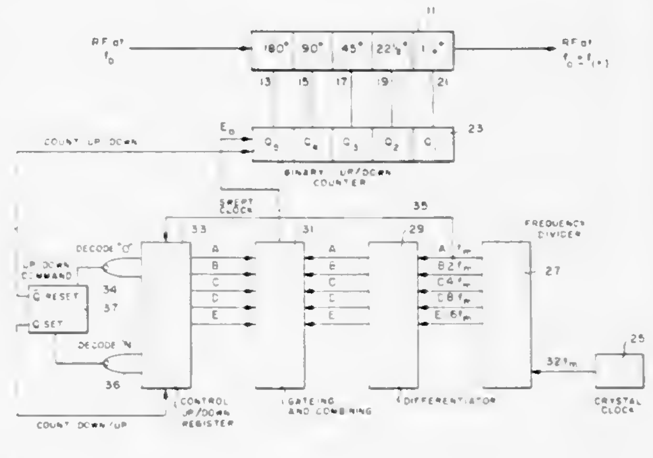
3,792,378
DIGITALLY CONTROLLED RF SWEEP GENERATOR

Alexander S. Hughes, College Park, and Sidney A. Taylor, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 8, 1971, Ser. No. 178,788

Int. Cl. H03b *19/00*

U.S. Cl. 331—178 **10 Claims**

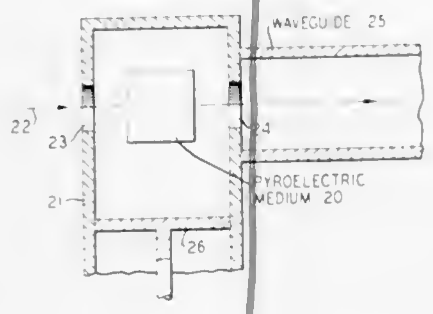


An RF signal is inputted to a digitally controlled RF phase shifter. The RF phase shifter is responsive to digital signal commands and operates to shift the phase of the RF input signal and its frequency in response to the digital signal input. The relationship between change in frequency versus change in phase over a time interval requires that the phase shift rate of change be varied parabolically for the frequency to change linearly with time. The phase change is, therefore, accomplished by parabolically incrementing the digital count, relative to time. The RF frequency is thereby linearly swept about the RF center frequency.

3,792,379
MILLIMETER WAVE DEVICES UTILIZING ELECTRICALLY POLARIZED MEDIA

David Henry Auston, Mountainside, and Alastair Malcolm Glass, Millington, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Mar. 7, 1972, Ser. No. 232,435
Int. Cl. H01s *3/10*
U.S. Cl. 332—7.51 **23 Claims**

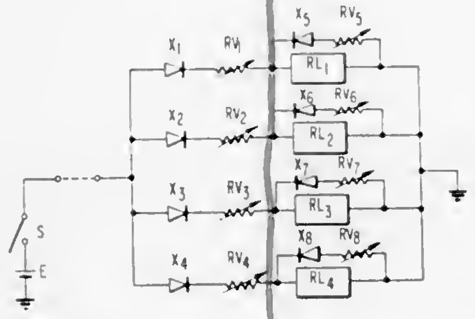


Radiative signals, e.g., pulses of duration as short as one picosecond or CW energy with frequencies as high as 10,000 GHz are radiated from pyroelectric media. Pump energy is in the form of electromagnetic radiation of wavelength within the range of one millimeter and shorter. The effect of such devices is to replicate the form of intensity variations of pump radiation whereby such variations take the form of pulses, modulation signals, difference frequencies, etc Rapid response is, in a preferred instance, due to direct absorption of pump radiation at or below a low frequency absorption edge of a crystalline medium so that the energy is pumped directly into the lattice of the pyroelectric medium. An alternative arrangement takes advantage of the thermalization accompanying relaxation of an excited electron state. In the latter case the excited state may be that of a dopant material having an absorption within a normal transparency bandwidth of the pyroelectric medium.

3,792,380
SIGNAL SWITCHING ARRANGEMENT

Masayoshi Murotani, Sapporo; Tsunetoshi Yano, Tateyama; Kaoru Koyama, and Toshiharu Motojima, both of Tokyo, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation and Nippon Electric Company, Limited, both of Tokyo, Japan

Filed Jan. 11, 1973, Ser. No. 322,665
Claims priority, application Japan, Jan. 14, 1972, 47/5875
Int. Cl. H01p *1/10;* **H01h** *47/04, 47/18*
U.S. Cl. 333—7 R **7 Claims**

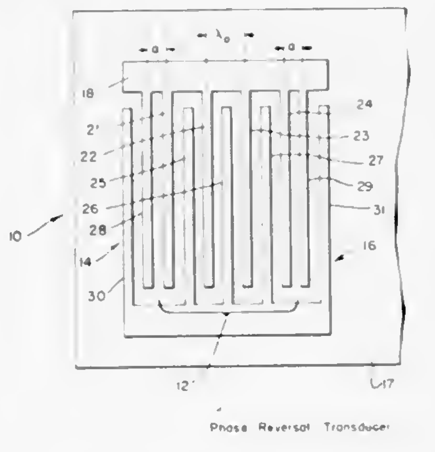


In a switching arrangement of the type having a plurality of coils simultaneously connected to a power source for causing movement of coil-associated switches, the addition of coil response time and release time adjusting means to control selective switching of two input signals to an output without incurring momentary signal interruption at the output. The response and release times are adjusted so that the switches associated with the signal to be connected to the output finish their movement before or at the same time as the start of movement of the switches associated with the signal to be disconnected from the output. The energization response time of each switch controlling relay coil is controlled by a variable resistance in series between the energizing source of power and the relay coil. The de-energization release time of each switch controlling relay coil is controlled by a variable resistance in parallel with said relay coil.

3,792,381
SURFACE-WAVE ELECTRO-ACOUSTIC TRANSDUCER

Thomas W. Bristol, Orange, Calif., assignor to Hughes Aircraft Corporation, Culver City, Calif.

Filed Feb. 20, 1973, Ser. No. 334,180
Int. Cl. H03h *9/04, 9/26, 9/30*
U.S. Cl. 333—72 **8 Claims**

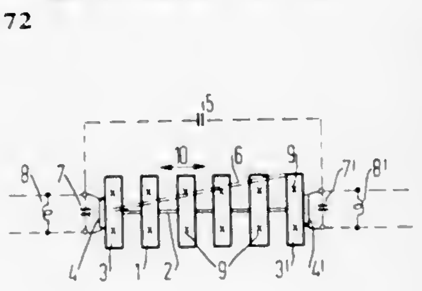


A family of surface-wave electro-acoustic transducers is realized that provide a large class of response functions that combine the smooth spectral characteristics which are unique to periodic transducers, and that possess a minimum of acoustic diffraction effects which are unique to unapodized transducers. In particular, an unapodized central array on a piezoelectric substrate is flanked by an identical pair of similar but smaller unapodized arrays of the same periodicity as that of the central array. The flanking arrays are spaced within one wavelength of, and in a phase reversal relationship with the central array. The configuration of the spectral response function is varied by adjusting the ratio of the number of sources in each of the flanking arrays to the number of sources in the central array. A source is defined as being distributed between a pair of electrodes of opposite polarity.

3,792,382
FILTER FOR ELECTRICAL OSCILLATIONS

Alfhart Guenther, Haar, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 19, 1973, Ser. No. 342,491
Claims priority, application Germany, Mar. 23, 1972, P 22 14 252.5
Int. Cl. H03h *9/26, 13/00*
U.S. Cl. 333—72 **11 Claims**

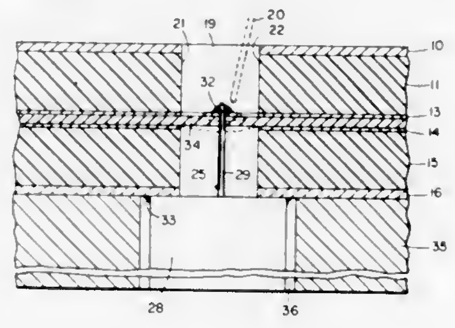


A filter for electric oscillations comprises n resonators, where $n = 4$, which are coupled by line elements and have line characteristics. The filter has an input impedance which tends to zero on at least one side of the pass band, and also has a maximum at a given frequency, the echo attenuation in the pass band having more than one maximum. At least two of the echo attenuation poles occur at non-physical frequencies ($p_o = \pm \sigma + j\omega$). The absolute value of the real part (σ) of the poles amounts to at least the n^{th} part of the 3dB bandwidth of the filter.

3,792,383
HYBRID STRIP TRANSMISSION LINE CIRCUITRY AND METHOD OF MAKING SAME

Thomas A. Knappenberger, Phoenix, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed June 21, 1971, Ser. No. 154,810
Int. Cl. H01p *3/08, 11/00, 1/30*
U.S. Cl. 333—84 M **8 Claims**

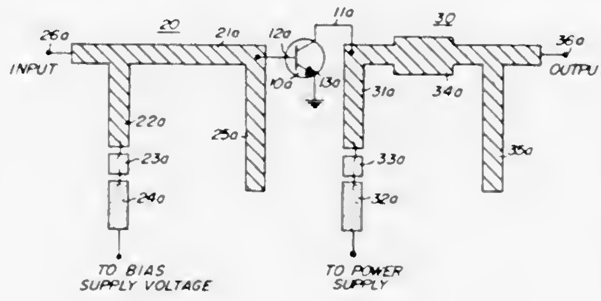


A stripline circuit using discrete and distributed circuit components is disclosed wherein the discrete members are fixed to one ground plane, the leads thereof extend through openings in the ground plane and attached dielectric board through a flexible distributed circuit carrier and are soldered to the strip circuit being carried by the flexible carrier. The covering (second) ground plane and attached dielectric board has an access opening on the opposite side of the circuit from the discrete components for enabling the soldered connection to be made. The access openings in the covering ground plane and attached dielectric member are of sufficient size to permit flexing of the flexible circuit carrier during differential thermal expansion of the leads and the dielectric members. The same is true for the other ground plane and attached dielectric member. Stress-free and crack-free solder connections are thus achieved, and the solder connections can be removed for servicing and the like of the discrete components even though the ground planes, dielectric boards and circuit carrier are bonded together.

3,792,384
CONTROLLED LOSS CAPACITOR

Richard E. Hunt, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 25, 1972, Ser. No. 220,066
Int. Cl. H01p *3/00, 3/08*
U.S. Cl. 333—84 M **3 Claims**

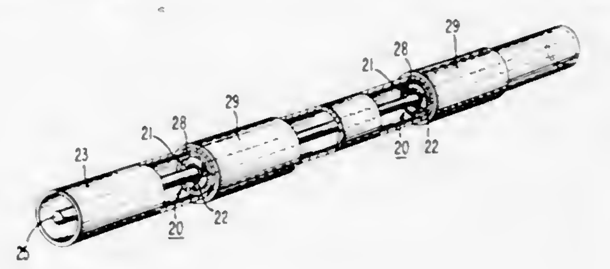


A variable loss transmission line including conductive strips of polycrystalline silicon deposited on a substrate. The polycrystalline silicon is selectively doped with an impurity to vary the resistance of the strips, thereby varying the loss or attenuation characteristics of the transmission line.

3,792,385
COAXIAL MAGNETIC SLUG TUNER

Louis Sebastian Napoli, Trenton, and John Joseph Hughes, Spotswood, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 6, 1972, Ser. No. 303,798
Int. Cl. H01p *1/00, 5/04*
U.S. Cl. 333—97 R **4 Claims**

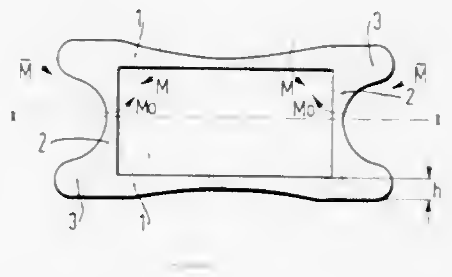


A movable magnetic tuning slug capacitively coupled to both the center conductor and outer conductor of an electromagnetic transmission line is used to provide a desired transmission line impedance in response to an applied magnetic field.

3,792,386
RECTANGULAR WAVEGUIDE HAVING SHAPED EXTERNAL CONTOUR PREVENTING INTERNAL DEFORMATION DURING BENDING OR TWISTING

Richard Schuster, and Wolfgang Loew, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Mar. 22, 1973, Ser. No. 343,881
Claims priority, application Germany, Apr. 7, 1972, P 22 16 802.1
Int. Cl. H01p *3/14*
U.S. Cl. 333—95 A **3 Claims**



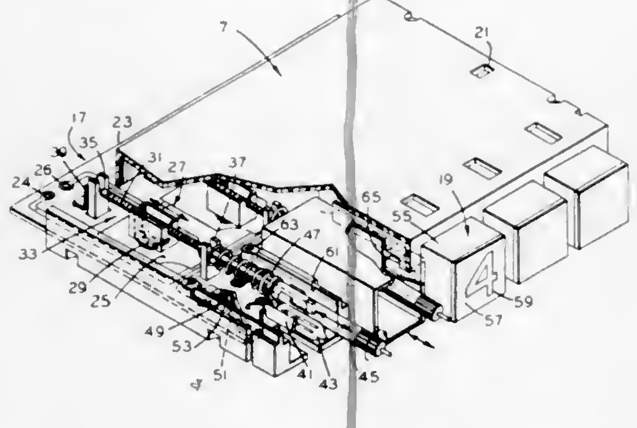
A rectangular waveguide has a cross section such that twisting or bending does not distort the internal cross section, lips being provided at each corner of the waveguide and the wall sections being shaped such that when viewed from a shorter side each corner has a portion with a substantially T-shaped section, and while viewed from a long side each corner has a pronounced asymmetric T-shaped section.

3,792,387
PUSHBUTTON TUNING SYSTEM

William Lee Arrington, Batavia, and Lee Irving Merz, Williamsville, both of N.Y., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Jan. 26, 1973, Ser. No. 326,759
Int. Cl. H03j *1/00*
U.S. Cl. 334—7 **8 Claims**

A pushbutton tuner module for a signal receiver employing a voltage-dependent type tuner includes an enclosure with upper and lower portions formed to join one another to provide a plurality of aligned openings, a printed circuit board means disposed within the enclosure and including a pair of switches, a light source, and an adjustable resistance for each one of the aligned openings, and a pushbutton formed for slidable engagement with the enclosure and disposed within each one of the openings for effecting engagement and disengagement of the switches, energization and de-energization of the light source, and coupling and decoupling of the adjustable resistor to the voltage-dependent tuner.



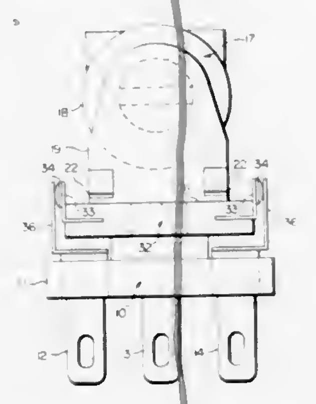
3,792,388
ELECTRICAL RELAY

Ora Ray Fleming, Pico Rivera, Calif., assignor to Teledyne, Inc., Los Angeles, Calif.

Filed Apr. 30, 1973, Ser. No. 355,815

Int. Cl. H01h *50/60*

U.S. Cl. 335—135 **6 Claims**



An electrical relay having an armature pivotally mounted for rotational movement about an axis, and a movable contact assembly carried by the armature. Electrical continuity between the movable contact assembly and selected stationary terminals of a header assembly is achieved through compression loaded contacts at the rotational axis of the armature, thereby avoiding problems experienced with the conventional flexible wire connectors of the prior art.

3,792,389
FLASHLIGHT AND SWITCH ASSEMBLY

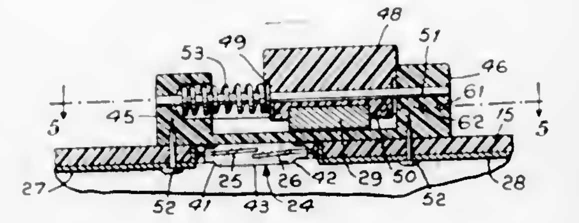
John D. Murphy, 22 E. 22nd St., Bayonne, N.J.

Continuation-in-part of Ser. No. 156,661, May 25, 1971. This application Dec. 22, 1971, Ser. No. 210,791

Int. Cl. H01h *9/00;* **F21i** *7/00*

U.S. Cl. 335—205 **5 Claims**

An improved flashlight construction which substantially reduces the possibility of arcing, having a glass enclosed magnetic reed switch electrically connected to the conductor strips along the wall of the flashlight case and having the magnet required to close the contact arms of the reed switch incorporated into a slidably mounted switch cover, the conductor strips being electrically connected in a fixed position between the conductor rings at the ends of the case. In a modified form of the switch assembly, the magnet is positioned in a preformed case which is mounted on the outside of the flashlight case so that the movable parts of the switch are completely separated from the internal parts of the flashlight. Other modifications of switch covers having magnets mounted therein which can be locked in either the "On" or "Off" position by means of magnetizable steel are also shown.



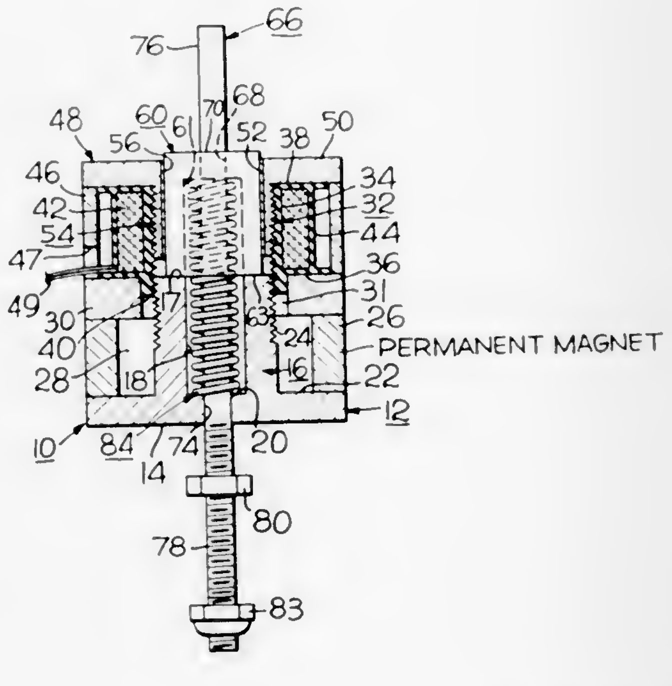
3,792,390
MAGNETIC ACTUATOR DEVICE

Donald R. Boyd, Waukesha, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 29, 1973, Ser. No. 365,024

Int. Cl. H01f *7/08*

U.S. Cl. 335—229 **15 Claims**



There is provided in accordance with an embodiment of the invention a magnetic actuator device, such a flux cancelling, transferring or shifting type trip device comprising an annular permanent magnet, and a first main pole piece of magnetic material engaging one axial end of the permanent magnet and a threaded magnetic hollow stud member integral with the first main pole piece and extending axially upwardly through the central opening of the annular-shaped permanent magnet. One end of an annular magnetic shunting pole piece engages the opposite axial end of the permanent magnet. An annular magnetic sleeve engages the opposite axial end of the annular shunting pole piece. A plastic bobbin on which is wound an electrical trip coil is positioned radially inwardly of the annular magnetic sleeve. A second magnetic main pole piece of annular-shape engages the axially outer end of the magnetic sleeve. The second main pole piece has an integral hollow threaded magnetic stud member extending axially inwardly of the assembly. A hollow cylindrical magnetic armature is axially movable against a spring force through the opening of the annular second main pole piece and in the communicating

hollow interior of the stud member carried by the second main pole piece. The armature is normally held in magnetically latched position by the magnetic field of the permanent magnet against the spring force and in contact with the axially inner end of the stud member carried by the first main pole piece. When a signal pulse is applied to the coil, a substantial amount of the permanent magnet flux is diverted through the shunting pole piece, permitting the biasing spring force to move the armature to a tripped position. An important feature of the construction is the fact that the plastic bobbin on which the trip coil is wound is threadedly engaged with the threaded studs carried by the oppositely disposed first and second main pole pieces whereby to hold the assembly securely together without the use of bolts or other fastening means. A further feature of the construction is the provision of a "built-in" nonmagnetic gap on the movable armature member in the form of a plated coating of a non-magnetic material on the surface of the armature which engages the stud member of the first pole piece in the latched position of the armature. This "built-in" gap, insures that the movable armature and cooperating stationary magnetic structure operate at an optimum point or region on the curve of magnetic force exerted on the armature vs. gap between the armature and the axially inner end of the stud member carried by the first main pole piece.

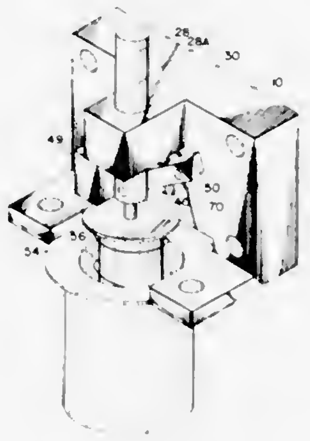
3,792,391
ELECTRICALLY OPERATED TWO POSITION ELECTROMECHANICAL MECHANISM

Lionel Lee Ewing, 750 Maple St. Apt. No. 21-B, Manfield, Ohio

Filed Dec. 18, 1972, Ser. No. 316,079

Int. Cl. E05b *47/02;* **H01f** *7/16*

U.S. Cl. 335—254 **6 Claims**



An electrical type of lock wherein the mechanical movement is actuated in response to a solenoid system triggered by an electrical momentary signal. The locking bolt alternatively changes from a locking to unlocking position or vice versa in a snap action and is retained in its respective position. The bolt is modified by mechanical means in association with the solenoid.

The locking arrangement and its actuation circuitry is particularly adaptable to a system wherein the initiating voltage is transmitted via communication lines i.e., telephone lines from a remotely located control station.

3,792,392
RELAY CONSTRUCTION

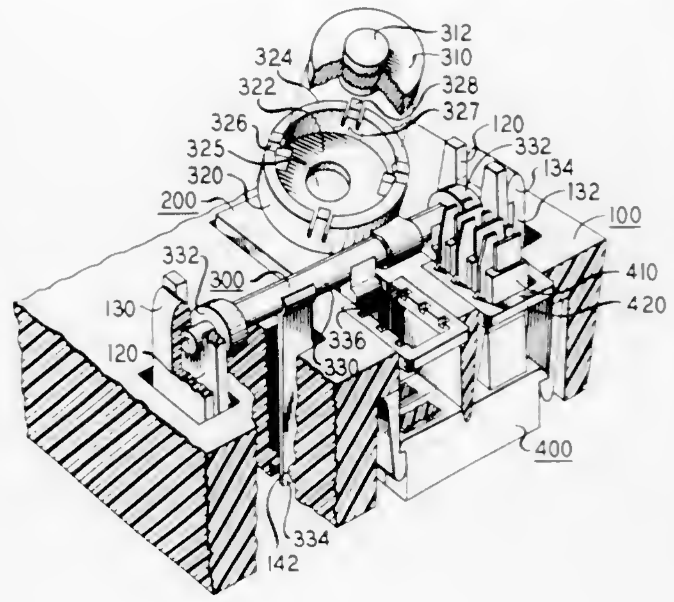
Karl-Heinz Pohl, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 18, 1972, Ser. No. 316,415

Int. Cl. H01f *7/08*

U.S. Cl. 335—270 **10 Claims**

The relay construction uses molded parts that are assembled without the use of fasteners. The relay comprises an electromagnet consisting of a core that is snap-mounted within a spool, the spool in turn being snap-mounted within an enclosure. An armature support, which includes an integral spring for biasing it to its unoperated position, is pivotally secured by snap-mounting to the enclosure and the armature itself is snap-mounted to the support.



3,792,393
ARRANGEMENT FOR ADJUSTING THE AIR GAP IN AN ELECTROMAGNETIC SWITCHING APPARATUS

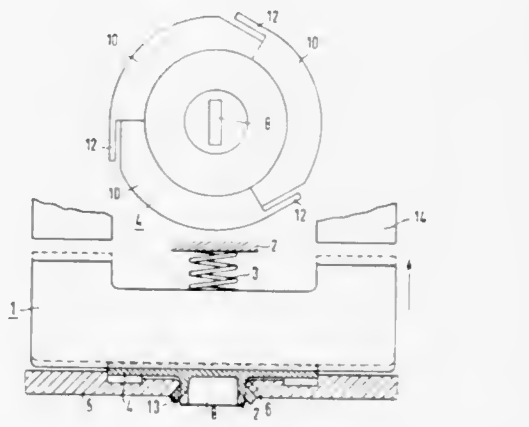
Georg Streich, and Johann Bauer, both of Amberg, Germany, assignors to Siemens Aktiengesellschaft, Munchen, Germany

Filed Dec. 13, 1972, Ser. No. 314,563

Claims priority, application Germany, Dec. 16, 1971, 2162363

Int. Cl. H01f *7/08*

U.S. Cl. 335—273 **7 Claims**



In an electromagnetic switching apparatus where the nonswitching magnet part is in a housing and spring loaded in the direction toward the housing, means are provided for adjusting the air gap between the switching and non-switching magnet parts when the magnet is not energized, said means comprising at least one adjusting part having wedge surfaces and adjustable in the housing, being placed between the nonswitching magnet part and the housing, such that the nonswitching magnetic part can be lifted from the housing by moving the adjusting part.

3,792,394

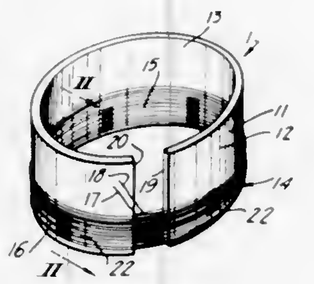
3,792,396
VOLTAGE TRANSFORMER

mitted from the magnetic core to the tank walls and permit ad-

the core halves, and welding the strap at a cruciform joint. A

3,792,394
VOICE COIL

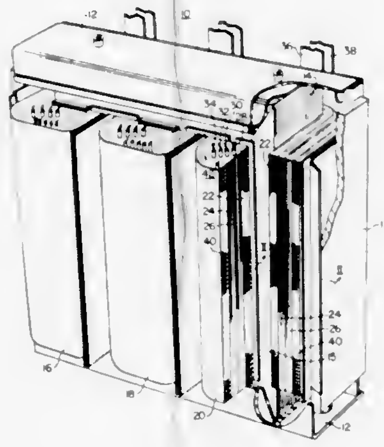
Jose Juan Bertagni, 1027 Hernandarias St., Buenos Aires, Argentina
Filed Nov. 1, 1972, Ser. No. 302,639
Claims priority, application Argentina, Dec. 16, 1971, 239650
Int. Cl. H01f *5/00*
U.S. Cl. 335—299 **8 Claims**



Voice coil having a tubular coil carrier defining an outside face and an inside face, a coil including at least a forward pitch layer of turns on said outside face and a backward pitch layer of turns on said inside face and preferably window openings in said carrier in the zone covered by said layers.

3,792,395
ELECTRICAL INDUCTIVE APPARATUS HAVING SHEET AND STRAP WOUND WINDINGS

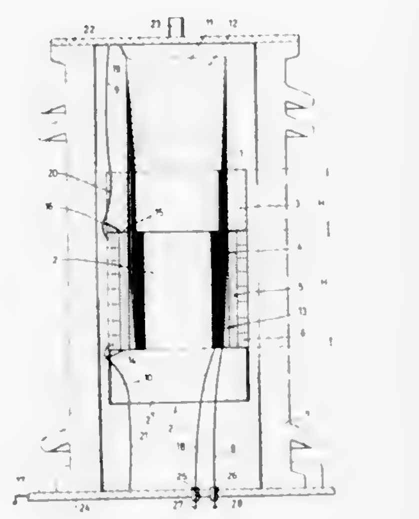
George P. Michel, South Boston, Va., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Apr. 3, 1973, Ser. No. 347,509
Int. Cl. H01f *21/12*
U.S. Cl. 336—5 **4 Claims**



A power distribution transformer having a multiple section high-voltage winding. At least one section is wound from sheet conductor material. Another section is wound from strap conductor material and is disposed concentrically around the sheet wound section. Tap leads are attached to the strap wound section and are connected to tap changing apparatus. The setting of the tap changing apparatus determines the extent to which the strap wound section is connected in series with the sheet wound section, and thus determines the voltage rating of the high-voltage winding.

3,792,396
VOLTAGE TRANSFORMER

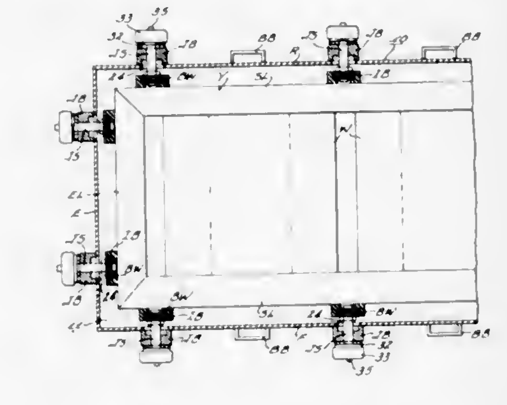
Vaino Tuure Kalevi Panu, Vaasa, Finland, assignor to Oy Stromberg AB, Vassa, Finland
Filed Mar. 20, 1973, Ser. No. 343,147
Claims priority, application Finland, Apr. 7, 1972, 975/72
Int. Cl. H01f *15/04, 15/14*
U.S. Cl. 336—69 **14 Claims**



A voltage transformer comprising a hollow support insulator within which is arranged a main insulator and associated with this, a magnetic circuit, at least one primary winding and at least one secondary winding, together with necessary conductors. The main insulator is of tubular form and made up of a number of metal foil tube elements located inside each other in such a manner as to overlap each other partially but not completely, with insulator elements of tubular form arranged between them. A first winding (either a primary or a secondary winding) is located around the main insulator and a second winding (either a secondary or a primary winding) is located inside the main insulator approximately opposite to said first winding. The magnetic circuit comprises two separate core sections, one of which extends from the surface of the main insulator, enclosing the first winding, at least approximately to the other end of the main insulator and the other of which extends from the surface of the main insulator, enclosing from inside the second winding, to the said other end of the main insulator where it meets the other end of the first core section.

3,792,397
STATIONARY INDUCTION APPARATUS HAVING SOUND ATTENUATING CORE CLAMPING MEANS

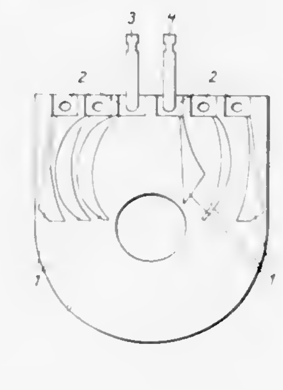
Arthur P. Reinemann, West Allis, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed July 2, 1973, Ser. No. 375,736
Int. Cl. H01f *27/26*
U.S. Cl. 336—92 **15 Claims**



A shunt reactor has adjustable, spring-loaded jackscrew core clamping means which attenuate vibratory forces transmitted from the magnetic core to the tank walls and permit adjustment of core clamping pressure from the exterior of the tank.

3,792,398
BOBBIN END PLATE WITH MEANS FOR FASTENING OF SOLDERING TABS

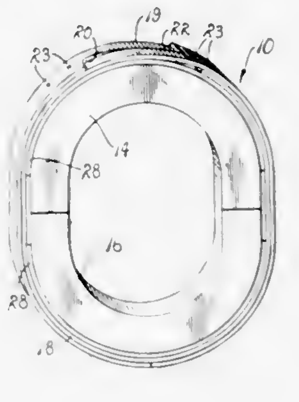
Alf Helge Bernhard Norlin, Katrineholm; Anders Natanael Olsson, Stockholm, and Tore Sven Strid, Katrineholm, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed May 17, 1973, Ser. No. 361,198
Claims priority, application Sweden, June 19, 1972, 8070/72
Int. Cl. H01f *15/10*
U.S. Cl. 336—192 **2 Claims**



An end plate for a bobbin comprising a L-shaped piece of an insulating material the first branch of which having a through hole for a core and a number of grooves for connecting wires to windings of the bobbin and the second branch of the end plate having notches for placing soldering tabs, each groove in the first branch emerging into a notch in the other branch, the emerging point having the form of a narrow mouth which the connecting wires pass on their way to the soldering tabs and which after the bobbin windings are completed are closed, thus locking connecting wires to the bottom of the notches.

3,792,399
BANDED TRANSFORMER CORES

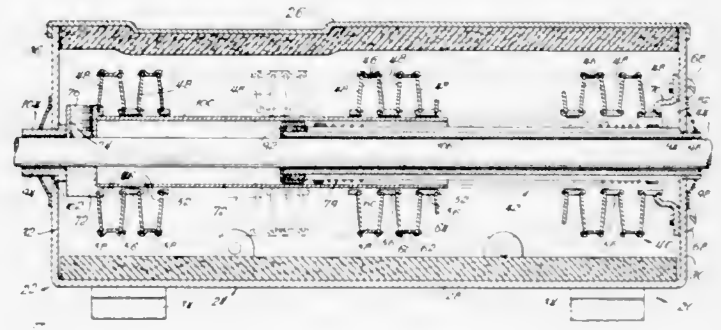
Colonel William T. McLyman, Lakewood, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Aug. 28, 1972, Ser. No. 284,245
Int. Cl. H01f *27/26*
U.S. Cl. 336—210 **6 Claims**



A banded transformer core formed by positioning a pair of mated, similar core halves on a supporting pedestal, encircling the core halves with a strap, selectively applying tension thereto, whereby a compressive force is applied about the periphery of the core for reducing the innate air gap between the core halves, and welding the strap at a cruciform joint. A d.c. magnetic field is employed in supporting the core halves during initial phases of the banding operation, while an a.c. magnetic field subsequently is employed for detecting dimension changes occurring in the air gaps as tension is applied to the strap.

3,792,400
TEMPERATURE RESPONSIVE ACTUATOR

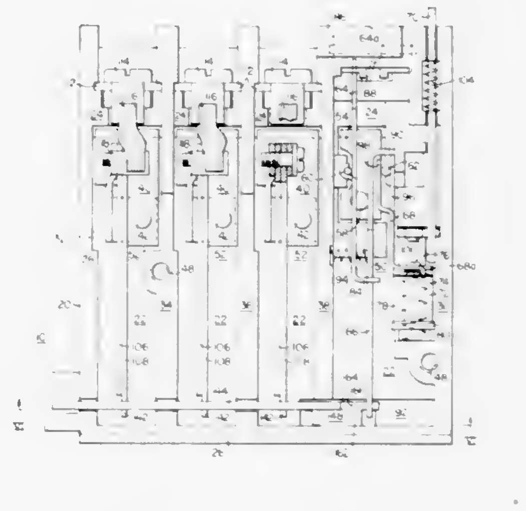
Thomas Edward Hayes, and Jon Harold Bechtel, both of Goshen, Ind., assignors to Johnson Service Company, Milwaukee, Wis.
Filed Jan. 17, 1973, Ser. No. 324,310
Int. Cl. H01h *71/16*
U.S. Cl. 337—38 **13 Claims**



A temperature responsive actuator made up of a bellows-like arrangement of bimetal spherical washers which are arranged in pairs with their concave surfaces in opposing relation. One end of the bellows-like arrangement is attached to a frame member and the other end is coupled to a controller rod which extends axially through the center of the bimetal washer arrangement. A heat control means for supplying heat internally of the bimetal washer arrangement is provided which is energized by a control signal from a remotely located temperature sensor element.

3,792,401
THERMALLY RESPONSIVE ELECTRICAL DEVICE

Paul T. Anderson, Beaver, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 29, 1972, Ser. No. 267,272
Int. Cl. H01h *37/30*
U.S. Cl. 337—49 **1 Claim**



An electrical control device or relay characterized by a pair of relatively separable contacts, means for moving the contacts between open and closed positions and comprising a latch member movable between unlatched and latched positions corresponding respectively to the open and closed posi-

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latch mechanism wherein spring pressure urges the latch open

3,792,405

3,792,407

tions of the contacts, three pole units of which each pole unit comprises a bimetal element responsive to current flow to effect heating thereof, a slide assembly associated with the bimetal elements of the pole unit and comprising first and second slides and a lever, the slide assembly being movable as a unit to move the latched member to the unlatched position when all of the bimetal elements are oerated, the lever being pivotally mounted on the second slide and engageable with the latch member, the first slide being movable in response to movement of at least one bimetal element to move the latch member through the lever to the unlatched position, the second slide being limited against movement when at least one of the bimetal elements is unoperable, and the first slide contacting the lever at a location between the location of mounting of the lever on the second slide and of engagement between the lever and the latch member.

3,792,402

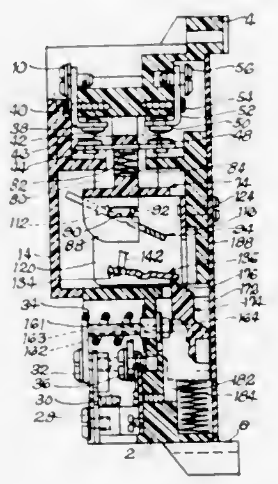
ELECTRICAL CIRCUIT CONTROLLER

John J. Peluchiwski, Medinah, and Dennis C. Walstad, Winfield, both of Ill., assignors to Furnas Electric Company, Batavia, Ill.

Filed Nov. 3, 1971, Ser. No. 195,433

Int. Cl. H01h *61/02*

U.S. Cl. 337—59 **23 Claims**



A manually operated switching device which includes a pivotally mounted actuating bracket carrying a cross bar which advances toward and away from a set of fixed contacts as the bracket is rotated. A set of movable contacts on the cross bar make or break the circuit as the bar is moved. A thermal overload device including a plunger normally held in a fixed position by a pawl and detent arrangement but in response to excess heat caused by excessive current in a controlled conductor the detent may rotate permitting a spring to drive the plunger to a position where it operates a reset bracket which in turn operates the actuating bracket opening the circuit and prevents its operation until the thermal overload has been removed.

3,792,403

CIRCUIT BREAKER

John Bullock, Los Angeles, Calif., assignor to Arrow-Hart, Inc., Hartford, Conn.

Filed May 27, 1971, Ser. No. 147,449

Int. Cl. H01h *21/16*

U.S. Cl. 337—66 **38 Claims**

A novel latch and release mechanism for an electrical circuit breaker is disclosed herein wherein the switch assembly is held closed while contact loading pressure by-passes a thermal release mechanism so that this latter mechanism is unloaded. Trip cams are provided which are responsive to movement of the thermal release mechanism for releasing the load on the latch mechanism wherein spring pressure urges the latch open and the contact closures of the switch assembly open. A temperature compensation means is operatively coupled to the trip cams of the release mechanism for pre-setting the precise release point of the contact loading pressure.

3,792,404

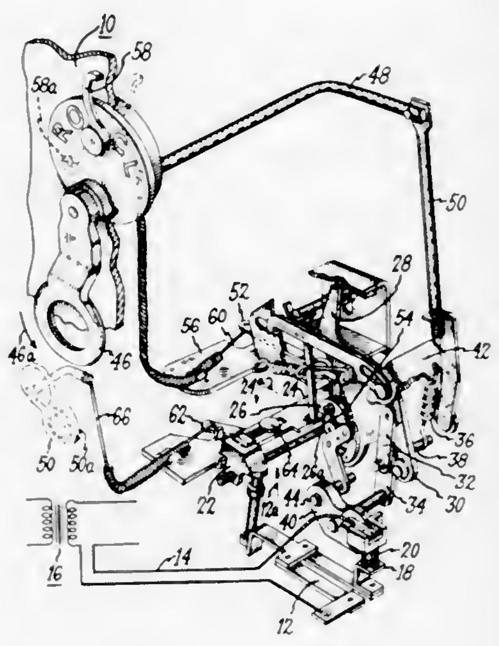
CIRCUIT BREAKER HAVING MECHANICAL LOCK TO PREVENT AUTOMATIC OPERATION

Louis F. Ettlinger, Conover, and Donald R. Barger, Newton, both of N.C., assignors to General Electric Company, Pittsfield, Mass.

Filed Aug. 30, 1972, Ser. No. 285,046

Int. Cl. H01h *71/16, 71/52*

U.S. Cl. 337—72 **4 Claims**



A mechanical lock for a circuit breaker. The locking mechanism includes a pivoted lever mounted on a fixed portion of the circuit breaker. The pivoted lever includes a hooked portion which may be pivoted into or out of engagement with the latch member of the circuit breaker. When engaging the latch member, the pivoted lever prevents automatic operation of the circuit breaker, while still allowing manual operation thereof. The pivoted lever has an operating member which is operable from the exterior of the tank enclosing the circuit breaker.

3,792,405

WIPER INTERMITTENTLY OPERATING DEVICE

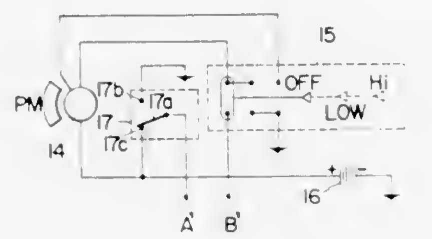
Akitomi Hatsugai, and Kazuyuki Ishida, both of Kiryu, Japan, assignors to Mitsubadenkiseisakusho Co., Ltd., Gunma-Prefecture, Japan

Filed Oct. 18, 1971, Ser. No. 189,938

Claims priority, application Japan, Dec. 18, 1970, 45/126473

Int. Cl. H01h *61/06*

U.S. Cl. 337—140 **6 Claims**



An intermittently operating wiper device wherein periodically and intermittently wiping operation is produced by adding a circuit containing: a) a lagging relay which is provided in a wiping mechanism intermittently activated by being heated and cooled by the intermission of an adjustable heating current, and b) an intermittently wiping switch having ON, OFF contacts or ON contact, to a circuit having a wiper motor connected to the well-known wiper switch, and an auto-stop relay controlled by said wiper motor. The invention also includes improvements in the lagging relay used in said intermittently operating device.

3,792,406

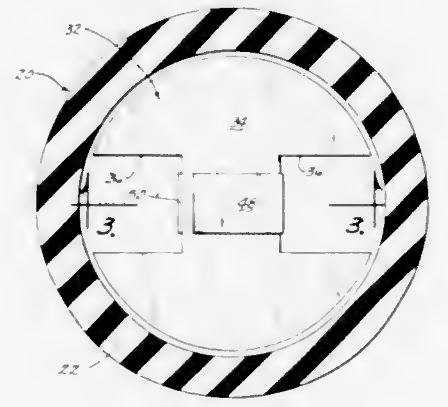
FUSE RESISTOR AND THE METHOD FOR MAKING SAME

Clifford A. Kreifels, Columbus, Nebr., assignor to Dale Electronics, Inc., Columbus, Nebr.

Filed Nov. 26, 1971, Ser. No. 202,307

Int. Cl. H01h *85/14*

U.S. Cl. 337—163 **9 Claims**



A fuse resistor is comprised of a wire resistor adapted to fuse and break in response to a predetermined magnitude of current passing therethrough. A silicone rubber casting surrounds the wire resistor. The wire resistor and the silicone rubber coating are embedded within a dielectric body member, and electrical contact means are connected to the resistor and extend outside the body member. The body member can be a disc which is adapted to be inserted within a light bulb socket between the light bulb and the terminals of the socket. The method of the present invention comprises coating a wirewound resistor with a silicone rubber, and molding the wire-wound resistor within an electrically insulative material so that the resistor is embedded within the insulative material with only its terminals protruding outwardly therefrom.

3,792,407

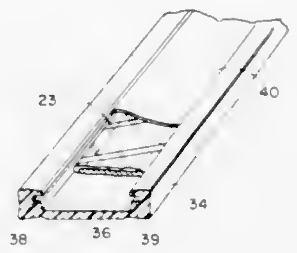
CHANNEL MOUNTED LEVEL SENSOR

Albert D. Ehrenfried; Norton T. Pierce, both of Concord, Mass., and Mason G. Ide, Nashua, N.H., assignors to Metritape, Inc., West Concord, Mass.

Filed Sept. 15, 1971, Ser. No. 180,608

Int. Cl. G01f *23/00*

U.S. Cl. 338—13 **8 Claims**



A channel mount for an elongated level sensor which provides a rugged mechanical housing while not detracting from sensor sensitivity. An elongated spatially continuous sensor is supported within a channel-shaped mount which includes a planar facing closely adjacent the sensitive surface of the sensor. The facing is movably disposed with respect to the mount to permit transverse deformation for sensor actuation.

3,792,408

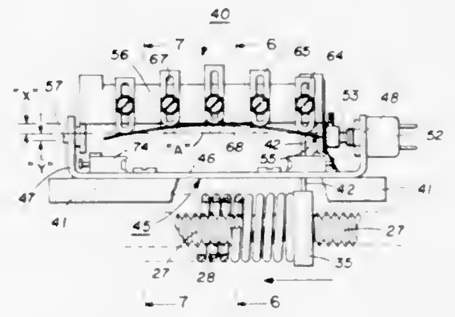
MOTION RESPONSIVE ELECTRICAL CONTROL APPARATUS

Joseph E. Gorgens, 116 Old Dyke Rd., Trumbull, Conn., and William A. Heske, 2101 Burr St., Fairfield, Conn.

Division of Ser. No. 113,419, Feb. 8, 1971, which is a continuation-in-part of Ser. No. 859,246, Sept. 17, 1969, abandoned, which is a continuation of Ser. No. 732,472, April 12, 1968, abandoned, which is a continuation-in-part of Ser. No. 565,857, July 18, 1966, abandoned. This application Jan. 8, 1973, Ser. No. 322,039

Int. Cl. H01c *5/00*

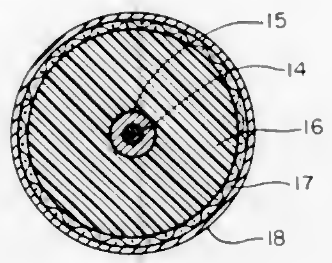
U.S. Cl. 338—91 **7 Claims**



A motion responsive electrical control apparatus for emitting an electrical control signal incrementally variable in desired correlation to a path of given mechanical motion. The apparatus includes a rotatably regulated electrical controller for emitting signals correlated to the angular position setting of the controller regulator. A cam member pivotally mounted onto the regulator of the controller is arcuately biased into overlying engagement with a movable follower defining a motion path to which the apparatus is to respond. Presettably adjustable pitch members incrementally spaced along the path of follower motion effect desired incremental changes in cam pitch thereat affording corresponding change to the controller position setting.

3,792,409
ELECTROSTATIC HAND GUN CABLE

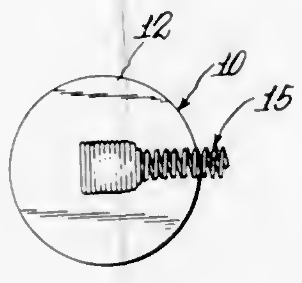
William L. Smart, and Paul S. Gregg, both of Indianapolis, Ind., assignors to Ransburg Corporation, Indianapolis, Ind.
Filed Apr. 2, 1973, Ser. No. 347,240
Int. Cl. H01c *13/00;* **H01b** *1/06, 9/02*
U.S. Cl. 338—214 **1 Claim**



An improved high voltage cable for usein electrostatic hand guns and includes a semiconductive stranded fiber glass core within a semiconductive shield surrounded by body of insulative material, a flexible conductive sheath in an outer protective covering; the semiconductive core and semiconductive shield provide resistance of not less than 20,000 and not more than 300,000 ohms per foot of cable length.

3,792,410
ELECTRICAL CONNECTIONS

Leo J. Klein, Clairton, Pa., assignor to Emerson Electric Co., St. Louis, Mo.
Division of Ser. No. 150,010, June 4, 1971, Pat. No. 3,702,387. This application Aug. 30, 1972, Ser. No. 285,070
Int. Cl. H01c *1/14*
U.S. Cl. 338—296 **3 Claims**

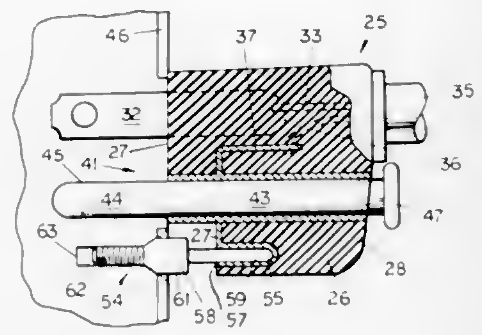


In an electric resistance heating element, the invention relates to the assembly of a resistor coil to a terminal pin to provide mechanical and electrical connection therebetween. The assembly is particularly suited for use in strip heaters wherein the coil is connected to the flat head of a terminal bolt.

A group of convolutions of the resistor coil are flattened against the bolt head and welded thereto by a resistance welding operation. In the method disclosed, the shank of the bolt is disposed within an opening in one welding electrode of a welding machine with the bolt head overlying the tip of such electrode, and the group of convolutions of the coil are placed against the flat surface of the bolt head. The other welding electrode has a rounded tip and as this electrode is moved toward said one electrode, its rounded tip flattens the group of convolutions in overlapping relation on the flat surface of the bolt head. With the flattened convolutions and the bolt head firmly gripped between the welding electrodes, welding current is caused to flow between the electrodes to weld the flattened convolutions to the flat surface of the bolt head. Those flattened convolutions at the center of the rounded tip of said other electrode are fully fused to the flat surface of the bolt head, whereas the convolutions off the center of such rounded tip have a stick weld to the flat surface. Thus, not only is a low resistance electrical connection made by the fully fused convolutions, but a good mechanical connection is made by the stick-welded convolutions.

3,792,411
ELECTRIC PLUG WITH BOTH REMOVABLE AND PIVOTABLE GROUND PINS

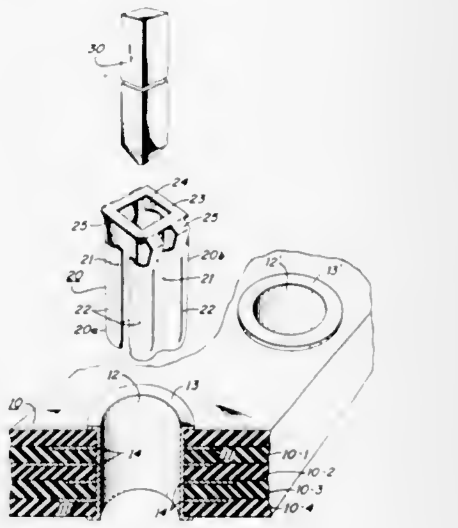
Robert L. Jenkins, P.O. Box 115, North Salem, N.H.
Filed Jan. 3, 1972, Ser. No. 214,566
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 P **9 Claims**



A male electric plug is of the type having a first grounding means and also a second grounding means. The first grounding means is an elongated ground pin member movable in a grounded socket member and the second grounding means is an inflexible element mounted on, integral with and grounded with one of the members for connection to an outlet plate. In one form both grounding means are pins freely slidable in grounded sockets. In another form the first grounding means is a pin pivotable in a socket and an integral tail on the pin is the second grounding means.

3,792,412
PRINTED WIRING BOARD TERMINAL ASSEMBLY

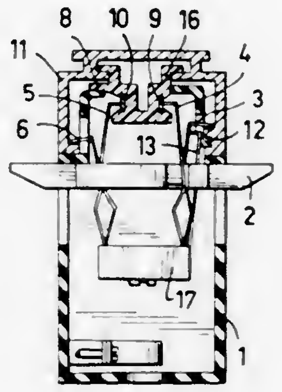
James Joseph Madden, Naperville, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed July 17, 1972, Ser. No. 272,317
Int. Cl. H05k *1/02*
U.S. Cl. 339—17 C **5 Claims**



A printed wiring board terminal assembly in which an adapter sleeve is inserted between the plated surface of a terminal hole and a terminal pin. The adapter sleeve is fashioned to present a plurality of longitudinal contacting nodes which expand radially to make electrical contact with the plating as the pin is inserted. The normal potentially damaging longitudinal stresses induced during pin insertion are thus converted to radial forces to preclude strain at the plating-wiring interfaces.

3,792,413
CONNECTING PLUG FOR AN ELECTRIC CURRENT SUPPLY RAIL

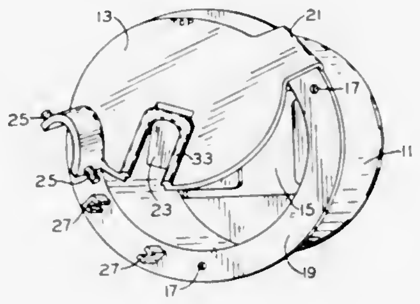
Mikko Aukusti Hyrlainen, Helsinki, Finland, assignor to Oy Nokia Ab, Helsinki, Finland
Filed Sept. 1, 1972, Ser. No. 285,853
Claims priority, application Finland, Sept. 6, 1971, 2490/71
Int. Cl. H01r *9/00*
U.S. Cl. 339—21 R **3 Claims**



A connecting plug for an electric current supply rail, comprising a casing and contact fingers flexibly fastened in said casing. An operating device preferably in the shape of a plate is arranged in the casing and is slidingly displaceable along said contact fingers between an inoperative position where the contact fingers are withdrawn into the casing and an operative position where the contact fingers are pushed out to protrude from said casing.

3,792,414
POWER CORD HATCH

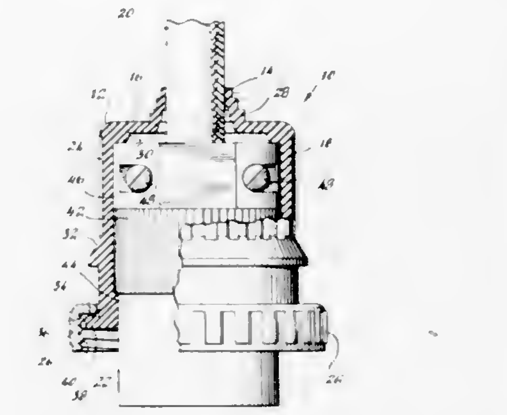
Gregory A. Smith, North Webster, Ind., assignor to Lyall Electric, Inc., Albion, Ind.
Filed Mar. 15, 1972, Ser. No. 234,848
Int. Cl. H01r *13/62*
U.S. Cl. 339—36 **8 Claims**



An improved hatch for a power supply cord to be used on travel trailers and similar structures wherein it is desired to store within the structure a power supply cord and within the hatch the power supply cord plug and, from time to time, extract that cord and connect it to a source of electrical current is disclosed. The hatch may be fabricated as one piece from polypropylene or other resilient material, there being an integral hinge which pliably couples the hatch housing and cover, and there may be a second integral hinge which pliably couples a flap to the cover or to the hatch housing to selectively open and close a notch in the cover through which the power cord may pass. Means for allowing one way passage of the plug through the back of the hatch during assembly and subsequently preventing its removal during use is also disclosed.

3,792,415
WEATHERPROOF COVER FOR ELECTRICAL CABLE CONNECTOR

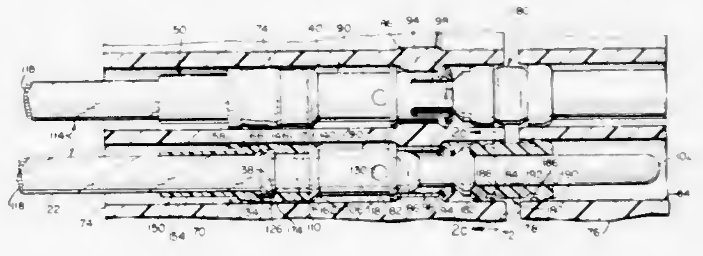
Alvin W. Fuller, Shelton, Conn., assignor to Harvey Hubbell, Incorporated, Bridgeport, Conn.
Filed Mar. 13, 1972, Ser. No. 234,261
Int. Cl. H01r *13/52*
U.S. Cl. 339—60 R **6 Claims**



Apparatus for weatherproofing an electrical cable connecting device, particularly where both an improved cable seal and greater cable flexibility are attained. A cable sealing gland is disposed on a flexible diaphragm to relieve the strain developed in the gland when the cable flexes. Gland resistance to cable flexure is overcome by relieving axial strain through distortion of the diaphragm about an axis perpendicular to the axis of the cable. Separation of the gland from the cable is overcome by relieving lateral strain through distortion of the diaphragm to reorient the axis of the gland in the direction of cable flexure. The diaphragm is disposed on a spacing ring as the end wall of a sealing boot which is otherwise configured to fit conventionally over the cable connecting device.

3,792,416
SYSTEM, METHOD AND SEAL FOR PRESSURE-SENSITIVE WIRE AND INTERFACE SEALING OF ELECTRICAL CONNECTOR ASSEMBLIES AND ASSOCIATED CONTACTS

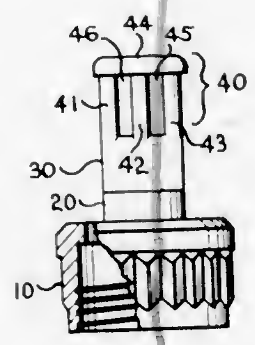
Norbert L. Moulin, Placentia, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Apr. 3, 1972, Ser. No. 240,501
Int. Cl. H01r *13/52*
U.S. Cl. 339—94 R **54 Claims**



Electrical pin and socket contacts, contained within connectors and interconnectable with one another by mating connection of the connectors, are sealed from the environment external to the interior of the connectors and the connection therebetween regardless of changing pressure conditions. Individual pressure-sensitive wire seals are utilized for each contact at the rear of the connectors and a two sided pressure-sensitive interface seal is utilized for sealing between two mating connectors. The pressure-sensitive wire seal at the rear of each connector includes a tubular portion jacketed in sealing contact on the conductor insulation, a cup-shaped flange opening toward the rear of the connector, a wiper land inwardly disposed of the cup-shaped land, and an interlocking engagement between the seal and the wire-receiving end of the contact. The pressure-sensitive interface seal sealingly engages each pin end of the pin contact and has a pair of cup-shaped seals facing each other and facing the front faces of the two connectors when each pin contact in one connector engages the socket contact of the other connector. The cup-shaped seals, in particular, not only afford the usual pressure sealing capability but also increase their sealing capability when pressure external to the interior of the connector exceeds the pressure interior to the connector while permitting escape of fluids or gases from the interior of the connector when the external pressure is less than the interior pressure. Since the seals are individual seals, if one seal is found to be defective, it is only necessary to remove only that seal for replacement or repair purposes. No other seal or contact need be disturbed. Further, a single one-piece connector is required and no additional extensions or attachments thereto are required, thereby simplifying and economizing the costs of material, assembly, and replacement of defective parts and improving reliability.

3,792,417
STRAIN RELIEF CLAMP FOR AN ELECTRICAL CONNECTOR

Stephen Punako, Bainbridge, N.Y., assignor to The Bendix Corporation, Southfield, Mich.
Filed Aug. 23, 1972, Ser. No. 283,028
Int. Cl. H01r *13/58*
U.S. Cl. 339—103 M **8 Claims**

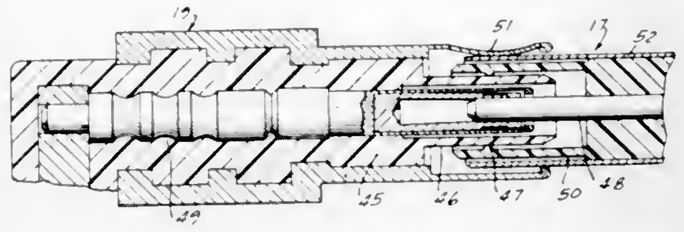


The strain relief clamp designed for use on general purpose multi-pin electrical connector assemblies to the plug or receptacle of the assembly and extending therefrom to terminate in a keeper element which includes apertures to facilitate retention of a band or tie string that secures to the clamp all the wires extending from the connector. The bundle of wires extending from the connector is thereby gripped in a firm and immovable position so that all axial and radial movement of the wires which might occur in operation is prevented from being transmitted to the point of connection of the several wires with the connector contacts. One or more apertures in the keeper element makes it possible to secure many or as few as one wire extending from the connector in the aforementioned manner to prevent breaking the connection point of a wire to a contact.

3,792,418
ELECTRICAL CONNECTOR

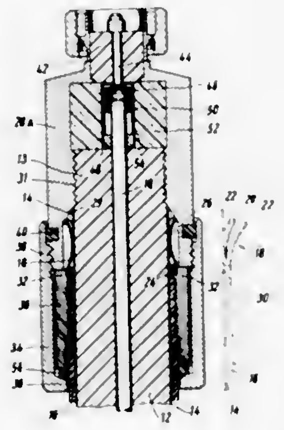
William A. Kailus, North Riverside, Ill., assignor to Bunker-Ramo Corporation, Oak Brook, Ill.
Filed Sept. 3, 1971, Ser. No. 177,730
Int. Cl. H01r *17/06*
U.S. Cl. 339—177 R **6 Claims**

A high-temperature electrical connector including interengageable mating sections each having a central and an outer-tubular metallic contact and an insulating sleeve disposed therebetween with the insulating sleeve of the one section having self-lubricating surfaces of a fluorocarbon engaging the sleeve or its associated outer-tubular metallic contact of the other section, the fluorocarbon having a relatively low heat deflection temperature so as to deform at high temperatures. The other insulating sleeve is composed of a material such as an aromatic polysulfone with a relatively high heat deflection temperature to provide a relatively rigid support for the fluorocarbon sleeve.



3,792,419
COAXIAL CABLES

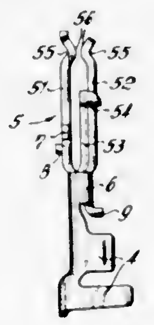
Georg Spinner, Erzgiessereistrasse 33, Munich, Germany
Filed July 11, 1972, Ser. No. 270,666
Int. Cl. H01r *17/06*
U.S. Cl. 339—177 R **8 Claims**



A plug connector fitting for coaxial cable comprises contact lugs arranged to contact the bared outer sleeve conductor of the cable. The lugs are pressed radially inwards by cam faces on a sleeve of the fitting.

3,792,420
ELECTRICAL COUPLING ELEMENT

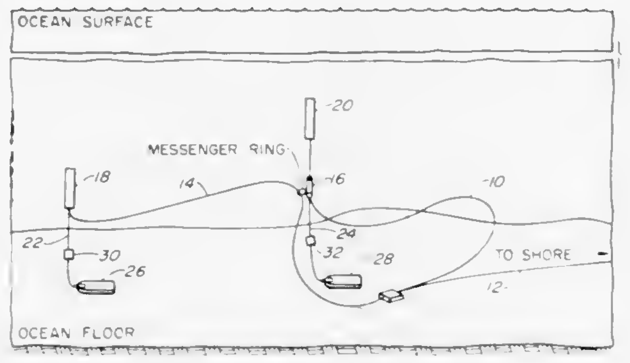
Alfred Konnemann, Wuppertal-Ronsdorf, and Wulf Muller, Wuppertal-Elberfeld, both of Germany, assignors to Fa. Grote & Hartmann Wuppertal-Ronscdorf, Wuppertal-Ronsdorf, Germany
Filed June 23, 1971, Ser. No. 155,966
Claims priority, application Germany, June 30, 1970, P 20 32 194.2
Int. Cl. H01r *13/12*
U.S. Cl. 339—258 R **1 Claim**



An electrical coupling element having a base portion for connecting the coupling element to a wire conductor, a pair of spring arms for receiving a flat plug contact therebetween, and a stop spring member disposed between the spring arms for securing the coupling element in a multiple purpose plug housing.

3,792,421
UNDERWATER DATA TRANSMISSION SYSTEM

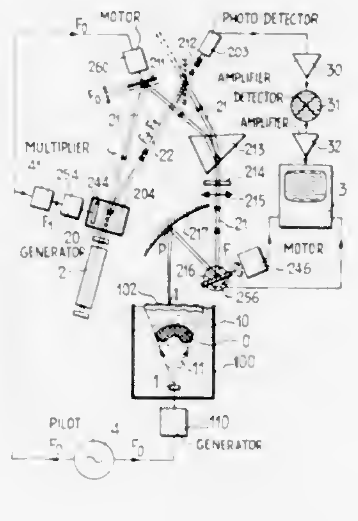
Larry Vane W. Frazier, Ventura, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed July 12, 1972, Ser. No. 270,878
Int. Cl. B63b *21/00*
U.S. Cl. 340—4 R **1 Claim**



The present invention is a method for raising and lowering an umblical cable into which other cables could be plugged, the cable being retrieved by releasing a connector through a signal sent on the cable. This allows the messenger cable to float to the surface, and after servicing the cable is equipped again with a releasable weight and allowed to fall to the ocean floor.

3,792,422
CAMERAS FOR ACOUSTIC HOLOGRAPHY

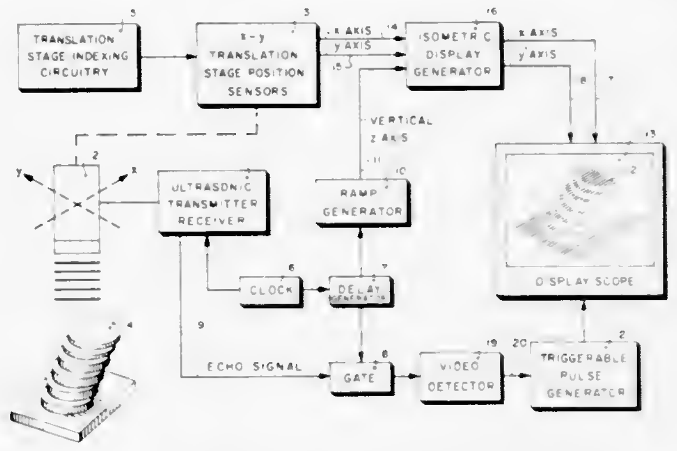
Joel Ernvein-Pecquenard, Paris, France, assignor to Thomson-CSF, Paris, France
Filed Jan. 2, 1973, Ser. No. 320,192
Claims priority, application France, Jan. 7, 1972, 7200495
Int. Cl. H04n *3/02;* **G01n** *29/04*
U.S. Cl. 340—5 H **9 Claims**



The present invention relates to improvements in laser-scan ultrasonic cameras. In order to substitute an acoustic hologram for the acoustic image presented upon the screen of the cathode ray tube, an optical phase reference and a square-law detection of the photo-signal are added to the usual devices.

3,792,423
ISOMETRIC IMAGING SYSTEM

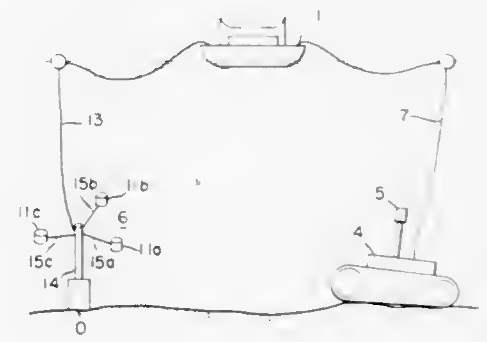
Frederick L. Becker, and Richard L. Trantow, both of Richland, Wash., assignors to The United States of America as represented by the U.S. Atomic Energy Commission, Washington, D.C.
Filed May 24, 1972, Ser. No. 256,300
Int. Cl. G01s *9/66*
U.S. Cl. 340—5 MP **3 Claims**


TRANSLATION STAGE INDEXING CIRCUITRY
x-y TRANSLATION STAGE POSITION SENSORS
x AXIS
y AXIS
ISOMETRIC DISPLAY GENERATOR
x AXIS
y AXIS
VERTICAL z AXIS
ULTRASONIC TRANSMITTER RECEIVER
RAMP GENERATOR
CLOCK
DELAY GENERATOR
DISPLAY SCOPE
ECHO SIGNAL
GATE
VIDEO DETECTOR
TRIGGERABLE PULSE GENERATOR

An isometric imaging system for effecting the projection of a three-dimensional coordinate system onto the horizontal and vertical plane of a conventional display scope is provided. The system provides for displaying both spatial and depth information by the novel transformation of the time coordinates of the scanned field, which contains the object, to the horizontal and vertical coordinates of the display scope. In one embodiment a novel sample and hold circuit is provided for processing data on tapes at playback factors greater than 10.

3,792,424
APPARATUS FOR DETECTING THE POSITION OF A MOVABLE ARTICLE UNDER WATER

Shinichi Nakatsuji, Chigasaki-shi, and Keisuke Suzuki, Hiratsuka-shi, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Filed Oct. 13, 1971, Ser. No. 188,859
Claims priority, application Japan, Oct. 13, 1970, 45-89291
Int. Cl. G01s *5/18*
U.S. Cl. 340—6 R **4 Claims**



An apparatus for detecting the position of a movable article under water which has at least three ultrasonic receivers equidistantly spaced around a standard point provided on the bottom of the body of water, an ultrasonic transmitter mounted onto the movable article for transmitting pulse ultrasonic waves, means for measuring the difference in the time when the receiver initially receives the ultrasonic wave and the time when the respective receivers receive the ultrasonic wave, and means for calculating the position of the movable article from the receiver initially receiving the ultrasonic wave and the standard point as a standard from the measured result of the measuring means. Thus, the apparatus of this invention may measure the position of the movable article under water regardless of the affect of the reflection of the ultrasonic wave from the rock, etc. on the bottom of the sea.

3,792,425
DEVICES FOR GENERATING ACOUSTIC WAVES IN A LIQUID MEDIUM

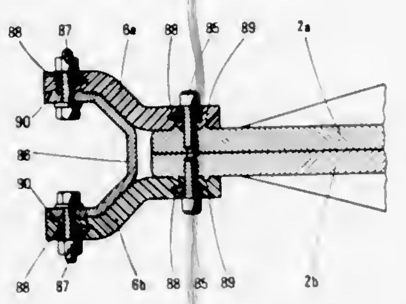
Pierre Magneville, Vernouillet, and Claude Duconge, Le Vesinet, both of France, assignors to Institut Francais Du Petrole

Filed Oct. 13, 1971, Ser. No. 188,816

Claims priority, application France, Oct. 15, 1970, 7037350

Int. Cl. H04b *13/00*

U.S. Cl. 340—12 R **9 Claims**



Device for generating acoustic waves in a liquid medium by implosion having two movable rigid members interconnected by a deformable membrane the membrane is formed of two annular strips each perpendicularly secured to the external edge of a movable member and to an annular flange external to the moveable members respectively to form a tight enclosure between the moveable member. At least one annular boss is provided on the external edges of the rigid members and on the annular flange to achieve a proper sealing between the external liquid medium and the enclosure.

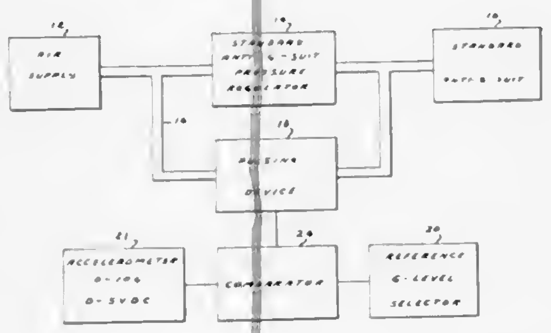
3,792,426
TACTILE WARNING DEVICE FOR G-LOADING ANGLE OF ATTACK

Richard L. Ravenelle, Woonsocket, R.I.; Michael J. Moran, New Bern, N.C., and David E. Thorburn, Reno, Nev., assignors to the United States of America as represented by the Secretary of the Air Force

Filed Apr. 6, 1972, Ser. No. 241,568

Int. Cl. G08g *5/00*

U.S. Cl. 340—27 R **6 Claims**


AIR SUPPLY
STANDARD ANTI-G-SUIT PRESSURE REGULATOR
STANDARD ANTI-G SUIT
PULSING DEVICE
ACCELEROMETER 0-10G 0-5VDC
COMPARATOR
REFERENCE G-LEVEL SELECTOR

A G-loading or angle of attack tactile warning apparatus having a by-pass air flow path around the standard anti-G-suit pressure regulator with apparatus in the by-pass path to provide a pulse signal to the anti-G-suit when certain limits such as angle of attack or G-load have been exceeded. A signal from an accelerometer or angle of attack sensor is compared with a reference signal from a reference selector. The output of a comparator is used to permit a solenoid to be energized in response to the output of a square wave generator so supply a low frequency pulse to the anti-G-suit. In another embodiment, a comparator output operates a switch in the by-pass line to cause a fluidic oscillator to supply a pulse signal to the anti-G-suit.

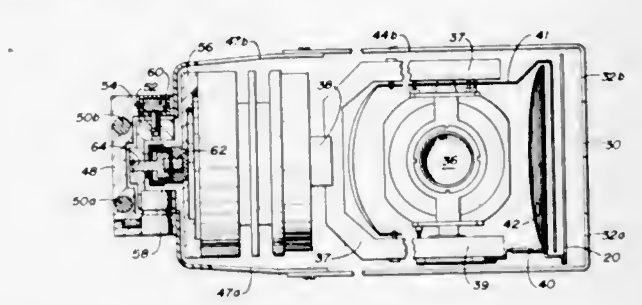
3,792,427
AIRCRAFT HORIZON DISPLAY AND STEERING INDICATOR

James R. Younkin, Mineral Wells, Tex., assignor to Mitchell Industries, Inc., Mineral Wells, Tex.

Continuation of Ser. No. 855,984, Sept. 8, 1969, abandoned. This application Sept. 3, 1971, Ser. No. 177,805

Int. Cl. G01c *19/34*

U.S. Cl. 340—27 NA **8 Claims**



A gyro is gimbaled within a frame which is fixed within an aircraft. Roll indicia is responsive to the gyro for rotation within a display window on the frame about an axis parallel to the roll axis of the aircraft. A horizon indicating member is also responsive to the gyro for movement within the display window to remain parallel to the actual horizon during flight of the aircraft. A steering bar is movable within the display window relative to the roll indicia and the horizon indicating member in dependence upon selected flight guidance commands.

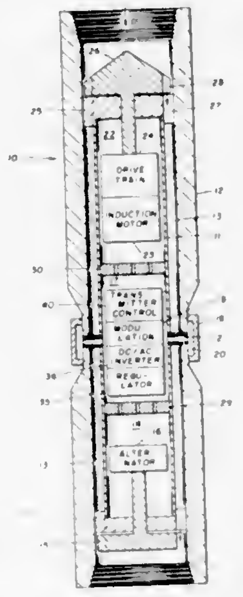
3,792,428
METHOD AND APPARATUS FOR CONTROLLING THE DOWNHOLE ACOUSTIC TRANSMITTER OF A LOGGING-WHILE-DRILLING SYSTEM

John W. Harrell, and James H. Sexton, both of Duncanville, Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed July 18, 1972, Ser. No. 272,819

Int. Cl. G01v *1/40*

U.S. Cl. 340—18 NCS **4 Claims**



A logging-while-drilling system utilizes the flow of drilling fluid within a borehole as the transmission medium for telemetering downhole logging measurements to the earth's surface. The hydraulic power within the drilling fluid is converted to suitable power for driving a downhole acoustic transmitter which produces an acoustic wave within the drilling fluid which is modulated with the information describing the downhole logging conditions. The power available for driving the transmitter is applied to the transmitter when it exceeds the minimum starting power requirement of the transmitter and is continuously applied to the transmitter so long as it does not, after starting the transmitter, drop below the minimum operating power requirement of the transmitter.

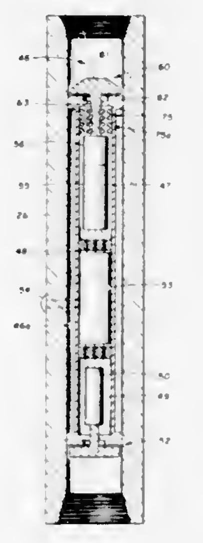
3,792,429
LOGGING-WHILE-DRILLING TOOL

Bobbie Joe Patton; Maurice Jack Prior, both of Dallas; James Howard Sexton, Duncanville, and Vasel Roy Slover, Jr., Irving, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed June 30, 1972, Ser. No. 267,851

Int. Cl. G01v *1/40*

U.S. Cl. 340—18 NC **8 Claims**



A logging-while-drilling tool which is adapted to be positioned within the drill string of a well drilling apparatus. The tool has a turbinelike, signal-generating valve which opens and closes at a rate to generate a pressure wave signal in the drilling fluid which is representative of a measured downhole condition. The tool includes a means for both biasing the valve toward an open position and holding it there when the tool is not operating and for canceling or substantially reducing the torque loads applied to the drive train of the tool when the tool is operating. This means comprises a magnetic unit which develops a magnetic torque characteristic which opposes the normal hydraulic torque characteristics of the valve.

3,792,430
DIGITAL COUNT RATE METER AND DEPTH DELAY SYSTEM FOR WELL LOGGING

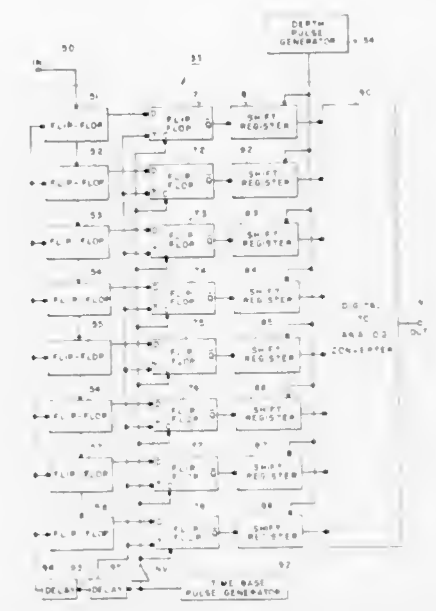
Francis J. Niven, Jr., Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Sept. 18, 1972, Ser. No. 289,902

Int. Cl. G01v *1/40;* **H03k** *21/00*

U.S. Cl. 340—18 DC **6 Claims**

Electrical signals from a well logging instrument are coupled to the earth's surface where circuitry is provided for a series of common depth point correlations. In one embodiment, the digitized signals drive an eight-bit counter which is gated through eight respective buffer circuits to eight serial shift registers. The signals in the eight-bit counter section are clocked out to the buffer section once each second regardless of movement of the well logging instrument in the borehole. The signals are shifted from the shift register at the rate of four bits per foot of well logged into a digital-to-analog converter. The amount of delay within the circuit is a function of the number of bits in the shift register divided by the number of depth pulses per foot of well logged. In an alternative embodiment, the analog signal to be delayed is converted to a parallel ten-bit digital signal which is then converted to a series signal which is coupled into a serial shift register. The conversion process is a function of depth pulses relating to the number of feet logged in the well. The output of the serial shift register is connected to a series-to-parallel register which is coupled into a digital-to-analog converter. In still another embodiment, the serial shift register is used with means for selecting the length of the register to vary the amount of delay. In yet another embodiment, a plurality of signal channels is coupled through a multiplexer and an analog-to-digital converter to the shift register. As with the other embodiments, a depth pulse generator clocks the pulses through the system and a demultiplexer provides a plurality of analog channels at the output of the system.

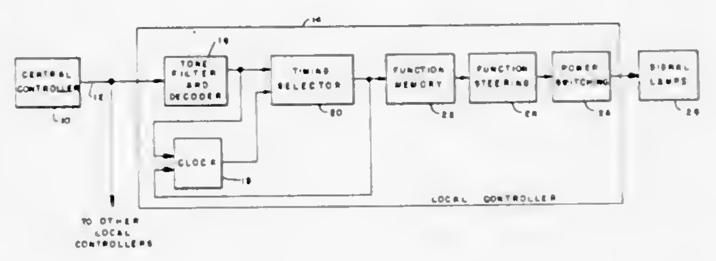


3,792,431
TRAFFIC CONTROL SYSTEM

John J. Matysek, Rt. No. 2, Box 151, Crozet, Va.

Continuation-in-part of Ser. No. 863,309, Oct. 2, 1969, Pat. No. 3,605,084, which is a continuation-in-part of Ser. No. 826,212, May 20, 1969, Pat. No. 3,644,884. This application July 27, 1971, Ser. No. 166,404

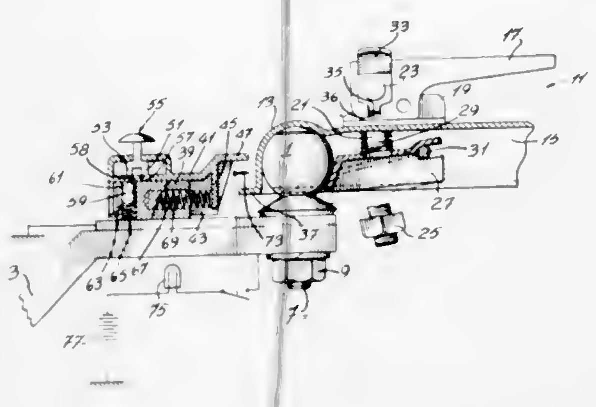
U.S. Cl. 340—41 **32 Claims**



A traffic control system in which a plurality of local controllers are connected to a central controller by means of a single communication channel. Each local controller can include a non-volatile memory which stores the desired cycle for that local controller. When it is desired to alter the cycle of a particular local controller, the central controller applies to the communication channel a code signal uniquely associated with that local controller. This enables the selected local controller to respond to subsequent coded signals altering the cycle, while the remaining local controllers do not respond to such commands. By way of illustration, the coded signals may be coded pulses of unique tones.

3,792,432
SAFETY TRAILER COUPLING

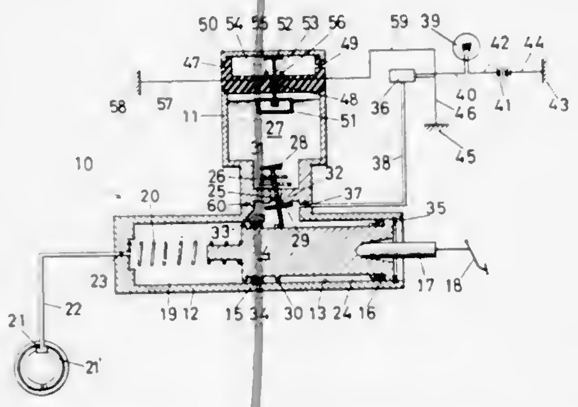
Robert Ellis, R.R. No. 5, South-Durham, and Clarence Ellis, 7e Rang, Wickham, both of Drummondville, Quebec, Canada
Filed Mar. 27, 1972, Ser. No. 238,104
Int. Cl. B60d *1/12;* **B60g** *1/00*
U.S. Cl. 340—52 R **6 Claims**



In a trailer hitch assembly having a ball member and a socket member, a safety locking device for preventing the coming out of the socket member from the ball member in case of the accidental loosening of the socket member. The locking device comprises a first element fixed to the attachment plate connecting the ball member to towing vehicle, and a second element fitted to the first element and horizontally displaceable with regard to the first element. The second element is displaced to its locking position by resilient means and retracted to its unlocking position by manual means. Stud means are provided for firmly maintaining, the second element in its displaced positions without the necessity of using a hand. Electrical switch means are removably connected to the second element and are displaceable therewith. They provide the warning of the conductor of the towing vehicle of any defect happening to the hitch assembly.

3,792,433
MASTER CYLINDER FOR HYDRAULIC BRAKING SYSTEM

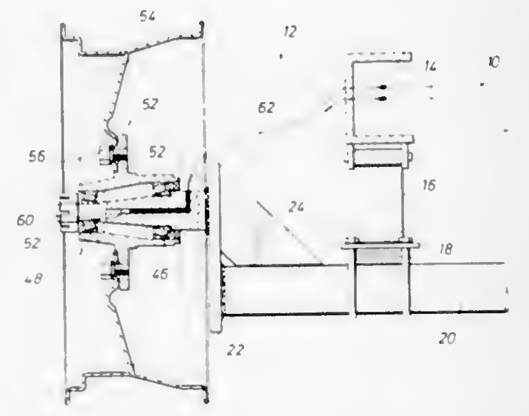
Takeshi Wada, Toyota City, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 17, 1972, Ser. No. 244,653
Claims priority, application Japan, May 1, 1971, 46/29010; May 15, 1971, 46/32661; May 19, 1971, 46/33776
Int. Cl. B60q *1/44;* **B60t** *11/22*
U.S. Cl. 340—52 C **7 Claims**



This invention relates to a master cylinder for hydraulic braking system including a cylinder body, a bore formed in the body, a fluid displacing piston slidably mounted within the bore and having primary and secondary cups, a poppet valve interposed between a reservoir and a chamber formed in the bore for closing communication between the reservoir and the chamber against the fluid pressure in the chamber and for opening the communication therebetween against the fluid pressure in the reservoir, the poppet valve and the secondary cup act with the primary cup to form an airtight chamber filled with oil, a first warning of device for warning the failure of the primary cup, a second warning device for warning that the level of the brake fluid in the reservoir is low, and a third warning device for warning when the pressure the brake fluid in the reservoir is below a certain pressure.

3,792,434
BEARING TEMPERATURE SENSING APPARATUS FOR USE ON A TRAILER

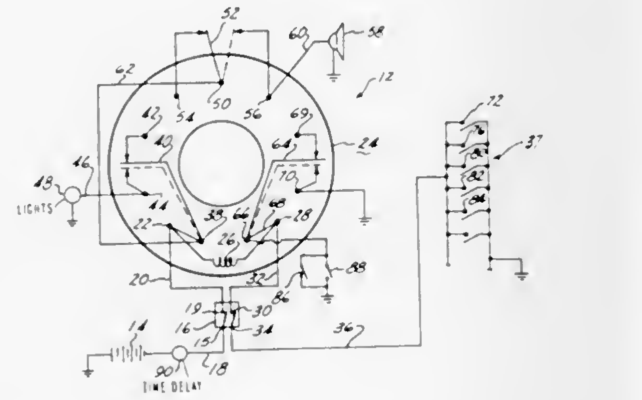
James G. Williams, 305 Chelsea Ln., Friendswood, Tex.
Filed July 14, 1972, Ser. No. 271,919
Int. Cl. B60q *1/00*
U.S. Cl. 340—57 **10 Claims**



An apparatus which incorporates a thermistor mounted in a stub axle being specially modified by the presence of an axial bore therein wherein the thermistor is positioned within the axle at a point between the bearing surfaces on the exterior thereof and further incorporating a conductor line which extends to an indicating apparatus located elsewhere. The indicating apparatus utilizes a DC power supply which is connected through a relay winding which reverses the operative status of relay contacts to form a visible indication of overheating of the bearings supported on the axle. Current flows from the source through the relay winding and thermistor to ground.

3,792,435
AUTOMOBILE THEFT PREVENTION ALARM SYSTEM

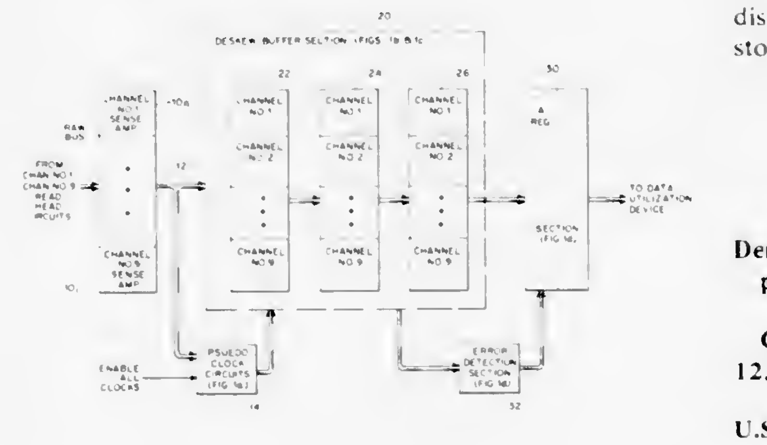
Casper Pace, 141 Rodney Ave., Buffalo, N.Y., and Thomas D. Pace, 1721 N. Cliff St., Alexandria, Va.
Filed May 30, 1972, Ser. No. 257,688
Int. Cl. B60r *25/10*
U.S. Cl. 340—63 **7 Claims**



An automobile theft prevention alarm system having an externally mounted control switch operated by the automobile operator to activate the alarm system. The alarm system comprises a central relay connected in series to the automobile battery by the control switch and is adapted to be activated by any of a plurality of sensing switches strategically located throughout the automobile. The relay is, in turn, connected to one or more warning devices, such as the automobile lights and horn, and when activated by one of the sensing switches, such as by the unauthorized opening of a car door or hood, the resulting electrical connection through the relay activates the warning devices. Once the relay has been energized, the subsequent closing of a sensing switch will not deactivate the warning system. In one embodiment of the invention a time delay mechanism is employed to terminate the alarm system after a predetermined period of operation provided the sensing switches are open, that is provided the associated portion of the automobile is returned to a normal authorized position.

3,792,436
DESKEWING BUFFER ARRANGEMENT WHICH INCLUDES MEANS FOR DETECTING AND CORRECTING CHANNEL ERRORS

David D. De Voy, Dedham; George J. Barlow, Tewksbury, and John A. Klashka, North Andover, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.
Filed Jan. 4, 1973, Ser. No. 321,094
Int. Cl. G06k *5/04;* **G11b** *27/36;* **H03k** *5/18*
U.S. Cl. 340—146.1 F **22 Claims**

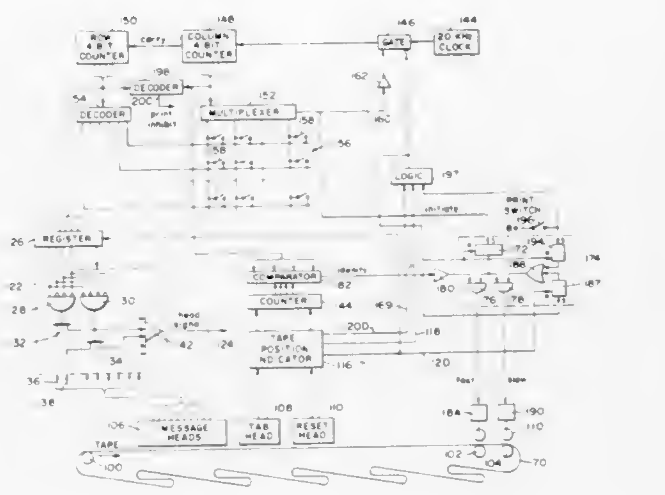

DESKEW BUFFER SECTION (FIGS. 1b & 1c)
CHANNEL NO 1 SENSE AMP
CHANNEL NO 9 SENSE AMP
RAW BUS
FROM CHAN NO 1 CHAN NO 9 READ HEAD CIRCUITS
CHANNEL NO 1
CHANNEL NO 2
CHANNEL NO 9
A REG
SECTION (FIG 1d)
TO DATA UTILIZATION DEVICE
ENABLE ALL CLOCKS
PSEUDO CLOCK CIRCUITS (FIG 1e)
ERROR DETECTION SECTION (FIG 1d)

A deskewing buffer system includes a plurality of storage registers each of which include a plurality of storage devices. Pairs of the storage devices provide storage for a single information channel. The devices of each channel further includes circuits for detecting when no information has been stored by an input pair of storage devices of a channel within a bit interval which signals a dropped bit within the channel. The detection circuits are then operative to switch both input storage devices of the channel to the same predetermined state. Thereafter, checking circuits coupled to a last register of the buffer system are operative to check the deskewed contents of the register and generate a signal indicating whether the channel dropped a binary ONE or binary ZERO bit. The signal is then used to transfer selectively the state of one of the pairs of storage devices of the channel to an output register.

3,792,437
INSTORE INFORMATION DISPENSING SYSTEM

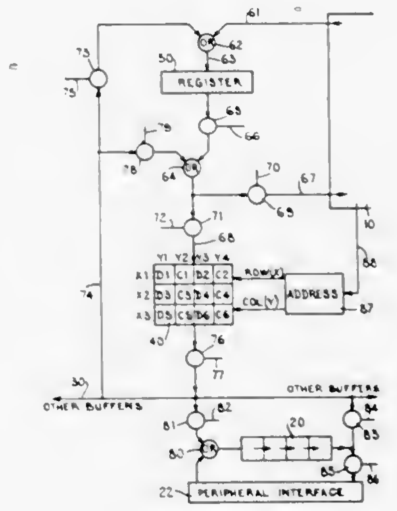
Stanley P. Blumenthal, Canton; Solomon Krasnick, Acton, and Gerald W. Gillespie, Brocton, all of Mass., assignors to Tel-A-Dex Corporation, Dedham, Mass.
Filed Dec. 20, 1971, Ser. No. 210,027
Int. Cl. H04q *5/00*
U.S. Cl. 340—152 R **21 Claims**

A couponning system for instore dispensing of directory and discount information. The couponning system is preprogrammed with an exchangeable record medium having audio directory information and information on items being discounted. The record medium also contains data for printing coupons with discount information to be presented with the purchase of special items. Actuation of a keyboard addresses a particular point on the record medium which is rapidly accessed to provide the information, and if called for by further keyboard actuation, the printing of a discount coupon. An automated production system provides for the rapid production of recording mediums for periodic replacement in the coupon dispensing system distributed throughout a plurality of user stores.



3,792,438
PERIPHERAL ACCESS CONTROL

Derek Hurst, Hitchin, England, assignor to International Computers Limited, London, England
Filed Apr. 28, 1972, Ser. No. 248,567
Claims priority, application Great Britain, Apr. 30, 1971, 12,310/71
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 **4 Claims**



Access is frequently required between a central processing arrangement and a plurality of peripheral equipments each associated with buffer storage. Control of such access is provided using a local store which has, for each peripheral, two storage locations, one for the control word appropriate to the peripheral and the other as an additional data word buffer. In this way setting up an access is speeded as also is the freeing of common data highways.

3,792,439

frame. A Y counter counts the carry signals of the X counter

write heads. When the disc storage unit is thereafter rotated to through the various display portions serially and to lock at two

3,792,439

STORAGE ARRANGEMENT FOR PROGRAM CONTROLLED TELECOMMUNICATION EXCHANGE INSTALLATIONS

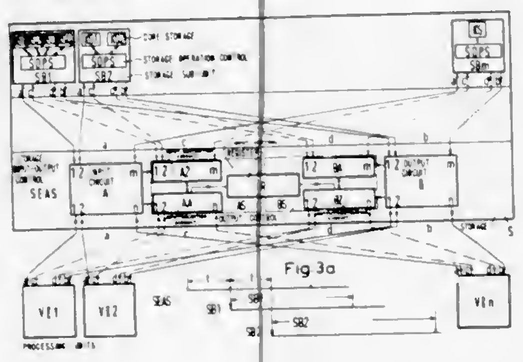
Heinz Auspurg; Dieter Holzerlandt, both of Munich; Hannes Jaeger, Icking; Peter Kern, Munich; Hans-Ulrich Moder, Munich; Rolf Schubert, Munich; Hans Bittermann, Munich; Josef Huber, Munich, and Bernhard Schaffer, Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Aug. 6, 1970, Ser. No. 61,692

Claims priority, application Germany, Aug. 19, 1969, P 19 42 189.7

Int. Cl. G06f *9/18*

U.S. Cl. 340—172.5 **7 Claims**



A message exchange system for binary data signals wherein circuit means are provided for subscriber interconnection as well as computer interconnection. Storage means are provided for the data and programs needed for operating the exchange. A storage unit containing a plurality of storage subunits is assigned to several data processing units in such a way that each processing unit has an individualized program control. Each of the processing units may be connected individually to a separate storage sub-unit. The aforementioned program control may be controlled either by permanently wired commands or commands in the storage means.

3,792,440

COORDINATE INDICATION DEVICE ON MICROFILM

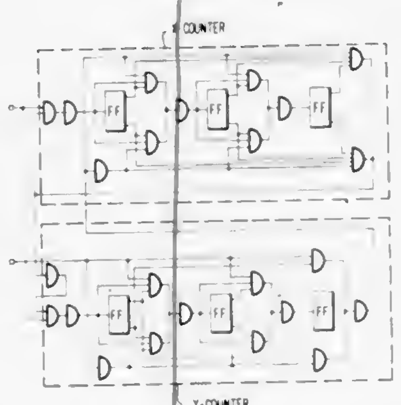
Makoto Murakoshi, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 4, 1971, Ser. No. 195,723

Claims priority, application Japan, Nov. 4, 1970, 45/96481

Int. Cl. G03b *23/08*

U.S. Cl. 340—172.5 **2 Claims**



A microfilm includes plural frames arranged in a two dimensional array, in which information is recorded on each frame. Clock pulses are utilized for representing the consecutive numbers which indicate the position of frames. An X counter counts the clock pulses to provide the X coordinate of the coordinate corresponding to the position of the desired frame. A Y counter counts the carry signals of the X counter to provide the Y coordinate. The X counter may be a reversible counter. Further, when the information is recorded on plural sheets of microfilm, i.e., with three dimensional extension, a Z counter counts the carry signals of the Y counter to indicate the sheet number of the microfilm. Thus, the coordinates of the desired frame are indicated with the outputs of the above counters.

3,792,441

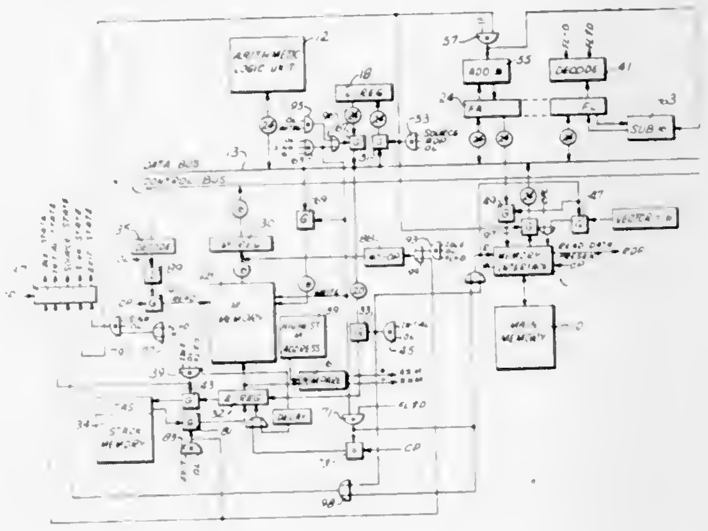
MICRO-PROGRAM HAVING AN OVERLAY MICRO-INSTRUCTION

Charles E. Wymore, Santa Barbara, and Paul R. LeCain, Goleta, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Mar. 8, 1972, Ser. No. 232,880

Int. Cl. G06f *9/16*

U.S. Cl. 340—172.5 **3 Claims**



There is described a micro-programmed data processor having, in addition to the main memory, a memory for currently used strings of micro-operators in which any portion of the latter memory can be overlayed from main memory by a unique micro-instruction that is handled as one more micro step in whatever micro-string is being executed. Once the overlay is complete, the next micro-operation in sequence is executed. This micro-operator may be from the previously stored micro-operator string or from the overlayed instructions, depending upon where the overlay is positioned in the memory.

3,792,442

APPARATUS FOR CONTROLLING THE TRANSFER OF DATA FROM CORE TO DISC STORAGE IN A VIDEO DISPLAY SYSTEM

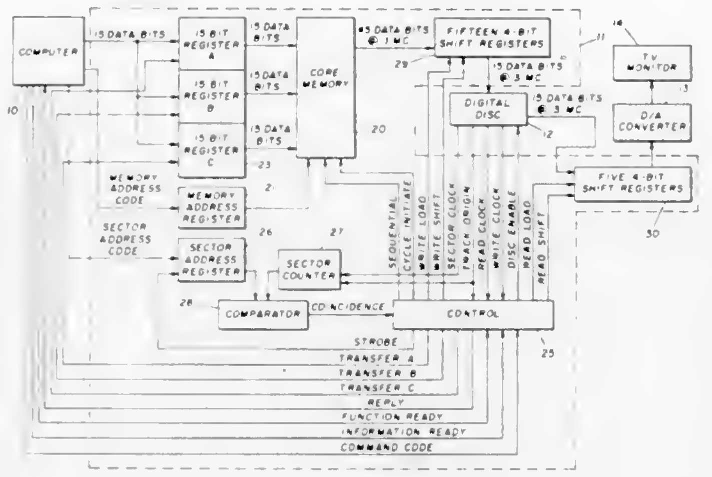
Gerard D. Koeijmans, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 85,761, Oct. 30, 1970, Pat. No. 3,742,289, which is a continuation of Ser. No. 812,213, April 1, 1969, abandoned. This application June 15, 1972, Ser. No. 263,325

Int. Cl. G11b *13/00*

U.S. Cl. 340—172.5 **4 Claims**

A video display system comprises a memory for storing digital data, a digital disc for recording digital data, a digital-to-analog converter for converting digital data to an analog video signal, and a TV monitor for displaying analog video signals. An interface controller controls the transfer of a sector address from the computer into a sector address register in timed relationship with a clock pulse from the disc storage unit, such clock pulse indicating that the disc storage unit has been rotated to its starting position adjacent the magnetic write heads. When the disc storage unit is thereafter rotated to the angular position represented by the sector address, data is transferred by way of the magnetic write heads from the computer to disc storage. A reply signal is then sent to the computer, indicating that the transfer of data has taken place.



3,792,443

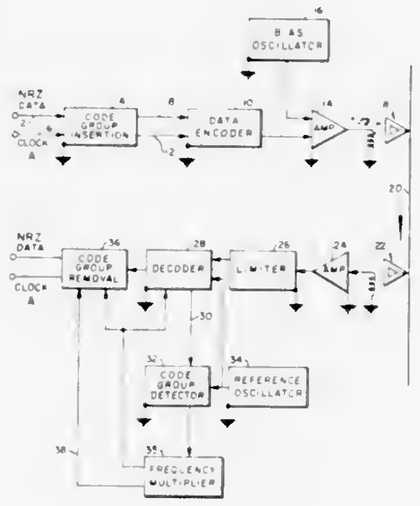
RECORDING AND PLAYBACK SYSTEM FOR SELF-CLOCKING DIGITAL SIGNALS

Ivars P. Breikss, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 14, 1972, Ser. No. 244,059

Int. Cl. G11b *5/00;* **H03k** *5/20*

U.S. Cl. 340—172.5 **4 Claims**



A recording and reproducing system for recording input digital data in a self-clocking encoded format and periodically inserting synchronizing words in the digital data stream and for reproducing the recorded data in its original format by decoding the reproduced signal while removing the inserted synchronizing words from the decoded signal.

3,792,444

DATA COMMUNICATION SYSTEM

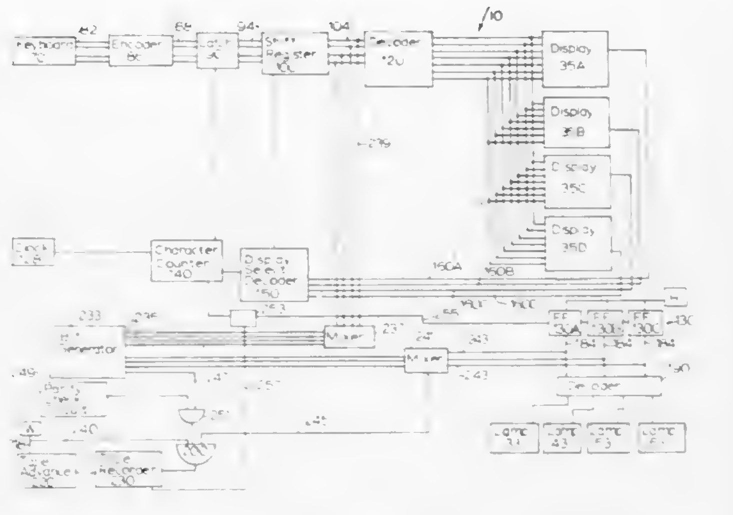
Robert E. Spinner, 26 Deer Trail Rd., North Caldwell, N.J.

Filed Sept. 18, 1972, Ser. No. 290,120

Int. Cl. G08b *5/00*

U.S. Cl. 340—172.5 **13 Claims**

The system includes a case having a plurality of display portions, each of which can display a unit of information in a predetermined sequence. The system also includes a keyboard for generating said numerical units of information, a counter for controlling the sequencing of the display portions, and a shift register for storing the units of information before entering them on tape. The counter is connected to sequence through the various display portions serially and to lock at two selected display portions which are operated back and forth along with the proper associated units of information.



The system also includes means for reading back the stored information from the tape and for transmitting the information to a remote computer or other data center.

3,792,445

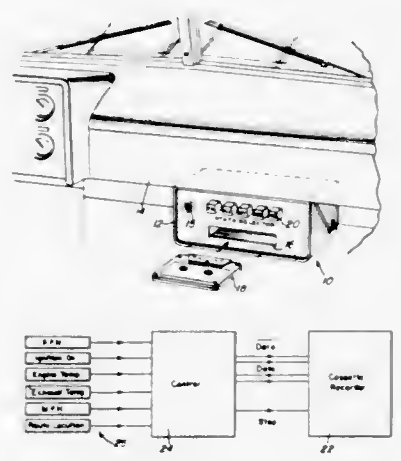
VEHICLE DATA RECORDING SYSTEM

Robert M. Bucks, Norristown, and Frederick M. Ayars, Lansdale, both of Pa., assignors to Mark & Son, Ltd., Palm Beach, Fla.

Filed Dec. 1, 1972, Ser. No. 311,140

Int. Cl. G11b *13/00;* **G01d** *9/28*

U.S. Cl. 340—172.5 **8 Claims**



A vehicle data recording system comprising a plurality of vehicle condition sensors and a route location selector which furnish corresponding digital data which is processed and periodically fed to a magnetic tape cassette recorder, or the like, for recording on magnetic tape. The magnetic tape is advanced only periodically and the data is recorded without significant gaps between the words, such that several days of data may be recorded on a single tape cassette for subsequent storage or analysis.

3,792,446

REMOTE POSTAGE METER RESETTING METHOD

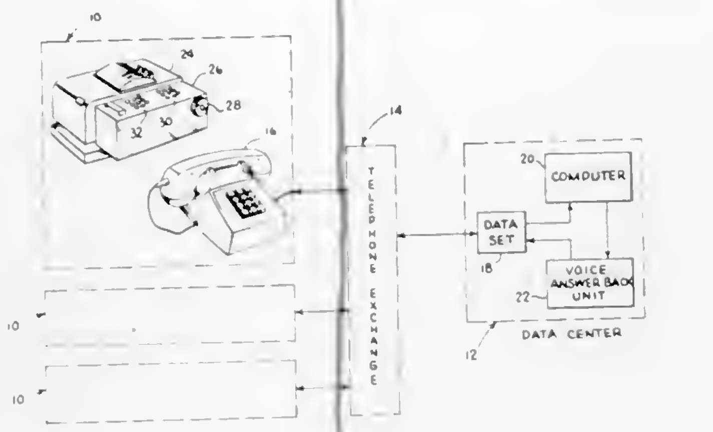
Robert B. McFiggins, Stamford, and Alton B. Eckert, Jr., Norwalk, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Dec. 4, 1972, Ser. No. 311,921

Int. Cl. G06f *9/18*

U.S. Cl. 340—172.5 **10 Claims**

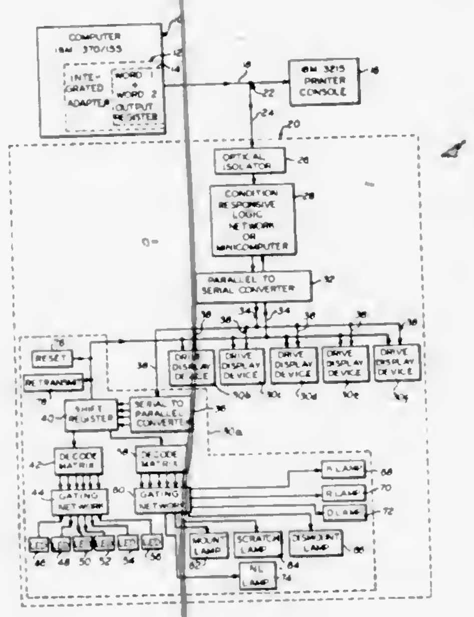
A data center equipped with a programmed digital computer and a voice answer-back unit processes telephone calls from users of postage meters equipped with combination locks, wherein each lock inhibits recharging of its associated meter with an additional postage increment while locked and its combination changes in random sequence with each actuation to enable meter recharging. The computer operates via the answer-back unit to voice communicate with the caller in requesting the input of data uniquely identifying the caller and the postage meter to be recharged pursuant to issuing the next combination.



3,792,447
DISPLAY DEVICE CONTROL SYSTEM

John P. Beltz, Willingboro, N.J., and Timothy P. Ahlstrom, Larchmount, N.Y., assignors to Ahlstrom, LaMarche & Co., Inc., New York, N.Y.

Filed Mar. 12, 1973, Ser. No. 340,198
Int. Cl. G06k *15/18*; **G06f** *5/04, 11/08*
U.S. Cl. 340—172.5 **19 Claims**

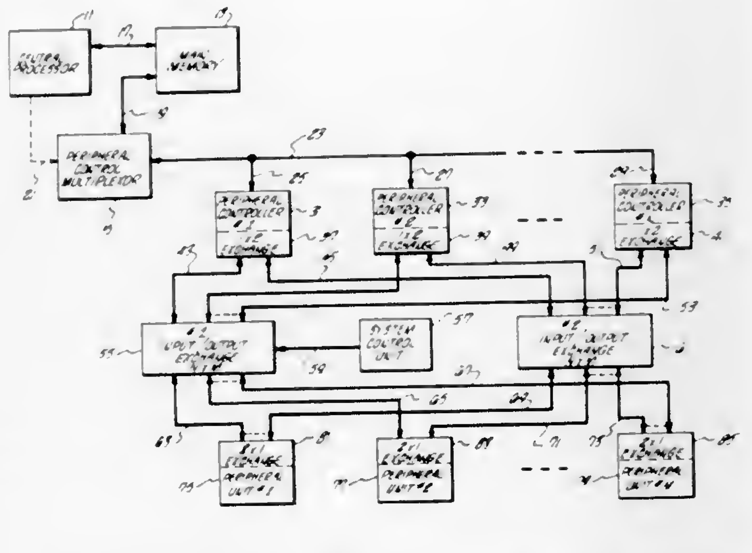


An operator display device control system for use with a computer data input device such as a tape drive or a disc driver intercepts an IBM OS hard copy printing instruction or message control signal to a printer or cathode ray tube operator console and provides a simplified visual display of the instruction with the appropriate tape or disc volume serial no. at the appropriate tape or disc drive for a plurality of such drives while still enabling the hard copy printing instruction to pass to the printer or cathode ray tube console for a substantially simultaneous printing thereof at the centrally located console. The display device control system includes a plurality of these display devices which enables the individual instructions to be displayed at the tape or disc drives to which the operator control instructions pertain as well as enabling the hard copy printing of the instruction at a central console.

3,792,448
FAILSOFT PERIPHERAL EXCHANGE

Walter Scott Bennett, Diamond Bar, and Jacob Frank Vigil, Sierra Madre, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed May 21, 1973, Ser. No. 362,249
Int. Cl. G05b *19/00*; **H04q** *3/00*
U.S. Cl. 340—172.5 **17 Claims**

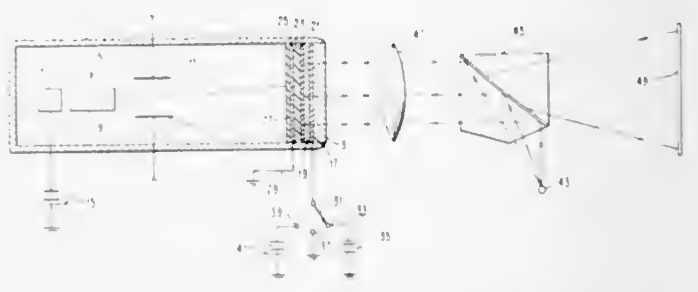


In a computer system, use of two or more I/O exchanges between peripheral controllers and serial peripheral units, such as disk files, disk packs and tape drives, provides redundant communication paths that can be made available for communication between the N controllers and the M peripheral units. All peripheral controllers and units are connected to each exchange. Each controller and unit may be manually assigned to a certain exchange. In the case of two exchanges, if a certain one fails due to loss of power, all peripheral units are automatically assigned to the other exchange.

3,792,449
FERROELECTRIC CERAMIC STORAGE DISPLAY TUBE

Benjamin Kazan, Bedford Hills, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1972, Ser. No. 267,750
Int. Cl. G11c *11/22*
U.S. Cl. 340—173.2 **7 Claims**

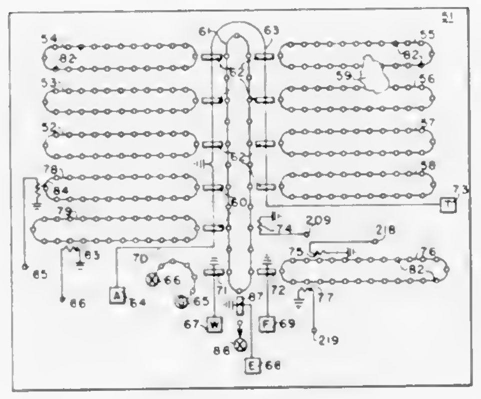


A ferroelectric ceramic is mounted within a CRT in a "-strain-biased" state, so that it is birefringent. A reflective layer is mounted adjacent the ceramic, and a photoconductive layer is mounted adjacent the reflective layer. With a potential applied across the ceramic-photoconductive layer combination, an image written upon regions of a phosphor target adjacent the photoconductive layer by an electron beam, results in the flow of local charge through corresponding regions of the ceramic, thereby changing the polarization thereat. The flow of polarization charge acts to modulate the birefringence in the ceramic, in accordance with the pattern of the image. A corresponding pattern of brightness is then projected upon an external screen. A "scattering mode" arrangement is also employed.

3,792,450
SYSTEM FOR OVERCOMING FAULTS IN MAGNETIC ANISOTROPIC MATERIAL

Joseph E. Bogar, Parsipanny, N.J.; John K. Bragg, New York, N.Y., and George H. Hare, North Caldwell, N.J., assignors to The Singer Company, New York, N.Y.

Filed May 8, 1972, Ser. No. 250,944
Int. Cl. G11c *29/00, 11/14, 19/00*
U.S. Cl. 340—174 ED **29 Claims**

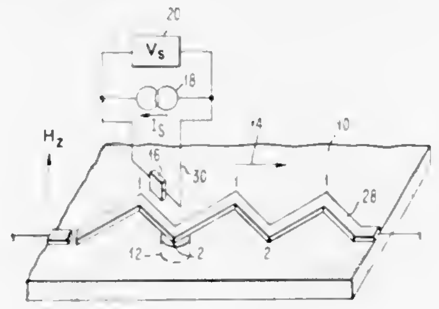


Mass memories using magnetic domain storage devices suffer from the large number of flaws found in the storage medium. This invention comprises a system for identifying and isolating those channels in a mass memory medium which contain flaws and for controlling the storage of information in the medium to avoid those channels. The system comprises the storage material having, in addition to the normal information storage registers, additional registers which contain the identification of those storage channels which contain flaws. This identification is in the form of bits of data whose movements are synchronized with the movements of the information stored in the memory, and which identification blocks the transfer of information into defective channels. During the initial testing of the mass memory, information is stored in each of the information storage channels, and that information is subsequently read out. The information which is read out is used as a word in a separate channel identification register to identify those channels which do not contain flaws. The information stored in the channel identification register is read during normal circulation of information through the transfer loop, and the presence of channel identification in that register opens loading gates to permit the loading of information into good channels and to prevent the loading of information into defective channels.

3,792,451
NON-DESTRUCTIVE SENSING OF VERY SMALL MAGNETIC DOMAINS

George S. Almasi, Purdy Station; George E. Keefe, Montrose, and Yeong S. Lin, Mt. Kisco, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 16, 1970, Ser. No. 89,964
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 EB **6 Claims**

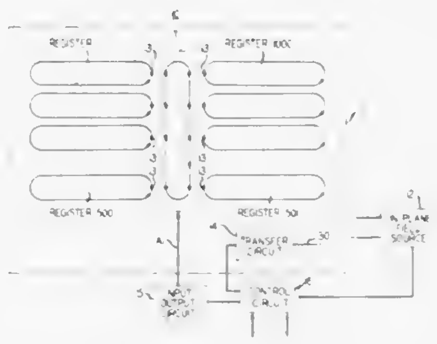


A magneto-resistive sensing technique for detection of very small single-wall magnetic domains. An apparatus is provided in which magneto-resistive sensing elements are located on a magnetic material capable of supporting single-wall magnetic domains (bubble domains). Since very small bubble domains have only small amounts of magnetic flux associated with them, a transverse magnetic bias field is used to move the operation of each sensing element into a linear region to maximize the sensor's incremental resistance change for a given change in flux. This transverse bias field is derived from the applied magnetic field used to propagate the bubble domains or from the stabilizing field used to stabilize the domains, thereby eliminating the need for an auxiliary bias field. In order to use the applied propagation and bias fields, the sensing elements are precisely located with respect to the propagation means, and have particular orientations.

3,792,452
MAGNETIC DEVICES UTILIZING ION-IMPLANTED MAGNETIC MATERIALS

Melvyn Dixon, Allentown, Pa.; Robert Alan Moline, Gillette, N.J.; James Clayton North, New Providence, N.J.; Lawrence John Varnerin, Jr., Watchung, N.J., and Raymond Wolfe, New Providence, N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed June 10, 1971, Ser. No. 151,728
Int. Cl. C11c *11/14*
U.S. Cl. 340—174 TF **22 Claims**



Magnetic anisotropy in oxidic magnetic materials is altered by strain which is induced by local expansion of the lattice through ion implantation. This compressional strain in the instance of a material having positive magnetostriction may result in an enhanced magnetic easy direction normal to a major surface. Exemplary rare earth iron garnet materials have been so processed as to result in a thin surface region having appropriate magnetic properties for incorporation in "bubble" devices.

3,792,453
DATA STORAGE SYSTEMS

Christopher Paul Relf Smith, Bishampton, England, assignor to Sperry Rand Limited, London, England

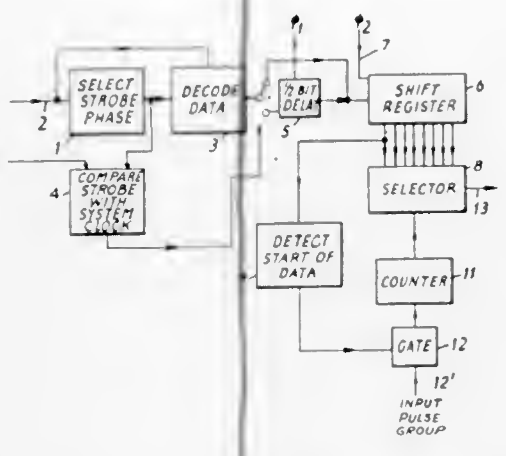
Filed Nov. 3, 1971, Ser. No. 195,417
Claims priority, application Great Britain, Nov. 5, 1970, 52652/70
Int. Cl. G11b *5/02*
U.S. Cl. 340—174.1 A **4 Claims**

Apparatus for use in a data storage system having a parallel read mode and which comprises, for each track of a recording medium from which data is to be read simultaneously, storage means for storing data to be read, and means for extracting data from the data storage means at a predetermined instant

by an identification frequency audio signal unique to the pro-

3,792,457

liquid is used as one electrode and if any holes are present in such that data from each track is available for reading simultaneously. Thus the reading of data is effected by first recovering data from each track concerned and then aligning the data timewise for onward transmission to readout.



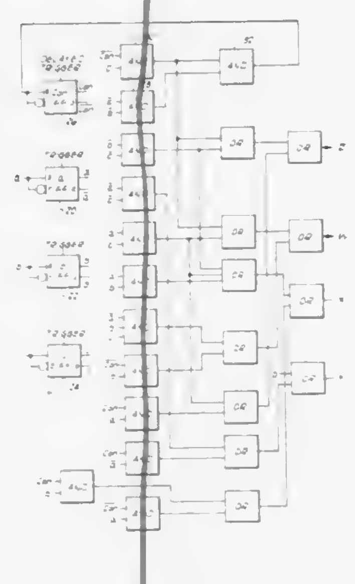
3,792,454
MAGNETIC STORAGE SYSTEM USING ALTERNATE CODES TO REDUCE WRITE CURRENT BIAS

James P. Lipp, Oklahoma City, Okla., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 3, 1972, Ser. No. 215,978

Int. Cl. G06f *15/34*; **G06g** *7/19*

U.S. Cl. 340—174.1 G **12 Claims**



A magnetic storage system which reduces the DC bias of magnetic write current by using alternate codes to represent certain triplets of binary signals where one of those triplets sequentially follows certain occurrences of a control triplet of binary signals. The DC bias required to write an alternate code is either zero or of a polarity which offsets the DC bias required to write the code representing the control triplet.

3,792,455
SECURITY ALARM SYSTEM WITH FREQUENCY SWEEPING

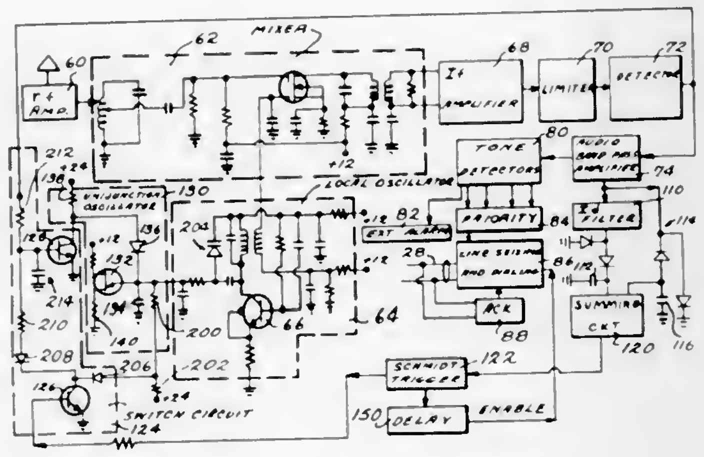
Darryl H. Phillips, Sunrise, Fla., assignor to Owen M. Ward, Key Biscayne, Fla.

Filed Sept. 15, 1972, Ser. No. 289,533

Int. Cl. H04b *1/16*; **H04q** *1/42*

U.S. Cl. 340—224 **12 Claims**

A system for providing an alarm upon detection of an alarm condition such as intrusion, fire, etc., having a number of sensors which each produce and transmit an rf signal modulated by an identification frequency audio signal unique to the protected facility and a combination of audio frequency signals defining the sensor function and a central alarm control which receives the rf signal and communicates via telephone lines with a central station. In order to eliminate the need for precisely tuning the rf frequency at each sensor and maintaining the rf frequency constant, the alarm control includes a unijunction oscillator circuit which varies a local oscillator connected to a mixer circuit, which forms part of a superhetrodyne receiver, between preset limits to sweep continuously. When an identification frequency signal of sufficient amplitude is detected, an electronic switch is operated to disable the unijunction oscillator and lock the system at the rf frequency onto which the detected identification frequency is modulated.



3,792,456
LIQUID LEVEL DETECTION SYSTEMS

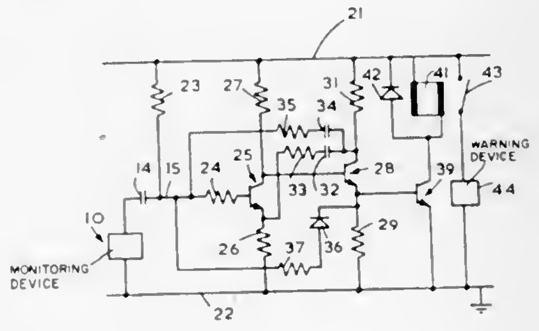
William Frank Hill, Stafford, England, assignor to Joseph Lucas (Electrical) Limited, Birmingham, England

Filed July 28, 1972, Ser. No. 276,038

Claims priority, application Great Britain, Sept. 18, 1971, 43621/71

Int. Cl. G08b *21/00*

U.S. Cl. 340—244 R **2 Claims**



A liquid level detection system for a vehicle has a positive temperature coefficient resistor mounted so that it is thermally coupled to the liquid when the liquid level is above the predetermined level. The liquid is in a container which is grounded, so that one terminal of the resistor is grounded through the liquid. The other terminal of the resistor is connected to a circuit giving a warning of resistance if the resistor changes as a result of excessive temperature rise of the liquid, or if the impedance to earth is substantially increased as a result of low liquid level.

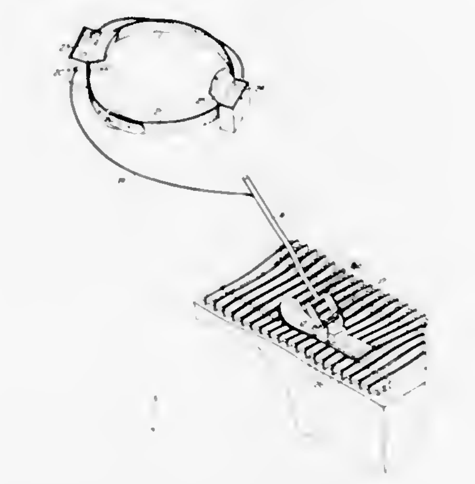
3,792,457
DETECTION DEVICE FOR INDICATING SHORT CIRCUITS IN ELECTROLYTIC CELLS

Frederick E. Templeton; William M. Tuddenham; Veloy H. Butterfield, Jr., and Barton F. Shipley, all of Salt Lake City, Utah, assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Jan. 5, 1972, Ser. No. 215,508

Int. Cl. G08b *21/00*

U.S. Cl. 340—253 A **12 Claims**



An electrical unit for sensing a steady magnetic field intensity produced by the flow of direct current is mounted in a carriage a fixed distance from the running surface of the carriage and is electrically connected in circuit with indicating means, which may be visual means, such as a light, or an audible alarm or both, energized in response to the sensing of a magnetic field of intensity greater than is produced by electrical current flow of up to a predetermined normal maximum amperage. The carriage is preferably of sled formation adapted to be pushed or pulled across a multitude of electrode suspension bars arranged in series along electrolytic cells in an electrolytic tank house, which bars serve to conduct current to the electrodes. The sensing unit is advantageously a magnetodiode, but may be any one of a number of possible alternatives, e.g. reed relays, electrically connected in suitable control circuitry.

3,792,458
METHOD AND APPARATUS FOR DETECTING PINHOLES IN SHEET MATERIAL

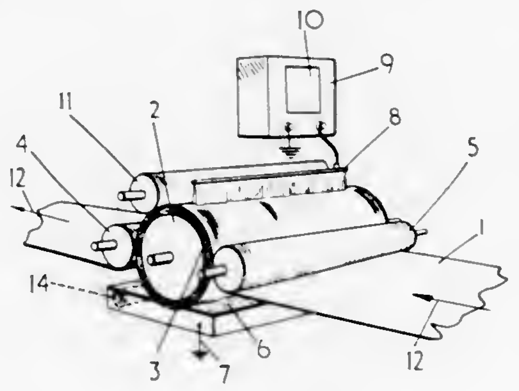
John Edwin Latham Smith, Horsham, and Philip Henry Witheridge, Gretton Fields, near Winchcombe, all of England, assignors to Coal Industry (Patents) Limited, London, England

Filed Dec. 15, 1971, Ser. No. 208,341

Claims priority, application Great Britain, Jan. 8, 1971, 1052/71

Int. Cl. G08b *21/00*

U.S. Cl. 340—259 **8 Claims**



Non-conductive sheet material is tested for holes by applying a liquid under pressure to one side of the material. The liquid is used as one electrode and if any holes are present in the material passes through to make a conductive path with an electrode on the other side of the material. The current passing can be detected and used to operate a marker onto the sheet.

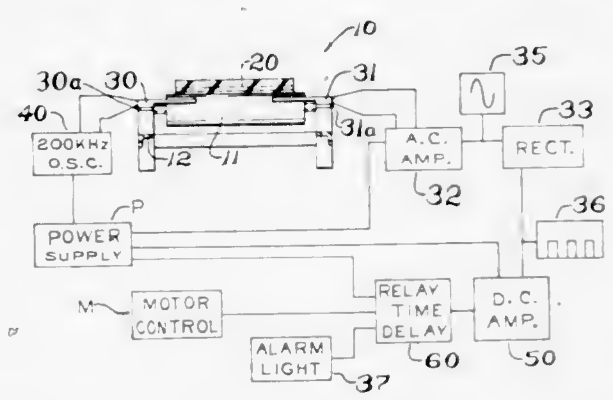
3,792,459
CONVEYOR BELT RIP DETECTOR

Frank D. Snyder, 715 W. Market, Akron, Ohio

Filed Mar. 20, 1972, Ser. No. 235,915

Int. Cl. B65g *43/02*; **G08b** *21/00*

U.S. Cl. 340—259 **10 Claims**



A plurality of longitudinally spaced conductors is embedded in a non-metallic endless conveyor belt with each conductor extending transversely the width of the belt. A stationary signal generator is disposed along one edge of the belt and capacitively coupled to induce a signal in each of the conductors as they pass the signal generator. A stationary detector is disposed along the edge of said belt on the side opposite the signal generator at the same longitudinal station as the signal generator. The detector is electrically capacitively coupled to detect the signal in the passing conductor and detect a belt rip due to a discontinuity in the conductor. The detector is operatively connected to deactivate the conveyor drive mechanism and to activate a light or other alarm.

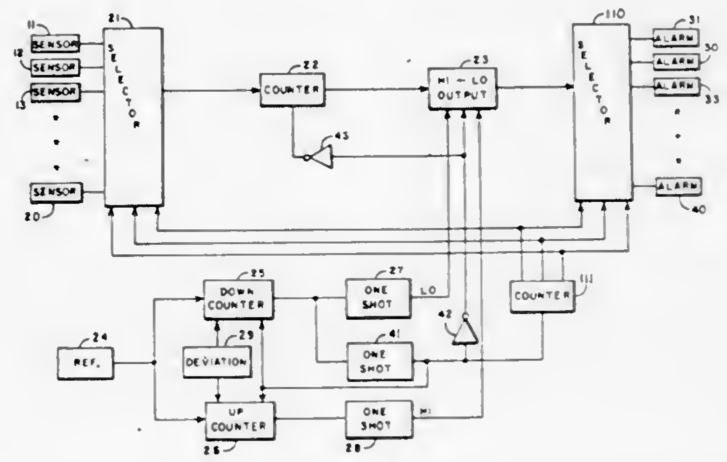
3,792,460
SHAFT SPEED MONITORING CIRCUIT

James W. Ratz, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 13, 1972, Ser. No. 297,568

Int. Cl. G08b *21/00*

U.S. Cl. 340—271 **8 Claims**



A shaft speed monitoring system comprises a plurality of sensors for sensing the speeds of a plurality of shafts, each sensor producing output pulses the frequency of which is determined by the rate at which its associated shaft rotates, a reference pulse source, a comparator circuit, a selector circuit

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for selecting a particular sensor such that the comparison circuit can compare the output from the selected sensor to the output of the reference pulse source and a second selector circuit for connecting one of the alarm circuits with its associated sensor for displaying an alarm condition.

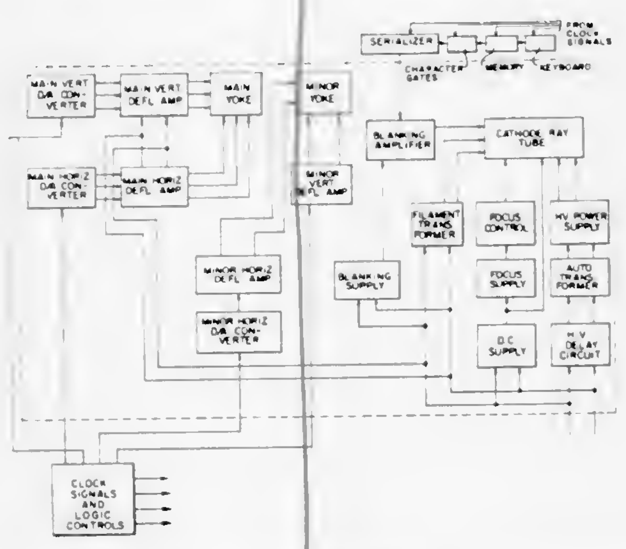
3,792,461
CHARACTER DISPLAY SYSTEM

Duncan E. Cull, and Alvin E. Culbertson, both of Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Division of Ser. No. 836,270, June 25, 1969, Pat. No. 3,668,661. This application June 4, 1971, Ser. No. 150,001

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 AD **5 Claims**



Selected characters each identified by a bit code are advanced serially to a memory. The memory is formatted for control of a cathode ray tube display operating to legibly display all characters in the memory. A major raster traces lines of character positions. A minor raster traces each character in a dot matrix at each character position.

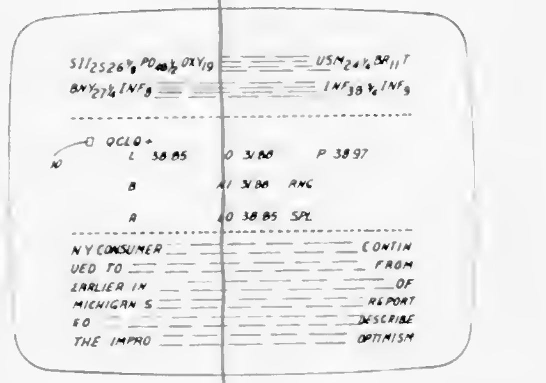
3,792,462
METHOD AND APPARATUS FOR CONTROLLING A MULTI-MODE SEGMENTED DISPLAY

Richard C. Casey, Darien; Robert J. Duggan, Monroe; Stephen A. Grosky, Monroe; Dixon T. Jen, Monroe, and John J. Serra, Monroe, all of Conn., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Sept. 8, 1971, Ser. No. 178,728

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 AD **53 Claims**



A method and apparatus for controlling a segmented display on a processor read-out device. An addressable memory is provided for storing segments of information which may be displayed. The addresses of the segments presently being displayed are stored and these addresses are utilized to retrieve the information to be displayed in each of the segments.

The segmented display may be presented in a plurality of different modes. A capability is provided for changing the mode being displayed at any given time and for altering the information which is displayed in each of the modes. When there is a change in the mode of display, various functions must be performed. Among these functions may be the positioning of an entry marker, the saving or clearing of a memory segment which may be used for different types of information in different modes, and the chaining together of related segments for the selected mode.

3,792,463
APPARATUS FOR PRODUCING GRAPHIC IMAGES ON AN IMAGE SURFACE

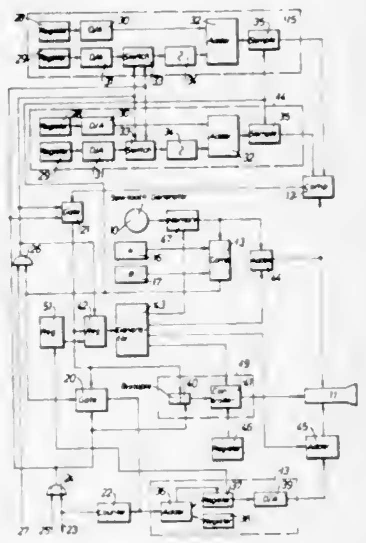
Erik Arivd Rune Eriksson, Faltskarsgatan 12, 42176 Vastra Frolunda, and Olof Lars Erik Nilsson, Nordostpassagen 71, 41311 Goteborg, both of Sweden

Continuation-in-part of Ser. No. 868,061, Oct. 21, 1969, abandoned. This application Feb. 7, 1972, Ser. No. 224,019

Claims priority, application Sweden, Oct. 24, 1968, 14432/68

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 AD **11 Claims**



An apparatus is provided for producing graphic images on an electronically controlled display surface, the images being subdivided into a plurality of area elements a number of which are filled with pattern elements which give each of said area elements a preselected surface representation. The apparatus is operative to store data defining the contour of successive area elements to be reproduced, along with informa-specifying the pattern density of the respective area element. A control circuit responsive to said stored information operates to determine the position of the first of said pattern elements within the respective area element, and thereafter successively determines the position of the remaining pattern elements within the respective area element. The apparatus further comprises means for modifying the surface representation of each area element by controlling the visual appearance of the pattern elements which fill said area element.

3,792,464
GRAPHIC DISPLAY DEVICE

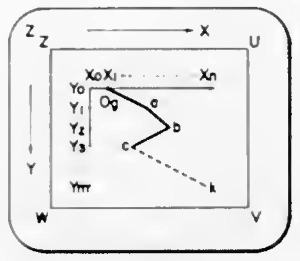
Nagaharu Hamada, Hitachi; Motosi Miyanaka, Kumage-gun, and Isao Yasuda, Hitachi, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Continuation of Ser. No. 70,663, Sept. 9, 1970, abandoned. This application Jan. 10, 1973, Ser. No. 322,540

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 AD **17 Claims**

A graphic display device for displaying a desired pattern on the screen of a cathode ray tube utilizing a raster of scanning lines. Means are provided for computing both starting and stopping positions on each scanning line for the desired pattern display in accordance with given information. Based on the results of the computation, a signal is delivered to the cathode ray tube for generating a brightened or unblanked line between the starting and stopping positions to form a display, the start position of each scanning line being determined by the scanning positions of the brightened or unblanked line of the previous scanned line.



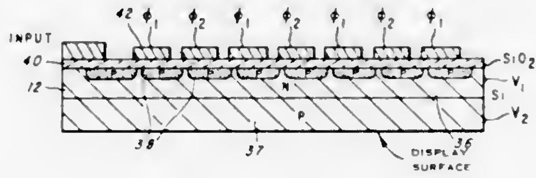
3,792,465
CHARGE TRANSFER SOLID STATE DISPLAY

Dean R. Collins, Dallas, Tex., and David L. Carter, Upper Montclair, N.J., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 30, 1971, Ser. No. 214,367

Int. Cl. H01l *17/00*

U.S. Cl. 340—324 R **14 Claims**



A solid state display includes a semiconductor charge shift register. The semiconductor substrate is formed to define a p-n junction in a plane parallel to the display surface. Information to be displayed is read into respective bits of the shift register in the form of minority carriers. The p-n junction is reversed biased to near avalanche. The minority carriers are transferred from the potential wells towards the p-n junction, triggering the avalanche, providing increased light output. In one aspect of the invention, a hetero-junction structure is provided for the substrate where silicon is used as the semiconductor charge shift register material and a semiconductor having good light emitting characteristics, such as a direct energy gap semiconductor material, is used to effect the display.

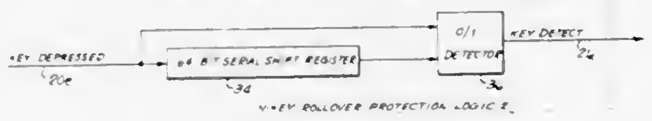
3,792,466
KEYBOARD ENTRY SYSTEM WITH N-KEY ROLLOVER AND N-KEY LOCKOUT PROTECTION

Edward H. Arnold, King of Prussia, and Donald L. McLaughlin, Newtown Square, both of Pa., assignors to MOS Technology, Inc., Valley Forge, Pa.

Filed May 31, 1972, Ser. No. 258,389

Int. Cl. G06f *3/02*

U.S. Cl. 340—365 E **25 Claims**



A keyboard entry system having a keyboard encoder array which scans a keyboard matrix in successive scan cycles to detect depressed keys and to generate an output in the form of a multibit code corresponding to each newly depressed key. The keyboard encoder array includes N-key rollover protection logic and N-key lockout logic. The N-key rollover logic properly interprets the depression of each new key regardless of the number of other keys which have been previously depressed and are still held in their depressed states. The N-key lockout logic validates the data representing a depressed key only if two or more keys have not been depressed within the same or within consecutive scan cycles.

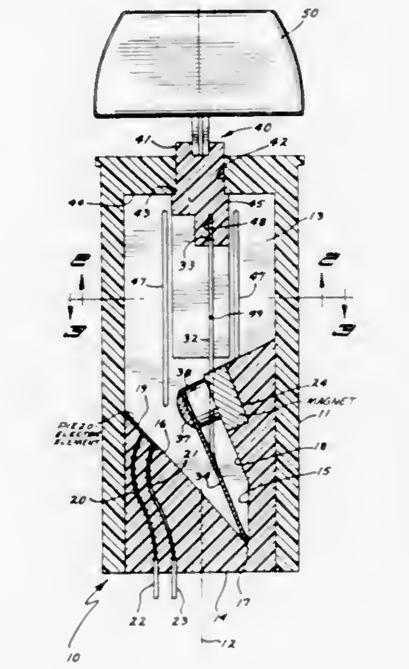
3,792,467
IMPACT TRANSDUCER APPARATUS

Xavier De Saint Sauveur, Verney Voltaire, France, assignor to Control Data Corporation, Minneapolis, Minn.

Filed Jan. 8, 1973, Ser. No. 321,873

Int. Cl. H04l *15/06*

U.S. Cl. 340—365 A **10 Claims**



An impact transducer apparatus comprises a lever means supported within a housing adapted to pivot between first and second positions. A hammer is attached to the lever means and is adapted to strike a piezoelectric element when the lever means is moved from its first to its second position. A magnetic latch including a magnet member is associated with the lever means for restraining movement of the lever from its first to its second position, and a resilient bias means, having a bent portion, biases the lever means towards its second position. A key reciprocal along an axis is connected to the bias means to increase energy in the bias means so that when the energy in the bias means exceeds a design level associated with the magnetic coupling of the latching means, the latching means releases the lever means and the bias means urges the lever means from its first to its second position, thereby causing the hammer to strike the piezoelectric element.

3,792,468
VEHICLE EXIT SIGNALING SYSTEM

Horace V. A. Bryan, 2836 W. 33rd St., Brooklyn, N.Y.

Filed Aug. 31, 1972, Ser. No. 285,359

Int. Cl. G08b *27/00*

U.S. Cl. 340—326 **8 Claims**

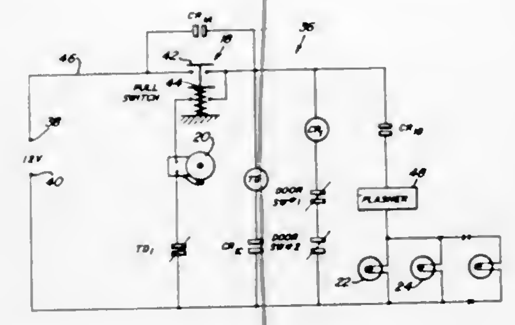
A vehicle exit signaling system comprising audio signal means for actuation by vehicle passengers to initially signal the vehicle driver that the passenger wishes to disembark,

visual signal means for reminding the driver to dispatch the

3,792,470

the transmission of an interrogating pulse and the receipt of a

electronic phase shifter for shifting the variable and reference visual signal means for reminding the driver to dispatch the passenger subsequent to operation of the audio signal means,

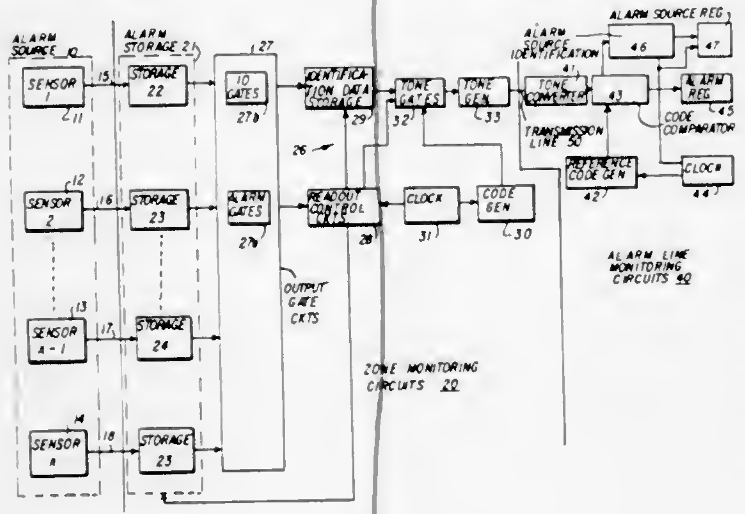


and means responsive to operation of the vehicle exit doors for disabling the visual signal means as the passenger disembarks.

3,792,469
MULTIPLEXED ALARM TRANSMISSION SYSTEM HAVING ALARM STORAGE CIRCUITS

Michael B. McLean, Whitefish Bay; Ramesh Krishnaiyer, and Allen Rasmussen, both of Milwaukee, all of Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed July 17, 1972, Ser. No. 272,541
Int. Cl. G08b *25/00, 26/00*
U.S. Cl. 340—409 **15 Claims**

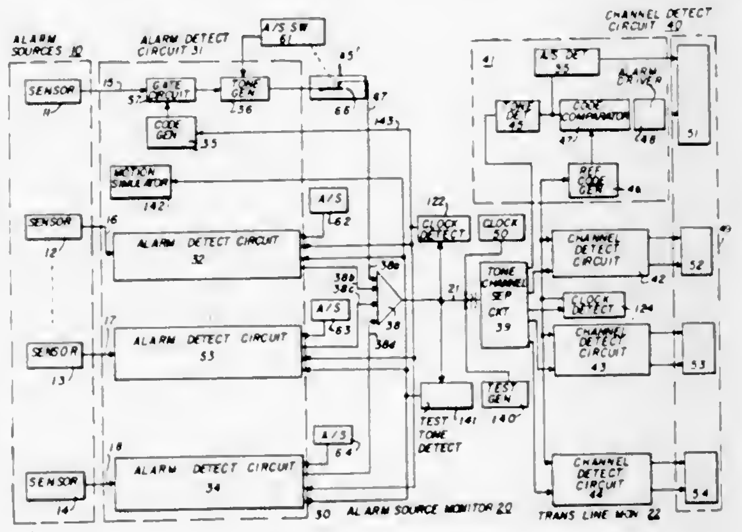


An alarm transmission system for transmitting alarm information provided by a plurality of alarm sources to a central monitor over a common transmission line includes zone monitoring circuits having a code generator for generating a line monitoring code comprised of a continuous sequence of bits, for transmission over the transmission line to the central monitor, alarm storage circuits which provide separate storage locations for storing alarm outputs provided by each alarm source, and alarm readout circuits operable in response to an alarm output provided by an alarm source to complement the next bit of the line monitoring code generated to indicate that an alarm has been provided and to thereafter selectively complement successive bits of the line monitoring code generated to represent the source of the alarm. Alarm line monitoring circuits at the central monitor include a code comparator which compares each bit of the line monitoring code with bits of a reference code comprised of a sequence of code bits in which each bit is normally identical with a corresponding bit of the line monitoring code at any given time. Whenever a bit of the line monitoring code differs with the corresponding bit of the reference code, an alarm indication is provided at the central monitor, and alarm source identification circuits are enabled to scan subsequent bits of the line monitoring code to determine the source of the alarm.

3,792,470
CODED TONE MULTIPLEXED ALARM TRANSMISSION SYSTEM

John C. Donovan, Whitefish Bay; Carl F. Klein, Milwaukee; Lawrence B. Korta, Milwaukee, and Ramesh Krishnaiyer, Milwaukee, all of Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed July 17, 1972, Ser. No. 272,542
Int. Cl. G08b *25/00, 26/00*
U.S. Cl. 340—409 **26 Claims**

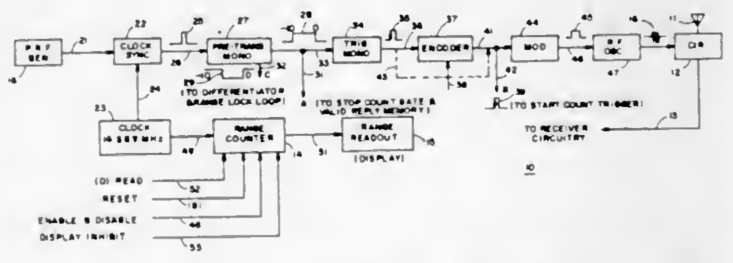


A frequency multiplexed alarm transmission system for transmitting alarm information provided by a plurality of intrusion detectors to a central monitor includes a plurality of alarm detector circuits, each individually associated with one of the intrusion detectors and each selectively operable in an access or a secure mode to provide a line supervision code comprised of a selected sequence of tone signals of a first or a second pair of frequencies, respectively, and a control circuit controlled by the corresponding intrusion detector to modify the tone sequence being provided by the associated alarm detector to indicate an intrusion of a corresponding protected area, different alarm detector circuits providing tone sequences having signals of different frequencies to enable simultaneous transmission of the line supervision codes to the central monitor over a common transmission line, line monitoring circuits at the central monitor include an individual tone detector for each alarm detector circuit for receiving the line supervision code sequences provided by the associated alarm detector circuit, the tone detectors being responsive to a modified line supervision code of the first pair of frequencies to indicate the detection of an authorized intrusion of the corresponding protected area and responsive to a modified line supervision code of the second pair of frequencies to indicate the detection of an unauthorized intrusion of the corresponding protected area.

3,792,471
RADAR RANGE LOCK LOOP

Keith M. Kingsbury, 2415 N. 38th St., Phoenix, Ariz.

Filed May 8, 1972, Ser. No. 251,276
Int. Cl. G01s *9/14*
U.S. Cl. 343—7.3 **14 Claims**

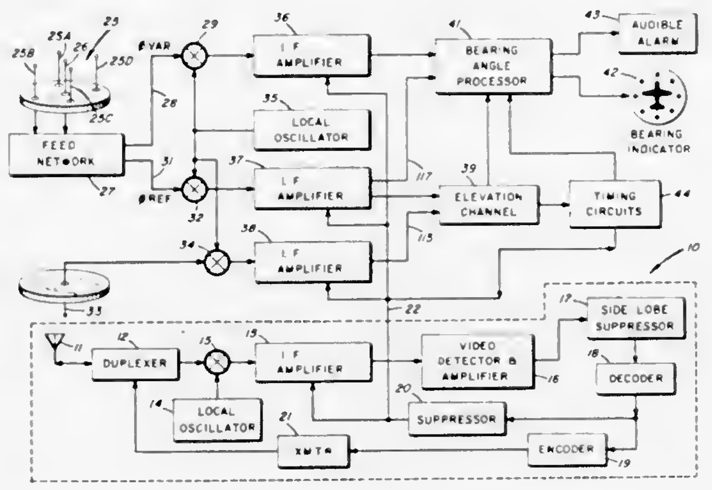


There is disclosed a radar tracking system wherein a range measurement is obtained by measuring the interval between the transmission of an interrogating pulse and the receipt of a reply pulse from a transponder. A single range gate pulse is generated by analogue means and the range measurement is terminated by the coincident arrival of the leading edge of the first of a coded reply pulse and the range gating voltage pulse at the input of a range lock loop. The range lock loop functions to maintain a predetermined minimum overlap between the leading edge of the reply pulse and the trailing edge of the range gate voltage pulse. A disable signal is applied to the range lock loop after receipt of each pulse that coincides with the range gate pulse. However, to prevent excessive disabling by unsynchronized high pulse repetition frequency interference or jamming pulses, and to allow the loop to remain locked to the desired signal in the presence of this interference, all disable signals are overidden (ignored) for a predetermined time period following receipt of each valid pulse. The range lock loop is re-enabled by sensing the presence of valid pulse information in a memory. The memory is disabled after each sensing of the state of the memory flipflop and is reenabled by the storage in its memory of the next succeeding valid pulse.

3,792,472
WARNING INDICATOR TO ALERT AIRCRAFT PILOT TO PRESENCE AND BEARING OF OTHER AIRCRAFT

Delmar V. Payne, Ferndale, and Wilfried G. Jaeckle, Birmingham, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Aug. 14, 1972, Ser. No. 280,308
Int. Cl. G01s *9/56*
U.S. Cl. 343—6.5 LC **20 Claims**



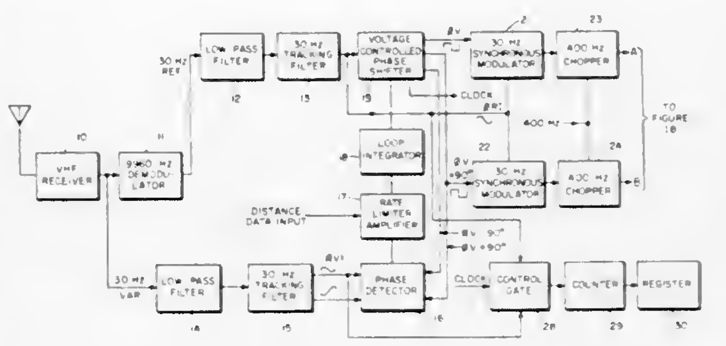
A pilot warning indicator which operates in cooperation with the ATCRBS to produce an indication of the presence and bearing of other aircraft at substantially the same altitude as the equipped craft. A spiral-phase field antenna array together with a digital phase comparator utilizes transponder reply signals from other aircraft to ground interrogations to provide bearing indications. Amplitude comparisons are made between transponder reply signals received by omnidirectional antennas mounted on the top and bottom of the aircraft fuselage to eliminate warnings of aircraft flying at substantially different altitude than equipped craft.

3,792,473
VOR RECEIVER WITH ADAPTIVE FILTERS AND PHASE SHIFTER FOR IMPROVED ACCURACY

Joseph J. Sawicki, Lighthouse Point, Fla., assignor to The Bendix Corporation, Southfield, Mich.

Filed Nov. 21, 1972, Ser. No. 308,393
Int. Cl. G01s *1/44*
U.S. Cl. 343—106 R **15 Claims**

An improved VOR receiver which includes adaptive band pass filters for the 30 Hz reference and variable signals and an electronic phase shifter for shifting the variable and reference signals into phase coincidence, the amount of phase shift thus introduced being a measure of VOR bearing angle. The phase shifter is controlled by a feedback loop having a limiter which

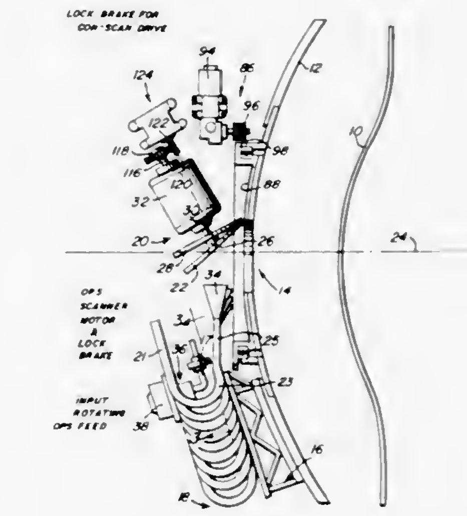


controls the rate of change of phase shift as a function of distance from the VOR station thereby reducing effects of scolloping in the beam of the VOR transmitter upon bearing indications.

3,792,474
SCHWARZSCHILD RADAR ANTENNA OPERABLE IN SECTOR SCAN AND CONICAL SCAN MODES WITH ANTI-BLOCKAGE REFLECTOR

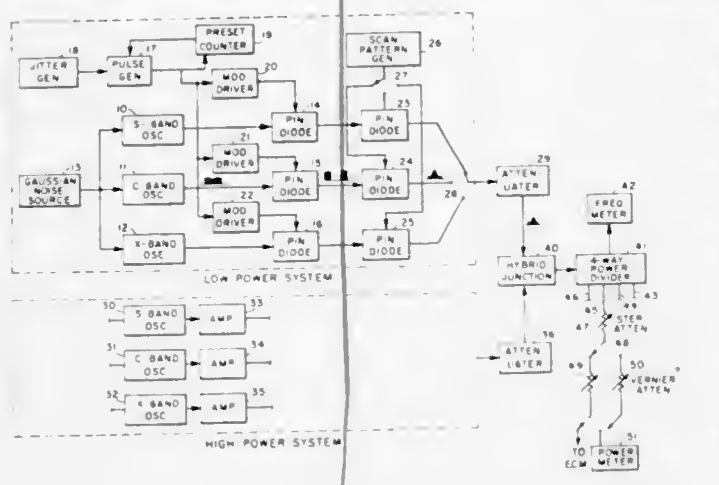
James M. Meek, Silver Spring; Clarence F. Ravilious, Rockville, and Whilden G. Heinard, Bethesda, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 26, 1973, Ser. No. 335,878
Int. Cl. H01q *3/20, 19/06, 19/18*
U.S. Cl. 343—756 **10 Claims**



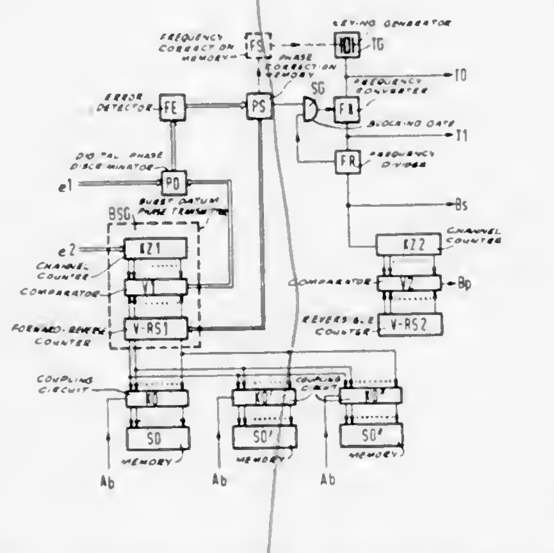
A Schwarzschild radar antenna has an organ-pipe scanner for producing relatively wide angle unidirectional sector scans of a high-gain pencil beam. When conical scanning is desired, energy from selected pipes of the organ-pipe scanner is directed to a nutating mirror that reflects the resulting conical scan to the reflectors of the antenna that reflect conical scan energy to the far field. A rotatable disc behind the main reflector controls the size of the aperture therein and provides decreased blockage when the antenna operates in the conical scanning mode.

3,792,475
RADAR TARGET SIMULATOR
Gary M. Smetana, Endwell, N.Y., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Mar. 9, 1972, Ser. No. 233,065
Int. Cl. G01s *7/40*; **G06g** *7/78*
U.S. Cl. 343—17.7 **3 Claims**



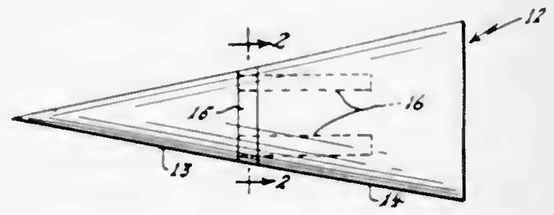
Apparatus is disclosed which simulates the operation of a plurality of radar transmitters so as to permit an evaluation of electronic countermeasure equipment. The system generates sequences of pulsed radio frequency signals whose carrier frequency, modulation, amplitude and power lever are controllable to realistically reflect the signal conditions which may be encountered by an aircraft when a multiplicity of radar emitters are operating simultaneously in its vicinity.

3,792,476
METHOD AND SYSTEM OF COMMUNICATION BETWEEN SEVERAL GROUND STATIONS AND A TRANSPONDER SATELLITE
Josef Domer, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany
Filed Apr. 20, 1971, Ser. No. 135,609
Claims priority, application Germany, Apr. 24, 1970, 2020094
Int. Cl. G01s *9/10*
U.S. Cl. 343—7.5 **8 Claims**



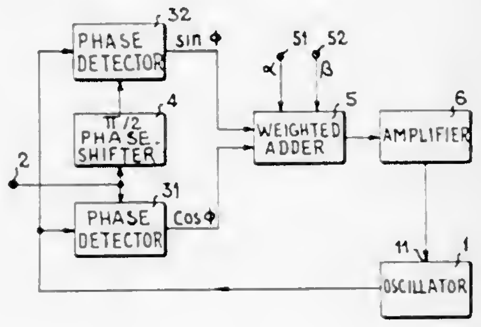
A method of communication between several ground stations and a transponder satellite by time-division multiple access (TDMA) operation, which comprises combining the time-multiplexed and preambled signal bursts of the individual ground stations to a transponder time-division pulse frame; regulating in a reference station the real time position of the station burst in the pulse frame relative to the burst datum phase, deriving the regulating criteria from the pulse frame arriving at the reference station by storing the burst datum position in a burst-position memory and comparing the stored datum position with the burst real position in the arriving pulse frame. This results in a phase-error correction signal which is used for correction of the transmitting phase of the burst issuing from the station. More specifically the regulating criteria are obtained by blocking the regulation (in a main regulating circuit) of the burst transmitting phase toward the transmitting side of the reference station and then restoring the regulation (in an auxiliary regulating circuit) through the burst-position memory of the burst datum phase transmitter to derive therefrom an error signal and transferring to a further memory the error data previously stored into the burst position memory (V-R̂S1) during the course of a regulating operation. This further memory adds the phase error data over a number of consecutive pulse frames to provide an averaged phase error correction signal from the sum of the error data. The memories are preferably of digital binary type.

3,792,477
DECOY MISSILE WITH ELECTROMAGNETIC WAVE BACKSCATTER CONTROL
Kiyo Tomiyasu, Scotia, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed May 16, 1969, Ser. No. 826,089
Int. Cl. G01s *9/02*
U.S. Cl. 343—18 E **6 Claims**



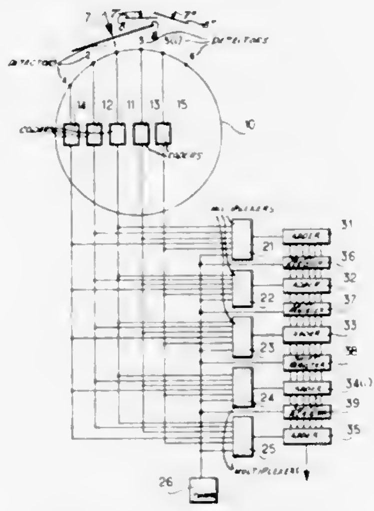
A decoy missile is constructed with a centrally located dielectric region to establish electrically isolated forward and rearward vehicle sections. Various antenna arrangements are utilized to provide electromagnetic wave backscatter control. The antenna arrangements comprise combinations of laterally disposed coaxial cable stubs and peripherally disposed segmented ring antennas.

3,792,478
PHASE CONTROL CIRCUIT
Guy Le Parquier, and Marie-Jacques Jullien, both of Paris, France, assignors to Thomson-CSF, Paris, France
Filed Dec. 7, 1970, Ser. No. 95,494
Claims priority, application France, Dec. 24, 1969, 6944909
Int. Cl. H04b *7/00*
U.S. Cl. 343—100 SA **11 Claims**



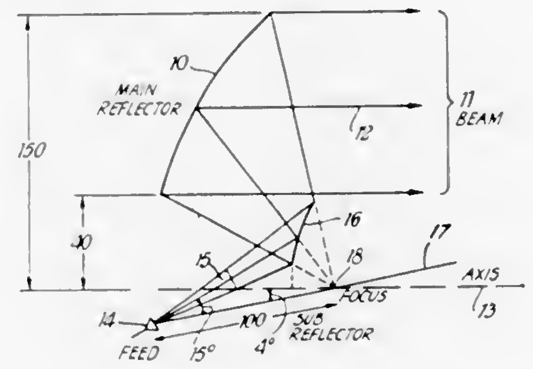
A circuit for controlling the phase of the output signal produced by an oscillator, by that of a reference signal, while imposing any desired phase shift between the two signals, comprises means for feeding to the oscillator, as control signal, a signal which is a weighted sum of the sine and of the cosine of the phase difference between the oscillator output signal and the reference signal; the weighting coefficients are determined by the value of the desired phase-shift; the sine and cosine are supplied by a conventional phase detecting means.

3,792,479
DEVICE FOR DETERMINING THE DIRECTION OF PROPAGATION OF A PLANE WAVE
Anne-Marie Faugeras, Paris, and Andre Lambert, Fresnes, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France
Filed Apr. 21, 1972, Ser. No. 246,414
Claims priority, application France, Apr. 21, 1971, 71.14137
Int. Cl. G01s *3/00*
U.S. Cl. 343—113 R **3 Claims**



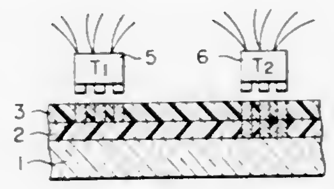
A device for determining the direction of propagation of a plane wave in an isotropic medium, in which the detectors are uniformly distributed on a circle. These detectors are disposed in groups each corresponding to a predetermined direction. Each detector is connected to a chain consisting of the same number of adders as detectors in a group. The adders are interconnected by shift registers.

3,792,480
AERIALS
Ralph Graham, Century Works, Lewisham, London, England
Filed Dec. 31, 1968, Ser. No. 790,507
Claims priority, application Great Britain, Jan. 2, 1968, 00274/68
Int. Cl. H01q *19/14*
U.S. Cl. 343—781 **5 Claims**



This disclosure relates to off-set or asymmetric aerial systems in which the main reflector which radiates into or receives from space a beam of energy is disposed to one side of the axis of the geometric body of which the main reflector forms part. The aerial system comprises a feed, a sub-reflector and a main relfector, the feed is displaced from the axis of the main reflector and the axis of the sub-reflector is transverse to the axis of the main reflector. This reduces the phenomena known as "bore-sight jitter" and "frequency sensitive squint."

3,792,481
METHOD OF RECORDING BY HEAT SENSITIVE MULTICOLOR INDICATION
Shinichiro Nagashima, Tokyo, and Toshio Watanabe, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed July 10, 1072, Ser. No. 270,195
Claims priority, application Japan, July 13, 1971, 46/51948
Int. Cl. G01d *15/10*
U.S. Cl. 346—1 **11 Claims**

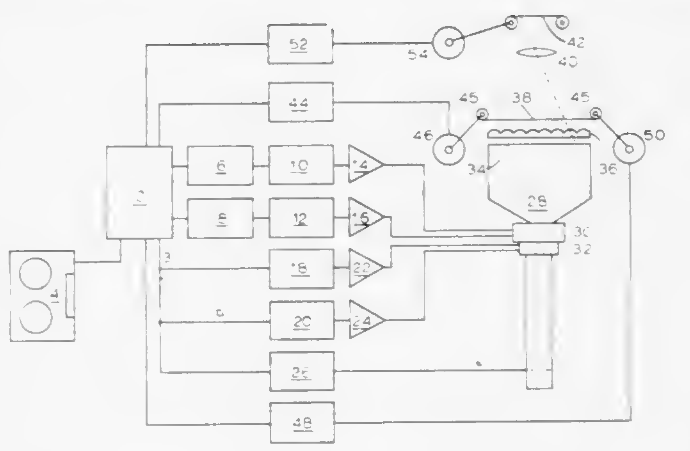


Heat sensitive recording to produce a multicolor indication is effected by bringing a heating element close to or in contact with a heat sensitive recording material for multicolor indication, the recording material has two or more heat sensitive recording layers. The temperature of the heating element is controlled to produce patterns having different colors depending upon the heat sensitive temperature of each heat sensitive layer.

ERRATA

For Classes 346—20 thru 346—145 see:
Patents Nos. 3,792,493 thru 3,792,496

3,792,482
PAGE PRINTER
Asger Torben Nielsen, 3836 Front St., San Diego, Calif.
Filed Apr. 13, 1972, Ser. No. 243,561
Int. Cl. B41b *19/06*
U.S. Cl. 95—4.5 **7 Claims**



A high speed non-impact printing device, that generates characters of high quality on a photosensitive medium in a predetermined page format. A high intensity projection kinescope is utilized as a light source and an aperture and lens array provides substantially parallel light through a moveable character matrix. Transparent Characters on an opaque background are arranged in rows and columns on a matrix, all characters of one row being of the same kind, the number of rows being equal to the number of different characters in the set and the number of columns being equal to the maximum number of characters per line on the printed page. The matrix is moved one step at a time and all character positions that agree with the desired text are illuminated. A mini computer with sufficient memory capacity to store a page of characters is utilized to control the printing operation.

3,792,483
ARRANGEMENT FOR RECORDING ALPHA-NUMERIC SYMBOLS

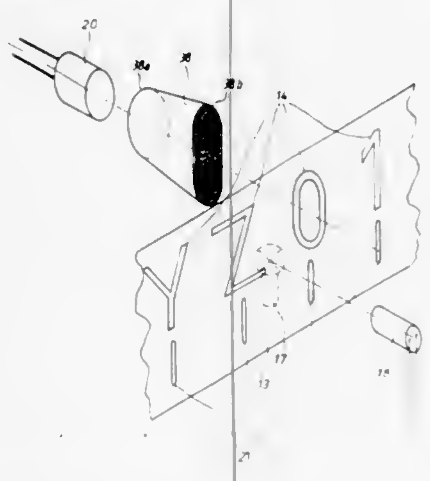
Richard Wick, Munchen; Josef Pfeifer, Unterhaching, and Wilfried Hofmann, Munchen, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 5, 1972, Ser. No. 259,866

Claims priority, application Germany, June 5, 1971, 2128038

Int. Cl. B41b *21/08*

U.S. Cl. 95—4.5 **20 Claims**



An endless band has a plurality of symbols spaced at equal intervals and is transported along a predetermined path in the lengthwise direction. A number of sources of illumination are arranged at predetermined positions along the path, each of these sources of illumination illuminating a symbol as it passes by, when said source of illumination is energized. Electronic control means energize the illuminating sources in correspondence to the symbol to be recorded. The film is positioned relative to the sources of illumination to record the so illuminated symbols.

3,792,484
AUTOMATIC FLASH CONTROL DEVICE

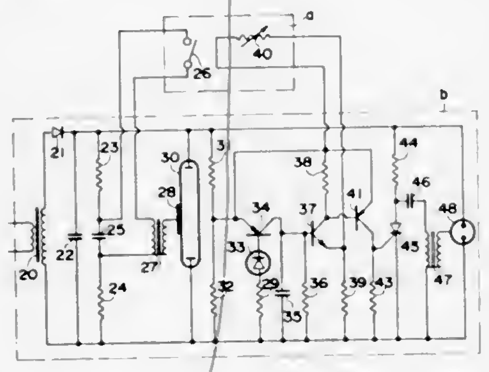
Kayoshi Tsujimoto, Osaka, and Yoshifusa Fujii, Kaizuka, both of Japan, assignors to Minolta Camera Kabushiki Kaisha Osaka-Shi, Osaka-fu, Japan

Filed May 11, 1971, Ser. No. 142,154

Claims priority, application Japan, May 11, 1970, 45-39877

Int. Cl. G03b *15/05*

U.S. Cl. 95—10 C **7 Claims**



An automatic diaphragm aperture control device and an automatic flash control device are combined to effect termination of flash firing by adjusting a threshold level in accordance with a light measuring circuit including a first light receiving element. A second light receiving element in the diaphragm aperture control device adjusts the diaphragm aperture in accordance with the intensity of light and also adjusts the threshold for terminating flash firing in accordance with the light intensity measured by the second light receiving element.

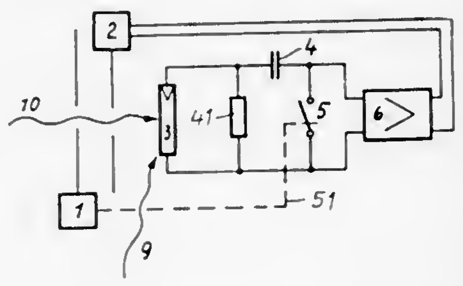
3,792,485
SINGLE LENS REFLEX CAMERA WITH CORRECTION FOR EFFECT OF STRAY LIGHT

Karl-Peter Strauss, Volkmarode, Germany, assignor to Rollei-Werke Franke & Heidecke

Filed Mar. 21, 1973, Ser. No. 343,257

Int. Cl. G03b *7/08;* **G01j** *1/46;* **G03b** *19/12*

U.S. Cl. 95—10 CE **7 Claims**



A single lens reflex camera in which one of the exposure factors (diaphragm aperture or shutter speed) is automatically set by means responsive to the light from the scene to be photographed. The photoelectric converter which receives light from the scene, is subject also to the influence of possible stray light. A circuit arrangement is provided for storing the voltage produced by the stray light falling on the photoelectric converter. Then when the light from the scene to be photographed falls on the photoelectric converter, only the excess of the voltage then produced by stray light plus scene light, over the previously stored voltage produced by the stray light alone, is used in setting the automatically settable exposure factor, thereby compensating for the effect of stray light.

3,792,486
CAMERA-RADIO COMBINATION

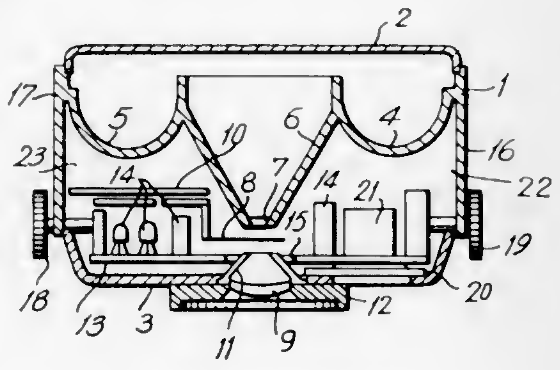
Karl-Heinz Lange, and Hermann Korber, both of Bunde, Germany, assignors to Bloda-Werke, Bunde (Westf), Germany

Filed May 22, 1972, Ser. No. 255,546

Claims priority, application Germany, Feb. 7, 1972, 2205652

Int. Cl. G03b *29/00*

U.S. Cl. 95—12 **10 Claims**



A camera-radio combination. The combination has a conventional camera provided with a camera housing having in its interior spaces which normally would remain empty. A radio receiver has components situated in these spaces.

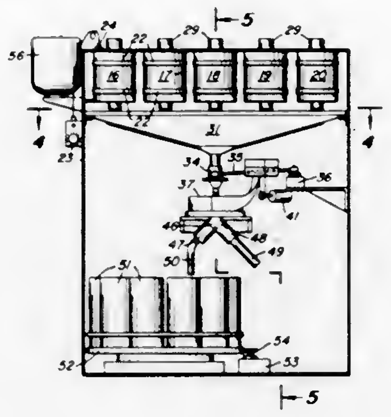
3,792,487
FILM PROCESSOR

Anthony R. Peres, Bristol, N.Y., assignor to Peres Electronics, Inc., Bristol, N.Y.

Filed Dec. 21, 1972, Ser. No. 317,204

Int. Cl. G03d *3/04*

U.S. Cl. 95—99 **10 Claims**



An automatic film processor has temperature-controlled containers for processing materials, solenoid-operated valves to admit the processing materials to a film-holding chamber on a timed schedule, an agitator for the film chamber, and a drain system. The operations are synchronized by a timer switch, and the machine preferably includes a driven mechanism for loading the film into the film chamber, and receptacles indexed under the drain to collect different processing materials after each step of the processing.

3,792,488
FIXING APPARATUS

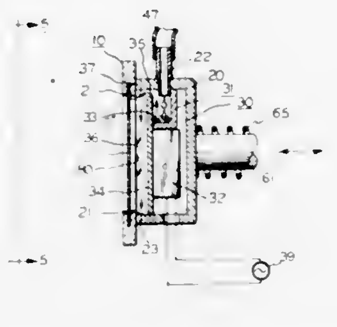
Noboru Katakabe, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 9, 1972, Ser. No. 279,265

Claims priority, application Japan, Aug. 18, 1971, 46-63148

Int. Cl. G03d *3/00*

U.S. Cl. 95—89 G **4 Claims**



A fixing apparatus is disclosed for fixing a developed visible image on a photoconductive surface of a film whereby a developed visible image is fixed on a photoconductive film by way of a small quantity of fixing solvent vapor. Further, the fixing solvent is easily and quickly evaporated by a low power heating element, and the used fixing solvent vapor is quickly discharged after the fixing. The apparatus has a fixing chamber having an aperture facing the film and an inlet through which fixing solvent is supplied. An evaporating device is mounted on the fixing chamber for evaporating the solvent and includes an evaporating chamber, a radiation plate parallel to photoconductive surface of the film and a heating element for heating the evaporating chamber. An engaging device is provided for moving the film and the chamber relative to each other so as to bring the aperture of the chamber into air-tight engagement with the film. A solvent supply device supplies a predetermined quantity of the solvent to the evaporating device through the inlet. The thus supplied fixing solvent is evaporated to a vapor which acts to fix the developed visible image on the film.

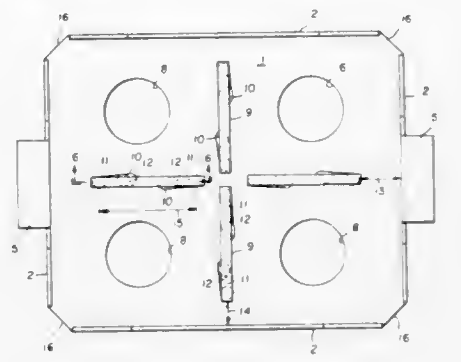
3,792,489
FRAME FOR PROCESSING PHOTOGRAPHIC CUT SHEET FILM

Hugo G. Jelinek, 118 Clearview Dr., Pittsford, N.Y.

Continuation-in-part of Ser. No. 205,062, Dec. 6, 1973, abandoned. This application Jan. 19, 1973, Ser. No. 325,215

Int. Cl. G03d *13/08*

U.S. Cl. 95—100 **1 Claim**



For developing and washing cut sheet film a frame is provided having a generally planar base and four side walls that are separated from one another at their corners. Partitions divide the frame into compartments, one for each sheet to be processed. The base has a plurality of apertures, one for each compartment; and the compartments are slightly wider and longer than the film sheets to permit some very limited movement of the sheets in the compartments; but the walls and the partitions are of a height to retain the film during processing. In use, the frame with the film sheets therein is dipped in a conventional tray containing developer, or water or other processing liquid and moved primarily laterally to cause the liquid to flow into and out of the corners of the frame and between compartments and under and over the sheets therein.

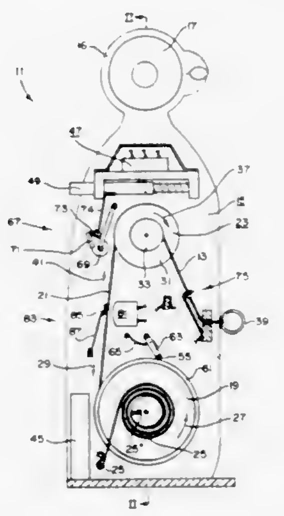
3,792,490
MINIATURE SOUND RECORDING AND REPRODUCING DEVICE

Voorhis F. Wigal, P.O. Box 1542, Jackson, Tenn.

Filed Feb. 1, 1972, Ser. No. 222,618

Int. Cl. G11b *15/32*

U.S. Cl. 360–62 **3 Claims**



A device for recording messages of short duration which may be audibly reproduced repeatedly by simply pulling a cord. The device employs spring power for transporting magnetic tape across a magnetic record-playback head, i.e., being completely void of electric motors or the like. Also included are novel sound recording, reproducing, and amplifying circuitry; switching structure; and structure for erasing the recorded messages from the tape. A low voltage battery, e.g., three volts, is provided to supply electrical energy to power the recording, reproducing and amplifying circuitry. The device is particularly adaptable for inclusion in a wide variety of items, e. g., dolls, animal figures, etc.

3,792,491
MAGNETIC RECORDING AND/OR REPRODUCING APPARATUS

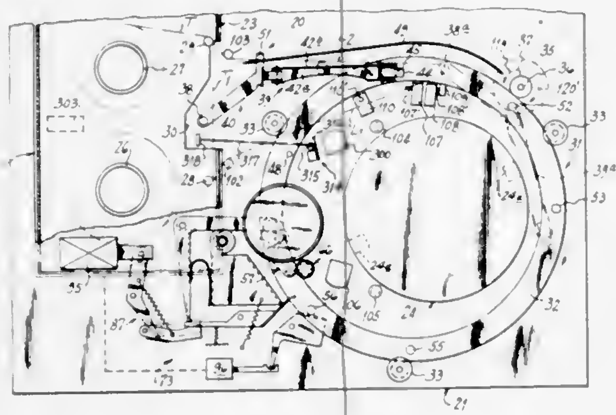
Katsu Inaga, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 30, 1972, Ser. No. 239,639

Claims priority, application Japan, Apr. 8, 1971, 46-26364

Int. Cl. G11b *5/00, 15/32*

U.S. Cl. 360–71 **8 Claims**



In an apparatus for magnetically recording and/or reproducing signals, such as video signals, on a magnetic tape extending between and wound on supply and take-up reels, and in which the tape between the reels is selectively guided in a first path removed from a tape guide drum and in a second path that extends about at least a portion of the guide drum periphery for scanning of the tape by a rotary magnetic head associated with the guide drum; the driving of the tape in each of the first and second paths is controlled by a sensing device which includes a light source and a light detector defining a light path therebetween which is intercepted by each of the first and second tape paths so that the light detector receives or detects light from the source to halt the driving of the tape only when a transparent leader provided at least at one end of the magnetic tape intercepts the light path.

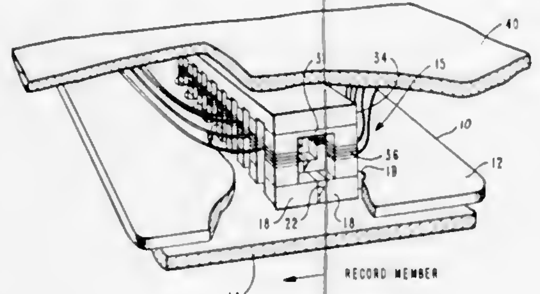
3,792,492
AIR BEARING MULTI-CHANNEL MAGNETIC HEAD ASSEMBLY

Samuel E. Neace, 95440 Henderson Ave., Sunnyvale, Calif.

Division of Ser. No. 126,565, March 22, 1971, Pat. No. 3,722,081. This application Dec. 20, 1972, Ser. No. 316,903

Int. Cl. G11b *5/60, 5/22*

U.S. Cl. 360–103 **7 Claims**



A multi-channel magnetic head assembly for non-contact usage comprises a pair of essentially unitary structures joined along a common plane. A first of the structures comprises a plurality of pole tip elements, formed from a single element and affixed within individual slots to a slotted air bearing element. The individual pole tip elements bridge, at the common plane, individual core legs having a common base and joined to a small circuit board. The arrangement provides precise gap depth, virtually zero gap scatter, and an effective gap length that corresponds to the physical length. The head also minimizes change of head position, and is extremely small and of low mass.

Methods of making multi-channel, non-contact head assemblies in accordance with the invention are based upon readily automated cutting and finishing steps. A unitary pole tip assembly is formed from a pair of block elements with an interposed non-magnetic spacer. Interchannel grooves are cut across the gap, forming a comb-like structure which is inserted into and affixed to a slotted air bearing element. The base of the comb-like structure is then ground away to a selected reference plane. The multiple pairs of core legs are formed by grooving a unitary magnetic block in two directions and this base structure is then joined to the pole tip elements.

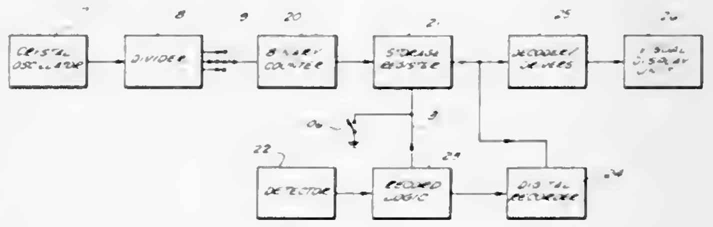
3,792,493
DOOR ACTUATED TIME RECORDER

David C. Hughes, Cos Cob, Conn., assignor to Intelligence Services Products Division, Inc., Syosset, N.Y.

Filed Nov. 6, 1972, Ser. No. 303,904

Int. Cl. G07c *1/10*

U.S. Cl. 346—20 **12 Claims**



A security system for detecting the opening or closing of the door of an enclosed area incudes an enclosure having a digital clock which drives a binary register, the binary register providing a binary decimal code a measure of time. The door includes a fin having a pair of magnets which enter a slot in the enclosure when the door is closed and are removed therefrom when the door is open. A detector and associated circuitry in the enclosure sense the presence of the magnets and provides a signal to a storage register each time the door is opened or closed, thereby causing the storage register to sample and hold the binary decimal code provided by the binary register at the time of an opening or closing. The storage register is coupled to an illuminated display by decoder/drivers, thereby causing the stored time to be displayed in arabic numerals. In addition, the outputs of the storage register are coupled to the writing styluses of an electromechanical recorder in the enclosure. A motor in the recorder, in response to the detection, moves a voltage sensitive paper under the styluses, thereby causing the stored time to be recorded in binary decimal code on the paper. Thus, each opening or closing of the door is recorded. The enclosure includes a transparent window through which several such writings on the paper are visible, and another transparent window through which the illuminated display is visible at a distance.

3,792,494
ELECTROSTATIC STYLUS RECORDING WITH SELF-CLEANING DRUM

Josef Matkan, Malvern, and Kevin Douglas O'Connor, Queenstown, both of Australia, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

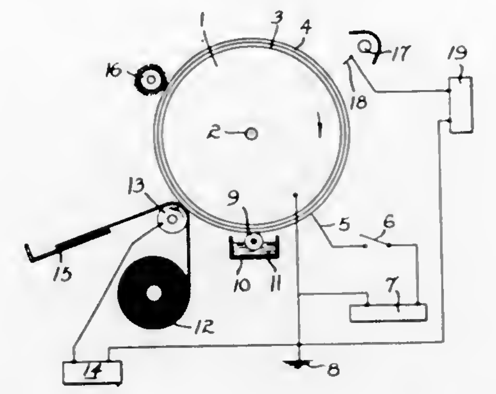
Filed Apr. 22, 1971, Ser. No. 136,325

Claims priority, application Australia, May 1, 1970, 1075/70

Int. Cl. G03g *13/22*

U.S. Cl. 346—74 ES **8 Claims**

A method of electrostatic recording using signal energised styli adjacently disposed across the surface of a photoconductive recording member so that such surface receives a recording potential to form a latent electrostatic image thereon, then rendering the latent image visible by applying electroscopic marking particles, then transferring the image so formed onto another surface, and cleaning the recording member for further recording by removing residual marking particles and by removing residual electrostatic charges by lowering the electrical resistivity of the photoconductive layer by exposure to activating radiation during a corona discharge.



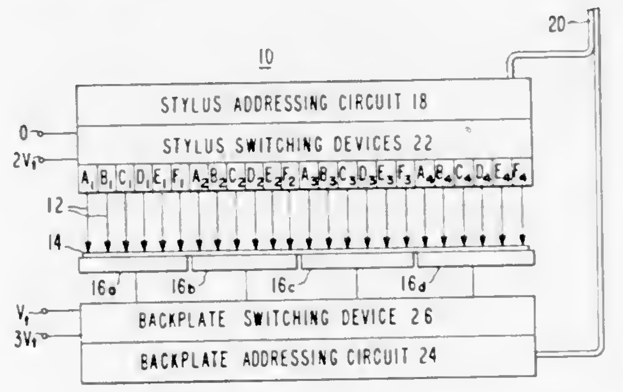
3,792,495
ELECTROSTATIC RECORDER EMPLOYING THREE VOLTAGE LEVEL SWITCHING BETWEEN THE STYLUS ELECTRODES AND THE BACKPLATE SECTIONS

Arthur E. Bliss, Sunnyvale, and Edward W. Marshall, Saratoga, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed Mar. 31, 1972, Ser. No. 240,043

Int. Cl. G01d *15/06*

U.S. Cl. 346—74 ES **7 Claims**


10
20
STYLUS ADDRESSING CIRCUIT 18
STYLUS SWITCHING DEVICES 22
0
2V_t
12
14
16a
16b
16c
16d
V_t
3V_t
BACKPLATE SWITCHING DEVICE 26
BACKPLATE ADDRESSING CIRCUIT 24

Two backplate voltages and two stylus electrode voltages are provided for an electrostatic recorder employing backplate switching and stylus electrode switching. The magnitudes of the four voltages establish an increasing progression, having a difference therebetween of slightly less than the threshold writing voltage V_T (that voltage required to establish writing in the electrostatic recorder). The difference between the lowest voltage and the second lowest voltage is designated V_t. The difference between the lowest voltage and the third voltage is $2V_t$, and the difference between the lowest and the highest voltage is about $3V_t$. These three voltage differences or levels are established between the stylus electrodes and the backup plates in such a manner that the voltage between the stylus selected to write and its backplate is $3V_t$; and the voltages between the remaining stylus electrodes and the adjacent backup plates is only V_t, which is slightly less than V_T and is insufficient to cause writing. The voltage applied for writing, $3V_t$, is almost three times the threshold voltage V_T, and establishes good contrast writing without ghosting from the non-selected stylus electrodes.

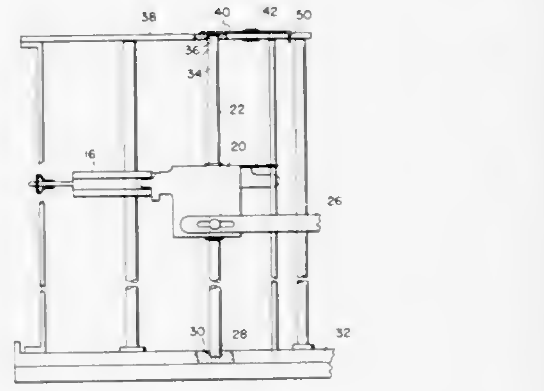
3,792,496
MEANS FOR MOUNTING A PEN DRIVE IN A CHART RECORDER OR THE LIKE

Melvin J. Post, and Kenneth Lee Shelter, both of Rochester, N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed Apr. 11, 1973, Ser. No. 349,926

Int. Cl. G01d *11/02*

U.S. Cl. 346—145 **7 Claims**



Disclosed is a spring retaining plate for the pen drive of a chart recorder. The rod, which carries the sliding pen or scribe of the recorder, is held at one end in a blind hole in the base of the recorder. The other end of the rod is supported by a bracket, the end of the rod extending into an opening in the bracket. A spring retaining plate flush mounted to the bracket prevents the rod from sliding through the bracket opening. The retaining plate is pivoted to the bracket and also has an opening which aligns with the bracket opening when the plate is pivoted. In this way, the rod can be moved axially at least partly through the bracket opening to free the end of the rod held by the base. Providing a plurality of opening in the bracket and in the plate, permits relatively easy conversion of the recorder from a single to a double or triple pen drive.

DESIGNS

230,335

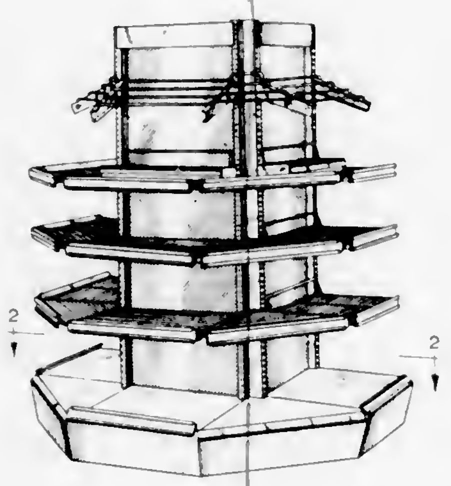
230,337

DESIGNS

FEBRUARY 12, 1974

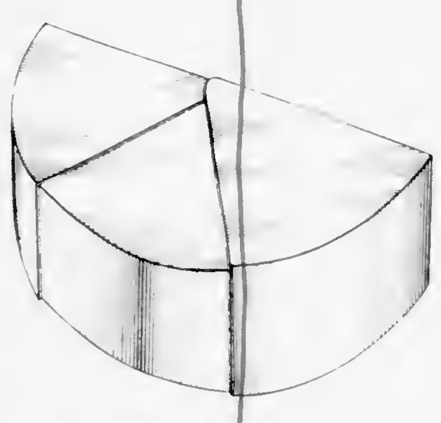
230,331
DISPLAY STAND
Alan K. Snyder, River Forest, Ill., assignor to Chicago Display Company, Melrose Park, Ill.
Filed July 28, 1972, Ser. No. 276,077
Term of patent 14 years
Int. Cl. D20—*02*

U.S. Cl. D6—24



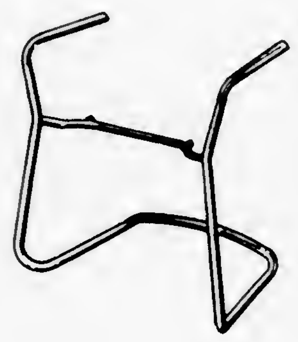
230,332
ARTICULATED TABLE
Maria Cristina Boeri, nee Mariani, Milan, Italy, assignor to Kiga S.p.A., Foligno (Perugia), Italy
Filed Dec. 16, 1971, Ser. No. 209,015
Term of patent 14 years
Int. Cl. D6—*03*

U.S. Cl. D6—178



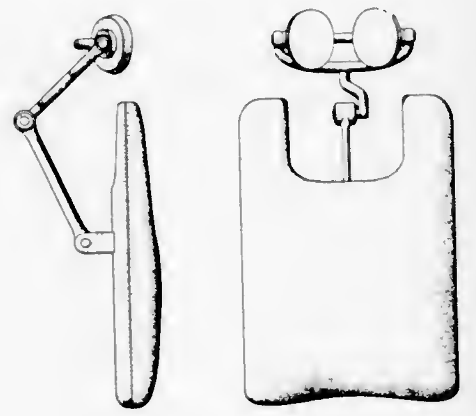
230,333
FRAME FOR A CHAIR
Harry Sebel, Ivor Rey, and James William Hughes, Bankstown, New South Wales, Australia, assignors to Sebel Limited, Bankstown, New South Wales, Australia
Filed Feb. 17, 1972, Ser. No. 227,312
Claims priority, application Australia Aug. 23, 1971
Term of patent 14 years
Int. Cl. D6—*06*

U.S. Cl. D6—191



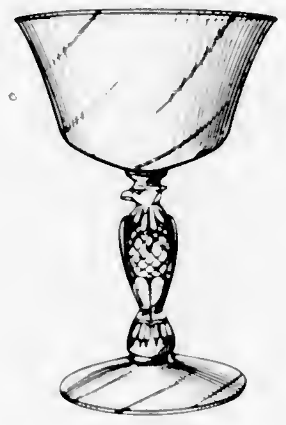
230,334
BACK AND HEAD SUPPORT ASSEMBLY FOR DENTAL CHAIR
David R. Gillham, 2872 Plass, Topeka, Kans. 66611
Filed July 13, 1972, Ser. No. 271,391
Term of patent 14 years
Int. Cl. D6—*06*

U.S. Cl. D6—200



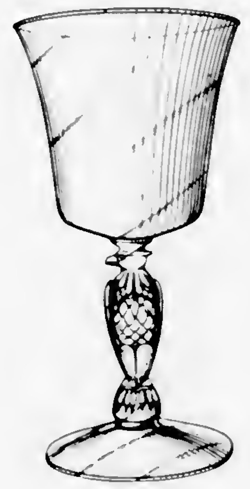
230,335
BEVERAGE GLASS OR SIMILAR ARTICLE
Walter B. Achenbach, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed July 23, 1971, Ser. No. 165,865
Term of patent 14 years
Int. Cl. D7—*01*

U.S. Cl. D7—8



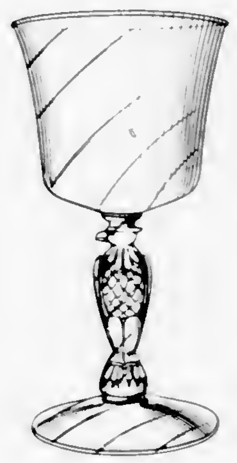
230,336
BEVERAGE GLASS OR SIMILAR ARTICLE
Walter B. Achenbach, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed July 23, 1971, Ser. No. 165,870
Term of patent 14 years
Int. Cl. D7—*01*

U.S. Cl. D7—8



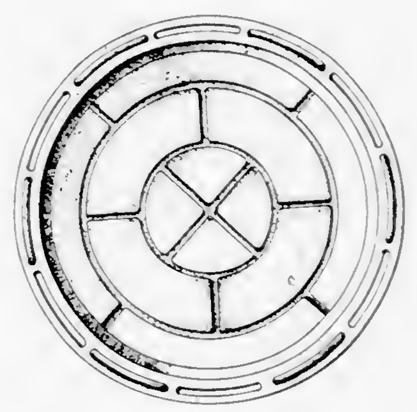
230,337
BEVERAGE GLASS OR SIMILAR ARTICLE
Walter B. Achenbach, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed July 23, 1971, Ser. No. 165,876
Term of patent 14 years
Int. Cl. D7—*01*

U.S. Cl. D7—8



230,338
FOOD TRAY
Oliver R. St. Andre, Chicopee, Mass., assignor to David L. Sokol, Springfield, Mass.
Filed Nov. 6, 1972, Ser. No. 304,122
Term of patent 14 years
Int. Cl. D7—*99*

U.S. Cl. D7—35



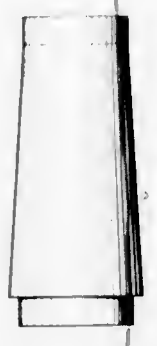
230.342

230,344
FOOD CONTAINER LID

230,347
DOOR LATCH HANDLE

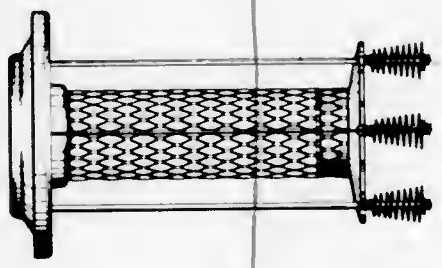
230,339
NON-HYGROSCOPIC CONDIMENT DISPENSER
Fred M. Trecartin, 8150 SW. 54th Ave.,
Miami, Fla. 33143
Filed Apr. 10, 1972, Ser. No. 242,902
Term of patent 14 years
Int. Cl. D7—*06*

U.S. Cl. D7—53



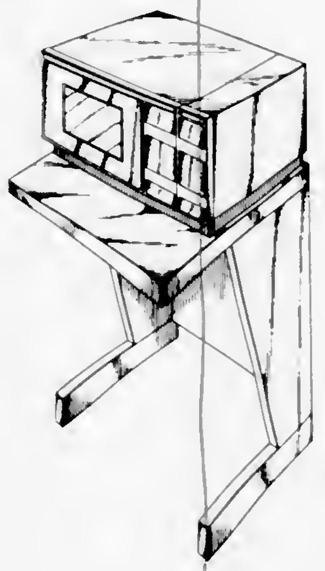
230,340
VERTICAL SOLID FUEL BARBEQUE GRILL
James R. Headberg, 10250 SW. 156th St.,
Miami, Fla. 33157
Filed May 7, 1973, Ser. No. 357,687
Term of patent 14 years
Int. Cl. D7—*04*

U.S. Cl. D7—110



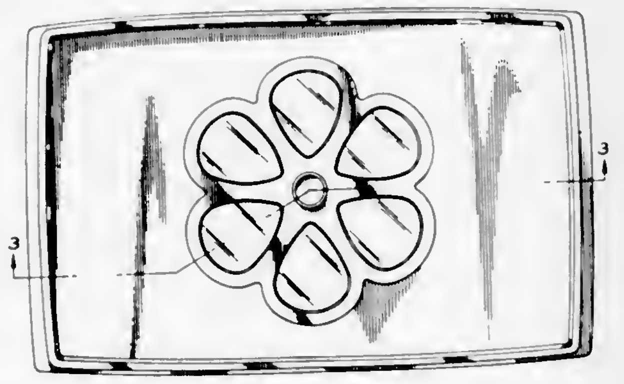
230,341
MICROWAVE OVEN AND CABINET COMBINATION
Gordon J. Waligorski, Lombard, Ill., assignor to
Culitron Inc., Chicago, Ill.
Filed Oct. 13, 1972, Ser. No. 297,444
Term of patent 14 years
Int. Cl. D7—*04*

U.S. Cl. D7—128



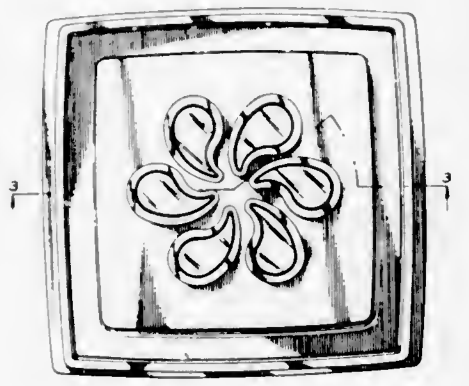
230,342
FOOD CONTAINER COVER
Paul C. Mallonn, Wooster, Ohio, assignor to Rubbermaid
Incorporated, Wooster, Ohio
Filed Feb. 24, 1972, Ser. No. 229,256
Term of patent 7 years
The portion of the term of the patent subsequent to
Oct. 30, 1987, has been disclaimed
Int. Cl. D7—*02*

U.S. Cl. D7—131



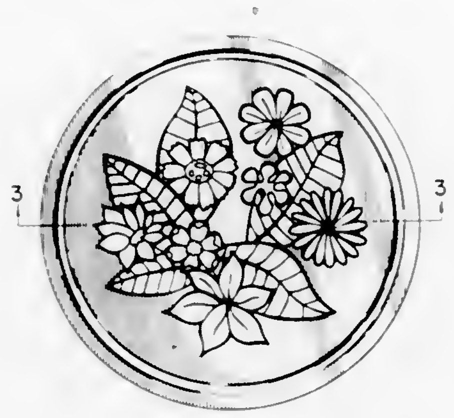
230,343
FOOD CONTAINER COVER
Paul C. Mallonn, Wooster, Ohio, assignor to Rubbermaid
Sales Corp., Wooster, Ohio
Filed June 29, 1972, Ser. No. 267,632
Term of patent 7 years
The portion of the term of the patent subsequent to
Mar. 5, 1981, has been disclaimed
Int. Cl. D7—*01*

U.S. Cl. D7—131



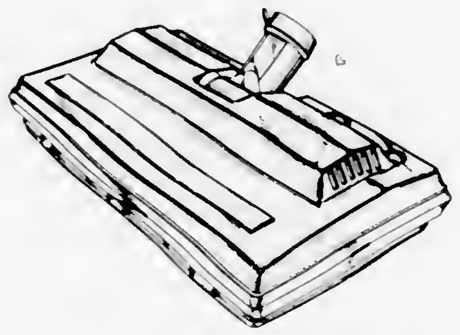
230,344
FOOD CONTAINER LID
William D. Taylor, Wooster, Ohio, assignor to
Rubbermaid Incorporated
Filed Sept. 27, 1972, Ser. No. 294,264
Term of patent 7 years
Int. Cl. D7—*02*

U.S. Cl. D7—131



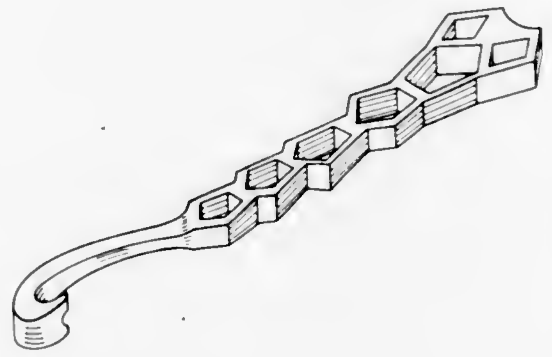
230,345
VACUUM CLEANER NOZZLE
Robert Brown, South Salem, N.Y., John Kowalewski, Riverside, Conn., Peter Medwed, Pound Ridge, N.Y., and John Moughty, Old Greenwich, Conn., assignors to Consolidated Foods Corporation, Old Greenwich, Conn.
Filed May 11, 1973, Ser. No. 359,234
Term of patent 14 years
Int. Cl. D15—*05*

U.S. Cl. D7—173



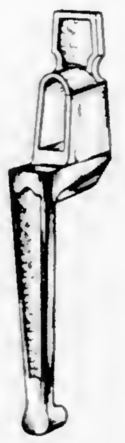
230,346
COMBINED MULTIPLE SOCKET WRENCH AND SPANNER
William James Stitt, Jr., 1320 Lynette Way,
Sacramento, Calif. 95831
Filed Aug. 2, 1972, Ser. No. 277,350
Term of patent 14 years
Int. Cl. D8—*05*

U.S. Cl. D8—26



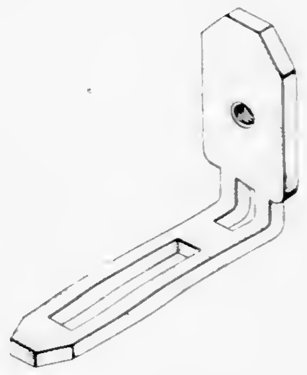
230,347
DOOR LATCH HANDLE
Claude Teggelaar, Grand Rapids, Mich., assignor to
Wolverine Industries, Inc., Grand Rapids, Mich.
Filed Jan. 11, 1973, Ser. No. 322,855
Term of patent 14 years
Int. Cl. D8—*06*

U.S. Cl. D8—170



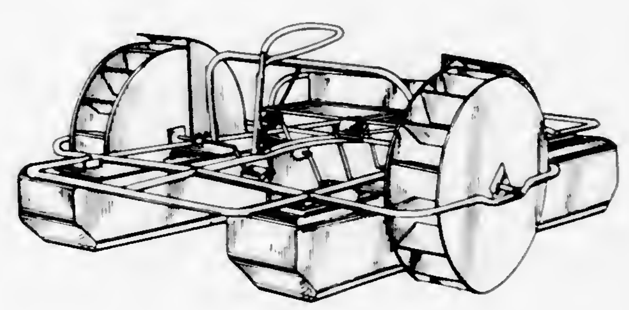
230,348
FITTING
Herman Sabel, 80 Chadwick Drive; Arnold Sabel, 19 Rebellion Road; and Leon W. Sabel, 3 Rebellion Road, all of Charleston, S.C. 29407
Filed July 26, 1972, Ser. No. 275,253
Term of patent 14 years
Int. Cl. D8—*08*

U.S. Cl. D8—236



230,349
WATERCRAFT
Leonard A. Kyryluk, Vancouver, British Columbia, and Peter Spitz, Maple Ridge, British Columbia, Canada, assignors to Lightweight Industries Ltd., Port Coquitlam, British Columbia, Canada
Filed Mar. 22, 1972, Ser. No. 237,247
Claims priority, application Canada Sept. 27, 1971
Term of patent 14 years
Int. Cl. D12—*06*

U.S. Cl. D12—68

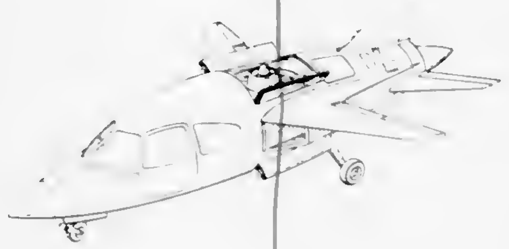


230,353

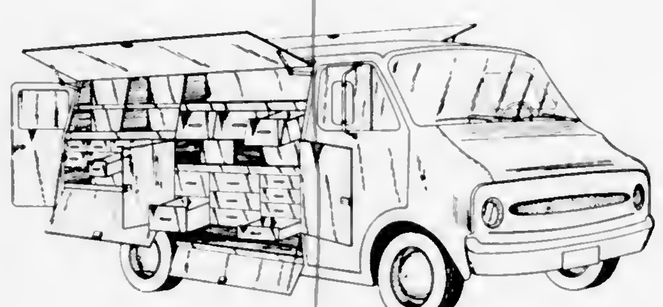
230,356

230,359

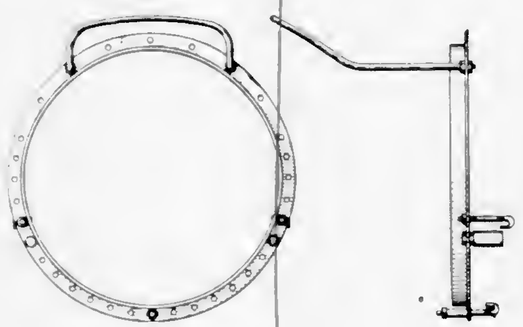
230,350
AIRCRAFT
Charles Bradbury, Hatfield, England, assignor to Hawker Siddeley Aviation Limited, Surrey, England
Filed Nov. 22, 1971, Ser. No. 201,256
Claims priority, application Great Britain May 21, 1971
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D2—75



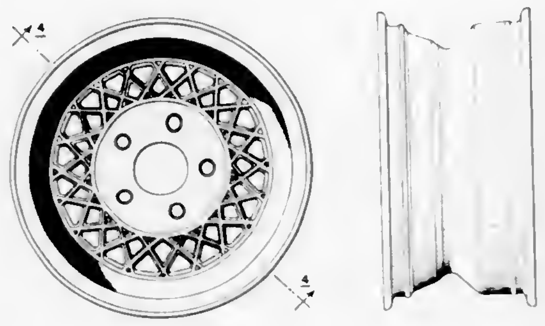
230,351
UTILITY VAN HAVING EXTERNALLY ACCESSIBLE COMPARTMENTS
Leo A. Hamel, 197 Auburn St.,
Cambridge, Mass. 02140
Filed May 8, 1972, Ser. No. 251,564
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—99



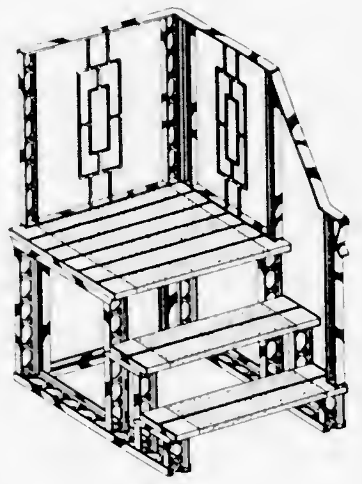
230,352
BICYCLE CARRIER FOR AUTOMOBILE
Walter Bernard, 4800 S. Lake Park Ave.,
Chicago, Ill. 60615
Filed Dec. 7, 1972, Ser. No. 313,160
Term of patent 14 years
Int. Cl. D12—*16;* D8—*99*
U.S. Cl. D12—158



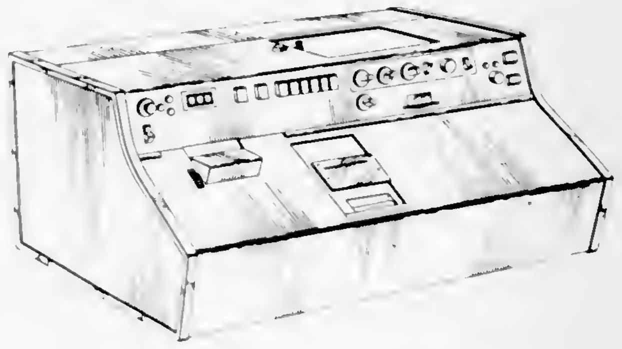
230,353
AUTOMOBILE WHEEL
Paul J. Mochel, Studio City, Calif., assignor to Appliance Plating Co., Inc.
Filed Sept. 10, 1971, Ser. No. 179,611
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—205



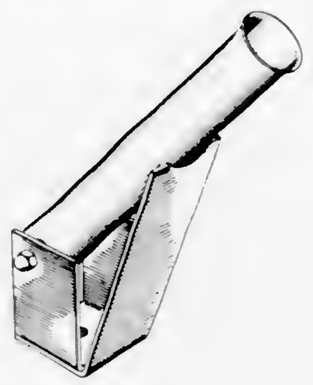
230,354
ENTRANCE STAIRCASE FOR MOBILE HOMES AND THE LIKE
Earl A. Roth, Akron, Ohio, assignor to Duncan Morris Co., Akron, Ohio
Filed Sept. 7, 1971, Ser. No. 178,536
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—7



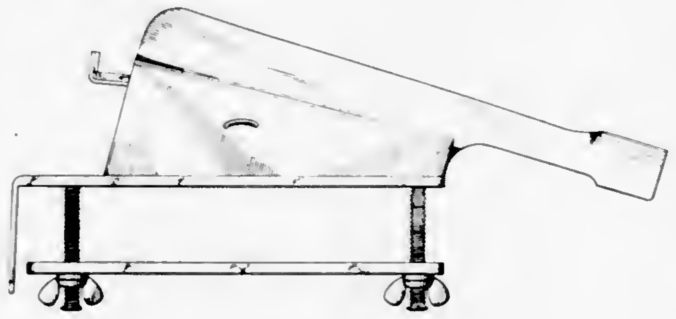
230,355
SCANNING DENSITOMETER
Jan A. van den Broek, Ann Arbor, George W. Toma, Dexter, and Lyle D. Frey, Whitmore Lake, Mich., assignors to Transidyne General Corporation, Ann Arbor, Mich.
Filed Oct. 12, 1972, Ser. No. 297,119
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D16—2 C



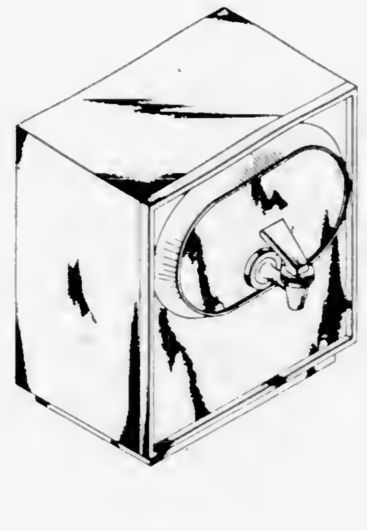
230,356
FISHING POLE HOLDER
Robert G. Nelson, 23206 U.S. 20,
South Bend, Ind. 46628
Filed Dec. 6, 1972, Ser. No. 312,598
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—22



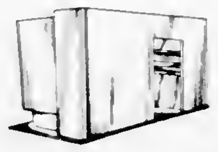
230,357
DETACHABLE HOLDER FOR A FISHING ROD AND REEL FOR MOUNTING ON A HORIZONTAL RAIL
Basil D. Ingram, 222 N. Belcher Road,
Clearwater, Fla. 33515
Filed May 9, 1973, Ser. No. 358,660
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—22

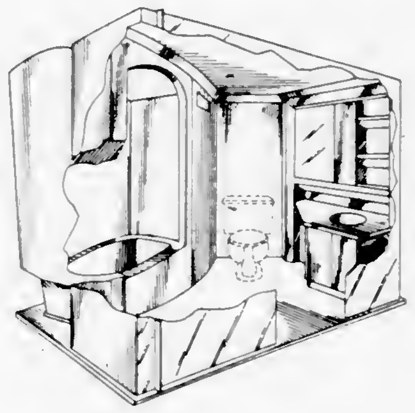


230,358
WATER FILTER
Samuel J. Mann, Englewood, N.J., assignor to Westinghouse Electric Corporation
Filed Sept. 15, 1971, Ser. No. 180,932
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4

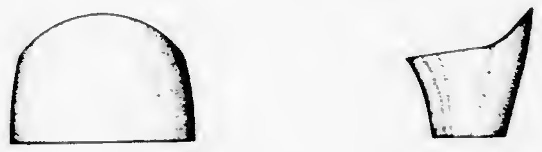


230,359
BATHROOM MODULE OR SIMILAR ARTICLE
Edgar H. Wood, 14 Alleyne St.,
Quincy, Mass. 02169
Filed Dec. 27, 1971, Ser. No. 212,842
Term of patent 14 years
Int. Cl. D23—*07*
U.S. Cl. D23—49

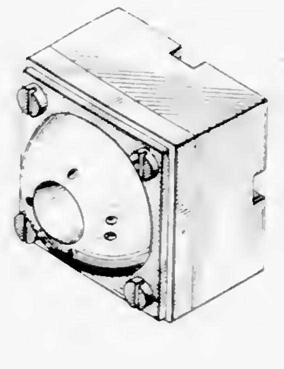




230,360
ORTHODONTIC BAND
Patrick B. Martin, Carlsbad, and Harry R. Smith, Montclair, Calif., assignors to Lancer Pacific, Incorporated, Pomona, Calif.
Filed Feb. 24, 1972, Ser. No. 229,259
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—1 C



230,361
ADJUSTABLE INFRARED ENERGY SENSOR UNIT
Danilo V. Missio, 60 Rockmont Drive,
Belmont, Mass. 02178
Filed Mar. 2, 1972, Ser. No. 231,442
Term of patent 14 years
Int. Cl. D13—*99*
U.S. Cl. D26—1 F



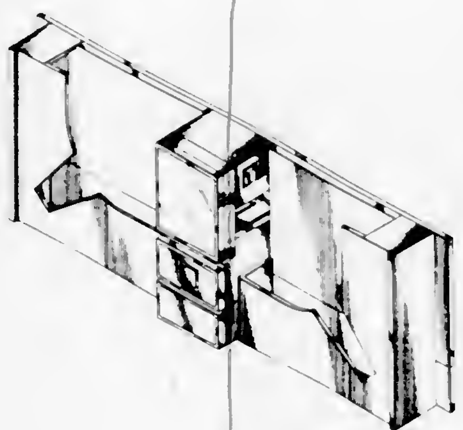
230,362

230,365
FARM TOY

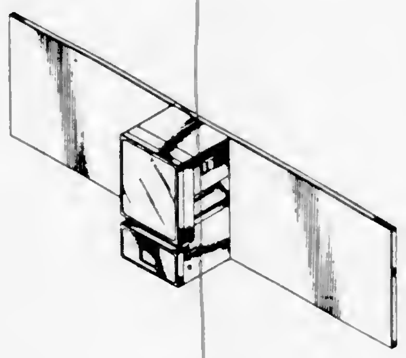
230,367
SUSPENDED FLOWER POT

230,369
KILOWATT HOUR METER BASE COVER

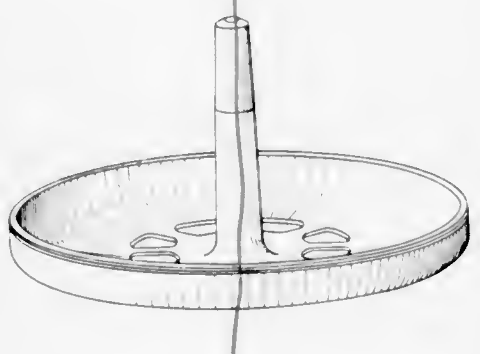
230,362
PERFORATED TAPE READER
Gene D. Vedder, Granada Hills, Calif., assignor to Ex-Cell-O Corporation, Detroit, Mich.
Filed Nov. 6, 1972, Ser. No. 304,231
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



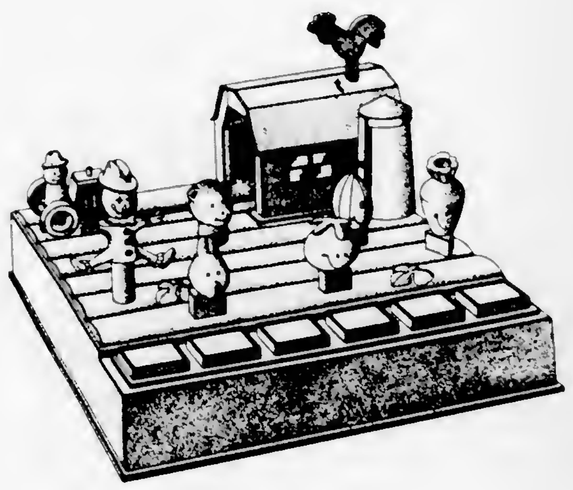
230,363
PERFORATED RECORD READER
Gene D. Vedder, Granada Hills, Calif., assignor to Ex-Cell-O Corporation, Detroit, Mich.
Filed Nov. 6, 1972, Ser. No. 304,236
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



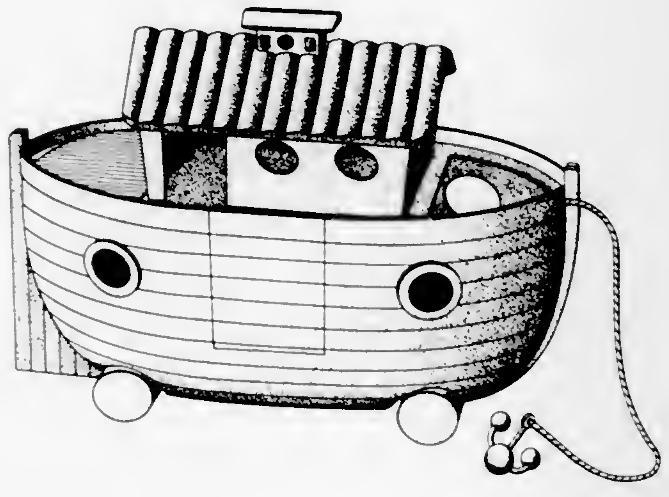
230,364
AERIAL SAUCER TOY
Bernard Friedman, P.O. Box 213, Allentown, Pa. 18105
Filed July 16, 1971, Ser. No. 163,552
Term of patent 14 years
The portion of the term of the patent subsequent to Mar. 16, 1985, has been disclaimed
Int. Cl. D21—*01*
U.S. Cl. D34—15 HH



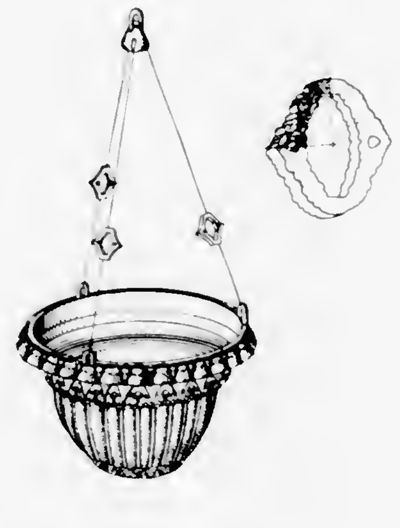
230,365
FARM TOY
Lawrence T. Jones, Pacific Palisades, and Anson Sims, Redondo Beach, Calif., assignors to California R & D Center, Pacific Palisades, Calif.
Filed Mar. 2, 1972, Ser. No. 231,447
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 A



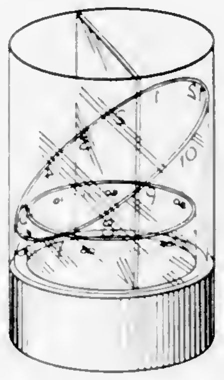
230,366
TOY ARK
Gerald W. Schmidt, Woodland Hills, and Anson Sims, Northridge, Calif., assignors to California R & D Center, Pacific Palisades, Calif.
Filed Aug. 9, 1972, Ser. No. 279,079
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 JJ



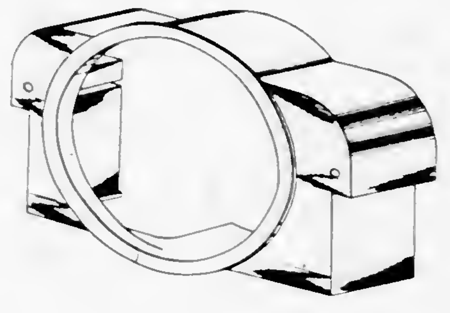
230,367
SUSPENDED FLOWER POT
Michael Neels, 3046 Marna Ave., Long Beach, Calif. 90808
Filed Sept. 13, 1971, Ser. No. 180,253
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 A



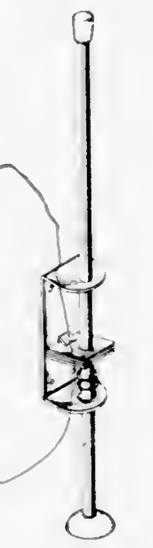
230,368
TABLE CLOCK
Anthony B. La Spina, 25 W. 45th St., New York, N.Y. 10036
Filed Dec. 23, 1971, Ser. No. 211,852
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—8 R



230,369
KILOWATT HOUR METER BASE COVER
Richard S. Jones, Bountiful, Utah, assignor to Sentinel Lighting & Manufacturing Company, Salt Lake City, Utah
Filed Jan. 14, 1972, Ser. No. 218,043
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 R

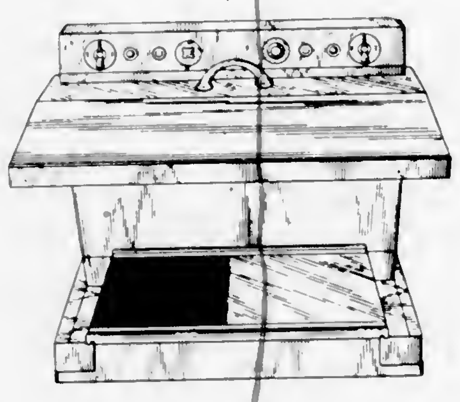


230,370
LADDER ATTACHMENT FOR EXTENDING AND LEVELING LADDERS
Lawrence A. Kaye, 12968 Greenleaf St., Studio City, Los Angeles, Calif. 91604
Filed Dec. 9, 1971, Ser. No. 209,590
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D54—1 A



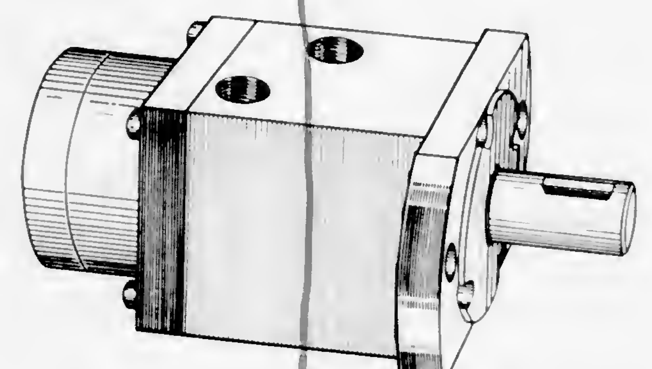
230,371
GRILL

Oscar Philipe, Northwood, England, assignor to Anglo-Swiss (Equipment Production) Limited, London, England
Filed June 9, 1972, Ser. No. 261,563
Claims priority, application Great Britain Apr. 28, 1972
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D55—1 E



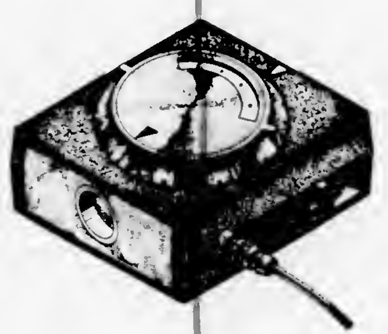
230,372
FLUID MOTOR

George V. Woodling, 22077 W. Lake Road, Rocky River, Ohio 44116
Continuation-in-part of abandoned design application Ser. No. 112,519, Feb. 3, 1971. This application June 30, 1972, Ser. No. 267,889
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 G



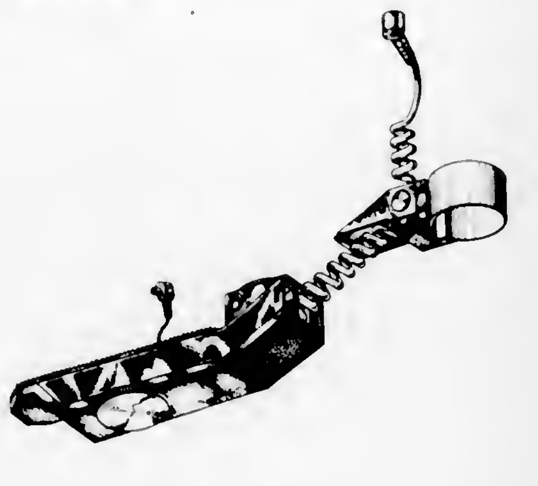
230,373
COMBINED LIGHT SENSOR AND CALCULATOR FOR A PHOTOFLASH UNIT

Peter T. Quinn, Littleton, and Charles E. Taylor, Denver, Colo., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Dec. 6, 1971, Ser. No. 205,464
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 E



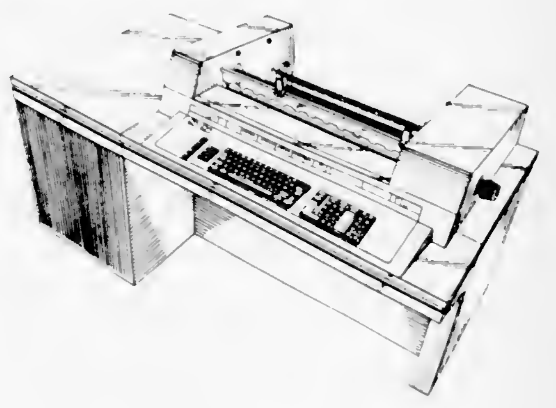
230,374
CAMERA FLASH MOUNTING BRACKET WITH LIGHT SENSOR

Peter T. Quinn and Dean M. Peterson, Littleton, Colo., assignors to Honeywell Inc., Minneapolis, Minn.
Filed June 12, 1972, Ser. No. 262,019
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 E



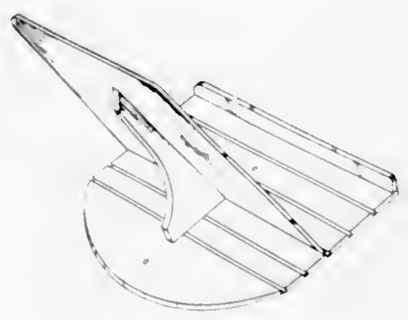
230,375
ACCOUNTING MACHINE OR SIMILAR ARTICLE

Donald L. Forsythe and Jerome U. Brown, Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio
Filed Oct. 19, 1971, Ser. No. 190,697
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11 B



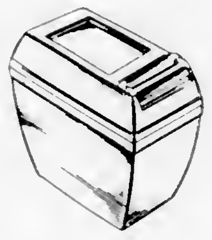
230,376
ADJUSTABLE TYPIST STAND FOR HOLDING REFERENCE DATA

Margerete Andrew, Rte. 4, Box 618, Eugene, Oreg. 97405
Filed Aug. 3, 1972, Ser. No. 277,618
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—1 C



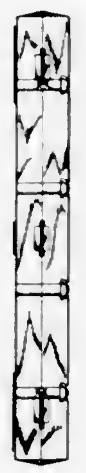
230,377
LABEL DISPENSER

David H. Netka, Encino, Calif., assignor to International Identification, Inc., Tarzana, Calif.
Filed Aug. 14, 1972, Ser. No. 280,429
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—1 B



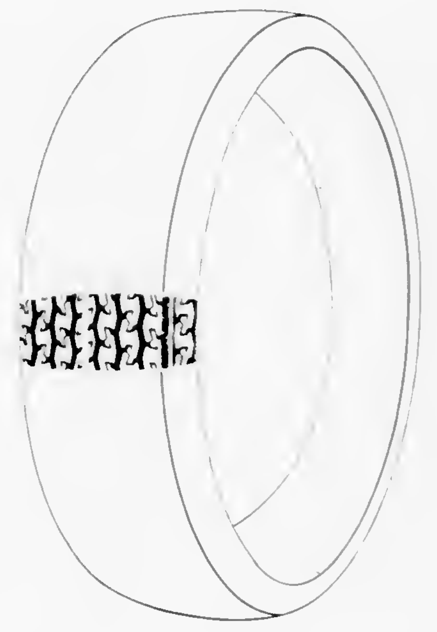
230,378
SKI CARRYING CASE

Harvey Eisenberg, 7 Demarest Road, Livingston, N.J. 07039
Filed Feb. 17, 1972, Ser. No. 227,345
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



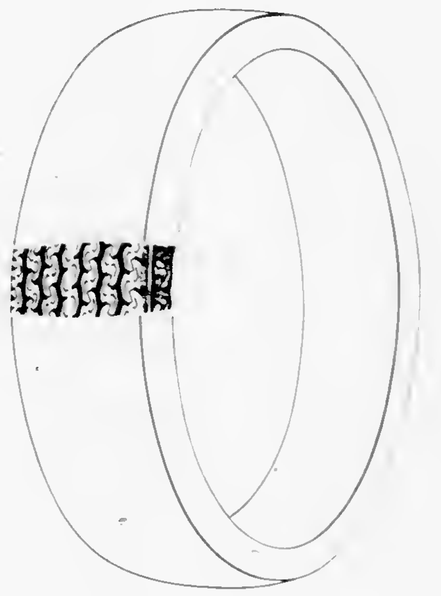
230,379
PNEUMATIC TIRE TREAD AND BUTTRESS

James H. Bierbusse, Grosse Pointe Woods, and Clarence H. Vizina, Jr., Ferndale, Mich., assignors to Uniroyal, Inc., New York, N.Y.
Filed Apr. 19, 1972, Ser. No. 245,691
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20 R



230,380
PNEUMATIC TIRE TREAD AND BUTTRESS

Clarence H. Vizina, Jr., Ferndale, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed June 14, 1972, Ser. No. 262,538
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20 R



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TO WHOM
PATENTS WERE ISSUED ON THE 12TH DAY OF FEBRUARY, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- AAI Corporation. *See—*
  - La Costa, Nicholas J., 3,791,301.
  - Sweeney, Patrick E.; and Schneppe, Robert W., Jr., 3,791,303.
- AB Asea-Atom: *See—*
  - Gustavsson, Eric Borje, 3,791,107.
- AB Bahco Ventilation: *See—*
  - Gustavsson, Karl Axel G., 3,791,109.
- AB Volvo: *See—*
  - Bane, Lars Olof, 3,791,233.
- Abele, Werner, to Du Pont de Nemours, E. I., and Company. Silver halide photographic element containing a reaction product of a heterocyclic mercaptan and a chloro formic acid ester as antifog agent. 3,791,830, Cl. 96-76.00r.
- Aberdeen Bag Company: *See—*
  - Brooks, Thomas W., 3,791,267.
- Abolins, Visvaldis; Erhardt, Peter F.; and Holoch, Klaus E., to General Electric Company. Stabilized polyphenylene ether compositions. 3,792,121, Cl 260-874 000.
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- ACF Industries, Incorporated: *See—*
  - Coyle, Edward L., and Murph, Howard L., 3,791,168.
- Achterrath, Ute. *See—*
  - Boguth, Walter; Studer, Rolf; Achterrath, Ute; and Kunze, Hans, 3,792,034.
- Action Films, Inc.: *See—*
  - Komazaki, Tosio, 3,791,723
- Acushnet Company: *See—*
  - Schweiker, George C.; and Jepson, John W., 3,791,655.
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  - Crawford, Joseph A., 3,792,310.
- Aerochem Research Laboratories, Inc.: *See—*
  - Calmon, Calvin, 3,791,981.
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- Agence National de Valorisation de la Recherche (ANVAR): *See—*
  - Besson, Jean; Bonnat, Michel, Deportes, Grenoble Charles; and Kleitz, Michel, 3,791,937.
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  - Anthony, Anne-Marie; Dembinski, Krzysztof; and Dupont, Lucien, 3,792,233.
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- Agfa-Gevaert AG: *See—*
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- Agfa-Gevaert Aktiengesellschaft: *See—*
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  - Kohlmannsperger, Josef, 3,791,843.
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  - Verhille, Karel Eugeen; and Voet, Luciaan Frans, 3,791,825.
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  - Schirtzinger, Joseph F., 3,791,328.
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- Algoma Steel Corporation, Limited, The: *See—*
  - Lucenti, Gary S., 3,791,015.
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  - Vollhardt, Frohmut; John, Harald, Rittinger, Wilhelm; Saum, Walter, Aliwka, Artur; and Wodtke, Friedrich, 3,791,441.
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- Allegheny Ludlum Industries, Inc.: *See—*
  - Ramachandran, Sundaresan; and Igwe, Basil U. N., 3,791,813.
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  - Hamilton, Brian K., 3,791,669.
  - Lucore, Richard W.; and Stephenson, Robert L., 3,791,670.
- Allington, William B., to Instrumentation Specialties Company. Electrophoresis method. 3,791,950, Cl. 204-180.00g.
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  - Folgero, Kare; and Hellsing, Sven, 3,792,185.
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  - Hayes, William H., 3,791,552.
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- American Can Company: *See*—
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  - Bolton, Joseph A., III, 3,791,917.
- Bittermann, Hans: *See*—
  - Auspurg, Heinz; Holzerlandt, Dieter; Jaeger, Hannes; Kern, Peter; Moder, Hans-Ulrich; Schubert, Rolf; Bittermann, Hans; Huber, Josef; and Schaeffer, Bernhard, 3,792,439.
- Biviator S.A., mesne: *See*—
  - Adler, Karl; and Ducommun, Georges, 3,791,134.
- Bjerke, Brian Kenneth; and Siverling, Michael McHugh, to International Business Machines Corporation. Document scanner having optical diffusion means. 3,792,268, Cl. 250-219.00q.
- Black, Samuel J.: *See*—
  - Voot, Charles C.; Talcott, John W.; Leslie, Donald M.; Dovell, Clark W.; and Black, Samuel J., 3,791,296.

- Black, Sivalls & Bryson, Inc.: *See*—
  - Ebeling, Harold O.; and Beets, Richard A., 3,791,350.
- Blackburn, Wayne A.; and Hemness, Sevall W. Fluid metering apparatus. 3,791,212, Cl. 73-251.000.
- Blada-Werke: *See*—
  - Lange, Karl-Heinz; and Korbert, Hermann, 3,792,486.
- Blanchard, William C., to Bendix Corporation, The. Piezoelectric driven unloaded pressure sensor. 3,791,216, Cl. 73-398.00r.
- Blank, Rudolf; and Kluczynski, Achim, to Agfa-Gevaert Aktiengesellschaft. Rotary spool for storage of convoluted photographic film or the like. 3,791,605, Cl. 242-74.000.
- Blase, Helmut: *See*—
  - Gorl, Richard; and Blase, Helmut, 3,791,530.
- Blaw-Knox Chemical Plants, Inc.: *See*—
  - Coombes, William A.; Zavada, Richard A.; Hansen, John E.; Singleton, William A.; and King, Robert R., 3,792,067.
- Blickman, Bernard I. Environmental-isolation room door-seal. 3,791,075, Cl. 49-484.000.
- Bliss, Arthur E.; and Marshall, Edward W., to Varian Associates. Electrostatic recorder employing three voltage level switching between the stylus electrodes and the backplate sections. 3,792,495, Cl. 346-74.0es.
- Blumenthal, Stanley P.; Krasnick, Solomon; and Gillespie, Gerald W., to Tel-A-Dex Corporation. Instore information dispensing system. 3,792,437, Cl. 340-152.00r.
- Bluttell, Victor Frederick, to Linolite Limited. Tubular lamp fittings. 3,792,247, Cl. 240-51.11r.
- Bobbitt, Charles R., to Honeywell Information Systems, Inc. Dual channel, dual potential open-circuit test apparatus. 3,792,349, Cl. 324-51.000.
- Bochnak, Gregory; and MacLennan, Roderick A., to United Aircraft Corporation. Hydraulic fluid supply apparatus for a hydraulic servomechanism. 3,791,775, Cl. 417-426.000.
- Bodinger, Donald C.: *See*—
  - Snyder, Richard C.; and Bodinger, Donald C., 3,791,312.
- Boehringer Mannheim Gesellschaft mit beschrankter Haftung: *See*—
  - Thum, Waldemar; Wahlefeind, August Wilhelm; Naher, Gotthilf; Gruber, Wolfgang; Mollering, Hans; Weimann, Gunter; and Bergmeyer, Hans Ulrich, 3,791,931.
- Boeing Company, The: *See*—
  - Baker, Irwin G., 3,791,073.
  - Moorehead, James R., 3,791,586.
- Bogar, Joseph E.; Bragg, John K.; and Hare, Goerge H., to Singer Company, The. System for overcoming faults in magnetic anisotropic material. 3,792,450, Cl. 340-174.0ed.
- Bogel, Graham D.: *See*—
  - Wilson, Kenneth A.; and Bogel, Graham D., 3,792,195.
- Bogeskov, Bernard E.; and Boyum, Ronald D. Hydraulic coupler. 3,791,411, Cl. 137-614.020.
- Boguth, Walter; Studer, Rolf; Achterrath, Ute; and Kunze, Hans, to Hoffmann-La Roche Inc. Tripeptide and acid addition salts. 3,792,034, Cl. 260-112.500.
- Boise Cascade Corporation: *See*—
  - Bokovoy, Ronald D., 3,791,238.
- Bokovoy, Ronald D., to Boise Cascade Corporation. Differential mechanism of the holdout ring type. 3,791,238, Cl. 74-750.000.
- Bole, Hamilton B., to American Optical Corporation. Lens frangibility testing apparatus. 3,791,193, Cl. 73-12.000.
- Boleky, Edward Joseph, III, to RCA Corporation. Fabrication of monolithic integrated circuits. 3,791,024, Cl. 29-577.000.
- Bolton, Joseph A., III, to Bird Machine Company. Process for producing kraft paper laminate of top stock and base stock layers. 3,791,917, Cl. 162-55.000.
- Bolza-Schunemann, Hans-Bernhard, to Schnellpressenfabrik Koenig & Bauer Aktiengesellschaft. Sheet feeder for printing presses. 3,791,642, Cl. 271-51.000.
- Bolze, Manfred: *See*—
  - Krieger, Bernhard; Bolze, Manfred; and Drawert, Manfred, 3,792,002.
- Bom, Cornelis Johannes Gerardus: *See*—
  - Van der Lely, Ary; and Bom, Cornelis Johannes Gerardus, 3,791,322.
- Bombardier, Alphonse R.; Bombardier, Gerard; and Bombardier, Germain, said Bombardier, Alphonse, and Bombardier, Gerard, assors. to said Bombardier, Germain. Hull construction for watercraft. 3,790,977, Cl. 9-6.000.
- Bombardier, Gerard: *See*—
  - Bombardier, Alphonse R.; Bombardier, Gerard; and Bombardier, Germain, 3,790,977.
- Bombardier, Germain: *See*—
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- Bonnat, Michel: *See*—
  - Besson, Jean; Bonnat, Michel; Deportes, Grenoble Charles; and Kleitz, Michel, 3,791,937.
- Boone, Roger S.; and Pyott, Frank. Contact lens holder. 3,791,689, Cl. 294-1.0ca.
- Boragine, Carolo: *See*—
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- Borden, Inc.: *See*—
  - Hollingsworth, Clinton Allen; and Lamb, Louis John, 3,791,810.
- Borel, Joseph; Deutsch, Jean-Claude; Labrunie, Guy; and Robert, Jacques, to Commissariat a l'Energie Atomique. Device for deflecting a light beam. 3,791,716, Cl. 350-160.01c.
- Borg-Warner Corporation: *See*—
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- Bosch, Robert, G.m.b.H.: *See*—
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  - Reiger, Franz, 3,791,360.
  - Schmaldienst, Peter; and Gemander, Georg, 3,791,363.
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- Bossler, Fred Christian; and Kent, William Harold, Jr., to Bell Telephone Laboratories, Incorporated. Detection of metal shield faults in buried cable. 3,792,350, Cl. 324-52.000.
- Bostick, Frank W.: *See*—
  - Landis, Earle H.; and Bostick, Frank W., 3,791,045.
- Bostley, Robert J., to Bendix Corporation, The. Device for gripping, driving and supplying coolant to a cutting tool having coolant passages therein. 3,791,660, Cl. 279-20.000.
- Botros, Raouf, to American Aniline Products, Inc. Aromatic polyester textile fibers dyed with bis(arylamino) dihydroxyanthraquinone dyes. 3,791,785, Cl. 8-39.000.
- Boudinot, Ralph A. Windbreakers for railway locomotives. 3,791,313, Cl. 105-456.000.
- Bouee, Vincent: *See*—
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- Boughton, Peter: *See*—
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- Boutin, Julien F.: *See*—
  - Slaght, William Francis; and Boutin, Julien F., 3,792,354.
- Bowling, J. Dennis, to Hearin Forest Industries. Ridge roof beam. 3,791,082, Cl. 52-79.000.
- Bowring, David John, to GKN Sankey Limited. Washing and filling machines. 3,791,425, Cl. 141-92.000.
- Bowser, George H., to PPG Industries, Inc. Multiple glazed unit. 3,791,910, Cl. 161-45.000.
- Boyd, Donald R., to Allis-Chalmers Corporation. Magnetic actuator device. 3,792,390, Cl. 335-229.000.
- Boyer, Lynn Forrest; and Johnson, Anderson Forbes, Jr., to Western Electric Company, Incorporated. Selective coating. 3,791,342, Cl. 118-52.000.
- Boyle, Willard Sterling; and Smith, George Elwood. Buried channel charge coupled devices. 3,792,322, Cl. 317-235.00r.
- Boyum, Ronald D.: *See*—
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- Bozik, Maynard L. Lockable tensioning device. 3,791,623, Cl. 254-51.000.
- Brackenridge, David R.: *See*—
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- Brackett, Charles Arthur, to Bell Telephone Laboratories, Incorporated. Suppression of spurious bias circuit oscillations in impatt oscillators. 3,792,375, Cl. 331-96.000.
- Bradley, William J. Adjustable pivotal headboard. 3,790,973, Cl. 5-53.00b.
- Brady, Donnie G.: *See*—
  - Cardenas, Carlos G.; and Brady, Donnie G., 3,792,116.
- Bragg, John K.: *See*—
  - Bogar, Joseph E.; Bragg, John K.; and Hare, Goerge H., 3,792,450.
- Brakebill, Harold G.; Lewis, Jay L.; and Berleyoung, Walter J., to Robertshaw Controls Company. Pressure regulator construction and method of making the same. 3,791,405, Cl. 137-494.000.
- Brand, Warren H.; and Scott, John, Jr., to Yarway Corporation. Pilot-operated steam traps. 3,791,578, Cl. 236-54.000.
- Brandeberry, Don R.: *See*—
  - Fritch, Junior L.; and Brandeberry, Don R., 3,791,780.
- Brandenburg, John T.; Suggitt, Robert M.; and Liden, Thomas M., to Texaco Inc. Conversion of alkylaromatics. 3,792,098, Cl. 260-668.00a.
- Brannen, William T.; and Watson, Roger W., to Standard Oil Company (Indiana). Fuel and lubricating oil additives-transition metal complexes. 3,791,804, Cl. 44-68.000.
- Brannen, William T.; and Watson, Roger W., to Standard Oil Company (Indiana). Transition metal complexes as fuel and motor oil additives. 3,791,805, Cl. 44-68.000.
- Branscum, Tony E., to Gott Manufacturing Co., Inc. Ice chest construction. 3,791,547, Cl. 220-17.000.
- Branscum, Tony E.; Morgan, Bill T.; and Peters, Donald L., to Phillips Petroleum Company. Method for blow molding a hollow article having an attached hollow adjunct. 3,792,143, Cl. 264-94.000.
- Branson Incorporated: *See*—
  - Mims, Bruce L., 3,791,569.
- Braunlich, Peter F., to Bendix Corporation, The. Stimulated exoelectron emission dosimeter having high spatial resolution. 3,792,282, Cl. 250-459.000.

Whitehurst, Darrell Duayne; Butter, Stephen Alan; and Rodewald,

Catherwood, Herbert C., 50% to Histed, William N. Rotary engine.

Breckhill, Frank D. Snow compacting apparatus. 3,791,053, Cl. 37-10.000.

Brehme, Hans, to Zeise, Theodor. Ship's propeller. 3,791,762, Cl. 416-198.000.

Breikss, Ivars P., to Honeywell Inc. Recording and playback system for self-clocking digital signals. 3,792,443, Cl. 340-172.500.

Breitfuss, Thomas K., to Hydro Conduit Corporation. Transport vehicle having lift mechanism and associated extendible and retractable mobile object support. 3,791,540, Cl. 214-75.00r.

Brendgord, Thomas, to American Sterilizer Company. Enclosure structure for modular system. 3,791,528, Cl. 211-88.000.

Brenholdt, Irving R., to Farrand Optical Co., Inc. Size gauging and quality inspecting rotating articles by imaging onto spatial filters and detectors. 3,791,741, Cl. 356-163.000.

Brewer, George R.; and Law, Russell R., to Hughes Aircraft Company. Process for accurately marking precise rectangular areas. 3,791,270, Cl. 95-1.000.

Brewer, Howell K., to United States of America, Air Force. Filament-wound, toroidal tire with pneumatic rim-locking tube. 3,791,433, Cl. 152-339.000.

Bridel, Laiteries E.: *See*—

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Bridge, Alan G.: *See*—

Mitchell, David S.; Bridge, Alan G.; and Jaffe, Joseph, 3,791,989.

Bright, William L. Safety lock for enclosures. 3,791,683, Cl. 292-32.000.

Brinkmann, Jurgen; Rasche, Manfred; and Heissmann, Willi, to Varta Aktiengesellschaft. Storage battery electrode. 3,791,869, Cl. 136-81.000.

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Bristol, Thomas W., to Hughes Aircraft Corporation. Surface-wave electro-acoustic transducer. 3,792,381, Cl. 333-72.000.

British Petroleum Company, Limited, The: *See*—

Davies, Owen Mansel; Olive, Martin Frederick; Cook, Terence John; and Hilder, Graham Keith, 3,791,960.

Broadhead, John; and Butherus, Alexander Duane, to Bell Telephone Laboratories, Incorporated. Rechargeable nonaqueous battery. 3,791,867, Cl. 136-6.00r.

Brocker, John Race, to Motorola, Inc. Tone detector with constant detection response time. 3,792,290, Cl. 307-233.000.

Broden, Kenneth John. Tissue roll dispenser. 3,791,601, Cl. 242-55.530.

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Brogli, Hans; and Brogli, Werner F. Method and apparatus for the manufacture of an emulsion. 3,791,984, Cl. 252-308.000.

Brogli, Werner F.: *See*—

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Brooks, Thomas W., to Aberdeen Bag Company. Method and apparatus for making packages of interconnected plastic bags and the like. 3,791,267, Cl. 93-35.00r.

Brothers, Jack; and Puzia, Walter J. Strapping severing tool. 3,791,031, Cl. 30-124.000.

Brown, Barry M.; and Ray, Elbert L., to Eastman Kodak Company. Process for manufacturing cellulosic reverse osmosis membranes using a very high temperature initial aqueous quench. 3,792,135, Cl. 264-41.000.

Brown, Bertram Keith: *See*—

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Brown, Melancthon S.; and Hohn, Gustave K., to Chevron Research Company. N-substituted aryl carbamates as insecticides. 3,792,169, Cl. 424-300.000.

Brown Oil Tools, Inc.: *See*—

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Brown, Patrick Michael; and May, Vernon Bruce, to Grace, W. R., & Co. Low density molding powder of vermiculite and clay. 3,791,836, Cl. 106-71.000.

Brown, Wallace W. Collapsible cable spool. 3,791,606, Cl. 242-115.000.

Broyden, Robert H.: *See*—

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Bruggink, Gordon J., Sr. Drying apparatus for barn milk lines. 3,791,046, Cl. 34-104.000.

Brun, Jens; and Nielsen, Hans, to Vald. Henriksen A/S. Apparatus for dyeing yarns in bobbins. 3,791,179, Cl. 68-198.000.

Bruning, Paul F., to Electronic Machining Company. Lift structure. 3,791,329, Cl. 114-66.50r.

Bruns, Carl Newton, to Stauffer Chemical Company. Paste type organopolysiloxane composition and fabrics coated therewith. 3,791,998, Cl. 260-2.50s.

Bruns, Eugene G.: *See*—

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Bryan, Horace V. A. Vehicle exit signaling system. 3,792,468, Cl. 340-326.000.

Bryan, John F., Jr. Dynamic load increasing automobile bumper. 3,791,468, Cl. 180-1.0fv.

Bryngdahl, Olof, to Xerox Corporation. Multiple image formation through self-imaging. 3,791,275, Cl. 95-18.00r.

Bucalo, Brian D. Method and apparatus for manufacturing toilet paper rolls. 3,791,266, Cl. 93-1.00r.

Buchman, John M. Apparatus for simplifying the playing of a song bell type instrument. 3,791,250, Cl. 84-483.000.

Buckman, Raymond W., Jr., to Westinghouse Electric Corporation. Tantalum base alloys. 3,791,821, Cl. 75-174.000.

Bucks, Robert M.; and Ayars, Frederick M., to Mark & Son, Ltd. Vehicle data recording system. 3,792,445, Cl. 340-172.500.

Bucode, Inc.: *See*—

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Buell, Bennett George, to American Cyanamid Company. Brightening plastics with 2-aryl-5-cyanonaphthoxazole brighteners. 3,792,056, Cl. 260-307.000.

Buffalo Brake Beam Company: *See*—

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Bullock, Greg A., to Du Pont de Nemours, E. I., and Company. Nitro ethyl sulfones. 3,792,093, Cl. 260-607.00a.

Bullock, John, to Arrow-Hart, Inc. Circuit breaker. 3,792,403, Cl. 337-66.000.

Bunker Ramo Corporation: *See*—

Casey, Richard C.; Duggan, Robert J.; Grosky, Stephen A.; Jen, Dixon T.; and Serra, John J., 3,792,462.

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Bunshah, Rointan F., to University of California, The Regents of the. High rate deposition of carbides by activated reactive evaporation. 3,791,852, Cl. 117-93.200.

Burckhardt, Manfred H.; Krohn, Hellmut; Grossner, Horst; and Florus, Hans-Jorg, to Daimler-Benz Aktiengesellschaft. Brake-force control system for vehicles, especially motor vehicles. 3,791,702, Cl. 303-21.0be.

Burdick, Robert E.: *See*—

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Burdick, Robert E., to Rolair Systems, Inc. Control unit for air cushion systems. 3,791,477, Cl. 180-117.000.

Burger, Edward. Debris pickup and collection apparatus. 3,790,986, Cl. 15-328.000.

Burgess, George A.: *See*—

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Burhans, Richard Orman: *See*—

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Burkett, Francis L.; and Lee, Richard J., to Dow Chemical Company, The. Packaging process. 3,792,144, Cl. 264-96.000.

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Burns, Gerald Edward: *See*—

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Burns, Jerome O.; and Green, William C., to Ocean Science and Engineering, Inc. Motion compensated crown block system. 3,791,628, Cl. 254-172.000.

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Burt, Glenn R.; Condo, Albert C.; Odsather, Richard L.; and Eliason, Kay E., to Atlantic Richfield Company. Foundation for construction on frozen substrata. 3,791,443, Cl. 165-45.000.

Buser, Warren H. Slotted canopy arrangement for volkswagen engine compartments. 3,791,471, Cl. 180-54.00a.

Bush, Clarence C., to United States of America, Army. Eye protector for welders. 3,792,226, Cl. 219-147.000.

Bush, John E.; and Morgan, Leland M., to United States of America, Navy. Ramjet engine fuel controller. 3,791,141, Cl. 60-243.000.

Bush, Walter Monroe; Gates, John Warburton, Jr.; and Newmiller, Robert John, to Eastman Kodak Company. Onium indophenoxides. 3,791,827, Cl. 96-22.000.

Busker, Leroy H.; and Daane, Robert A., to Beloit Corporation. Through drying for fibrous web. 3,791,044, Cl. 34-9.000.

Butherus, Alexander Duane: *See*—

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Butler, John V., to Lockheed Aircraft Corporation. Particle standard and calibration method. 3,791,192, Cl. 73-1.00r.

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Buzzi, Gunter, to Grohe, Hans, KG. Head shower. 3,791,588, Cl. 239-446.000.

Cadiou, Jean Georges, to Societe Anonyme Automobiles Citroen. Power steering apparatus. 3,791,475, Cl. 180-79.20r.

Cadwell, Edward Peter, to Treadwell Corporation. Recovery of copper from copper sulfide containing concentrates. 3,791,817, Cl. 75-106.000.

Cairns, Hugh; and Hunter, Dennis, to Fisons Limited. Bis chromone-2-carboxylic acids. 3,792,063, Cl. 260-345.200.

Caldarelli, Antonio. Fluid-powered engine. 3,791,142, Cl. 60-263.000.

California Computer Products, Inc.: *See*—

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California Institute of Technology: *See*—

Haley, Floyd C., 3,791,106.

Callullerovich, Maximo. Wheel and tire therefor. 3,791,432, Cl. 152-339.000.

Calmon, Calvin, to Aerochem Research Laboratories, Inc. Volume reduction of radioactive ion exchange resins for disposal. 3,791,981, Cl. 252-301.10w.

Calpis Food Industry Co., Ltd., The: *See*—

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Cambridge Thermionic Corporation: *See*—

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Canadian Industries, Limited: *See*—

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Cannon, John Allister, and Tracton, Arthur Allen, to Ciba-Geigy Corporation. Epoxide-dimethylol propionic acid reaction product with amine aldehyde condensate. 3,792,112, Cl. 260-834.000.

Canon Kabushiki Kaisha: *See*—

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Omi, Kokichi; and Arai, Toshio, 3,791,903.

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Canron, Inc.: *See*—

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Canup, Robert E.; and McPeak, Earl W., Jr., to Texaco Inc. Adaptable photoelectric automotive distributor combination. 3,792,261, Cl. 250-233.000.

Cappelle, Norman D.; and Tap, Henry H., to Oak Industries, Inc. Slip Clutch for television fine tuning mechanism. 3,791,226, Cl. 74-10.800.

Cardenas, Carlos G.; and Brady, Donnie G., to Phillips Petroleum Company. Flame-resistant polymeric compositions containing brominated adducts of acyclic trienes. 3,792,116, Cl. 260-861.000.

Carini, George F.; Williams, George H.; and Burhans, Richard Orman, to Dresser Industries, Inc. Semi-silica plastic refractory composition. 3,791,835, Cl. 106-68.000.

Carlow, Earl F., to Motorola, Inc. Multi-frequency signal generator. 3,792,360, Cl. 328-14.000.

Carlson, David John, to RCA Corporation. High frequency automatic gain control circuits. 3,792,359, Cl. 325-319.000.

Carmellini, Andrew E.; and Rogers, Andrew J., to Commercial Decal, Inc. Low temperature decalcomania. 3,791,841, Cl. 117-3.400.

Carpigiani, Poerio. Machine and method for making a soft ice product formed of frozen air-and-gelatin dispersion. 3,792,182, Cl. 426-250.000.

Carreira, Leonard M., to Xerox Corporation. Photoelectrophoretic imaging transfer method. 3,791,823, Cl. 96-1.400.

Carrier Corporation: *See*—

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Honnold, Fred V., Jr.; and Johnson, Richard L., 3,791,165.

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Carver, Charles M. Hole punching tool. 3,791,034, Cl. 30-367.000.

Case, Edward M.: *See*—

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Case, Everett N., to Atlantic Richfield Company. Process for producing phosphoric acid. 3,792,151, Cl. 423-166.000.

Casey, Richard C.; Duggan, Robert J.; Grosky, Stephen A.; Jen, Dixon T.; and Serra, John J., to Bunker Ramo Corporation. Method and apparatus for controlling a multi-mode segmented display. 3,792,462, Cl. 340-324.0ad.

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Catherwood, Herbert C., 50% to Histed, William N. Rotary engine. 3,791,353, Cl. 123-8.330.

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Chai, Sooyoung, to Bell Telephone Laboratories, Incorporated. Solid-state diode array camera tube having electronic control of light sensitivity. 3,792,197, Cl. 178-7.100.

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Chapman, Roland Philip. Centrifugal casting apparatus. 3,791,439, Cl. 164-292.000.

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Cherry, Myron E. Vibration free piston engine. 3,791,227, Cl. 74-52.000.

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Cleare, Ian Martin, to Smiths Industries, Limited. End fittings for flexible metallic conduits. 3,791,680, Cl. 285-174.000.
Clearwaters, Walter L., to United States of America, Navy. Stress relief insert for flexible towed array. 3,791,480, Cl. 181-.50a.
Clitheroe, Jay B., to Mineral & Chemical Resource Company. High energy gas-liquid contacting process. 3,791,104, Cl. 55-86.000.
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Cody, Thomas E.; Davison, Arthur L.; Grohowski, Joseph A.; Horvath, Geza J.; and Linde, Theodore R., to Bethlehem Steel Corporation. Portable flame photometer and sampling probe. 3,791,743, Cl. 356-187.000.
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Colt Industries Operating Corporation, mesne: *See*—
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Conner, Charles J., to United States of America, Agriculture. Process for brown mineral dyeings of cellulosics without oxidative degradation (tendering), from a single bath. 3,791,786, Cl. 8-52.000.
Conner, James Marvin, to Combustion Engineering, Inc. Recess template. 3,791,040, Cl. 33-174.00g.
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CPC International Inc.: *See*—
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Creuzet, Robert. Heat-extrusion method. 3,791,183, Cl. 72-46.000.
Cromer, Charles F.; Yoon, Kue Hong; and Dakin, Hayes O., Jr., to Westinghouse Electric Corporation. Gas operated blast valve for double-flow interrupters. 3,792,218, Cl. 200-148.00b.
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Cross, James Waverley. Bracket construction for wall mounting of cabinets. 3,791,709, Cl. 312-245.000.
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Cutler, Hymie. Feedrate control system for numerical control apparatus. 3,792,333, Cl. 318-571.000
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Dauenhauer, Florian F. Mechanical vine transfer and carrier. 3,791,389, Cl. 130-30.00d.
Davies, Owen Mansel; Olive, Martin Frederick; Cook, Terence John; and Hilder, Graham Keith, to British Petroleum Company, Limited, The. Isomerization of paraffin hydrocarbons. 3,791,960, Cl. 208-57.000.
Davis, Alwyn K., and St. John, Ward A. Catamenial device and applicator therefor. 3,791,385, Cl. 128-263.000.
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Des Champs, Nicholas Howard, to Donbar Development Corporation. Rotary heat exchanger. 3,791,369, Cl. 126-116.00r.
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Deveney, Frank P. Marine diver vessel. 3,791,327, Cl. 114-16.00r.
Devlin, Edward J., to Glacier Ware, Inc. Method for converting a liquid comestible to a partially frozen condition. 3,791,159, Cl. 62-68.000.
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  Baldyga, Joseph W., 3,791,191.
Diamond, Harold G.; and Gustine, Floyd L., to Allis-Chalmers Manufacturing Company. Electrostatic resin powder spray system. 3,791,341, Cl. 118-7.000.
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  Loftfield, Richard E., 3,791,947.
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Dice, Dennis D., to Electronic Data Controls Corporation Simulated dice game and control circuit therefor. 3,791,650, Cl. 273-138.00a.
Diciaccio, James J.; Gjertsen, John W.; and Nathanson, Alfred S., to Itek Corporation. Linear encoder. 3,791,037, Cl. 33-125.00r.
Dickson, George; and Westergaard, Robert K., to King-Seeley Thermos Co. Ice making machine. 3,791,163, Cl. 62-347.000.
Didier, Wm., Mfg. Co.: *See*—
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Dieter, Julian A., to Jones, R. A., and Company, Incorporated. Drip inhibiting glue nozzle. 3,791,590, Cl. 239-459.000.
Dietz, Conter, to Gebr. Happich GmbH. Means for controlling illumination of control or service elements on motor vehicle. 3,792,248, Cl. 240-1.0el.
Dill, Dale R.; and Springer, William O., to Monsanto Company. Solid, non-caking, free-flowing styrene maleic anhydride compositions. 3,792,119, Cl. 260-874.000.
Dille, Kenneth L.; Saines, George S.; and Arkell, Alfred, to Texaco Inc. Jet fuel manufacture. 3,791,958, Cl. 208-15.000.
Dilley, Earl H. Electric outboard motor. 3,791,331, Cl. 115-17.000.
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Dixon, Melvyn; Moline, Robert Alan; North, James Clayton; Varnerin, Lawrence John, Jr.; and Wolfe, Raymond, to Bell Telephone Laboratories, Incorporated. Magnetic devices utilizing ion-implanted magnetic materials. 3,792,452, Cl. 340-174.0tf.
Dixon, Richard Wayne; Hackett, William Harold, Jr.; and McGahan, Thomas Edward, to Bell Telephone Laboratories, Incorporated. Preferential etching in gap. 3,791,948, Cl. 204-129.750.
Dobesch, Franz Xaver, to VDO Tachometer Werke Adolf Schindling GmbH. Wind direction indicator for sailboats. 3,791,211, Cl. 73-188.000.
Dobras, Bruce W.; Vanderpool, James L.; and Humbarger, Ross C., to Monarch Marking Systems Company. Record reading system. 3,792,236, Cl. 235-61.11e.
Dobson, John C., to Formmet Corporation. Forged ring structure of multiple cast metals. 3,791,706, Cl. 308-216.000.
Dofek, Frantisek, to Zdarske strojirny a slevarny, narodni podnik. Shearing machine for cutting of band material. 3,791,244, Cl. 83-305.000.
Domer, Josef, to Siemens Aktiengesellschaft. Method and system of communication between several ground stations and a transponder satellite. 3,792,476, Cl. 343-7.500.
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Donbar Development Corporation: *See*—
  Des Champs, Nicholas Howard, 3,791,369.
Donjon, Jacques; Hazan, Jean-Pierre; and Marie, Gerard Joseph Marcel, to U.S. Philips Corporation. Electro-optic device comprising an optic image relay and method of manufacturing same. 3,792,259, Cl. 250-213.0vt.
Donot, Guy R. Machine for making coffee beverage. 3,791,284, Cl. 99-289.000.
Donovan, Daniel L., to Borg-Warner Corporation. Charge forming apparatus. 3,791,632, Cl. 261-35.000.
Donovan, John C.; Klein, Carl F.; Korta, Lawrence B.; and Krishnaiyer, Ramesh, to Johnson Service Company. Coded tone multiplexed alarm transmission system. 3,792,470, Cl. 340-409.000.
Dooley, Joseph F., to Pfizer Inc. Method for determining glucose with O-toluidine reagent containing an arsenic compound. 3,792,044, Cl. 23-230.00b.
D'Orazio, Vincent T., to Johnson, S. C., & Son, Inc. Benzyl chrysanthemomates. 3,792,079, Cl. 260-468.00h.
Dorey, Howard Anthony: *See*—
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Duarte, Ruben G.; and Duarte, Manuel George. Flour mix for preparing tortillas. 3,792,174, Cl. 99-94.000.
Duchesne, Gonzague L. Hydroxy-terminated polybutadiene diisocyanate and triol composition. 3,792,003, Cl. 260-18.0tw.
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Duncan, Alfred D., to Duncanlcte Laboratory, Inc. Table service. 3,791,550, Cl. 220-23.860.
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Durante, Anthony C.; and Macey, Frank G., to Chester Electronics Laboratories, Incorporated. Signal processing system for reading indicia over a wide depth of field. 3,792,235, Cl. 235-61.11e.
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Eberhardt, George J.; and Kennedy, Gilbert; deceased (by Kennedy, Dorothy L.; executrix), to National Cash Register Company, The. Method of creating motion-free connection. 3,791,016, Cl. 29-432.000.
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Eckert, Konrad; and Knapp, Heinrich, to Bosch, Robert, G.m.b.H. Fuel injection apparatus for externally ignited internal combustion engines operating on continuously injected fuel. 3,791,359, Cl. 123-119.00r.
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Eiseman, Fred S., Jr.; Schenck, Leslie M.; and Beiswanger, John P. G., to GAF Corporation. Lubricating compositions containing sulfur containing phosphate esters. 3,791,985, Cl. 252-32.0fr.
Eisenbeiss, Friedhelm; and Ehlerding, Susanne, to Merck Patent Gesellschaft Nat. Chronatographic ready-for-use columns. 3,791,522, Cl. 210-198.00c.
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Epstein, J. Michael; and Sisson, Robert B. Emergency light apparatus. 3,792,314, Cl. 307-66.000.
Ercoli, Raffaele; Guainazzi, Mauro; and Silvestri, Giuseppe, to Snam Progetti S.p.A. Process for the polymerization of unsaturated compounds. 3,791,944, Cl. 204-59.00r.
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Eriksson, Erik Arivd Rune; and Nilsson, Olof Lars Erik. Apparatus for producing graphic images on an image surface. 3,792,463, Cl. 340-324.0ad.
Ernst, Otto: *See*—
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Erny, Daniel Richard; and Tysko, Leon Albert, to Van Dyk Research Corporation. Xerographic toner concentration measuring apparatus and method. 3,791,744, Cl. 356-201.000.
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Etzel, James E.; Helbing, Clarence H.; and Justus, Carl A., to Certain-Teed Products Corporation, mesne. Waste water reclamation in fiber glass operation. 3,791,807, Cl. 65-3.000.
Eubanks, Lloyd S.; and Payne, John T., to Monsanto Company. Purification of carboxylic acids. 3,791,935, Cl. 203-74.000.
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Finkel, Bernard G.; Levy, Arthur L.; and Keyloun, Carol, to Scientific Specialties, Ltd. Method and apparatus for determining triglyceride level. 3,791,791, Cl. 23-230.00b.

Frank, Charles E.; and Murib, Jawad H., to National Distillers and Chemical Corporation. Process for the preparation of acrylic and methacrylic acids. 3,792,086, Cl. 260-533.00n.

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Ewing, Josh F., to Ewing-Records & Associates, Inc. Panet for use in a modular concrete form. 3,791,615, Cl. 249-189.000.

Ewing, Lionel Lee. Electrically operated two position electromechanical mechanism. 3,792,391, Cl. 335-254.000.

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Faldi, Giovanni. Pump used in dredging systems operating with compressed air. 3,791,763, Cl. 417-118.000.

Falk, Richard A. Immersion sample cartridge. 3,791,219, Cl. 73-425.40r.

Falk, Richard A.; and Falk, William R. Pneumatic metal sampler. 3,791,220, Cl. 73-425.600.

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Farkas, Robert D. Method of using a compressible die member to form patterns on a plastic sheet including the use of a liquid plastisol and dielectric heating. 3,791,906, Cl. 156-245.000.

Farkos, Robert A. Electromagnetic pump or motor device with axially spaced piston members. 3,791,770, Cl 417-418.000.

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Fattore, Vittorio; Mazzei, Marcello; and Notari, Bruno, to Snam Progetti S.p.A. Process for disproportionating the olefins. 3,792,107, Cl. 260-683.00d.

Faugeras, Anne-Marie; and Lambert, Andre, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Device for determining the direction of propagation of a plane wave. 3,792,479, Cl. 343-113.00r.

Fauser, Hans, to Societa Italiana Superior S.r.L. Device for cooking foods. 3,791,370, Cl. 126-25.00f.

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Felciai, Laurent. Multi unit dwelling structure. 3,791,081, Cl. 52-79.000.

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Feldwick, Raymond Douglas, to Grace, W. R., & Co. Preparation of a magnesium spinel catalyst base. 3,791,992, Cl. 252-463.000.

Fellows, Charles T.; Hermann, Stanley R.; and Hochwalt, Norman C., to National Cash Register Company, The. Transfer medium for producing scratch and smudge resistant marks. 3,792,111, Cl. 260-33.6sb.

Ferrara, Anne Marie, to Western Electric Company, Incorporated. Method of depositing a metal pattern on a surface. 3,791,340, Cl. 117-47.00a.

Ferrara, Anne Marie; and Kenney, John Thomas, to Western Electric Company, Incorporated. Method of selectively depositing a metal on a surface. 3,791,939, Cl. 204-15.000.

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Kaeding, Heinz; Fick, Heinz; and Dahlgruen, Rolf, 3,791,507.

Finkel, Bernard G.; Levy, Arthur L.; and Keyloun, Carol, to Scientific Specialties, Ltd. Method and apparatus for determining triglyceride level. 3,791,791, Cl. 23-230.00b.

Finsterwalder, Ulrich; and Bomhard, Helmut, to Dyckerhoff & Widmann Aktiengesellschaft. Multi-story building and method of construction therefor. 3,791,093, Cl. 52-745.000.

First, Antonin, to CKD Praha, oborovy podnik. Chopper-controlled scheme for infinite field weakening of series motors. 3,792,326 Cl. 318-138.000.

Firth, William Charles, Jr.: *See—*
Panzer, Hans Peter; Firth, William Charles, Jr.; Coscia, Anthony Thomas, and Palmer, Lucille Elma, 3,792,027.

Fischer Holdings Ltd.: *See—*
Fischer, Karl Otto Paul, 3,791,990.

Fischer, Karl Otto Paul, to Fischer Holdings Ltd. Oil absorbent. 3,791,990, Cl. 252-427.000.

Fisons Limited: *See—*
Cairns, Hugh; and Hunter, Dennis, 3,792,063.

Fitzsimons, Ogden, Radden, Charles O.; and Hindman, George J., to Petrocon Corporation. Process for re-refining used petroleum products. 3,791,965, Cl. 208-179.000.

Flamagas, S.A.: *See—*
Gili, Ricardo Aguirre, 3,791,548.

Fleischer, Paul Egon; and Hilberman, Dan, to Bell Telephone Laboratories, Incorporated. Active controllable filter circuit using variable transconductance amplifier. 3,792,367, Cl. 330-98.000.

Fleischmann, Erwin; and Watzlawek, Karlheinz, to Lohmann & Stolterfoht Aktiengesellschaft. Elastic shaft clutch. 3,791,497, Cl. 192-30.00v.

Fleisher, Henry. Apparatus for preparing a painted metal surface for repainting. 3,791,078, Cl. 51-5.000.

Fleming, Ora Ray, to Teledyne, Inc. Electrical relay. 3,792,388, Cl. 335-135.000.

Fliesser, Engelbert, to Agfa-Gevaert AG. Intermittent for cinematographic apparatus. 3,791,566, Cl. 226-68.000.

Flinn & Dreffein Engineering Co.: *See—*
Gamble, Slade B.; and Kelly, Richard A., 3,791,796.

Florus, Hans-Jorg: *See—*
Burckhardt, Manfred H.; Krohn, Hellmut, Grossner, Horst, and Florus, Hans-Jorg, 3,791,702.

Floyd, Roger M.: *See—*
Bamburg, Robert A.; Duncan, Farris N., and Floyd, Roger M., 3,791,562.

FMC Corporation: *See—*
Culbertson, George W., 3,791,501
MacHenry, Richard, 3,791,745.

Focke & Pfuhl: *See—*
Focke, Heinz, 3,792,209.

Focke, Heinz, to Focke & Pfuhl. Switch sensing device for sensing presence of seal on containers. 3,792,209, Cl. 200-61.410.

Folgero, Kare; and Hellsing, Sven, to Allmanna Svenska Elektriska Aktiebolaget. Channel-type induction furnace. 3,792,185, Cl. 13-29.000.

Folkerth, Ilden R., to Michigan Instruments, Inc. Gas cylinder holder. 3,791,403, Cl. 137-343.000.

Food Technology, Inc.: *See—*
Glahe, Elmer F., 3,792,173.

Ford Motor Company: *See—*
Hellriegel, Edmund; and Pfadenhauer, Dieter, 3,791,693.
Stockton, Thomas R., 3,791,138.

Forgione, Peter Salvatore; Polistina, Rocco Alberto; and Schmitt, Edward Emil, to American Cyanamid Company. Entrapped carrier bound enzymes. 3,791,927, Cl. 195-63.000.

Formmet Corporation: *See—*
Dobson, John C., 3,791,706

Forrester, Richard C., III: *See—*
Lynn, Scott; and Forrester, Richard C., III, 3,792,153.

Foster, Douglas E., to Didier, Wm., Mfg. Co. Submarine type, self-propelled suction sweeper. 3,790,979, Cl. 15-1.700.

Foster, Edward L.: *See—*
Stone, Charles W.; and Foster, Edward L., 3,791,627.

Fouces, Juan M.: *See—*
Fouces, Manuel; and Fouces, Juan M., 3,791,181.

Fouces, Manuel; and Fouces, Juan M. Brake locking device for preventing theft of self-propelled vehicles. 3,791,181, Cl. 70-202.000.

Fouche, Jean; and Leger, Andre, to Rhone-Poulenc S.A. Dihydrodibenzo [b,f] azepine derivatives. 3,792,042, Cl. 260-239.00d.

Fouquet-Werk Franz & Planck: *See—*
Kohler, Pius; and Kuhn, Falk, 3,791,176.

Fowler, Larry G., to Sugar Cane Growers Cooperative of Florida. Two row cutter windrower harvesting machine. 3,791,114, Cl. 56-13.900.

Fox, Charles L., Jr., to Research Corporation. Burn ointment comprising silver sulfadiazine and collagenase. 3,792,161, Cl. 424-94.000.

Fox, Richard; Williams, Darrel Andrew; and Wisinski, Adam Prus, to ICI Australia, Limited. Method of filling boreholes with viscous slurried explosives. 3,791,255, Cl. 86-20.00c.

Fox, Shirl S., to Dental Designs. Cuspidor and dental console for use therewith. 3,790,971, Cl. 4-263.000.

Foye, Albion G. Hopper-type mortar spreader. 3,791,559, Cl. 222-176.000.

Frank, Charles E.; and Murib, Jawad H., to National Distillers and Chemical Corporation. Process for the preparation of acrylic and methacrylic acids. 3,792,086, Cl. 260-533.00n.

Frank, Edmund. *See—*
Toman, Joseph R.; and Frank, Edmund, 3,792,276.

Frank, Robert L.; Martin, Sidney G.; and Smith, Clayton S., to Morton-Norwich Products, Inc. Process for the recovery of non-ferrous metal values from sulfide ores and the reduction of gaseous emissions to the atmosphere therefrom. 3,791,812, Cl. 75-9.000.

Franke, Friedrich Hermann: *See—*
Wenzel, Werner; Franke, Friedrich Hermann; and Jager, Ramund, 3,791,994.

Frankenfeld, John W.; and Miller, Sanford A., to Esso Research and Engineering Company. High energy food supplements comprising linear aliphatic 1,3-diols. 3,791,241, Cl. 99-2.00r.

Frauson, William O.: *See—*
Taylor, William; Frauson, William O.; and Chinowsky, Stanley, 3,791,878.

Frazier, James L.; and Polacek, Richard, to Houdaille Industries, Inc. Machine tool tooling. 3,791,257, Cl. 90-11.00d.

Frazier, Larry Vane W., to United States of America, Navy. Underwater data transmission system. 3,792,421, Cl. 340-4.00r.

Freed, Meier E.: *See—*
Potoski, John R.; and Freed, Meier E., 3,792,053.

Fregnan, Gian Carlo: *See—*
Bernardi, Luigi; De Castiglione, Roberto; Fregnan, Gian Carlo; and Goffredo, Onofrio, 3,792,032.

Freightliner Corporation: *See—*
Self, Kenneth W.; Chew, Norman B.; and Twyman, Bill T., 3,791,664.

French, Heinz; Albrecht, Konrad; and Schafer, Eugen, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Storable highly concentrated pesticides and process for their manufacture. 3,791,811, Cl. 71-120.000.

Freya-Plastic & Franz Delbrousk: *See—*
Delbrouck, Franz; and Nickel, Wilfried, 3,791,549.

Fried, John H.; and Harrison, Ian T., to Synthex Corporation. Naphthyl alkanols and derivatives thereof, methods of use thereof, and processes for the preparation thereof. 3,792,167, Cl. 424-337.000.

Fried, Peter I.: *See—*
Swersey, Burt L.; and Fried, Peter I., 3,791,467.

Friedlander, Erich Siegfried, to Associated Electrical Industries Limited. A.C. power transmission systems. 3,792,288, Cl. 307-102.000.

Friedman, Mitchell, to Bio/Physics Systems, Inc. Digital fluidic amplifier particle sorter. 3,791,517, Cl. 209-74.00r.

Friedman, Sanford J. Animal shield. 3,791,383, Cl. 128-154.000.

Friedmann, Charles Aubrey; Hofer, Peter; and Lange, Winthrop E., to Mundipharma AG. Bis-(phosphorylated anthralin) compounds and process for preparing same. 3,792,129, Cl. 260-927.00r.

Friedmann, Paul G.; and Cohen, William C., to Leeds & Northrup Company. Adaptive feed forward-feedback control of the concentration of a selected ion of a solution. 3,791,793, Cl. 23-230.00a.

Fries, Paul; and Moritz, Konrad, to Siemens Aktiengesellschaft. Cooling apparatus for flat semiconductors using one or more heat pipes. 3,792,318, Cl. 317-234.00r.

Fries, William: *See—*
Kunin, Robert; and Fries, William, 3,791,866.

Frigo, Richard I.; and Crowden, William F. Drum. 3,791,249, Cl. 84-411.000.

Fritch, Junior L.; and Brandeberry, Don R., to Robinair Manufacturing Corporation. Vacuum pump. 3,791,780, Cl. 418-60.000.

Fromuth, Harry C., Jr., to Rohm & Haas Company. Polyphenylene ether resins containing a butadiene-acrylic-styrene polymer modifier. 3,792,122, Cl. 260-876.00r.

Fuchiwaki, Yutaka; and Nishikaji, Takashi, to Mitsubishi Chemical Industries Limited. Process for preparing a cross-linked porous copolymer. 3,791,999, Cl. 260-2.50m.

Fudro, Stanley J., to Toys 'N Things, Inc. Egg decorating device. 3,792,163, Cl. 33-21.00d.

Fuji Photo Film Co., Ltd.: *See—*
Akashi, Goro; and Hirakawa, Takashi, 3,791,608.
Murakoshi, Makoto, 3,792,440.

Fuji Shashin Koki Kabushiki Kaisha: *See—*
Ito, Haruhiro, 3,791,643.

Fujii, Yoshifusa: *See—*
Tsujimoto, Kayoshi; and Fujii, Yoshifusa, 3,792,484.

Fujita, Kinji; and Mitsui, Hironitsu, to Kabushiki Kaisha Suwa Seikosha. Temperature compensated quartz oscillator circuit. 3,792,377, Cl. 331-116.00r.

Fujitsu Limited: *See—*
Honda, Masanori, 3,791,717.

Fujiwara, Motokichi: *See—*
Inoue, Katsumi; and Fujiwara, Motokichi, 3,791,056.

Fujiyama, Tetsuo; and Hamamoto, Takashi, to Toyo Kogyo Co., Ltd. Rotary piston internal combustion engine. 3,791,781, Cl. 418-179.000.

Fukada, Tetsuo: *See—*
Shirota, Minoru; Fukada, Tetsuo; Ogata, Mayumi; Takahashi, Toshiaki; and Yamada, Hiromi, 3,792,172.

Fukatsu, Shunzo; Ishikawa, Tetsuo; Miura, Taro; Niida, Taro; Noniya, Bunzo; and Koeda, Takemi, to Meji Seika Kaisha, Ltd. Mono-acetyl derivatives of antibiotic SF-837 and SF-837-A2 aubstances and production thereof. 3,792,035, Cl. 260-210.0ab.

Fukinuki, Takahiko: *See—*
Miyata, Masachika; and Fukinuki, Takahiko, 3,792,355.

Fukushima, Hideaki: *See—*
Suzuki, Yoshio; Aono, Shunji; and Fukushima, Hideaki, 3,792,055.

Fuller, Alvin W., to Hubbell, Harvey, Incorporated. Weatherproof cover for electrical cable connector. 3,792,415, Cl. 339-60.00r.

Fuller, Howard J., to Worcester Controls Corporation. Interface for multiplex motor control systems. 3,792,332, Cl. 318-562.000.

Fumiaki, Yamagishi; Fumio, Endo; and Hideki, Ooi, to Dai-Ichi Kogyo Seiyaka Co., Ltd. Process for synthesizing sucrose esters of fatty acids. 3,792,041, Cl. 260-234.00r.

Fumio, Endo: *See—*
Fumiaki, Yamagishi; Fumio, Endo; and Hideki, Ooi, 3,792,041.

Furlong, Louis E.; Zimmerman, Abraham A.; and Shannon, Hugh F., to Esso Research and Engineering Company. Enchancing the operation of a gasoline engine. 3,791,066, Cl. 44-66.000.

Furnas Electric Company: *See—*
Peluchiwski, John J.; and Walstad, Dennis C., 3,792,402.

Furr, Tommy R., to Oxford Industries, Inc. Method and apparatus for forming random stripe in knitting garments. 3,791,173, Cl. 66-20.000.

Gachot, Jean. Pressure regulators for compressed-air circuits. 3,791,399, Cl. 137-116.000.

GAF Corporation: *See—*
Eiseman, Fred S., Jr.; Schenck, Leslie M.; and Beiswanger, John P. G., 3,791,985.

Gahler, Charles C., to Smith, X. S., Inc. Plastic covered building structures. 3,791,076, Cl. 52-2.000.

Gaiduchik, Vladimir Olegovich: *See—*
Afanasiev, Vadim Nikolaevich; Gaiduchik, Vladimir Olegovich; and Gruzin, Pavel Lukich, 3,792,252.

Gallo, Charles F., Jr., to Xerox Corporation. Corona wire apparatus. 3,790,999, Cl. 29-25.150.

Galpern, Grigary Davidovich: *See—*
Burmistrova, Tamara Petrovna; Bardina, Tatyana Alexandrovna; Galpern, Grigary Davidovich; Karaulova, Elena Nikolaevna; Luchai, Nonna Alexandrovna; Terpilovsky, Nikolai Nikolaevich; and Khitrik, Adolf Alexandrovich, 3,792,095.

Gamble, Slade B.; and Kelly, Richard A., to Flinn & Dreffein Engineering Co. and Anti-pollution apparatus. . 3,791,796, Cl. 23-277.00c.

Gander, Frederick W.; and Garlington, William D., to Du Pont de Nemours, E. I., and Company. Granular polyketone preparation. 3,791,890, Cl. 260-61.000.

Garbi, Frank. Electromagnetic drive system. 3,792,295, Cl. 310-46.000.

Garcea, Gian Paolo, to Alfa Romeo S.p.A. Regulator based on the control of a member having variable impedance surface-characteristics, particularly for feed adjustment in I.C. engines. 3,792,343, Cl. 323-82.000.

Garden Industries, Inc.: *See—*
Barrett, Robert, 3,791,421.

Gardner, Conrad O. Highway drainage and exhaust system. 3,791,752, Cl. 404-2.000.

Gardner, Keith L.; and La Baw, Kenneth B., to United States of America, Navy. Lateral photodetectors. 3,792,257, Cl. 250-211.00j.

Gardner-Denver Company: *See—*
Strecker, Gerald L.; and Schultz, Dennis L., 3,791,149.
Workman, William, Jr., 3,791,459.

Garlinghouse, Leslie H. Gate operating system for concrete buckets. 3,791,690, Cl. 294-71.000.

Garlington, William D.: *See—*
Gander, Frederick W.; and Garlington, William D., 3,791,890.

Garrett Corporation, The: *See—*
Kartinen, Ernest J.; and Lewis, Roger W. (said Lewis assor. to), 3,791,575.
Summer, James R., 3,791,764.

Garrett, Jim C.: *See—*
O'Dea, Orrin B.; and Hanneman, Thomas W., 3,792,210.

Garrett, John W.; Alexander, Milton; and Riepenhoff, Ralph R., to United States of America, Air Force. Aircraft ejection seat actuation system. 3,791,610, Cl. 244-122.00a.

Gates, John Warburton, Jr.: *See—*
Bush, Walter Monroe; Gates, John Warburton, Jr.; and Newmiller, Robert John, 3,791,827.

Gattus, Jean; and Mallet, Maurice, to Rhone-Poulenc S.A. Films of polyamide-imides having a uniplanar axial structure. 3,792,019, Cl. 260-47.0cp.

Gayot, Jean: *See—*
Bardet, Serard; Gayot, Jean; and Bouee, Vincent, 3,791,304.

Geary, Carl H., to Carrier Corporation. Turbine turning mechanism. 3,791,231, Cl. 74-142.000.

Gebauer, Thomas Edward: *See—*
Hanser, Paul Edmund; and Gebauer, Thomas Edward, 3,791,457.

Gebel, Radames K. H.; and Fettis, Henry E., to United States of America, Air Force. Controllable edge sharpening system for time sequential signals. 3,792,363, Cl. 328-164.000.

Gebr. Bellmer KG: *See—*
Kollmar, Ulrich, 3,791,268.

Gebr. Happich GmbH: *See—*
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Geiger, Julius: *See—*
Von Bonin, Wulf; Geiger, Julius; Meinhardt, Gunter; Meyer, Karl-Otto; Wagenknecht, Werner; and Himmelmann, Wolfgang, 3,791,831.

Gelbenegger, Franz. Angle adjustment unit for prostheses and

Glass, Marvin I.; Morrison, Howard J.; and Kaelin, Bette M.,

Branscum, Tony E., 3,791,547.

Gottfried Bischoff Bau Kompl. Gasreinigungs und Wasseruckkuhlan-

Grune, Horst, to Varta Aktiengesellschaft. Process for reactivating a fuel cell battery. 3,791,870, Cl. 136-86.00e.

- Gelbenegger, Franz. Angle adjustment unit for prostheses and ortheses. 3,790,965, Cl. 3-21.000.
- Geller, Myer: *See*—
  - Altman, Daniel E.; Barstow, Glidden J.; and Geller, Myer, 3,792,373.
- Gemander, Georg: *See*—
  - Schmaldienst, Peter; and Gemander, Georg, 3,791,363.
- Gemmill, Robert M., Jr.; and Schick, John W., to Mobil Oil Corporation. Substituted indans. 3,792,096, Cl. 260-612.00r.
- Gendron, Wilfred H., to United States Envelope Company. Two-way mailing item and continuous form assembly thereof. 3,791,572, Cl. 229-69.000.
- General Automation Manufacturing Incorporated: *See*—
  - Warren, Wesley S., 3,791,755.
- General Dynamics Corporation: *See*—
  - Tubb, Irvin L., 3,791,970.
- General Electric Company: *See*—
  - Abolins, Visvaldis; Erhardt, Peter F.; and Holoch, Klaus E., 3,792,121.
  - Abolins, Visvaldis; and Reinhard, Donald L., 3,792,123.
  - Bilski, Richard E., 3,791,657.
  - Ettlinger, Louis F.; and Barger, Donald R., 3,792,404.
  - Lewis, Robert E.; and Hanson, Lloyd A., 3,791,982.
  - Lister, John W., 3,792,305.
  - Loika, Alexander, Jr., 3,792,353.
  - Price, Frank D.; and Conners, Richard G., 3,792,193.
  - Rice, Keith E., 3,791,203.
  - Summers, Robert M.; and Holoch, Klaus E., 3,792,120.
  - Zdaniewski, Joseph J., 3,792,012.
- General Foods Corporation: *See*—
  - Moreno, Victor; and Lysak, David A., 3,791,283.
- General Motors Corporation: *See*—
  - Zens, John F., 3,791,671.
- Geomet, Incorporated: *See*—
  - Moyer, Rudolph H.; and Sibbett, Donald J., 3,791,933.
- Gertsch AG, mesne: *See*—
  - Feichtinger, Johann; and Feichtinger, Anton, 3,791,675.
- Gess, Larry C. Apparatus for filling, labeling, and closing containers, such as syringes. 3,791,009, Cl. 29-208.00b.
- Gestetner Copiers Limited: *See*—
  - Mihalik, Nandor, 3,791,731.
  - Mikalik, Nandor; Moss, Andrew Anthony; and Prince, John Charles Henry, 3,791,732.
- Gibby, Michael G.; Pines, Alexander; and Waugh, John S., to Massachusetts Institute of Technology. Proton-enhanced nuclear induction spectroscopy. 3,792,346, Cl. 324-.50r.
- Gidge, Lester, to Monsanto Company. Method of heat sealing porous materials. 3,791,908, Cl. 156-273.000.
- Gidick, Ward F., to Koppers Company, Inc. Pollution-free coal charging apparatus. 3,791,320, Cl. 110-101.00r.
- Giery, Edward G., Jr.: *See*—
  - Schrage, Donald J.; and Giery, Edward G., Jr., 3,791,317.
- Gilani, Syed S. H.; and Murray, Donald W., to Esso Research and Engineering Company. Grease thickened with lithium soap of hydroxy fatty acid and lithium salt of aliphatic dicarboxylic acid. 3,791,973, Cl. 252-41.000.
- Gilbreath, Dennis R.; and Kralstein, Sheldon D., to United Aircraft Corporation. Vector angle computer. 3,792,246, Cl. 235-186.000.
- Giles, Charles E. Collet and collet fixture. 3,791,661, Cl. 279-43.000.
- Gili, Ricardo Aguirre, to Flamagas, S.A. Automatic ashtray. 3,791,548, Cl. 220-20.500.
- Gilles, Roger; and Nougarede, Francis, to Entreprise de Recherches et d'Activites Petrolieres (Elf). Slider-type assembly device. 3,790,993, Cl. 24-201.00c.
- Gillespie, Gerald W.: *See*—
  - Blumenthal, Stanley P.; Krasnick, Solomon; and Gillespie, Gerald W., 3,792,437.
- Gillette Company, The: *See*—
  - Webster, Mild E., 3,791,098.
- Gillies, George A., to Shell Oil Company. Hydrogenated block copolymers and process for preparing same. 3,792,127, Cl. 260-880.00b.
- Gilmore, Thomas P., to Allis-Chalmers Corporation. D.C. to D.C. converter. 3,792,337, Cl. 321-2.000.
- Girling Limited: *See*—
  - Nicholls, Lawrence George, 3,791,407.
  - Tickle, Colin John Frederick, 3,791,491.
- Gjertsen, John W.: *See*—
  - Diciaccio, James J.; Gjertsen, John W.; and Nathanson, Alfred S., 3,791,037.
- GKN Sankey Limited: *See*—
  - Bowring, David John, 3,791,425.
- GKN Transmissions Limited: *See*—
  - Pagdin, Brian Colin, 3,791,589.
- Glabe, Elmer F., to Food Technology, Inc. Process of reducing shrinkage and retaining moisture and juices in meat products and products produced thereby. 3,792,173, Cl. 426-92.000.
- Glacier Ware, Inc.: *See*—
  - Devlin, Edward J., 3,791,159.
- Gladish, James O.: *See*—
  - Ancel, Selwyn J.; and Gladish, James O., 3,791,977.
- Glass, Alastair Malcolm: *See*—
  - Auston, David Henry; and Glass, Alastair Malcolm, 3,792,379.
- Glass, Marvin, & Associates: *See*—
  - Glass, Marvin I.; Morrison, Howard J.; and Kaelin, Bette M., 3,791,662.
- Glass, Marvin, Associates: *See*—
  - Licitis, Gunars; and Rodmaker, Gerald M., 3,791,656.
- Glass, Marvin I.; Morrison, Howard J.; and Kaelin, Bette M., to Glass, Marvin, & Associates. Toy vehicle with removable soft body portion. 3,791,662, Cl. 280-1.100.
- Glaswerke Schuller GmbH: *See*—
  - Schuller, Wolfgang; and Veeh, Karl, 3,791,919.
- Glaxo Laboratories Limited: *See*—
  - Arkley, Vincent; Eardley, Stephen; and Long, Alan Gibson, 3,792,047.
- Gleason, Edward H.; and Guziak, Leonard F. Flame retardant latex. 3,792,007, Cl. 260-29.07p.
- Glindmeyer, Friedrich; Hennenberg, Wilhelm; and Limpens, Karl, to Prym, William, Werke KG. Method and apparatus for production of a zipper by weaving. 3,791,417, Cl. 139-11.000.
- Gloucester Engineering Co., Inc.: *See*—
  - Schott, Charles M., Jr., 3,791,567.
  - Skelding, Geoffrey Harry; and Tracey, Wilbur G., 3,791,294.
- Glover, John Benjamin, to Hepworth Iron Comapny, Limited, The. Pipe fittings. 3,791,679, Cl. 285-155.000.
- Glutz, Bernhard: *See*—
  - Martin, Forst G.; Glutz, Bernhard; and Linz, Hans, 3,790,995.
- G.M.T. S.A.: *See*—
  - Lefebvre, Pierre Albert, 3,792,296.
- Godderidge, Jean. Devices for unwinding filamentary material from a bobbin or spool. 3,791,119, Cl. 57-34.00r.
- Goehring, Clifford Clayton; Hart, Arthur Clifford, Jr.; and Wooldridge, Derek, to American Can Company. Multilayer laminated polyethylene copolymer-polyamide film. 3,791,915, Cl. 161-227.000.
- Goerden, Leonard; and Gromping, Franz, to Bayer Aktiengesellschaft. Process and apparatus for the production of hollow bodies from reaction resins, which are reinforced with fibres. 3,791,900, Cl. 156-171.000.
- Gof, Mohammed S. Water bike. 3,791,332, Cl. 115-27.000.
- Goffe, William L., to Xerox Corporation. Removal of background from an imaged migration layer. 3,791,822, Cl. 96-1.0ps.
- Goffredo, Onofrio: *See*—
  - Bernardi, Luigi; De Castiglione, Roberto; Fregnan, Gian Carlo; and Goffredo, Onofrio, 3,792,032.
- Gold, Nicholas. Three-dimensional board game apparatus. 3,791,649, Cl. 273-131.0ad.
- Goldbaum, Elliott: *See*—
  - Scowen, Kenneth J.; and Goldbaum, Elliott, 3,792,249.
- Goldberg, Morris: *See*—
  - Schwartz, Robert; and Goldberg, Morris, 3,792,281.
- Goldfarb, Harold; and Valsamakis, Christopher, to North American Rockwell Corporation. Solder flux composition. 3,791,879, Cl. 148-23.000.
- Goldfarb, Harold; and Valsemakis, Christopher. Solder flux composition. 3,791,886, Cl. 148-23.000.
- Goldman, Maurice A., to Synagex Corporation. Refining feed unit for a carding machine. 3,790,990, Cl. 19-105.000.
- Goldor Topsoe A/S: *See*—
  - Rostrup-Nielsen, Jens Richard, 3,791,993.
- Goldsmith, Clifton R., to Phillips Petroleum Company. Process for establishing reactive contact between reactive ingredients. 3,791,980, Cl. 252-188.30r.
- Goldstein, Irving; and Rambauske, Werner R. Improved optical cavity for a laser. 3,792,370, Cl. 331-94.500.
- Golze, Richard R., to Rockwell International Corporation. Vehicle wheel trim. 3,791,700, Cl. 301-37.0cm.
- Goodhart, Frank; and Campbell, William A., to Warner-Lambert Company. Dissolution testing device. 3,791,222, Cl. 73-432.00r.
- Goodrich, Stanley R., Jr.; and Roethlisberger, Jerry M., to Dart Industries Inc. Ball joint with manually operable, sensible wear indicator. 3,791,748, Cl. 403-27.000.
- Goodyear Tire & Rubber Company, The: *See*—
  - Conger, Marvin T.; Evans, Theodore A.; and Gordon, Larry A., 3,792,000.
  - Duddey, James E.; Hahn, Maneung; and Schirmer, Joseph P., Jr., 3,792,015.
- Gordon, Larry A.: *See*—
  - Conger, Marvin T.; Evans, Theodore A.; and Gordon, Larry A., 3,792,000.
- Gorgens, Joseph E.; and Heske, William A. Motion responsive electrical control apparatus. 3,792,408, Cl. 338-91.000.
- Gorin, Everett; Kulik, Conrad J.; and Lebowitz, Howard E., to Consolidation Coal Company. Conversion of coal to clean fuel. 3,791,956, Cl. 208-8.000.
- Gorl, Richard; and Blase, Helmut, to Rheinstahl AG. Adjustable width crane supporting structure. 3,791,530, Cl. 212-145.000.
- Gorman, John P., to Cast Iron Soil Pipe Institute. Vented sanitary trap unit. 3,791,401, Cl. 137-216.200.
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- Hayes, George A., to United States of America, Navy. Annealing treatment for controlling warhead fragmentation size distribution. 3,791,881, Cl. 148-143.000.
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- Hayes, Thomas Edward; and Bechtel, Jon Harold, to Johnson Service Company. Temperature responsive actuator. 3,792,400, Cl. 337-38.000.
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- Heske, William A.: *See—*
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- Hico Corporation of America: *See—*
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- Higochi, Takeru; and Stella, Valentino J., to Alza Corporation. Esters of hydantoic acid. 3,792,081, Cl. 260-472.000.
- Hilberman, Dan: *See—*
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- Hill, Brian K.; and Kehr, J. Alan, to Minnesota Mining & Manufacturing Company. Metal Imidazolate-catalyzed systems. 3,792,016, Cl. 260-47.0en.
- Hill, William E., to United States of America, Army, mesne. Fast burning double-base propellant. 3,791,893, Cl. 149-19.000.
- Hill, William Frank, to Lucas, Joseph, (Electrical) Limited. Liquid level detection systems. 3,792,456, Cl. 340-244.00r
- Hiller, Heinrich; and Jentzsch, Wolfgang, to Badische Anilin- und Soda-Fabrik Aktiengesellschaft. Production of anthraquinone-alpha-sulfonic acids. 3,792,065, Cl. 260-370.000.
- Himes, William H., to Leyman Manufacturing Corporation. Cargo platform. 3,791,541, Cl. 214-75.00t.
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- Hirata, Hiroshi, to Minolta Camera Kabushiki Kaisha. Overlap control device for a motion picture camera. 3,791,724, Cl. 352-91.000.
- Hirayama, Chikapa; and Fey, Maurice G., to Westinghouse Electric Corporation. Processes for chemical conversion. 3,791,949, Cl. 204-171.000.
- Hirayama, Chikara, to Westinghouse Electric Corporation. Stress grading coatings for insulators. 3,791,859, Cl. 117-201.000.
- Hirozawa, Koichiro, to Aisin Seiki Company, Limited. Door lock mechanism. 3,791,686, Cl. 292-216.000.
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- Hofmann, Karl, to Bosch, Robert, G.m.b.H. RPM regulator for a fuel injection pump serving an internal combustion engine. 3,791,361, Cl. 123-139.0ap.

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Hopkins, Arthur W. Opening means for containers. 3,791,570, Cl. 229-7.00r.
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Hudson, Paul S., to Phillips Petroleum Company. Solid propellants prepared from acidic vinylidene polymers using both polyaziridinyl and difunctional aziridinyl curing agents. 3,791,888, Cl. 149-19.000.
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Jakob, Hans, to American Safety Equipment Corporation. Push button buckle. 3,790,994, Cl. 24-230.00a.
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  - Bergmann, Paul F.; and Coates, David L., 3,791,355.
- Johnson, Richard L.: *See*—
  - Honnold, Fred V., Jr.; and Johnson, Richard L., 3,791,165.
- Johnson, Robert H.: *See*—
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  - Donovan, John C.; Klein, Carl F.; Korta, Lawrence B.; and Krishnaiyer, Ramesh, 3,792,470.
  - Hayes, Thomas Edward; and Bechtel, Jon Harold, 3,792,400.
  - Janu, George J., 3,791,397.
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  - Loutzenhiser, Russell H.; Aukrust, Egil; and Meyer, Harry W., 3,791,819.
- Jones, Alan Richardson, to Coulter Chemistry, Inc., mesne. Magnetic hopper system for loading and unloading a conveyor. 3,791,509, Cl. 198-41.000.
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  - Woodier, George T.; Jones, Charles; and Hermes, Walter L., 3,791,235.
- Jones, John L.; and Rubino, Andrew M., to Armour Pharmaceutical Company. Basic aluminum bromide-polyol complexes and methods of making same. 3,792,070, Cl. 260-448.00r.
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- Jones, Robert J., to TRW Inc. Perfluoro addition polymers. 3,792,022, Cl. 260-77.5am.
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  - Glass, Marvin I., Morrison, Howard J.; and Kaelin, Bette M., 3,791,662.
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- Kakumu, Ichizo; and Ito, Teruyuki, to Toyoda Koki Kabushiki Kaisha. Grinding machine with wheel dress compensating apparatus. 3,791,084, Cl. 51-165.870.
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- Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, to Societe Anonyme dite: L'Oreal. p-Hydroxy-diphenylamine compounds. 3,792,090, Cl. 260-571.000.
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- Kane, Richard E.; and Reese, Frank L.; deceased (by Reese, Blanche C.; executrix), to Westinghouse Electric Corporation. High-voltage circuit interrupter incorporating series vacuum interrupter elements. 3,792,213, Cl. 200-144.00b.
- Kaneno, Masayuki: *See*—
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- Kanner, Bernard: *See*—
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- Karandy, Fred: *See*—
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- Kastan, Howard; and Pena, Joe C., to Lockheed Aircraft Corporation. Retention member. 3,791,234, Cl. 74-579.00r.
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- Katakabe, Noboru, to Matsushita Electric Industrial Co., Ltd. Fixing apparatus. 3,792,488, Cl. 354-300.000.
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- Kaufmann, Siegfried; and Rutz, Hans, to Rieter Maschine Works, Ltd. Method and apparatus for controlling the doffing of bobbins and the donning of tubes on spindles of ring spinning and ring twisting machines. 3,791,124, Cl. 57-52.000.
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- Kawaguchi, Hiroshi; Konishi, Masataka; and Tsukiura, Hiroshi, to Bristol Myers Company. Process for preparing ambutyrosin. 3,792,037, Cl. 260-210.00r.
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- Kawamura, Saburo; Ozaki, Taiji; and Orii, Saburo, to Kuraray Co., Ltd. Method of preparing films of polyvinyl alcohol resins. 3,792,146, Cl. 264-205.000.
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- Kawasaki, Jiro: *See*—
  - Narusawa, Shozo; Itzuka, Oshi; and Kawasaki, Jiro, 3,791,545.
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- Kawecki Berylco Industries, Inc.: *See*—
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- Kay Manufacturing Corporation: *See*—
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- Kaye, Morton; and Radlauer, Marvin I., to Radlauer, Marvin I. Portable microfilm viewer. 3,791,728, Cl. 353-26.000.
- Kazan, Benjamin, to International Business Machines Corporation. Ferroelectric ceramic storage display tube. 3,792,449, Cl. 340-173.200.
- Kazem, Abdollah. Solid state circuit breaker. 3,792,289, Cl. 307-125.000.
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- Keijzer, Johan H.; and Beets, Roland H. C., to Monroe Belgium N.V. Shock absorber with piston rod guide and seal means. 3,791,495, Cl. 188-322.000.
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  - Maxwell, John Augustus; and Merrill, Michael Wallace, 3,792,150.
- Keith, Arlie L. Digital clinical thermometer. 3,791,214, Cl. 73-362.0ar.
- Keith, Carl D.; and Mooney, John J., to Engelhard Minerals & Chemicals Corporation. Process and apparatus. 3,791,143, Cl. 60-274.000.
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- Keystone Industries, Inc.: *See*—
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- Kilbourn, Eugene L.; and Baker, James T., to Progressive Dynamics, Inc. Light fixture with removable lens. 3,792,250, Cl. 240-7.100.
- Kim, Keun Y., to Monsanto Company. Stabilized phosphate and dentifrice compositions and process for producing same. 3,792,152, Cl. 423-311.000.
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- Kirschner, Lawrence, to Warner-Lambert Company. Dissolution testing device. 3,791,221, Cl. 73-432.00r.
- Kishikawa, Hiroshi; Yasuno, Kiyoshi; Kitamura, Shuji; Ueno, Katsuji; Inoue, Haruo; and Toyota, Nobuhiro, to Sumitomo Chemical Company, Ltd. Thermoplastic resin composition comprising polycarbonates and polyarylene esters. 3,792,115, Cl. 260-860.000.
- Kishikawa, Hiroshi; Yasuno, Kiyoshi; Kitamura, Shuji; Ueno, Katsuji; Inoue, Haruo; and Toyota, Nobuhiro, to Sumitomo Chemical Company, Ltd. Resin composition comprising styrene resin and a polyarylene ester. 3,792,118, Cl. 260-873.000.
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- Klang, Daniel M.; and Mosciatti, Roger, to Bucode, Inc. Light collecting and transmitting apparatus. 3,791,607, Cl. 242-184.000.
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Klein, Heinrich; Pieper, Rudolf; and Sieth, Joachim, to Siemens Aktiengesellschaft. Apparatus for producing granular solids from the gaseous phase such as by sublimation. 3,791,110, Cl. 55-261.000.

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Klein, Richard M., to GTE Laboratories, Incorporated. Preparation of chaloogenide glass sputtering targets. 3,791,955, Cl. 204-298.000.

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Kniefel, Alfred Beryl. Building block. 3,791,090, Cl. 52-593.000.

Knudson, Gary A. Method and apparatus for forming multiple panel shapes. 3,791,185, Cl. 72-181.000.

Kobayashi, Hisashi; and Tang, Donald Tao-Nan, to International Business Machines Corporation. Receiver structure for equalization of partial-response coded data. 3,792,356, Cl. 325-42.000.

Kobayashi, Kazuo; and Kaneno, Masayuki, to NGK Insulators, Ltd. Utilizing mixtures of yttria, magnesia, and lanthanum oxide in manufacture of transparent alumina. 3,792,142, Cl. 264-65.000.

Kobori, Toshio; and Ohba, Masaru, to Minolta Camera Kabushiki Kaisha. Switching apparatus for electric shutter mechanisms. 3,791,277, Cl. 95-42.000.

Koch, James Allan; and Henderson, Donald Leroy, to Deere & Company. Multi-load tractor hitch system. 3,791,454, Cl. 172-7.000.

Koch, James Allan, to Deere & Company. Tractor hitch system including a vertically swingable drawer powered by a draft line actuator. 3,791,456, Cl. 172-450.000.

Kockums Mekaniska Verkstads AB: *See*—
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Stout, Beauford F.; and Hann, George W., 3,791,217.

Koeda, Takemi: *See*—
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Koehler, Carlton L. Underwater wet cell battery case. 3,791,875, Cl. 136-173.000.

Koehring Company: *See*—
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Koeijmans, Gerard D., to Mobil Oil Corporation. Apparatus for controlling the transfer of data from core to disc storage in a video display system. 3,792,442, Cl. 340-172.500.

Kohler, Pius; and Kuhn, Falk, to Fouquet-Werk Franz & Planck. Detection device for errors in the angular position of a pattern control drum for a textile machine. 3,791,176, Cl. 66-138.000.

Kohlmannsperger, Josef, to Agfa-Gevaert Aktiengesellschaft. Thermomagnetic imaging method. 3,791,843, Cl. 117-17.500.

Koizumi, Ken; Ikeda, Yoshiro; and Yoshiyagawa, Mitsugi, to Nippon Selfoc Kabushiki Kaisha; a/k/a Nippon Selfoc Co., Ltd. Continuous production of light-conducting glass fibers with ion diffusion. 3,791,806, Cl. 65-3.000.

Kokusai Keiso Co., Ltd.: *See*—
Nagatani, Norimichi; and Imamura, Toyohide, 3,791,554.

Kollmar, Ulrich, to Gebr. Bellmer KG. Machine for flattening cartons. 3,791,268, Cl. 93-53.00r.

Kollmer, Werner: *See*—
Stengel, Max; Kollmer, Werner; and Grassl, Manfred, 3,792,189.

Kolodchin, William; and Brackenridge, David R., to Ethyl Corporation. Flame resistant polyester. 3,792,117, Cl. 260-864.000.

Komazaki, Tosio, to Action Films, Inc. Motion picture apparatus. 3,791,723, Cl. 352-72.000.

Komline-Sanderson Engineering Corporation: *See*—
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Komroff, Paul: *See*—
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Kondrot, Leonard B.: *See*—
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Konishi, Masataka: *See*—
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Konnemann, Alfred; and Muller, Wulf, to Fa. Grote & Hartmann. Electrical coupling element. 3,792,420, Cl. 339-258.00r.

Koppers Company, Inc.: *See*—
Gidick, Ward F., 3,791,320.
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Korbert, Hermann: *See*—
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Korpics, Charles J. Vapor phase inhibitor containing benzotriazole and tolyltriazole mixtures. 3,791,855, Cl. 117-154.000.

Korta, Lawrence B.: *See*—
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Kose, Tatsuo; Hori, Kiyokazu; and Ochi, Kazuo, to Daiwa Boseki Kabushiki Kaisha and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Automatic doffing apparatus. 3,791,126, Cl. 57-53.000.

Koshugi, Jyoniti: *See*—
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Koskimies, Jouni; and Heinanen, Kauko, to Valmet Oy. Headbox of a paper making machine having multiple, vertically inclined vanes. 3,791,918, Cl. 162-343.000.

Kotera, Norio: *See*—
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Kotick, Michael Paul: *See*—
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Kotitschke, Josef: *See*—
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Kovacs, Stephen G. Magnetic heart pump. 3,791,769, Cl. 417-417.000.

Kovar, Robert F.: *See*—
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Krakauer, Edwin G.: *See*—
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Krall, Heribert A.; and Maag, Helmut, to Technica-Guss GmbH. Strand milling machine. 3,791,258, Cl. 90-21.00c.

Kralstein, Sheldon D.: *See*—
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Kramer, Daniel E. Pressure switch for refrigeration systems. 3,791,161, Cl. 62-226.000.

Kran, Hans-Peter: *See*—
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Kratzer, Bernd J. L.; and Ulffers, Heinz, to Zeiss-Stiftung, Carl; d/b/a Zeiss, Carl. Method of and device for determining the state of refraction of a human eye. 3,791,719, Cl. 351-11.000.

Kreifels, Clifford A., to Dale Electronics, Inc. Fuse resistor and the method for making same. 3,792,406, Cl. 337-163.000.

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Kressman, Theodore Roger Ernest: *See*—
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Krieger, Bernhard; Bolze, Manfred; and Drawert, Manfred, to Schering AG. Hot melt pressure sensitive adhesives. 3,792,002, Cl. 260-18.00n.

Krishnaiyer, Ramesh: *See*—
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Kroger, Paul W., to Aluminum Company of America. Method of making high strength aluminum alloy forgings and products produced thereby. 3,791,876, Cl. 148-2.000.

Krohn, Hellmut: *See*—
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Kroll, Gert Wolfgang. Filter device. 3,791,111, Cl. 55-341.000.

Krueger, Friedrich, and Bauer, Lieselotte, to Benckiser, Joh. A., GmbH, Chemische Fabrik. Process of preventing scale and deposit formation in aqueous systems and composition. 3,791,978, Cl. 252-180.000

Krueger, Keith Theophil, to I-T-E Imperial Corporation. Anti-singular pleating device. 3,792,222, Cl. 200-169.00r.

Krzewinski, Henrietta K., to Johnson & Johnson. Universal surgical drape. 3,791,381, Cl. 128-132.00d.

Kublick, Christian, to Siemens Aktiengesellschaft. Control device for an inverted converter. 3,792,339, Cl. 321-18.000.

Kubo, Naoshi: *See*—
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Kuehl, Guenter H., to Mobil Oil Corporation. Hydrocarbon conversion process employing a crystalline aluminosilicate and method of preparing the same. 3,791,964, Cl. 208-120.000.

Kuhle, Engelbert: *See*—
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Kuhn, Falk: *See*—
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Kuhnlein, Hans, to Siemens Aktiengesellschaft. Spinning turbine having speed-controlled brakeable electric drive motor. 3,792,329, Cl. 318-210.000.

Kulik, Conrad J.: *See*—
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Kunin, Robert; and Fries, William, to Rohm & Haas, Company. Recovery of waste brine regenerant. 3,791,866, Cl. 127-46.00a.

Kunze, Bernhard, to Hegenscheidt, Wilhelm, Kommanditgesellschaft. Method and apparatus for smooth-rolling of cylindrical workpiece surfaces. 3,791,000, Cl. 29-90.00r.

Kunze, Hans: *See*—
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Kuraray Co., Ltd.: *See*—
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Kuruma, Hiroshi: *See*—
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Kusano, Kazuto; and Miyata, Kenji, to Japan Gasoline Co., Ltd. Method of treating waste gas arising from industrial facility. 3,791,103, Cl. 55-73.000.

Kyowa Hakko Kogyo Co., Ltd.: *See*—
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La Baw, Kenneth B.: *See*—
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La Costa, Nicholas J., to AAI Corporation. Integral primer cartridge. 3,791,301, Cl. 102-45.000.

La Lena, George A., and Stewart, Jack D., to Princeton Metal Systems Corporation. Collapsible feed mechanism. 3,791,186, Cl. 72-272.000.

Labrunie, Guy: *See*—
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Labuda, Edward Franklin; and Ryden, William Dennis, to Bell Telephone Laboratories, Incorporated. Method for neutralizing charge in semiconductor bodies and dielectric coatings induced by cathodic etching. 3,791,952, Cl. 204-192.000.

Lacey, Thomas G. Photographic apparatus. 3,792,264, Cl. 250-311.000.

Lacher, Jorge Halder. Centrifuge and rotating discharge means therefor. 3,791,577, Cl. 233-21.000.

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Lacy-Hulbert and Company, Limited: *See*—
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Laks, Maurice. Electrical regulating system. 3,792,317, Cl. 317-157.000.

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Lammers, Sidney G., to Dart Industries, Inc. Process of moulding foamable materials by simultaneously heating and vibrating the mold. 3,792,138, Cl. 264-46.000.

Lamorte, Howard W.; and Pliakos, Kostas, to Hico Corporation of America. Apparatus for compacting material. 3,791,289, Cl. 100-179.000.

Lampart, Alfred: *See*—
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Lampe, John G.; and Wall, Willie E., to Armstrong Cork Company. Method of making a thermoplastic drawer. 3,791,002, Cl. 29-155.00r.

Landis, Earle H.; and Bostick, Frank W., to Schick Incorporated. Hair dryer with one finger head release. 3,791,045, Cl. 34-99.000.

Landwehrkamp, Hans; and Niestroj, Heinrich, to Schubert & Salzer Maschinenfabrik Aktiengesellschaft. Method and apparatus for stopping and starting one or more open-end-spinning devices. 3,791,128, Cl. 57-93.000.

Lang, Robert J., to Esso Research and Engineering Company. Reactor assembly to reduce automotive emissions from an internal combustion engine. 3,791,144, Cl. 60-278.000.

Lange, Karl-Heinz; and Korbert, Hermann, to Blada-Werke. Camera-radio combination. 3,792,486, Cl. 354-76.000.

Lange, Winthrop E.: *See*—
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Larson, Agne, to Nuclear-Chicago Corporation. Scintillation camera with improved resolution. 3,792,274, Cl. 250-368.000.

Lau, Raymond Thomas, to Owens-Illinois, Inc. Method of strengthening glass articles using powdered salts for ion exchange. 3,791,809, Cl. 65-30.000.

Lauchlan, Robert, and Shaw, Gray, to Uniroyal, Inc. Compositon of polysulfones and polyurethanes. 3,792,114, Cl. 260-858.000

Lauriente, Michael; and Pemsel, Ernst R., Jr., to Westinghouse Electric Corporation. Thermal coated booms for spacecraft. 3,791,853, Cl. 117-97.000.

Laverman, Royce Jay, to Chicago Bridge & Iron Company. Cryogenic storage tank facility with dike wall cooled by leaking liquefied gas. 3,791,164, Cl. 62-50.000.

Law, Russell R.: *See*—
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Lawless, Glen D.; and Ullrich, Leonard E., to Hydroflow Supply Inc. Resilient flexible hose. 3,791,415, Cl. 138-127.000.

Lawrence, Allan Keith, to Deere & Company. Row crop harvester attachment. 3,791,117, Cl. 56-98.000.

Lawson, Gustaf Rudolph, to AMP Incorporated. Crimping tool. 3,791,189, Cl. 72-410.000.

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Lazickas, Casimir M., to Eastman Machine Company. Machine for cutting-sheet-like material such as fabric. 3,791,246, Cl. 83-375.000.

Le Parquier, Guy; and Jullien, Marie-Jacques, to Thomson-CSF. Phase control circuit. 3,792,478, Cl. 343-100.0sa.

Le Rouax, Robert K., to Hydril Company. Non-rotating ram rod locking assembly for blowout preventer. 3,791,616, Cl. 251-1.000.

Le Van, Sally A. Method of cutting and decorating eggshells. 3,791,895, Cl. 156-62.000.

Lean, Eric G.; and Pennington, Keith S., to International Business Machines Corporation. System for coupling light from a fiber optic waveguide into a thin film waveguide. 3,791,715, Cl. 350-96.0wg.

Leblanc, G., Corporation: *See*—
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Lebowitz, Howard E.: *See*—
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Lebra, Jacques, to U.S. Philips Corporation. Device for centering an X-ray film cassette. 3,792,283, Cl. 250-468.000.

Lebreton, Francisque; Sarda, Jean-Paul, and Morlier, Pierre, to Institut Francais du Petrole, des Carburants et Lubrifiants 1 & 4. Device for emitting and receiving signals in a bare hole, eliminating the influence on the intensity of the signals being recived of the shape of the hole and of a centering defect of the device in the latter. 3,791,479, Cl. 181-.5be.

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Leemann, Walter, A.G. Fabrik fur fototechnische, elektronische und feinmechanische Apparate: *See*—
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Leger, Andre: *See*—
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Lehmann, Walter, to Mirabed AG. Spring core mattress and method of making same. 3,790,972, Cl. 5-351.000.

Leimgruber, Willy; and Weigele, Manfred, to Hoffmann-La Roche Inc. Process for the preparation of 4-amino-2-methylpyridine 5-carboxamide. 3,792,076, Cl. 260-465.400.

Lemke, Lyle T.: *See*—
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Leon, Simons, to N & S Co. Turbine engine with valved, rotating combustion chamber. 3,791,139, Cl. 60-39.340.

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Mackay, Anthony. Reflecting telescope system. 3,791,713, Cl. 350-

Martin, Robert L., to Rimar Manufacturing, Inc. Decorative grill joint. 3,791,095, Cl. 52-758.00h.

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Loomis, Russell M., to Unarco Industries, Inc Pneumatic safety system for vehicle lading. 3,791,311, Cl 105-369 0ba.
Lorentz, Connie Wayne Engine charge timing system. 3,791,354, Cl 123-90 120
Losch, Joseph D., to Susquehanna Air Motors, Inc Air motor 3,791,333, Cl 115-34 00r
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Lovell, Melvin V Animal handler 3,791,347, Cl 119-19.000.
Lowe, Ronald C Humidifier. 3,791,633, Cl. 261-101 000
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Macune, Charles W.; and Parrish, Walter J., to Kodata, Inc. Dual printing apparatus with selective hammer arming means. 3,791,291, Cl. 101-69 000.
Madden, James Joseph, to Bell Telephone Laboratories, Incorporated. Printed wiring board terminal assembly. 3,792,412, Cl. 339-17 00c.
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Magneville, Pierre; and Ducongi, Claude, to Institut Francais du Petrole. Device for generating acoustic waves in a liquid medium. 3,792,425, Cl. 340-12.00r.
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Marchignoni, Albano. Exercising and teaching apparatus for limb training and for teaching swimming. 3,791,646, Cl. 272-71.000.
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Martial, Jean Paul Jules, to Fabrique Nationale Hestal S.A. en Abrege FN. Top lever mechanism for firearms. 3,791,062, Cl. 42-44.000.
Martin, David B., to Honeywell Information Systems, Inc. Automatic redial memory device for telephones. 3,792,203, Cl. 179-90.00b.
Martin, Forst G.; Glutz, Bernhard; and Linz, Hans, to Societe de la Viscose Suisse. Apparatus for the preparation of polyethylene terephthalate filaments. 3,790,995, Cl. 28-59.500.
Martin, Robert L., to Rimar Manufacturing, Inc. Decorative grill joint. 3,791,095, Cl. 52-758.00h.
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Maxwell, Neil J. Anchor for holding a fish while working on the same. 3,790,988, Cl. 17-18.000.
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McConnell, Lorne D.; and Mockli, Rolf, to I-T-E Imperial Corporation. Coaxial conductor connector and gland for two-pressure circuit breaker. 3,792,217, Cl. 200-148.00b.
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McLeod, Ian C. Method and apparatus for indirect electrical ignition of combustible powders. 3,791,302, Cl. 102-70.20a.
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Meoni, Angelo, to Cemsa. Method of reproducing flat keys and tools used to this end. 3,791,240, Cl. 76-110.000.
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Meter, Robert B. Knit fabric. 3,791,178, Cl. 66-196.000.
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Miller, Harry, to Sperry Rand Corporation. Angle of attack computer. 3,791,208, Cl. 73-180.000.
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Minushkin, Bertram, and Kissel, George, to United States of America, Atomic Energy Commission. Self-sealing electrochemical oxygen meter. 3,791,953, Cl. 204-195.00s.
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Mitchell, David S.; Bridge, Alan G.; and Jaffe, Joseph, to Chevron Research Company. Catalyst rejuvenation with oxalic acid. 3,791,989, Cl. 252-413.000.
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Nakatsuji, Shinichi, and Suzuki, Keisuke, to Kabushiki Kaisha Konatsu Seisakushi. Apparatus for detecting the position of a movable article under water. 3,792,424, Cl. 340-6.00r.
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Nelson, Roy A. Orchard tree covering device. 3,791,069, Cl. 47-21.000.

Nelson, Wesley C. Valve shutoff device. 3,791,396, Cl. 137-38.000.
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Newcombe, Jack; Dotson, Anderson O., Jr., and Olechowski, Jerome Robert, to Cities Service Company. Cyclododecylmethyl cyclododecanecarboxylates. 3,792,078, Cl. 260-468.00r
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Nollen, Johann Theodor, to Verlichtings-en Metaalwaren Industrie "-Gouda-Holland" N.V., Industrieterrein. Cable channel. 3,791,613, Cl. 248-49.000
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- Snyder, Richard C., and Bodinger, Donald C., to Pullman Incorporated. Freight car end construction. 3,791,312, Cl. 105-423.000.
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    Kaminaka, Hiroshi; Kotera, Norio; Kuruma, Hiroshi; and Yanagihara, Hideki, 3,792,075.
Yano, Tsunetoshi. *See*—
    Murotani, Masayoshi; Yano, Tsunetoshi; Koyama, Kaoru; and Motojima, Toshiharu, 3,792,380.
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    Brand, Warren H.; and Scott, John, Jr., 3,791,578.
Yasuda, Isao: *See*—
    Hamada, Nagaharu; Miyanaka, Motosi; and Yasuda, Isao, 3,792,464.
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    Kishikawa, Hiroshi; Yasuno, Kiyoshi; Kitamura, Shuji; Ueno, Katsuji; Inoue, Haruo; and Toyota, Nobuhiro, 3,792,118.
Yazaki, Hitoshi. Echo-noise absorption device. 3,791,481, Cl. 181-33.00r.
Yearka, Francis L. Back scrubber. 3,791,746, Cl. 401-201.000.
Yoon, Kue Hong: *See*—
    Cromer, Charles F.; Yoon, Kue Hong; and Dakin, Hayes O., Jr., 3,792,218.
Yoshida, Shigeaki: *See*—
    Maruyama, Shoji; Saito, Tadashi; Yoshida, Shigeaki; and Shimada, Masaru, 3,791,832.
Yoshioka, Yoshio; and Okuyama, Kenichi, to Hitachi, Ltd. Device for connecting extreme low temperature cable with normal temperature electric apparatus. 3,792,220, Cl. 200-163.000.
Yoshiyagawa, Mitsugi: *See*—
    Koizumi, Ken; Ikeda, Yoshiro, and Yoshiyagawa, Mitsugi, 3,791,806
Young, Bernard W.; deceased (by Young, Sophie, executrix) Surface sweeping machine equipped with gutter brush. 3,790,981, Cl 15-89.000.
Young, Richard W., to Polaroid Corporation. Projection system employing adjustable mirror for image framing. 3,791,725, Cl. 352-129.000.
Young, Sophie. *See*—
    Young, Bernard W., 3,790,981
Younkin, James R., to Mitchell Industries, Inc. Aircraft horizon display and steering indicator. 3,792,427, Cl. 340-27.0na.
Yuen, Vann. Method for purifying mercury. 3,791,797, Cl. 23-312.00r
Yuken Kogyo Company Limited: *See*—
    Saitou, Kouji; and Ichioka, Hisakazu, 3,791,408
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Zaslavsky, Boris Jurievich: *See*—
    Vichutinsky, Alfred Alfredovich; and Zaslavsky, Boris Jurievich, 3,791,202.
Zaun, Richard David; and Hook, Richard Wayne, to Deere & Company. Root crop harvesting implement. 3,791,451, Cl. 171-58.000.
Zavada, Richard A.: *See*—
    Coombes, William A.; Zavada, Richard A., Hansen, John E., Singleton, William A.; and King, Robert R., 3,792,067.
Zdaniewski, Joseph J., to General Electric Company. Silicone resin useful in molding compositions. 3,792,012, Cl. 260-37.0sb.
Zdarske strojirny a slevarny, narodni podnik. *See*—
    Dofek, Frantisek, 3,791,244.
Zdebski, David M. Traffic signaling device for vehicles. 3,791,336, Cl 116-28.00r.
Zecher, Wilfried; and Merten, Rudolf, to Bayer Aktiengesellschaft Process for the production of imidocarboxylic acids. 3,792,061, Cl 260-326.00n.
Zeise, Theodor: *See*—
    Brehme, Hans, 3,791,762.
Zeiss-Stiftung, Carl; d/b/a Zeiss, Carl. *See*—
    Kratzer, Bernd J. L.; and Ulffers, Heinz, 3,791,719.
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    Nitzsche, Siegfried; Zeller, Norbert, Graf, Werner; and Bauer, Ignaz, 3,792,071.
Zelley, Walter G.; Burrell, Lower, and Rogerson, William M., to Aluminum Company of America. Coated aluminum welding electrode and filler rod. 3,791,860, Cl 117-202.000.
Zellweger Ltd.: *See*—
    Sturzenegger, Jakoe, 3,792,234.
Zenith Radio Corporation: *See*—
    Nuehring, Donald E., 3,791,846.
Zens, John F., to General Motors Corporation. Occupant restraint system. 3,791,671, Cl. 280-150.0ab.
Ziemek, Gerhard; Beck, August; Gwnia, Ewald; Schatz, Friedrich; and Arntz, Hans-Joachim, to Kabel- und Metallwerke Gutehoffnumgeshutte Aktiengesellschaft. Spacer assembly for concentric tubular systems. 3,791,416, Cl. 138-112.000.
Zietemann, Heinz, to Siemens Aktiengesellschaft. Circuit arrangement for improving the short circuit resistance of the slower interference-free logic circuits. 3,792,291, Cl. 307-239.000.
Zimmerman, Abraham A.: *See*—
    Furlong, Louis E.; Zimmerman, Abraham A.; and Shannon, Hugh F., 3,791,066.
Zimmerman, D. W., Mfg., Inc.: *See*—
    Stone, Charles W.; and Foster, Edward L., 3,791,627.
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    Havenith, Lothar; Liebsch, Dietrich; and Zirner, Joachim, 3,792,023.
Zochil, Francesco. Trowelling machine. 3,791,754, Cl. 404-112.000.
Zumeta, Julio; and Case, Edward M., to Marlo Company, Inc., The. Packings for pumps, valves, and the like. 3,791,658, Cl. 277-230.000.

LIST OF REISSUE PATENTEES

TO WHOM

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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bell Telephone Laboratories, Inc.: *See*—
    Kakalec, Robert J. Re. 27,916.
Cole, Joseph E., to Scovill Mfg. Co. Popcorn popper having automatic buttering means. Re. 27,920, 2-12-74, Cl. 99—323.8.
Salyer, Ival O.: *See*—
    Jefferson, Robert T., and Salyer. Re. 27,917.
Jefferson, Robert T., and I. O. Salyer, to United States of America, Atomic Energy Commission. Open-pore polyurethane product. Re. 27,917, 2-12-74, Cl. 260—2.5.
Kakalec, Robert J., to Bell Telephone Laboratories, Inc. Closed loop ferroresonant voltage regulator which simulates core saturation. Re. 27,916, 2-12-74, Cl. 323—61.
Montguire, David M., to National Steel Corp. Multiple-head slitting apparatus. Re. 27,918, 2-12-74, Cl. 83—433.
National Steel Corp.: *See*—
    Montguire, David M. Re. 27,918.
Aktiebolaget, Allmanna Svenska Elektriska: *See*—
    Pucher, Walter, and Aktiebolaget. Re. 27,919.
Pucher, Walter, by Aktiebolaget, Allmanna Svenska Elektriska, assignee. Circuit breaker for high voltage direct current. Re. 27, 919, 2-12-74, Cl. 317—11.
Scovill Mfg. Co.: *See*—
    Cole, Joseph E. Re. 27,920.
United States of America
    Atomic Energy Commission: *See*—
        Jefferson, Robert T. and Salyer. Re. 27,917.

LIST OF PLANT PATENTEES

Anderson, Frederic W., to L. E. Cooke, Co. Peach tree. 3,476, 2-12-74, Cl. 43.
Anderson, Frederic W., to Reedley Nursery, Inc. Nectarine tree. 3,478, 2-12-74, Cl. 41.
Anderson, Frederic W., to Stark Bro's Nurseries and Orchards Co. Nectarine tree. 3,477, 2-12-74, Cl. 41.
Anderson, Frederic W., to Reedley Nursery, Inc. Plum tree. 3,479, 2-12-74, Cl. 38.
Andrew, John. Almond tree. 3,471, 2-12-74, Cl. 30.
Bernstein, Bruno, to Mikkelsens, Inc. Begonia plant. 3,474, 2-12-74, Cl. 68.
Cooke, L. E., Co.: *See*—
    Anderson, Frederic W. 3,476.
Driscoll Strawberry Associates, Inc.: *See*—
    Johnson, Harold A., Jr. 3,473.
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    Jessel, Walter H., Jr., and Duffett. 3,481.
Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,481, 2-12-74, Cl. 79.
Johnson, Harold A., Jr., to Driscoll Strawberry Associates, Inc. Strawberry plant. 3,473, 2-12-74, Cl. 49.
Jurale, Bernard S. Apple tree. 3,475, 2-12-74, Cl. 34.
Mikkelsens, Inc.: *See*—
    Bernstein, Bruno. 3,474.
Moore, Ralph S. Miniature rose plant. 3,472, 2-12-74, Cl. 7.
Reedley Nursery, Inc.: *See*—
    Anderson, Frederic W. 3,478.
    Anderson, Frederic W. 3,479.
Small, Earl J., Growers, Inc.: *See*—
    Sweet, Jack S. 3,480.
Stark Bro's Nurseries and Orchards Co.: *See*—
    Anderson, Frederic W. 3,477.
Sweet, Jack S., to Earl J. Small, Growers, Inc. Poinsettia plant. 3,480, 2-12-74, Cl. 86.
Wakefield, Mary B. Dogwood tree. 3,482, 2-12-74, Cl. 51.
Yoder Brothers, Inc.: *See*—
    Jessel, Walter H., Jr., and Duffett. 3,481.

LIST OF DESIGN PATENTEES

Achenbach, Walter B., to Owens-Illinois, Inc. Beverage glass or similar article. 230,335, 2-12-74, Cl. D7—8.
Achenbach, Walter B., to Owens-Illinois, Inc. Beverage glass or similar article. 230,336, 2-12-74, Cl. D7—8.
Achenbach, Walter B., to Owens-Illinois, Inc. Beverage glass or similar article. 230,337, 2-12-74, Cl. D7—8.
Andrew, Margetete. Adjustable typist stand for holding reference data. 230,376, 2-12-74, Cl. D74—1.
Anglo-Swiss (Equipment Production) Ltd.: *See*—
    Philipe, Oscar. 230,371.
Appliance Plating Co., Inc.: *See*—
    Moehel, Paul J. 230,353.
Bernard, Walter. Bicycle carrier for automobile. 230,352, 2-12-74, Cl. D12—158.
Bierbusse, James H., and C. H. Vizina, Jr., to Uniroyal, Inc. Pneumatic tire tread and buttress. 230,379, 2-12-74, Cl. D90—20.
Boeri, Maria C., to Kiga S.p.A. Articulated table. 230,332, 2-12-74, Cl. D6—178.
Bradbury, Charles, to Hawker Siddeley Aviation Ltd. Aircraft. 230,350, 2-12-74, Cl. D2—73.
Brown, Robert, J. Kowalenski, P. Medwed, and J. Moughty, to Consolidated Foods Corp. Vacuum cleaner nozzle. 230,345, 2-12-74, Cl. D7—173.
Brown, Jerome U.: *See*—
    Forsythe, Donald L., and Brown. 230,375.
California R & D Center: *See*—
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    Brown, Robert, Kowalenski, Medwed, and Moughty. 230,345.
Cultron Inc.: *See*—
    Waligorski, Gordon J. 230,341.
Duncan Morris Co.: *See*—
    Roth, Earl A. 230,354.
Eisenberg, Harvey. Ski carrying case. 230,378, 2-12-74, Cl. D87—1.
Ex-Cell-O Corp.: *See*—
    Vedder, Gene D. 230,362.
    Vedder, Gene D. 230,363.
Forsythe, Donald L., and J. U. Brown, to The National Cash Register Co. Accounting machine or similar article. 230,375, 2-12-74, Cl. D64—1.
Frey, Lyle D.: *See*—
    Vanden Broek, Jan A., Toma, and Frey. 230,355.
Friedman, Bernard. Aerial saucer toy. 230,364, 2-12-74, Cl. D34—15.
Gillham, David R. Back and head support assembly for dental chair. 230,334, 2-12-74, Cl. D6—200.
Hamel, Leo A. Utility van having externally accessible compartment. 230,351, 2-12-74, Cl. D12—99.
Hawker Siddeley Aviation Ltd.: *See*—
    Bradbury, Charles. 230,350.
Headberg, James R. Vertical solid fuel barbeque grill. 230,340, 2-12-74, Cl. D7—110.
Honeywell Inc.: *See*—
    Quinn, Peter T., and Taylor. 230,373.
    Quinn, Peter T., and Peterson. 230,374.
Hughes, James W.: *See*—
    Sebel, Harry, Rey, and Hughes. 230,333.
Ingram, Basil D. Detachable holder for a fishing rod and reel for mounting on a horizontal rail. 230,357, 2-12-74, Cl. D22—22.
International Identification, Inc.: *See*—
    Netka, David H. 230,377.
Jones, Lawrence T., and A. Sims, to California R & D Center. Farm toy. 230,365, 2-12-74, Cl. D34—15.
Jones, Richard S., to Sentinel Lighting & Mfg. Co. Kilowatt hour meter base cover. 230,369, 2-12-74, Cl. D52—6.
Kaye, Lawrence A. Ladder extension. 230,370, 2-12-74, Cl. D54—1.
Kiga S.p.A.: *See*—
    Boeri, Maria C. 230,332.
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LaSpina, Anthony B. Table clock. 230,368, 2-12-74, Cl. D42—8.
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Mallonn, Paul C., to Rubbermaid Inc. Food container cover. 230,342, 2-12-74, Cl. D7—131.
Mallonn, Paul C., to Rubbermaid Sales Corp. Food container cover. 230,343, 2-12-74, Cl. D7—131.
Mann, Samuel J., to Westinghouse Electric Corp. Water filter. 230,358, 2-12-74, Cl. D23—4.
Martin, Patrick B., and H. R. Smith, to Lancer Pacific, Inc. Orthodontic band. 230,360, 2-12-74, Cl. D24—1.
Medwed, Peter: *See*—
 Brown, Robert, Kowalenski, Medwed, and Moughty. 230,345.
Missio, Danilo V. Adjustable infrared energy sensor unit. 230,361, 2-12-74, Cl. D26—1.
Mochel, Paul J., to Appliance Plating Co., Inc. Automobile wheel. 230,353, 2-12-74, Cl. D12—205.
National Cash Register Co., The: *See*—
 Forsythe, Donald L., and Brown. 230,375.
Neels, Michael. Suspended flower pot. 230,367, 2-12-74, Cl. D35—3.
Nelson, Robert G. Fishing pole holder. 230,356, 2-12-74, Cl. D22—22.
Netka, David H., to International Identification, Inc. Label dispenser. 230,377, 2-12-74, Cl. D74—1.
Owens-Illinois, Inc.: *See*—
 Achenbach, Walter B. 230,335.
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Peterson, Dean M.: *See*—
 Quinn, Peter T., and Peterson. 230,374.
Philipe, Oscar, to Anglo-Swiss (Equipment Production) Ltd. Grill. 230,371, 2-12-74, Cl. D55—1.
Quinn, Peter T., and C. E. Taylor, to Honeywell Inc. Combined light sensor and calculator for a photoflash unit. 230,373, 2-12-74, Cl. D61—1.
Quinn, Peter T., and D. M. Peterson, to Honeywell Inc. Camera flash mounting bracket with light sensor. 230,374, 2-12-74, Cl. D61—1.
Rey, Ivor: *See*—
 Sebel, Harry, Rey, and Hughes. 230,333.
Roth, Earl A., to Duncan Morris Co. Entrance staircase for mobile homes and the like. 230,354, 2-12-74, Cl. D13—7.
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Schmidt, Gerald W., and A. Sims, to California R & D Center. Toy ark. 230,366, 2-12-74, Cl. D34—15.
Sebel, Harry, I. Rey and J. W. Hughes, to Sebel Ltd. Frame for a chair. 230,333, 2-12-74, Cl. D6—191.
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Snyder, Alan K., to Chicago Display Co. Display stand. 230,331, 2-12-74, Cl. D6—24.
Sokol, David L.: *See*—
 St. Andre, Oliver R. 230,338.
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 Kyryluk, Leonard A., and Spitz. 230,349.
St. Andre, Oliver R., to David L. Sokol. Food tray. 230,338, 2-12-74, Cl. D7—35.
Stitt, William J., Jr. Combined multiple socket wrench and spanner. 230,346, 2-12-74, Cl. D8—26.
Taylor, Charles E.: *See*—
 Quinn, Peter T., and Taylor. 230,373.
Taylor, William D., to Rubbermaid Inc. Food container lid. 230,344, 2-12-74, Cl. D7—131.
Transidyne General Corp.: *See*—
 Van den Broek, Jan A., Toma, and Frey. 230,355.
Teggelaar, Claude, to Wolverine Industries, Inc. Door latch handle. 230,347, 2-12-74, Cl. D8—170.
Toma, George W.: *See*—
 Van den Broek, Jan. A., Toma, and Frey. 230,355.
Trecartin, Fred M. Non-hygroscopic condiment dispenser. 230,339, 2-12-74, Cl. D7—53.
Uniroyal, Inc.: *See*—
 Bierbusse, James H., and Vizina. 230,379.
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Van den Broek, Jan A., G. W. Toma, and L. D. Frey, to Transidyne General Corp. Scanning densitometer. 230,355, 2-12-74, Cl. D16—2.
Vedder, Gene D., to Ex-Cel-O Corp. Perforated type reader. 230,362, 2-12-74, Cl. D26—5.
Vedder, Gene D., to Ex-Cell-O Corp. Perforated tape reader. 230,363, 2-12-74, Cl. D26—5.
Vizina, Clarence H., Jr.: *See*—
 Bierbusse, James H., and Vizina. 230,379.
Vizina, Clarence H., Jr., to Uniroyal, Inc. Pneumatic tire tread and buttress. 230,380, 2-12-74, Cl. D90—20.
Waligorski, Gordon J., to Culitron Inc. Microwave oven and cabinet combination. 230,341, 2-12-74, Cl. D7—128.
Westinghouse Electric Corp.: *See*—
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Wood, Edgar H. Bathroom module. 230,359, 2-12-74, Cl. D23—49.
Woodling, George V. Fluid motor. 230,372, 2-12-74, Cl. D55—1.

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15 2	3,791,115
17 5	3,791,116
98	3,791,117
202	3,791,118
CLASS 57	
34HS	3,791,120
	3,791,121
34R	3,791,119
52	3,791,123
	3,791,124
	3,791,125
53	3,791,126
58 52	3,791,127
77 45	3,791,122
93	3,791,128
140R	3,791,129
157TS	3,791,130
161	3,791,131
164	3,791,132
CLASS 58	
23AC	3,791,133
23BA	3,791,134
90R	3,791,135
CLASS 60	
24	3,791,136
39 18R	3,791,137
39 34	3,791,139
39 51H	3,791,138
207	3,791,140
243	3,791,141
263	3,791,142
274	3,791,143
278	3,791,144
286	3,791,145
289	3,791,146
422	3,791,147
456	3,791,148
543	3,791,149
CLASS 61	
5	3,791,150
41A	3,791,151
46	3,791,152
	3,791,153
	3,791,154
63	3,791,155
72 4	3,791,156
CLASS 62	
41	3,791,157
50	3,791,164
55 5	3,791,158
68	3,791,159
77	3,791,165
138	3,791,166
196	3,791,160
226	3,791,161
341	3,791,162
347	3,791,163
401	3,791,167
408	3,791,168
CLASS 64	
1V	3,791,169
19	3,791,170
25	3,791,171
CLASS 65	
3	3,791,806
	3,791,807
11W	3,791,172
30	3,791,808
	3,791,809
CLASS 66	
20	3,791,173
50R	3,791,174
95	3,791,175
138	3,791,176
147	3,791,177
196	3,791,178
CLASS 68	
198	3,791,179
CLASS 70	
107	3,791,180
202	3,791,181
252	3,791,182
CLASS 71	
34	3,791,810
120	3,791,811
CLASS 72	
46	3,791,183
97	3,791,184
181	3,791,185
272	3,791,186
	3,791,187
356	3,791,188
410	3,791,189
412	3,791,190
431	3,791,191
CLASS 73	
1R	3,791,192
12	3,791,193
15B	3,791,202
15R	3,791,194
27R	3,791,195
28	3,791,196
49 3	3,791,197
53	3,791,198
67 1	3,791,200
67 8S	3,791,201
67 9	3,791,199
70.1	3,791,203
88 5R	3,791,204
	3,791,205
141R	3,791,206
143	3,791,210
147	3,791,207
180	3,791,208
188	3,791,211
251	3,791,212
339A	3,791,213
342	3,791,217
359	3,791,209
362AR	3,791,214
385	3,791,215
398R	3,791,216
423R	3,791,218
425 4R	3,791,219
425 6	3,791,220
432R	3,791,221
	3,791,222
519	3,791,224
CLASS 74	
7R	3,791,225
10.8	3,791,226
52	3,791,227
54	3,791,228
128	3,791,229
	3,791,230
142	3,791,231
459	3,791,232
492	3,791,233
493	3,791,223
579R	3,791,234
606	3,791,235
650	3,791,238
710.5	3,791,236
711	3,791,237
752C	3,791,239
CLASS 75	
9	3,791,812
59	3,791,813
60	3,791,814
82	3,791,816
84 1R	3,791,815
106	3,791,817
126E	3,791,818
130 5	3,791,819
140	3,791,820
174	3,791,821
CLASS 76	
110	3,791,240
CLASS 81	
57.13	3,791,242
CLASS 83	
54	3,791,243
305	3,791,244
370	3,791,245
375	3,791,246
418	3,791,247
433	Re 27,918
641	3,791,248
CLASS 84	
116R	3,791,251
314	3,791,252
383	3,791,253
411	3,791,249
471	3,791,254
483	3,791,250
CLASS 86	
20C	3,791,255
CLASS 89	
185	3,791,256
CLASS 90	
11D	3,791,257
12D	3,791,260
21C	3,791,258
62R	3,791,259
CLASS 91	
176	3,791,264
485	3,791,261
CLASS 92	
52	3,791,262
86	3,791,263
CLASS 93	
1C	3,791,265
1R	3,791,266
35R	3,791,267
53R	3,791,268
93DP	3,791,269
CLASS 95	
1	3,791,270
4 5	3,791,271
10CT	3,791,272
11R	3,791,274
11V	3,791,273
18R	3,791,275
42	3,791,276
	3,791,277
53EA	3,791,278
CLASS 96	
1PS	3,791,822
1 4	3,791,823
1 5	3,791,824
	3,791,825
	3,791,826
22	3,791,827
33	3,791,828
48PD	3,791,829
76R	3,791,830
87A	3,791,831
91R	3,791,832
CLASS 98	
33A	3,791,279
40VM	3,791,280
43	3,791,281
59	3,791,282
CLASS 99	
2R	3,791,241
57	3,791,283
289	3,791,284
323 8	Re 27,920
419	3,791,285
CLASS 100	
40	3,791,286
89	3,791,287
170	3,791,288
179	3,791,289
CLASS 101	
31	3,791,290
69	3,791,291
111	3,791,292
234	3,791,293
248	3,791,294
415 1	3,791,295
CLASS 102	
10	3,791,296
24R	3,791,297
28EB	3,791,298
35 4	3,791,299
35 6	3,791,300
45	3,791,301
70 2A	3,791,302
92 7	3,791,303
CLASS 104	
18	3,791,304
69	3,791,305
130	3,791,306
134	3,791,307
139	3,791,308
148MS	3,791,309
CLASS 105	
369BA	3,791,310
	3,791,311
423	3,791,312
456	3,791,313
CLASS 106	
46	3,791,833
57	3,791,834
68	3,791,835
71	3,791,836
114	3,791,837
205	3,791,838
268	3,791,839
307	3,791,840
CLASS 108	
43	3,791,314
CLASS 110	
8R	3,791,315
	3,791,316
	3,791,317
	3,791,318
18R	3,791,319
101R	3,791,320
CLASS 111	
3	3,791,321
7	3,791,322
CLASS 112	
121 15	3,791,323
138	3,791,324
213	3,791,325
CLASS 113	
118R	3,791,326
CLASS 114	
16R	3,791,327
42	3,791,328
66 5R	3,791,329
221	3,791,330
CLASS 115	
17	3,791,331
27	3,791,332
34R	3,791,333

CLASS 184 | 251 3,791,968 | 92PC 3,792,240

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41 3,791,973 | 405 3,792,066 | CLASS 272 | CLASS 312 | CLASS 332 | CLASS 343

35	3,791,334
70	3,791,335
CLASS 116	
28R	3,791,336
	3,791,337
124F	3,791,338
142R	3,791,339
CLASS 117	
3 4	3,791,841
16	3,791,842
17.5	3,791,843
33 5CM	3,791,844
33 5T	3,791,845
38	3,791,846
46CG	3,791,847
47A	3,791,340
	3,791,848
63	3,791,849
75	3,791,850
93 1PF	3,791,851
93 2	3,791,852
97	3,791,853
136	3,791,854
154	3,791,855
155UA	3,791,856
161KP	3,791,857
201	3,791,858
	3,791,859
202	3,791,860
213	3,791,861
	3,791,862
217	3,791,863
238	3,791,864
CLASS 118	
7	3,791,341
52	3,791,342
60	3,791,343
421	3,791,344
637	3,791,345
CLASS 119	
17	3,791,346
19	3,791,347
	3,791,348
CLASS 122	
11	3,791,349
356	3,791,350
479D	3,791,351
CLASS 123	
8 25	3,791,352
8 33	3,791,353
90 12	3,791,354
90 27	3,791,355
117R	3,791,356
	3,791,357
	3,791,358
119A	3,791,360
119R	3,791,359
139AP	3,791,361
140R	3,791,362
148E	3,791,363
	3,791,364
179F	3,791,365
198DB	3,791,366
CLASS 125	
11R	3,791,367
CLASS 126	
25A	3,791,368
	3,791,370
116R	3,791,369
339	3,791,371
390	3,791,372
CLASS 127	
32	3,791,865
46A	3,791,866
CLASS 128	
1C	3,791,373
1D	3,791,374
2E	3,791,376
2P	3,791,377
2S	3,791,375
2 05M	3,791,378
4	3,791,379
92BB	3,791,380
132D	3,791,381
	3,791,382
154	3,791,383
260	3,791,384
263	3,791,385
305	3,791,386
320	3,791,387
335 5	3,791,388
CLASS 130	
30D	3,791,389
CLASS 131	
196	3,791,390
CLASS 132	
39	3,791,391
CLASS 133	
1R	3,791,392
CLASS 134	
167R	3,791,393
169R	3,791,394
CLASS 136	
6R	3,791,867
13	3,791,868
81	3,791,869
86D	3,791,896
86E	3,791,870
100R	3,791,871
120FC	3,791,872
133	3,791,873
134R	3,791,874
173	3,791,875
CLASS 137	
13	3,791,395
38	3,791,396
82	3,791,397
116	3,791,399
154	3,791,400
216 2	3,791,401
315	3,791,402
343	3,791,403
433	3,791,404
494	3,791,405
512 15	3,791,407
515 5	3,791,406
529	3,791,408
597	3,791,409
604	3,791,410
614 02	3,791,411
614 11	3,791,412
625.3	3,791,413
625 66	3,791,398
CLASS 138	
37	3,791,414
112	3,791,416
127	3,791,415
CLASS 139	
11	3,791,417
122W	3,791,418
CLASS 140	
92 1	3,791,419
93.2	3,791,420
149	3,791,421
CLASS 141	
11	3,791,422
86	3,791,423
92	3,791,424
	3,791,425
CLASS 144	
2R	3,791,426
	3,791,427
172	3,791,428
218	3,791,429
326	3,791,430
CLASS 148	
2	3,791,876
6 157	3,791,877
6.2	3,791,431
11.5A	3,791,880
11 5F	3,791,878
23	3,791,879
	3,791,886
143	3,791,881
172	3,791,887
174	3,791,882
187	3,791,883
	3,791,884
	3,791,885
CLASS 149	
19	3,791,888
	3,791,891
	3,791,893
19 3	3,791,889
19 4	3,791,892
CLASS 152	
339	3,791,432
	3,791,433
CLASS 156	
60	3,791,894
62	3,791,895
137	3,791,897
143	3,791,898
152	3,791,899
171	3,791,900
172	3,791,901
212	3,791,902
235	3,791,905
245	3,791,906
253	3,791,907
273	3,791,908
306	3,791,909
517	3,791,903
571	3,791,904
CLASS 157	
1.24	3,791,434
CLASS 159	
25A	3,791,435
CLASS 160	
348	3,791,436
CLASS 161	
45	3,791,910
58	3,791,911
160	3,791,912
164	3,791,913
190	3,791,914
227	3,791,915
247	3,791,916
CLASS 162	
55	3,791,917
343	3,791,918
353	3,791,919
363	3,791,920
CLASS 164	
49	3,791,437
55	3,791,438
113	3,791,440
292	3,791,439
CLASS 165	
1	3,791,441
45	3,791,443
CLASS 166	
5	3,791,442
54	3,791,444
72	3,791,445
291	3,791,448
307	3,791,446
311	3,791,447
312	3,791,449
CLASS 169	
37	3,791,450
CLASS 171	
58	3,791,451
CLASS 172	
4 5	3,791,452
7	3,791,454
26 5	3,791,455
53	3,791,453
450	3,791,456
781	3,791,457
CLASS 173	
12V	3,791,459
12	3,791,458
43	3,791,460
48	3,791,461
80	3,791,463
104	3,791,462
CLASS 174	
21C	3,792,187
28	3,792,188
69	3,792,189
72R	3,792,190
84R	3,792,191
102SC	3,792,192
153R	3,792,193
CLASS 175	
88	3,791,464
373	3,791,465
CLASS 176	
17	3,791,921
20	3,791,922
37	3,791,923
78	3,791,466
CLASS 177	
157	3,791,467
CLASS 178	
6 8	3,792,194
	3,792,195
	3,792,196
7 1	3,792,197
7 91	3,792,198
CLASS 179	
15BS	3,792,201
15B1	3,792,199
18BC	3,792,202
18GF	3,792,200
90B	3,792,203
110A	3,792,204
175	3,792,205
CLASS 180	
1FV	3,791,468
6R	3,791,469
19R	3,791,470
54A	3,791,471
64R	3,791,472
65A	3,791,473
77H	3,791,474
79 2R	3,791,475
91	3,791,476
117	3,791,477
121	3,791,478
CLASS 181	
5BF	3,791,479
5A	3,791,480
33R	3,791,481
35R	3,791,482
42	3,791,483
CLASS 182	
2	3,791,484
106	3,791,485
132	3,791,486
201	3,791,487
CLASS 184	
1E	3,791,488
5	3,791,489
CLASS 187	
29R	3,791,490
CLASS 188	
70R	3,791,491
170	3,791,492
251M	3,791,493
277	3,791,494
322	3,791,495
CLASS 192	
22	3,791,496
30V	3,791,497
57	3,791,498
70.27	3,791,499
87 17	3,791,500
93A	3,791,501
111A	3,791,502
CLASS 194	
1G	3,791,503
10	3,791,505
71	3,791,506
CLASS 195	
29	3,791,924
	3,791,925
30	3,791,926
63	3,791,927
66R	3,791,928
103 5R	3,791,929
	3,791,930
	3,791,931
	3,791,932
127	3,791,933
CLASS 198	
1	3,791,504
32	3,791,507
34A	3,791,508
41	3,791,509
127R	3,791,510
172	3,791,511
271	3,791,512
288	3,791,513
CLASS 200	
6B	3,792,206
35R	3,792,207
48V	3,792,221
51R	3,792,208
61 41	3,792,209
61 45	3,792,211
61 59	3,792,210
68	3,792,212
144B	3,792,213
	3,792,214
144C	3,792,215
146R	3,792,216
148B	3,792,217
	3,792,218
159R	3,792,219
163	3,792,220
169R	3,792,222
CLASS 202	
173	3,791,934
CLASS 203	
74	3,791,935
CLASS 204	
1R	3,791,937
1T	3,791,936
15	3,791,938
	3,791,939
35N	3,791,940
46	3,791,941
56M	3,791,942
56	3,791,943
59AM	3,791,945
59R	3,791,944
82	3,791,946
95	3,791,947
129 75	3,791,948
171	3,791,949
180G	3,791,950
181	3,791,951
192	3,791,952
195S	3,791,953
	3,791,954
298	3,791,955
CLASS 206	
52F	3,791,514
501	3,791,552
CLASS 208	
8	3,791,956
10	3,791,957
15	3,791,958
19	3,791,959
57	3,791,960
65	3,791,961
80	3,791,962
111	3,791,963
120	3,791,964
179	3,791,965
208M	3,791,966
216	3,791,967
251	3,791,968
CLASS 209	
73	3,791,515
74R	3,791,517
	3,791,518
74	3,791,516
80.5	3,791,519
CLASS 210	
23	3,791,969
36	3,791,520
67	3,791,521
198C	3,791,522
	3,791,523
217	3,791,525
232	3,791,524
321	3,791,526
387	3,791,527
CLASS 211	
88	3,791,528
CLASS 212	
124	3,791,529
145	3,791,530
CLASS 213	
8	3,791,531
	3,791,532
	3,791,533
43	3,791,534
CLASS 214	
1R	3,791,535
6 5	3,791,537
16 4A	3,791,536
16 6	3,791,538
17C	3,791,539
75R	3,791,540
751	3,791,541
370	3,791,542
620	3,791,544
730	3,791,543
CLASS 215	
274	3,791,545
CLASS 219	
98	3,792,223
121LM	3,792,224
131R	3,792,225
147	3,792,226
216	3,792,227
230	3,792,228
284	3,792,229
343	3,792,230
497	3,792,231
522	3,792,232
553	3,792,233
CLASS 220	
2 1A	3,791,546
17	3,791,547
20 5	3,791,548
21	3,791,549
23 86	3,791,550
60	3,791,551
CLASS 221	
156	3,791,553
289	3,791,554
298	3,791,555
CLASS 222	
21	3,791,556
105	3,791,557
161	3,791,558
176	3,791,559
386	3,791,560
396	3,791,561
528	3,791,562
CLASS 224	
39R	3,791,563
CLASS 226	
19	3,791,564
67	3,791,565
68	3,791,566
112	3,791,567
140	3,791,568
CLASS 228	
1	3,791,569
CLASS 229	
7	3,791,570
40	3,791,571
69	3,791,572
	3,791,573
CLASS 232	
44	3,791,574
CLASS 233	
19A	3,791,575
19R	3,791,576
21	3,791,577
CLASS 235	
61 11F	3,792,234
	3,792,235
	3,792,236
61 11J	3,792,238
61 11R	3,792,237
61 12N	3,792,239
92CW	3,792,241
92PC	3,792,240
117A	3,792,242
151	3,792,243
151 3	3,792,244
181	3,792,245
186	3,792,246
CLASS 236	
54	3,791,578
CLASS 239	
3	3,791,579
205	3,791,581
222 17	3,791,582
227	3,791,583
237	3,791,584
256	3,791,585
265 29	3,791,586
267	3,791,587
414	3,791,580
446	3,791,588
453	3,791,589
459	3,791,590
533	3,791,591
666	3,791,592
667	3,791,593
CLASS 240	
1EL	3,792,248
2R	3,791,594
7 1	3,792,250
51 11R	3,792,247
106.1	3,792,249
CLASS 241	
20	3,791,595
34	3,791,596
100	3,791,597
CLASS 242	
47 12	3,791,598
	3,791,599
55 19A	3,791,600
55 53	3,791,601
56A	3,791,602
56R	3,791,603
68 3	3,791,604
74	3,791,605
115	3,791,606
184	3,791,607
199	3,791,608
201	3,791,609
CLASS 244	
122A	3,791,610
153R	3,791,611
CLASS 248	
49	3,791,612
	3,791,613
216	3,791,614
CLASS 249	
189	3,791,615
CLASS 250	
41 3	3,792,251
43 5FI	3,792,252
83 3R	3,792,253
	3,792,255
83 6FI	3,792,254
199	3,792,256
211J	3,792,257
213VI	3,792,259
213A	3,792,258
215	3,792,260
219O	3,792,268
223R	3,792,262
233	3,792,261
272	3,792,269
311	3,792,263
	3,792,264
315	3,792,265
318	3,792,266
322	3,792,267
336	3,792,270
338	3,792,275
343	3,792,272
347	3,792,271
366	3,792,273
368	3,792,274
369	3,792,276
	3,792,277
382	3,792,278
384	3,792,279
390	3,792,280
444	3,792,281
459	3,792,282
468	3,792,283
551	3,792,284
CLASS 251	
1	3,791,616
8	3,791,617
37	3,791,618
45	3,791,619
65	3,791,620
122	3,791,621
CLASS 252	
12	3,791,970
32 7R	3,791,985
33 4	3,791,971
37.7	3,791,972

41	3,791,973
49.5	3,791,974
	3,791,975
75	3,791,976
156	3,791,977
180	3,791,978
187	3,791,979
188 3R	3,791,980
301 1R	3,791,982
301 1W	3,791,981
305	3,791,983
308	3,791,984
316	3,791,987
355	3,791,986
408	3,791,988
413	3,791,989
421	3,791,994
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29 7P	3,792,007
30 6SB	3,792,008
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	3,792,125
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Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,079,213, H. F. G. Ueltz, ABRASIVE GRAIN, **filed** July 2, 1971, D.C., W.D.N.Y. (Buffalo), Doc. C–1971–309, *The Carborundum Company* v. *Norton Company.* Consent judgment entered, June 12, 1973.

3,126,212, S. A. Young, COMBINATION GROUND JOINT AND SWEAT CONNECTION, **filed** Feb. 28, 1973, D.C., N.D. Ohio (Cleveland), Doc. C–73–228, *Stephen A. Young* v. *Mansfield Sanitary, Inc.*

3,136,676, R. A. Fisch, METALLIZED PLASTIC EXTRUSION PRODUCTS AND METHOD OF MAKING SAME, **filed** Dec. 16, 1969, D.C.N.J. (Newark), Doc. C–1495–69. *Anchor Plastics Co., Inc.* v. *Dyncr Industrial Plastics Corp.* Judgment: patent valid and for permanent injunction, July 9, 1973.

3,146,368, Fiore and Kaplan, CATHODE-RAY TUBE WITH COLOR DOTS SPACED BY LIGHT ABSORBING AREAS, **filed** June 6, 1973, D.C. Del. (Wilmington), Doc. 4672, *Tokyo Shibaura Electric Co., Ltd. et al.* v. *Zenith Radio Corporation.*

3,159,897, Ellis and Thorsteinson, MACHINE FOR EXTRUDING HOLLOW CORED CONCRETE SECTIONS; **3,284,867**, G. Booth, MACHINES FOR FORMING HOLLOW CORED CONCRETE PRODUCTS, **filed** Feb. 16, 1973, D.C. Minn. (Minneapolis), Doc. 4–73–C–102, *Dyform Concrete Prestressed Ltd.* v. *Spiroll Corporation Ltd.*

3,168,763, W. B. Gilbert, SOLID CORE DOOR, **filed** Apr. 30, 1971, D.C., E.D. Mich. (Detroit), Doc. 36423, *Lifetime Doors, Inc.* v. *Walled Lake Door Company.* Claims 1 through 4 of patent invalid, claims are infringed, June 27, 1973.

3,220,788, P. J. Hunckler, PARTS STORAGE AND MERCHANDISING DEVICE, **filed** Apr. 3, 1972, D.C., N.D. Ohio (Cleveland), Doc. C72–313, *The Lamson & Sessions Co.* v. *Hunckler Products, Inc.* Stipulation and order dismissing case with prejudice, June 5, 1973.

3,229,049, H. Goldberg, HEARING AID, **filed** Mar. 16, 1973, D.C., W.D.N.Y. (Buffalo), Doc. C–1973–139, *Hyman Goldberg* v. *Unitron Industries, Ltd.* Stipulation of discontinuance, May 18, 1973.

3,261,139, Brydolf and Kellems, PANEL HARDWARE, **filed** Sept. 11, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–2155–F, *Acme General Corp.* v. *Nodak Corp and Imperial Mobile Home Suppliers, Inc.* Consent judgment, ordered patent owned by plaintiff, and is valid. Defendant, Nodak Corporation, has infringed. Defendant, Nodak Corporation perpetually enjoined, action dismissed with respect to defendant, Imperial Mobile Home Suppliers, Inc., Feb. 15, 1973.

3,284,867. (See 3,159,897.)

3,290,417, Christenson, Porter and Halcoussis, THERMOSETTING COATING COMPOSITIONS MODIFIED WITH AN ALKYLENIMINE; **3,666,710**, Makhlouf, Christenson, and Halcoussis, NON-AQUEOUS DISPERSIONS; **3,686,111**, Makhlouf and Porter, NON-AQUEOUS POLYMERIC PSEUDO-DISPERSION, **filed** Nov. 28, 1972, D.C., W.D. Pa. (Pittsburgh), Doc. 72–1007, *Celanese Corporation* v. *PPG Industries, Inc.*

3,460,614, H. L. Burgess, PILOT VALVE AND MULTIPLE PILOT VALVE UNIT, **filed** July 3, 1973, D.C., S.D. Tex. (Houston), Doc. CA 73–H–925, *Hudson Machines Works,* v. *C. Jim Stewart & Stevenson, Inc. and Ram Machine Corp.*

3,462,198, G. R. Onufer, BALANCER FOR ROTATING BODY; **3,581,782**, same, VAPOR EMISSION CONTROL SYSTEM, **filed** Feb. 9, 1973, D.C., E.D. Mich. (Detroit), Doc. 39650, *Russell, Burdsall & Ward Bolt & Nut Co.* v. *Geo. R. Onufer.*

3,472,011, E. P. R. Scragg, TREATMENT OF ARTIFICIAL YARNS AND THREADS, **filed** Oct. 3, 1972, D.C., W.D.N.C. (Charlotte), Doc. C–C–72–224, *Celanese Corporation and Fiber Industries, Inc.* v. *Ernest Scragg & Sons, Ltd. and Scragg North America, Inc.* **Same, filed** Oct. 13, 1972, D.C., S.D. Fla. (Miami), Doc. 72–1643–C–JE, *Lex-Tex Ltd., Inc.* v. *Bobbie Brooks, Inc. et al.*

3,475,070, T. C. Hoshall, DISPLAY CASE, **filed** May 2, 1972, D.C., W.D. Okla. (Oklahoma City), Doc. 72–300–C. *Thomas C. Hoshall and Rainbo Photo Color, Inc.* v. *Dillard Department Stores, Inc. et al.*

3,479,873, H. Hermanns, SELF-CLEANING ELECTRODES, **filed** Feb. 20, 1973, D.C., E.D. Pa. (Philadelphia), Doc. CA–73–367, *Fischer and Porter Company* v. *Brooks Instrument Company.* **Same, filed** Mar. 2, 1973, D.C., E.D. Mo. (St. Louis), Doc. 73C119(4), *Emerson Electric Co.* v. *Fischer & Porter Co.* Case transferred to the U.S. District Court for the Eastern District of Pennsylvania, May 24, 1973.

3,501,907, Barber and Scrymgeour, FILING SYSTEM INDEX INDICATORS AND METHOD OF PRODUCING SAME, **filed** May 14, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1232, *Donald Barber and Thomas Scrymgeour and Datafile Limited* v. *Tab Prod. Co. and Tab Service Co.* Cause dismissed pursuant to Rule 41(a)(1), May 23, 1973.

3,528,820, Schwall, Rogers and Corbin, PROCESS OF PREPARING A SELF-BASTING POULTRY PRODUCT; **3,563,763**, same, SELF-BASTING POULTRY PRODUCTS, **filed** July 31, 1972, D.C., W.D. Va. (Harrisonburg), Doc. 72–C–38–H, *Armour and Company* v. *Swift & Company.*

3,533,920, C. P. Covino, ALUMINUM ARTICLES HAVING A POLYMERIC FLUOROHYDROCARBON SURFACE AND PROCESSES FOR PREPARING THE SAME, **filed** June 6, 1973, D.C., E.D. Mich. (Detroit), Doc. 40230, *General Magnaplate Corporation* v. *Engineered Devices, Inc. et al.*

3,563,763. (See 3,528,820.)

3,571,942, Orensten and Orensten, PROCESS FOR PRESERVING FLOWERS, **filed** June 5, 1973, D.C. Minn. (Minneapolis), Doc. 4–73–C–198, *Henry E. Orensten and Vivian C. Orensten* v. *Craft Master Corporation.*

3,572,327, Beard, Boggs and Treace, UNIVERSAL TRACTION BELT MEANS, **filed** Oct. 16, 1972, D.C. Ind. (South Bend), Doc. 72–S–206, *Richards Manufacturing Company, Inc.* v. *Orthopedic Equipment Company, Inc.*

3,581,782. (See 3,462,198.)

3,599,855, E. V. Henc, BOX-STITCHING APPARATUS, **filed** June 28, 1973, D.C. Md. (Baltimore), Doc. 73–669–Y, *Edward V. Henc* v. *Flynn & Emrich Company and Precision Industries, Inc.*

3,614,016, J. E. Reith, APPARATUS FOR CONTROL DEPTH FISHING, **filed** Jan. 31, 1973, D.C., W.D. Mich. (Grand Rapids), Doc. G28–73–CA–1, *James E. Rieth & Riveria Tool Company* v. *Jack King, doing business as King Industries.*

3,627,608, Steiner and Paulsen, METHOD OF FORMING A PANEL HAVING A COMPOUND CURVATURE, **filed** Mar. 30, 1973, D.C., E.D. Mich. (Detroit), Doc. 39889, *Woodall Industries, Inc.* v. *Van Dresser Corporation.*

3,666,710. (See 3,290,417.)

3,680,560, Pannier, Reynolds and Sorenson, VACUUM DRAINAGE COLLECTING APPARATUS WITH DISPOSABLE LINER, **filed** Jan. 17, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c141, *Sorenson Research Co.* v. *Inhalation Therapy Equipment Co. Judgment*: Claims 1, 21, 10, 11, 17, 19 and 20 are valid and have been infringed. Court now enters a final judgment in favor of the plaintiff on the question of liability, Apr. 27, 1973.

3,686,111. (See 3,290,417.)

3,741,107, Boyd, Bond, Elliott, Gisolfi and Merkin, PORTABLE REFUSE HANDLING APPARATUS, **filed** June 26, 1973, D.C. Md. (Baltimore), Doc. 73–647–K, *Union Environmental Corporation and John A. Boyd* v. *Board of Education of Montgomery County et al.*

Certificates of Correction for the Week of Feb. 19, 1974

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Disclaimers and Dedications

3,133,162.—*Aldo L. Coen,* Chicago, Ill. LOUD SPEAKER STRUCTURE. Patent dated May 12, 1964. Disclaimer and dedication filed Aug. 7, 1973, by the assignee, *Alpha Products, Inc.*

Hereby disclaims and dedicates to the Public the remaining term of said patent.

3,214,705.—*Raymond V. Smith,* Los Altos, and *Joseph B. Reagn,* San Jose, Calif. UNITY GAIN PREAMPLIFIER FOR PHOTOMULTIPLIER TUBES. Patent dated Oct. 26, 1965. Disclaimer and dedication filed Oct. 29, 1973, by the assignee, *Lockheed Aircraft Corporation.*

Hereby disclaims and dedicates said patent to the People of the United States.

Dedications

3,000,978.—*Robert H. Fredenburg,* Barberton, Ohio. NOVEL COMPOSITION. Patent dated Sept. 19, 1961. Dedication filed Nov. 2, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,111,064.—*Kenneth W. Jones,* Franklin, Ohio. MACHINE FOR FORMING AND ASSEMBLING PAPERBOARD CARRIERS. Patent dated Nov. 19, 1963. Dedication filed Sept. 26, 1973, by the assignee, *International Paper Company.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,536,874.—*Remy J. Van Ophem,* Warren, Mich. DUAL BRAKING SYSTEM SAFETY DEVICE. Patent dated Oct. 27, 1970. Dedication filed July 31, 1972, by the assignee, *The Weatherhead Company.*

Hereby dedicates said entire patent to the Public.

3,616,173.—*George W. Green,* Portland, Oreg., and *Donald G. Sundberg,* Newark, Ohio. FIRE RESISTANT WALLBOARD. Patent dated Oct. 26, 1971. Dedication filed Nov. 23, 1973, by the assignee, *Georgia-Pacific Corporation.*

Hereby dedicates to the Public the entire remaining term of said patent.

Disclaimers

2,939,253.—*Albert R. Richard,* Weymouth, and *George P. Honkanen,* Hingham, Mass. CENTERLESS GRINDING AND BORING APPARATUS. Patent dated June 7, 1960. Disclaimer filed Nov. 7, 1973, by the assignee, *Woodruff & Stokes Company.*

Hereby enters this disclaimer to all claims of said patent.

3,133,349.—*Kurt A. Riedel,* Milwaukee, Wis. TOOL CHANGER FOR A MACHINE TOOL. Patent dated May 19, 1964. Disclaimer filed June 26, 1972, by the assignee, *Kearney & Trecker Corporation.*

Hereby enters this disclaimer to all claims of said patent.

3,174,222.—*Walter M. Pohl,* Boca Raton, Fla. TOOL CHANGING MACHINE TOOL. Patent dated Mar. 23, 1965. Disclaimer filed June 26, 1972, by the assignee, *Kearney & Trecker Corporation.*

Hereby enters this disclaimer to all claims of said patent.

3,218,706.—*Frank Zankl* and *Earl R. Lohneis,* Milwaukee, Wis. MACHINE TOOL WITH TOOL CHANGER. Patent dated Nov. 23, 1965. Disclaimer filed June 26, 1972, by the assignee, *Kearney & Trecker Corporation.*

Hereby enters this disclaimer to all claims of said patent.

3,236,895.—*John Malcolm Lee* and *J. C. Winfrey,* Lake Jackson, Tex. POLYOXYALKYLENEPOLYAMINES. Patent dated Feb. 22, 1966. Disclaimer filed Nov. 13, 1972, by the assignee, *The Dow Chemical Company.*

Hereby enters this disclaimer to claim 1 of said patent.

3,240,875.—*Lucius P. Thomas,* Indianapolis, Ind. UNITARY CONTROL PROVIDING COMPLEMENTARY CONTRAST AND BRIGHTNESS CHANGES. Patent dated Mar. 15, 1966. Disclaimer filed Oct. 25, 1973, by the assignee, *RCA Corporation.*

Hereby enters this disclaimer to claims 1–9 of said patent.

3,249,997.—*Morris L. Hutchens,* Brookfield, Wis. PROGRAM TOOL VERIFIER. Patent dated May 10, 1966. Disclaimer filed June 26, 1972, by the assignee, *Kearney & Trecker Corporation.*

Hereby enters this disclaimer to all claims of said patent.

3,344,949.—*Martin Himmel*, Mount Vernon, N.Y. TOPS FOR COFFEE PERCOLATOR LIDS AND LIKE ARTICLES. Patent dated Oct. 3, 1967. Disclaimer filed Nov. 23, 1973, by the assignee, *Tops Manufacturing Co. Inc.*

Hereby enters this disclaimer to claims 1, 2, 5, 7 and 8 of said patent.

3,386,297.—*Grant N. Willis*, Bristol, Conn. MOTION CONVERSION MECHANISM. Patent dated June 4, 1968. Disclaimer filed Nov. 13, 1972, by the assignee, *The Arthur G. Russell Company, Incorporated.*

Hereby enters this disclaimer to claim 9 of said patent.

3,419,569.—*Ulrich Renner*, Riehen, Switzerland. INDOLE DERIVATIVES. Patent dated Dec. 31, 1968. Disclaimer filed Nov. 14, 1972, by the assignee, *Ciba-Geigy Corporation.*

Hereby enters this disclaimer to claims 1 and 9 of said patent.

3,426,582.—*Colin Shaw McArthur* and *Bruce Wall McKnight*, Winston-Salem, N.C. CIGARETTE INSPECTION APPARATUS. Patent dated Feb. 11, 1969. Disclaimer filed July 19, 1972, by the assignee, *R. J. Reynolds Tobacco Company.*

Hereby enters this disclaimer to claims 10 and 11 of said patent.

3,455,723.—*Edward L. Kern*, Midland, Mich. COATING WITH SILICON CARBIDE BY IMMERSION REACTION. Patent dated July 15, 1969. Disclaimer filed Oct. 18, 1972, by the assignee, *Dow Corning Corporation.*

Hereby enters this disclaimer to claims 1–3 of said patent.

3,532,639.—*George B. Hatch*, Allison Park, Pa. CORROSION INHIBITING WITH COMBINATIONS OF ZINC SALTS, AND DERIVATIVES OF METHANOL PHOSPHONIC ACID. Patent dated Oct. 6, 1970. Disclaimer filed Aug. 10, 1972, by the inventor, the assignee, *Calgon Corporation*, assenting.

Hereby enters this disclaimer to claims 1 through 10 of said patent.

3,577,982.—*Edwin Le Par*, Andalusia, Pa. EQUIPMENT FOR DELIVERING A LIQUID INTO A BODY STOMA. Patent dated May 11, 1971. Disclaimer filed Jan. 11, 1972, by the inventor.

Hereby enters this disclaimer to claims 1, 2 and 4 of said patent.

3,582,202.—*Philip J. Donald*, Woodbury, N.J. PROJECTION OF COLOR-CODED B AND W TRANSPARENCIES. Patent dated June 1, 1971. Disclaimer filed May 12, 1972, by the assignee, *RCA Corporation.*

Hereby enters this disclaimer to all claims of said patent.

3,619,509.—*James Robert Barger*, Haddon Heights, and *Phillips Brooks Scott*, Haddonfield, N.J. BROAD SLOPE DETERMINING NETWORK. Patent dated Nov. 9, 1971. Disclaimer filed May 4, 1972, by the assignee, *RCA Corporation.*

Hereby enter this disclaimer to all claims of said patent.

3,619,537.—*Tomoyuki Hosokawa*, Nara, *Hazime Mori*, Toyonaka, and *Shigeru Kusunoki*, Kyoto, Japan. HIGH-FREQUENCY HEATING DEVICE. Patent dated Nov. 9, 1971. Disclaimer filed June 21, 1972, by the assignee, *Matsushita Electric Industrial Co., Ltd.*

Hereby enters this disclaimer to claim 1 of said patent.

3,640,733.—*Gustav E. Rast*, Hamburg, and *Russell I. Steiner*, Williamsville, N.Y. EDIBLE SUBSTRATES COLORED WITH MONOAZO DYESTUFFS. Patent dated Feb. 8, 1972. Disclaimer filed July 17, 1972, by the assignee, *Allied Chemical Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to July 7, 1987.

3,641,505.—*Walter M. Artz*, Succasunna, *Kenneth R. Cornelius*, Parsippany, *John W. Olson*, Morris Township, Morris County, N.J., *Gary R. Signor*, Burlington, N.C., and *Francis E. Slojkowski*, Milburn, N.J. MULTIPROCESSOR COMPUTER ADAPTED FOR PARTITIONING INTO A PLURALITY OF INDEPENDENTLY OPERATING SYSTEMS. Patent dated Feb. 8, 1972. Disclaimer filed May 15, 1972, by the assignees, *Bell Telephone Laboratories, Incorporated and Western Electric Company, Incorporated.*

Hereby enter this disclaimer to claims 1 through 7 and 9 through 13 of said patent.

3,742,674.—*Marshall Ira Lang*, Wayne, N.J. SUSPENDED CEILING SYSTEM INCLUDING A GRID NETWORK. Patent dated July 3, 1973. Disclaimer filed Feb. 1, 1973, by the assignee, *Bajer Industries Incorporated.*

Hereby disclaims the portion of the term of the patent subsequent to Aug. 22, 1989.

3,770,418.—*Thomas J. Wilde*, Fullerton, Calif. METHOD OF MELTING IRON WITH LUMPS OF CARBON COKE. Patent dated Nov. 6, 1973. Disclaimer filed Apr. 26, 1973, by the inventor and the assignee, *Amax Carbon Products, Inc.*

Hereby disclaim the portion of the term of the patent subsequent to Nov. 9, 1988.

National Technical Information Service

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DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF TRANSPORTATION

Patent Counsel, 400 7th St, SW., Washington, D.C. 10590

Patent application 378,510. Rail Gage Apparatus. Filed July 12, 1973. PC $3/MF $1.45.

Patent application 390,614. Infrared Tire Inspection Technique. Filed Aug. 22, 1973. PC $3/MF $1.45.

Patent application 407,213. Airport Loop Detector System. Filed Oct. 17, 1973. PC $3/MF $1.45.

Patent application 411,671. Vehicle Tracking System for Headway Monitoring. Filed Nov. 1, 1973. PC $3/MF $1.45.

Patent application 413,871. Copy Machine Record System for Cost Control. Filed Nov. 8, 1973. PC $3/MF $1.45.

U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th and C Sts. NW.,
Washington, D.C. 20240

Patent application 385,214. Recovery of Tungsten From Alkaline Brine. Filed Aug. 2, 1973. PC $3/MF $1.45.

Patent 3,332,745. Method of Quantitatively Determining Trace Impurities in Inert Gas Systems. Filed Dec. 20, 1963. Patented July 25, 1967. Not available NTIS.

Patent 3,632,481. Critical Velocity, Uninterruptedly Flowing Brine in Multistage Distillation System. Filed Feb. 13, 1970. Patented Jan. 4, 1972. Not available NTIS.

Patent 3,633,099. Process and Apparatus for Determining Crevice Corrosion by Polarization Techniques. Filed June 30, 1969. Patented Jan. 4, 1972. Not available NTIS.

Patent 3,634,231. Treatment of Sewage Digester Supernatant Liquor. Filed May 13, 1970. Patented Jan. 11, 1972. Not available NTIS.

Patent 3,635,092. Manually Operated Gas Sampler. Filed Nov. 12, 1969. Patented Jan. 18, 1972. Not available NTIS.

Patent 3,637,823. Preparation of Caronic Acid From Delta-3-Carene. Filed Oct. 20, 1969. Patented Jan. 25, 1972. Not available NTIS.

Patent 3,639,925. Recovery of Gold From Carbonaceous Ores. Filed Nov. 17, 1970. Patented Feb. 8, 1972. Not available NTIS.

Patent 3,640,821. Reductive Degradation of Halogenated Pesticides. Filed Dec. 23, 1970. Patented Feb. 8, 1972. Not available NTIS.

Patent 3,640,846. Production of Methane by Bacterial Action. Filed Apr. 29, 1969. Patented Feb. 8, 1972. Not available NTIS.

Patent 3,642,433. Process for Extracting Aluminum Compounds From Dawsonite and Dawsonitic Oil Shale. Filed Aug. 5, 1968. Patented Feb. 15, 1972. Not available NTIS.

Patent 3,642,445. Utilization of Coal-Burning Power Plant By-Products. Filed Apr. 30, 1970. Patented Feb. 15, 1972. Not available NTIS.

Patent 3,644,202. Collagen Membranes for Reverse Osmosis Desalination. Filed Mar. 31, 1970. Patented Feb. 22, 1972. Not available NTIS.

Patent 3,649,220. Recovery of Zinc and Nickel From Waste Phosphate Liquor. Filed Dec. 23, 1969. Patented Mar. 14, 1972. Not available NTIS.

Patent 3,649,377. Process for Improving Creep Resistance of Zinc-Copper Alloys. Filed Oct. 13, 1969. Patented Mar. 14, 1972. Not available NTIS.

Patent 3,649,470. Hot Brine Seeding Technique to Increase Flashing Efficiencies in Multistage Flash Evaporators. Filed Jan. 28, 1970. Patented Mar. 14, 1972. Not available NTIS.

Patent 3,660,022. Recovery of Copper. Filed Mar. 2, 1971. Patented May 2, 1972. Not available NTIS.

Patent 3,662,046. Method of Making Reverse Osmosis Membranes for Desalination of Water. Filed June 3, 1970. Patented May 9, 1972. Not available NTIS.

Patent 3,663,163. Regeneration of Cation Exchange Resins and Recovery of Salts. Filed May 18, 1970. Patented May 16, 1972. Not available NTIS.

Patent 3,666,444. Electrowinning of Beryllium. Filed Dec. 5, 1968. Patented May 30, 1972. Not available NTIS.

Patent 3,671,516. Reverse-Osmosis Membranes. Filed Mar. 2, 1971. Patented June 20, 1972. Not available NTIS.

Patent 3,725,221. Recovery of Niobium and Tantalum. Filed Jan. 26, 1972. Patented Apr. 3, 1973. Not available NTIS.

Patent 3,774,771. Reverse Osmosis Module. Filed Dec. 9, 1971. Patented Nov. 27, 1973. Not available NTIS.

Patent 3,775,091. Induction Melting of Metals in Cold, Self-Lined Crucibles. Filed Feb. 26, 1969. Patented Nov. 27, 1973. Not available NTIS.

DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research Code 302,
Arilngton, Va. 22217

Patent 3,619,869. Fiber Aligning Apparatus. Filed Jan. 2, 1969. Patented Nov. 16, 1971. Not available NTIS.

Patent 3,620,061. Design of Ultrasonic Transducers for Use With Rolling Mill Rolls. Filed Oct. 3, 1969. Patented Nov. 16, 1971. Not available NTIS.

Patent 3,620,075. Force Gage (Pilot's). Filed Oct. 22, 1969. Patented Nov. 16, 1971. Not available NTIS.

Patent 3,621,805. Embedment Anchor. Filed Feb. 2, 1970. Patented Nov. 23, 1971. Not available NTIS.

Patent 3,623,914. Metal Anode Package. Filed Feb. 19, 1970. Patented Nov. 30, 1971. Not available NTIS.

Patent 3,624,518. Single Pulse Switch Circuit. Filed Mar. 24, 1970. Patented Nov. 30, 1971. Not available NTIS.

Patent 3,625,066. Water Sampling Apparatus. Filed Mar. 30, 1970. Patented Dec. 7, 1971. Not available NTIS.

Patent 3,626,626. Shark Dart Electronic Circuit. Filed July 24, 1970. Patented Dec. 14, 1971. Not available NTIS.

Patent 3,629,340. Synthesis of Perfluoroparacresol, Polyoxyperfluorobenzylene and Related Monomers and Polymers. Filed June 25, 1968. Patented Dec. 21, 1971. Not available NTIS.

Patent 3,630,413. Device for Manually or Automatically Inflating a Life Preserver. Filed Apr. 1, 1970. Patented Dec. 28, 1971. Not available NTIS.

Patent 3,639,077. Belt-Driven Pi-Pitch Cycloidal Propeller. Filed July 23, 1970. Patented Feb. 1, 1972. Not available NTIS.

Patent 3,642,653. Water 'Displacing Corrosion Preventive. Filed Jan. 2, 1969. Patented Feb. 15, 1972. Not available NTIS.

Patent 3,642,700. Phenylated Imide-Quinoxaline Copolymers. Filed Sept. 24, 1970. Patented Feb. 15, 1972. Not available NTIS.

Patent 3,643,329. Explosively Actuated Cutter. Filed Apr. 17, 1970. Patented Feb. 22, 1972. Not available NTIS.

Patent 3,644,222. Ablative Epoxy Resin Composition and Method of Preparation. Filed Oct. 31, 1967. Patented Feb. 22, 1972. Not available NTIS.

Patent 3,644,247. Encapsulating Elastomeric Compound. Filed Aug. 17, 1970. Patented Feb. 22, 1972. Not available NTIS.

Patent 3,645,259.Crewman's Head Positioning and Restraining Device. Filed Oct. 23, 1970. Patented Feb. 29, 1972. Not available NTIS.

Patent 3,645,794. Disposable Anode Package. Filed Feb. 19, 1970. Patented Feb. 29, 1972. Not available NTIS.

Patent 3,646,333. Digital Correlator and Integrator. Filed Dec. 12, 1969. Patented Feb. 29, 1972. Not available NTIS.

Patent 3,646,355. Automatic Power Tranfer Switch. Filed May 19, 1970. Patented Feb. 29, 1972. Not available NTIS.

Patent 3,646,694. Dredging Method Employing Injection and Suction Nozzles. Filed Dec. 17, 1969. Patented Mar. 7, 1972. Not available NTIS.

Patent 3,647,164. Lunch Bar Installation. Filed Aug. 19, 1970. Patented Mar. 7, 1972. Not available NTIS.

Patent 3,652,485. Aircraft Carrier Deck Coating. Filed Oct. 13, 1970. Patented Mar. 28, 1972. Not available NTIS.

Patent 3,654,190. Fire Retardant Intumescent Paint. Filed May 28, 1970. Patented Apr. 4, 1972. Not available NTIS.

Patent 3,655,785. Method of Making Perfluorostyrene. Filed Nov. 6, 1969. Patented Apr. 11, 1972. Not available NTIS.

Patent 3,656,210. Cable End Fitting. Filed Sept. 25, 1970. Patented Apr. 18, 1972. Not available NTIS.

Patent 3,656,211. Reciprocably Latched Canopy Release. Filed Apr. 28, 1970. Patented Apr. 18, 1972. Not avaialble NTIS.

Patent 3,656,838. Method for Making an Optical Filter for a Character Identification System. Filed Sept. 4, 1970. Patented Apr. 18, 1972. Not available NTIS.

Patent 3,657,580. Magnetically Shielded Electrical Machine With Superconducting Filed Windings. Filed Jan. 18, 1971. Patented Apr. 18, 1972. Not available NTIS.

Patent 3,658,101. Jet Stream Refueling System. Filed May 29, 1968. Patented Apr. 25, 1972. Not available NTIS.

Patent 3,658,410. Wide Angle Anamorphic Retractive Lenses. Filed Feb. 8, 1971. Patented Apr. 25, 1972. Not available NTIS.

Patent 3,659,306. Wiper for Machined Surfaces. Filed June 22, 1970. Patented May 2, 1972. Not available NTIS.

Patent 3,661,107. Life Support System for Deep Submersible Vehicles. Filed Dec. 28, 1970. Patented May 9, 1972. Not available NTIS.

Patent 3,661,728. Nickel Plating of Nickel-Copper Printed Circuit Board. Filed Mar. 31, 1971. Patented May 9, 1972. Not available NTIS.

Patent 3,663,274. Method of Minimizing Accumulation of Electrostatic Charge on Polyethylene. Filed June 3, 1970. Patented May 16, 1972. Not available NTIS.

Patent 3,663,297. Process for the Preparation of Sintered Zinc Powder Battery Electrodes. Filed June 24, 1970. Patented May 16, 1972. Not available NTIS.

Patent 3,663,308. Method of Making Ion Implanted Dielectric Enclosures. Filed Nov. 5, 1970. Patented May 16, 1972. Not available NTIS.

Patent 3,663,925. Electrical Connector. Filed May 20, 1970. Patented May 16, 1972. Not available NTIS.

Patent 3,663,989. Latch and Hinge Device. Filed Oct. 5, 1970. Patented May 23, 1972. Not available NTIS.

Patent 3,664,371. Resilient Poppet Valve. Filed Oct. 23, 1970. Patented May 23, 1972. Not available NTIS.

Patent 3,664,438. Underwater Rock Core Sampling Device and Method of Use Thereof. Filed Aug. 26, 1970. Patented May 23, 1972. Not available NTIS.

Patent 3,665,151. Apparatus for Preventing Carbon Diffusion in Electric Discharge Sintering. Filed July 24, 1969. Patented May 23, 1972. Not available NTIS.

Patent 3,665, 326. Automatic Threshold Detector With Selectable Percentage of Threshold Crossings. Filed Mar. 30, 1970. Patented May 23, 1972. Not available NTIS.

Patent 3,665,509. Underwater Electrical Connector. Filed Mar. 22, 1971. Patented May 23, 1972. Not available NTIS.

Patent 3,666,028. Coring Apparatus for Taking Samples of the Ocean Floor. Filed Sept. 25, 1970. Patented May 30, 1972. Not available NTIS.

Patent 3,666,895. Film Recorded Velocity and Dynamic Gain Control Mcehanism. Filed Mar. 9, 1971. Patented May 30, 1972. Not available NTIS.

Patent 3,667,553. Telescoping Sea Floor Soil Sampler. Filed

Patent application 405,346. Journal Bearings. Filed Oct. 11, Patent 3,667,553. Telescoping Sea Floor Soil Sampler. Filed Dec. 14, 1970. Patented June 6, 1972. Not available NTIS.

Patent 3,668,287. Method of Constructing Foamed in Place Building Containing Heating Wire. Filed Dec. 29, 1969. Patented June 6, 1972. Not available NTIS.

Patent 3,668,557. Low Frequency Blocking Oscillator. Filed Sept. 4, 1970. Patented June 6, 1972. Not available NTIS.

Patent 3,668,679. Automated Analyzer of Machine Operation. Filed Feb. 18, 1971. Patented June 6, 1972. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters NASA—
Code GP–2, Washington, D.C. 20546

Patent application 401,466. Low Speed Phaselock Speed Control System. Filed Sept. 27, 1973. PC $3.50/MF $1.45.

Patent application 401,919. Ultraviolet Light Reflective Coating. Filed Sept. 28, 1973. PC $3/MF $1.45.

Patent application 402,865. Millimeter Wave Pumped Parametric Amplifier. Filed Oct. 2, 1973. PC $3/MF $1.45.

Patent application 405,341. Remote Manipulator System. Filed Oct. 11, 1973. PC $3.50/MF $1.45.

Patent application 405,342. A Meter for Use in Detecting Tension in Straps Having Predetermined Elastic Characteristics. Filed Oct. 11, 1973. PC $3/MF $1.45.

Patent application 405,346. Journal Bearings. Filed Oct. 11, 1973. PC $3/MF $1.45.

Patent application 406,715. Automatic Focus Control for Facsimile Cameras. Filed Oct. 15, 1973. PC $3/MF $1.45.

Patent 3,764,097. Lightweight, Variable Solidity Knitted Parachute Fabric. Patented Oct. 9, 1973. Not available NTIS.

Patent 3,764,790. Technique for Extending the Frequency Range of Digital Dividers. Patented Oct. 9, 1973. Not available NTIS.

Patent 3,764,850. Electron Beam Controller. Patented Oct. 9, 1973. Not available NTIS.

Patent 3,764,933. Controlled Oscillator System With a Time Dependent Output Frequency. Patented Oct. 9, 1973. Not available NTIS.

Patent 3,765,229. Ultrasonic Scanner for Radial and Flat Panels. Patented Oct. 16, 1973. Not available NTIS.

Patent 3,765,958. Method of Heat Treating a Formed Powder Material. Patented Oct. 16, 1973. Not available NTIS.

Patent 3,766,315. Method and Apparatus for a Single Channel Digital Communications System. Patented Oct. 16, 1973. Not available NTIS.

Patent 3,767,212. Spiral Groove Seal. Patented Oct. 23, 1973. Not available NTIS.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JANUARY 19, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-02-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-25-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	10-11-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-04-73
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	9-01-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	6-13-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	9-18-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-02-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	8-16-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	2-02-73
DESIGNS, GROUP 290—R. L. CAMPBELL, Director Industrial Arts; Household, Personal and Fine Arts.	4-11-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	3-16-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	2-26-73
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	3-02-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-22-73
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-28-72

Expiration of patents: The patents within the range of numbers indicated below expire during January 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,775,762 to 2,779,941, inclusive
Plant Patents	Numbers 1,543 to 1,558, inclusive

REISSUES

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tions at a first frequency. A second circuit having input and output terminals is arranged to be switched between predetermined points in the first circuit, shifting the fre-

is an alkyl, aryl, or acyl radical, are photochemical initiators for the polymerization of vinyl monomers.

REISSUES

FEBRUARY 19, 1974

Matter enclosed in heavy brackets **[ ]** appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,921

TEMPERATURE CONTROL OF CHEMICAL TEMPERING OF SOLID GLASS OR VITRO-CRYSTALLINE BODIES

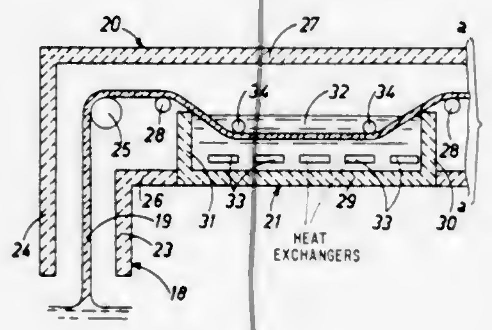
Jean Duthoit, Gilly, Belgium, assignor to Glaverbel S.A., Watermael Boitsfort, Belgium

Original No. 3,628,934, dated Dec. 21, 1971, Ser. No. 723,380, Apr. 23, 1968. Application for reissue Aug. 11, 1972, Ser. No. 279,791

Claims priority, application Luxembourg, Apr. 28, 1967, 53,555; Great Britain, Mar. 27, 1968, 14,778/68

Int. Cl. C03c *21/00*

U.S. Cl. 65—30 **11 Claims**



A process and apparatus for improving the properties of materials which are chemically tempered by means of an ion diffusion process, the improvement being obtained by decreasing the temperature at which the process is carried out during the course of the ion diffusion operation, by at least 40° C.

27,922

IMAGE-FORMING ELEMENTS CONTAINING CROSS-LINKABLE POLYMER COMPOSITIONS *AND PROCESSES FOR THEIR USE*

Donald W. Heseltine, Philip W. Jenkins, and John D. Mee, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original No. 3,615,453, dated Oct. 26, 1971, Ser. No. 766,288, Oct. 9, 1968. Application for reissue June 30, 1972, Ser. No. 267,830

Int. Cl. G03c *1/70*

U.S. Cl. 96—35.1 **23 Claims**

Polymers having hardenable groups and incorporating an energy-sensitive compound containing a heterocyclic nitrogen atom substituted with an —OR group where R is alkyl, aralkyl or acyl are crosslinked by exposure, including imagewise exposure, to electromagnetic radiation.

27,923

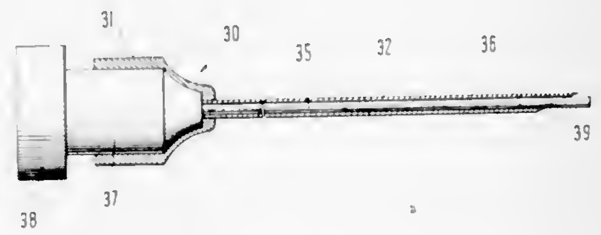
APPARATUS AND METHOD FOR PREVENTING BLOOD CLOTTING

Itzhak E. Bentov, 241 Glezen Lane, Wayland, Mass. 01778

Original No. 3,491,756, dated Jan. 27, 1970, Ser. No. 604,523, Dec. 12, 1968, which is a continuation-in-part of abandoned application Ser. No. 547,479, May 4, 1966. Application for reissue Dec. 23, 1971, Ser. No. 211,531

Int. Cl. A61m *5/32*

U.S. Cl. 128—221 **14 Claims**



A means for preventing blood clots and the like which are occasioned by leaving a medical device such as a catheter or needle in a body for long periods of time in the form of a flexible or rigid obturator comprising a metal (aluminum, magnesium, etc.) high in the electrochemical series, containing wire or probe which fits into a needle or cathether and generates a negative voltage and produces a soft gel to inhibit clot formation. An electrochemical arrangement and a circuit provide means for establishing a selected voltage within the tissue which prevents clot formation and also generates a gel. Also provided is a method for minimizing coagulation of blood about a medical device partially inserted into a medically formed opening in body tissue. *A hollow tubular needle* **[**means**]** *is formed with a surface which prevents blockage by blood in the body.*

27,924

FREQUENCY SHIFT OSCILLATOR WHICH AVOIDS THE GENERATION OF TRANSIENTS

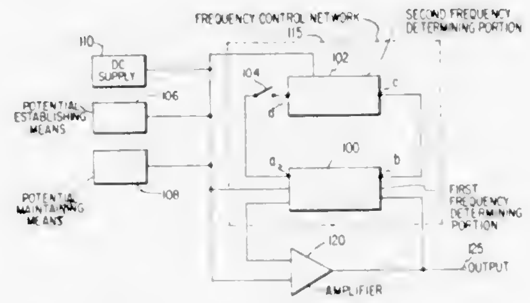
William Frederick Hingston, Needham, Mass., assignor to RCA Corporation

Original No. 3,618,132, dated Nov. 2, 1971, Ser. No. 827,188, May 23, 1969. Application for reissue Aug. 28, 1972, Ser. No. 284,091

Int. Cl. H03b *5/20;* **H03c** *3/06*

U.S. Cl. 331—179 **7 Claims**

A frequency shift oscillator includes a first frequency-determining circuit whereby the oscillator normally functions at a first frequency. A second circuit having input and output terminals is arranged to be switched between predetermined points in the first circuit, shifting the frequency of the oscillator to a second frequency. The predetermined points in the first circuit and the input-output terminals of the second circuit are all maintained at substantially the same constant potential irrespective of whether or not the second circuit is switched between the predetermined points in the first circuit, avoiding the generation of transients which would otherwise occur upon the switching of the second circuit in and out of the first circuit.


FREQUENCY CONTROL NETWORK
115
SECOND FREQUENCY DETERMINING PORTION
110
DC SUPPLY
106
104
102
c
d
POTENTIAL ESTABLISHING MEANS
100
a
b
POTENTIAL MAINTAINING MEANS
108
FIRST FREQUENCY DETERMINING PORTION
120
125
OUTPUT
AMPLIFIER

27,925

PHOTOPOLYMERIZATION USING N-ALKOXY HETEROCYCLIC INITIATORS

Philip W. Jenkins, Donald W. Heseltine, and John D. Mee, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original No. 3,574,622, dated Apr. 13, 1971, Ser. No. 766,304, Oct. 9, 1968. Application for reissue June 23, 1972, Ser. No. 265,853

Int. Cl. G03c *1/70*

U.S. Cl. 96—35.1 **37 Claims**

Energy-sensitive compounds containing a heterocyclic nitrogen atom substituted with an —OR group where R is an alkyl, aryl, or acyl radical, are photochemical initiators for the polymerization of vinyl monomers.

27,926

COMPOSITIONS AND PROCESSES FOR TREATING EXHAUST

James F. Roth, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Original No. 3,418,070, dated Dec. 24, 1968, Ser. No. 289,393, June 20, 1963. Application for reissue Dec. 21, 1970, Ser. No. 100,481

Int. Cl. B01d *53/34;* **B01j** *4/22*

U.S. Cl. 423—212 **21 Claims**

A catalytic composition and a process for the catalytic oxidation of exhaust gases from an automobile combustion engine where the exhaust is passed over a catalytic composite which comprises an active copper **[**oxide**]** component which is contained on an alumina base and which has a crystalline content of less than 2% based on the weight of the composite. Furthermore, the catalytic composite has a macropore volume determined by the mercury penetration method of about 0.05 to 0.30 cubic centimeter per gram.

27,927

FOAMABLE THERMOPLASTIC POLYMER GRANULES AND METHOD FOR MAKING

Werner L. Jablonski, Midland, Mich., by Dow Chemical Co., Midland, Mich., assignee

No Drawing. Original No. 3,663,466, dated May 16, 1972, Ser. No. 749,287, Aug. 1, 1968. Application for reissue Mar. 8, 1973, Ser. No. 339,714

Int. Cl. C08f *33/02, 47/10*

U.S. Cl. 260—2.5 B **8 Claims**

Foamable styrene polymers are prepared by incorporating within the particles an alkali metal salt of long chain or aromatic carboxylic acids. Improved fusion, low cooling time and anti-clumping properties are obtained.

3,486

CHRYSANTHEMUM PLANT

apple scab, excellent fresh fruit quality as regards flavor

PLANT PATENTS

GRANTED FEBRUARY 19, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,481

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed June 5, 1972, Ser. No. 259,997

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—79 **1 Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness by its good vigor and strong stem; medium large to large incurved flower; its bright bronze, lustrous flower color; its suitability for winter production in most areas of the United States, and by its ability to be grown as a bronze standard for spring in California; by its excellent shipping qualities if harvested in the ⅓ to ½ open stage, opening quite well in approximately three days with only clorox added to the water, and by its very low temperature tolerance, with the new cultivar initiating and developing buds at 56°–58° F.

3,482

DOGWOOD TREE

Mary B. Wakefield, 1465 Brush Hill Road, Milton, Mass. 02186

Filed June 29, 1972, Ser. No. 267,515

Int. Cl. A01h *5/12*

U.S. Cl. Plt.—51 **1 Claim**

1. A new and distinct variety of dogwood tree of the Japanese dogwood type, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a strong, graceful and rapid habit of growth, an exceptionally large bloom size ranging from about 7 inches to 8 inches in diameter, a distinctive bloom form characterized by a long, taper-pointing of the bracts which are carried on long peduncles so as to extend well beyond the foliage, with the peduncles being inclined from 30° to 60° above the branches so that the blooms are more readily visible to an observer standing nearby, a distinctive and interesting bloom color which begins as pale green and then whitens along the edges of the bracts, leaving a broad central green stripe longitudinally extending through each bract and which remains for several weeks until the green color whitens and the bract color becomes white over-all, a prolonged blooming habit which usually begins in early June and extends well into July at Milton, Massachusetts, with the blooms remaining crisp and fresh until the bracts fall, attractive fruit of large size which are borne on long, outwardly inclined peduncles and are readily visible from ground level, excellent hardiness to at least −20° F. without injury, and especial suitability for street plantings, as well as for ornamental plantings in parks and on residential grounds.

3,483

ALMOND TREE

Kenneth Stretch, 14010 Le Grand Road, Le Grand, Calif. 95333, and Robert Stretch, 8729 E. Mariposa Way, Merced, Calif. 95340

Filed July 21, 1972, Ser. No. 273,761

Int. Cl. A01h *5/03*

U.S. Cl. Plt.—30 **1 Claim**

1. A new and distinct variety of almond tree, substantially as illustrated and described, characterized by being highly resistant to frost and of vigorous growth and having high production characteristics; and further characterized when compared with the Nonpareil variety, by being more frost resistant, having resilient limbs and substantially larger flowers with more space between the petals thereof, with lesser amounts of pink at the base of each petal than the flowers of the Nonpareil variety.

3,484

CHRYSANTHEMUM PLANT

Leonard H. Shoesmith, Westfield-Woking, England, assignor to Pan-American Plant Company, Chicago, Ill.

Filed Aug. 10, 1972, Ser. No. 279,511

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—77 **1 Claim**

A new variety of *Chrysanthemum morifolium* of standard type for greenhouse culture, having a ten-week response to photoperiod culture and being particularly adapted for fall, winter and spring flowering. This plant is a vigorous grower producing abundant foliage and very large pure white flowers.

3,485

APPLE TREE

Stephen M. Coke, Yakima, Wash., assignor to H. Barry Rose, Alhambra, Calif.

Filed Aug. 16, 1972, Ser. No. 281,113

Int. Cl. A01h *5/03*

U.S. Cl. Plt.—35 **1 Claim**

1. A new and distinct variety of apple tree, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a natural semi-dwarf, self-spreading and self-thinning, spur type habit of growth, with the fruit spurs being more numerous per foot of fruiting wood than in any other "Delicious" variety and the fruit spurs beginning to form and set fruit at an unusually early age (usually during the second year), but requiring no thinning by reason of the fact that all but one fruit naturally drops off in all clusters to leave only one fruit per spur, heavier leaves of darker green color than in any other "Delicious" apple variety, and the leaves having more prominent feeder veins on their under sides than other varieties, a regular annular fruit-bearing habit, a more perfect "Delicious" type fruit form, but the fruit not being as long when mature as the fruit of the variety known as "Starkrimson" Bisbee strain (Plant Pat. No. 1,565), an unusually early blood red blush of the post bloom fruit on the calyx end, with the little fruit being a solid red color without stripes from the time the fruit sets and remaining a distinctive, attractive and uniform solid dark red color throughout each tree and throughout the fruit growth until the fruit matures, a superior resistance to lead-arsenic toxicity, particularly in old orchard soils, greater frost resistance than most other varieties of the "Delicious" type, and at least as good as Golden varieties, a self-pollinating habit which is unusual for semi-dwarf red varieties of the "Delicious" type, and also an ability to pollinate the variety "Starking Red Delicious," and good keeping qualities of the fruit in ordinary storage without the need of controlled atmosphere.

3,486

CHRYSANTHEMUM PLANT

Robert E. Danielson, West Chicago, Ill., assignor to Pan-American Plant Company, Chicago, Ill.

Filed Aug. 16, 1972, Ser. No. 281,170

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—78 **1 Claim**

A new irradiation mutation of the variety May Shoesmith (unpatented) having a very large globular flower of the standard incurved type and a deep yellow color. This variety has an eleven-week response, can be flowered the year around with photoperiod control, and is best suited for wintertime greenhouse culture.

3,487

CARNATION PLANT

Winfred Davis Holley, Fort Collins, Colo., assignor to Colorado State University Research Foundation, Fort Collins, Colo.

Filed Aug. 16, 1972, Ser. No. 281,200

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—70 **1 Claim**

A new variety of carnation plant distinguished by its continuous and profuse production of relatively large flowers having a generally cyclamen purple color; and by its vigorous growth and rapid flowering habit resulting in an exceptionally high yield of commercial quality blossoms.

3,488

APPLE TREE

Daniel F. Dayton, Urbana, and James B. Mowry, Carbondale, Ill., L. Frederic Hough, Bloomsburg, and Catherine Bailey, Englishtown, N.J., Edwin B. Williams, Lafayette, and Jules Janick and Frank H. Emerson, West Lafayette, Ind., and J. Ralph Shay, Corvallis, Oreg., assignors to Purdue Research Foundation

Filed Sept. 1, 1972, Ser. No. 285,941

Int. Cl. A01h *5/03*

U.S. Cl. Plt.—34 **1 Claim**

1. A new and distinct apple tree substantially as shown and described particularly characterized by resistance to apple scab, excellent fresh fruit quality as regards flavor and crisp texture and maturing approximately two (2) weeks before "Delicious," one (1) week before "Jonathan," or one and one-half (1½) weeks after "Prima."

3,489

ROSE PLANT

Griffith J. Buck, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Oct. 4, 1972, Ser. No. 290,511

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—13 **1 Claim**

A new variety of rose plant characterized by its profuse production of medium sized blooms having a generally cardinal red color with the petal surface irregularly variegated with stripes or patches of varying hues of white, rose and light red coloring. This new rose is further distinguished by its ability to transmit the characteristic color striping or streaking of its flower petals to its own seedlings and by its resistance to low winter temperatures and the high nighttime temperatures of summer.

3,490

ALMOND TREE

Guido Bandoni, 1434 N. Franklin Road, Merced, Calif. 95390

Filed Oct. 2, 1972, Ser. No. 294,029

Int. Cl. A01h *5/03*

U.S. Cl. Plt.—30 **1 Claim**

A large, dense, vigorous almond tree—which produces at an early age—having a stocky trunk with strong branches, abundant foliage, and a very heavy, early, white bloom; the tree being a regular and very productive bearer of large, uniform, very light colored nuts in harvest in late September, and having large, single, plump kernels.

PATENTS

PUBLISHED FEBRUARY 19, 1974

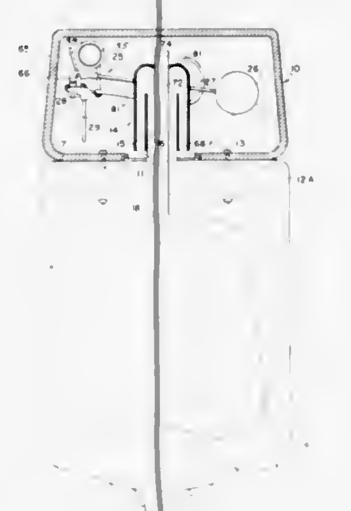
GENERAL AND MECHANICAL

3,792,497

COMBINED VENTED STORAGE/PRESSURE DISCHARGED TANK FOR WATER CLOSETS OR URINALS

Robert Ralph Robbins, 62 Thatcher Dr., Winnipeg, Manitoba, Canada

Filed July 28, 1972, Ser. No. 276,224
Int. Cl. E03d *3/10, 3/00*
U.S. Cl. 4—26 **24 Claims**



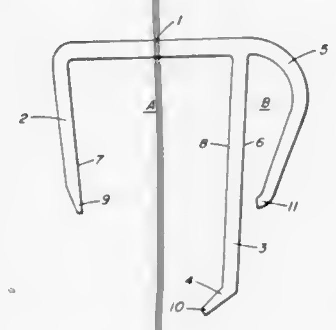
A combined vented storage and pressure tank is mounted to a urinal or closet bowl and connected to a source of air pressure and water supply. A maually operated valve closes off the tank vent and connects the air pressure line to the interior of the tank. This air pressure forces the water through an inverted U tube into the urinal or bowl. When empty the air line is automatically cut off, the vent opens and the water line partially fills the tank controlled by float assembly, ready for next use. An anti-gurgle tube extends from the tank to the top of the syphon of the bowl and operates just prior to the air closing off. This allows air to enter the conventional syphon and breaks this syphon action thus preventing undesirable gurgling from taking place.

3,792,498

BASIN ELEMENT

Morris Klimboff, 1410 Holman View Dr., Cincinnati, Ohio, and James Edwards Chisholm, 1969 Section Rd., Apt. No. 300, Cincinnati, Ohio

Filed Dec. 22, 1971, Ser. No. 211,025
Int. Cl. A47k *1/04*
U.S. Cl. 4—166 **6 Claims**



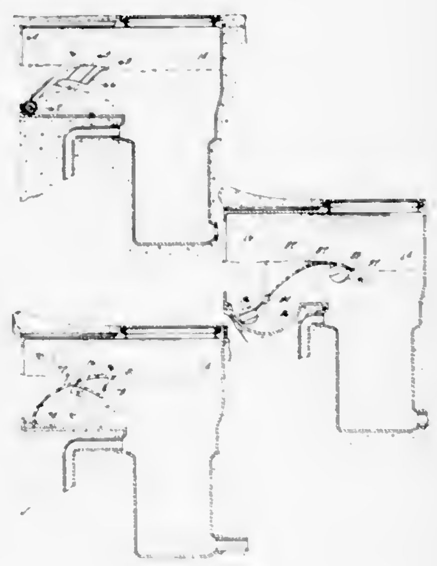
A one-piece extruded element adapted for mounting on the lip of a basin as a protective bumper, is disclosed. The element is in the form of a "7" having a top section and a long and short leg. The long leg has a slanted foot at the end thereof and a downwardly and inwardly slanting member positioned at the top thereof and terminating before reaching the outer surface of said long leg. The extrusion is of a strong material, preferably a resilient plastic.

3,792,499

SWIMMING POOL SURFACE SKIMMING WEIRS

Brackston T. Whitaker, Tucson, Ariz., assignor to William O. Baker, Huntington Beach, Calif.

Continuation-in-part of Ser. No. 801,029, Feb. 20, 1969, abandoned. This application Jan. 30, 1970, Ser. No. 7,000
Int. Cl. E03d *3/16, 3/18*
U.S. Cl. 4—172.17 **17 Claims**



A weir for use in swimming pool skimmers which may be biased to maintain a water level differential between the swimming pool and the interior of the skimmer is disclosed. Particularly advantageous results are obtained when the weir is so designed that the upper surface of the weir is flat or mildly convex and a lower surface which is either flat or mildly concave intersects with the upper surface to form an edge which is proximate the surface of the water in the swimming pool and a distance above the water in the skimmer.

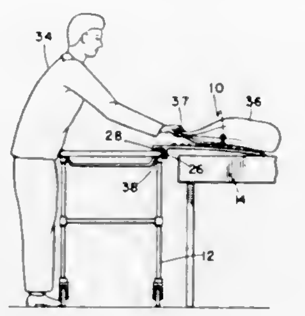
3,792,500

APPARATUS AND METHOD FOR TRANSFERRING A BODY BETWEEN HORIZONTALLY SPACED SUPPORTED POSITIONS

Martin L. Swara, Sr., 2565 Nye St., San Diego, Calif.

Filed Apr. 6, 1972, Ser. No. 241,789
Int. Cl. A61g *7/10*
U.S. Cl. 5—81 B **2 Claims**

The apparatus comprises roller frames with a plurality of horizontally spaced rollers that enable a single attendant to move a body to and from a wheeled cot. The frame is retained on a horizontal bar forming a part of the structure of the cot, by a pair of vertical legs. The legs also serve to retain the roller frame over the edge of a mortuary table, and for this use, the outermost leg is substantially shorter than the adjacent leg.

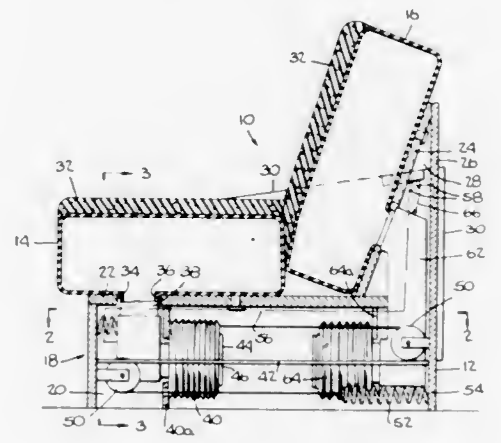


3,792,501

AIR CHAIRS AND CONVERTIBLE SOFAS

Edmund Kery, 908 E. 55th St., Brooklyn, N.Y.

Filed June 18, 1973, Ser. No. 370,919
Int. Cl. A47c *27/08, 17/14*
U.S. Cl. 5—348 R **10 Claims**



An air chair consisting of a frame having a seat support over a base chamber and a back support before a rear chamber in communication with the base chamber, with an inflatable cushion on the seat support in air communication with a bellows-shaped air spring in the base chamber through an intermediate tube, and an inflatable back cushion in air communication with a second similar air spring in the base chamber through an intermediate tube. The air springs are tensioned against entry of air from the cushions except under body pressure, the air forced back into the cushions when pressure is lifted. Air lines pump air initially into the cushions through valves. A convertible sofa of three cushions secured together as a unit and three back cushions similarly united, with above described air systems. The sofa back section is selectively rotative with respect to the seat section to lie on the same plane and form a bed, or pivoted to form the back rest of the sofa.

3,792,502

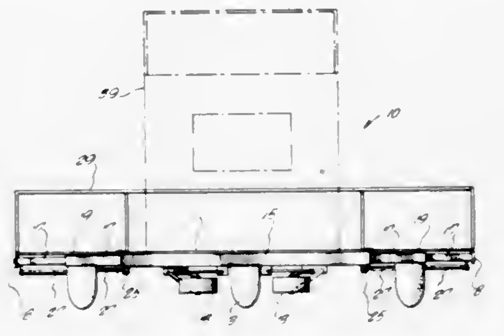
AMPHIBIOUS VEHICLE

Norman Odegaard, 4731 Chenoweth Rd., The Dalles, Oreg.

Filed Apr. 27, 1972, Ser. No. 248,204
Int. Cl. B63c *13/00*
U.S. Cl. 9—1 T **5 Claims**

An amphibious vehicle is disclosed which is capable of supporting a permanent installation, such as a cabin, in all modes of travel.

The vehicle comprises a central platform having a pair of retractable wheels mounted below to support the vehicle in a land travel mode. The platform further includes a plurality of lateral tubes intermittently spaced below for receiving a plurality of telescoping beams. These beams are adapted to telescope out of both sides of the platform in cantilevered positions to support a quantity of floor panels. The floor panels are adapted to be pivoted into a vertical stowed position when the beams are fully retracted into the tubes. In the stowed position, the floor panels are located on the sides of the platform to still provide sufficient space on the platform for supporting a permanent installation. A plurality of pontoons are securely mounted below the central platform and the floor panels to support the vehicles in water. A marine motor and propeller combination is also mounted below the platform to drive the vehicle in water.

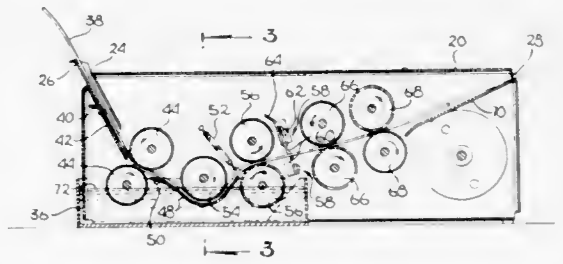


3,792,503

PLASTIC SHEET CLEANING MACHINE

Gordon L. Brock, 7652 Garfield Ave., Space No. 28, Huntington Beach, Calif.

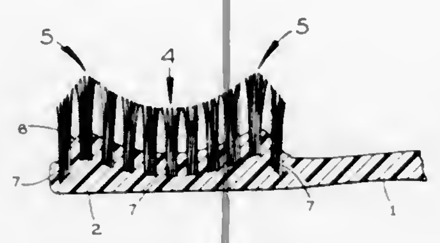
Filed Oct. 26, 1971, Ser. No. 192,396
Int. Cl. A63d *5/00*
U.S. Cl. 15—4 **8 Claims**



A plastic sheet cleaning machine for cleaning and drying plastic sheets, such as bowling score sheets. The machine has two pairs of rollers adapted to receive a plastic sheet and propel it past a counter-rotating cleaning roller disposed so as to be partially immersed in a cleaning fluid, a pair of oppositely disposed squeegee devices to remove the excess moisture from the sheet, and two pairs of soft absorbent rollers to further dry the cleaning sheet. A motor drive is adapted to be actuated by the insertion of a plastic sheet to be cleaned and a time delay mechanism is adapted to continue the operation of the mechanism until a plastic sheet passes completely therethrough.

3,792,504
HYGIENIC TOOTHBRUSH

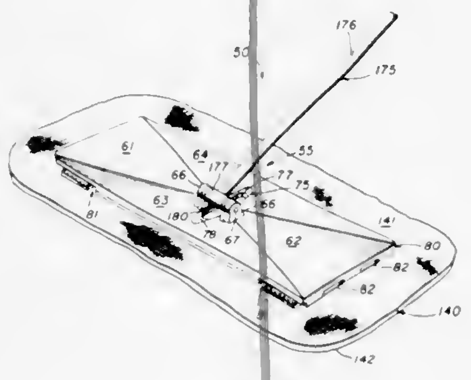
Donald G. Smith, 2551 Abaca Ave., Coral Gables, Fla.
Filed Sept. 25, 1972, Ser. No. 292,267
Int. Cl. A46b *9/04*
U.S. Cl. 15—167 R **3 Claims**



A toothbrush with a formation of bristles arranged to comply with the shape of teeth and more particularly to clean the gum surfaces between teeth and the mating sides thereof.

3,792,505
COMBINATION DUST CLOTH AND DUST MOP

Julian I. Saltzstein, Cleveland, Ohio, assignor to American Uniform Company, Cleveland, Tenn.
Filed June 21, 1972, Ser. No. 264,815
Int. Cl. A47l *13/256, 13/46*
U.S. Cl. 15—231 **28 Claims**

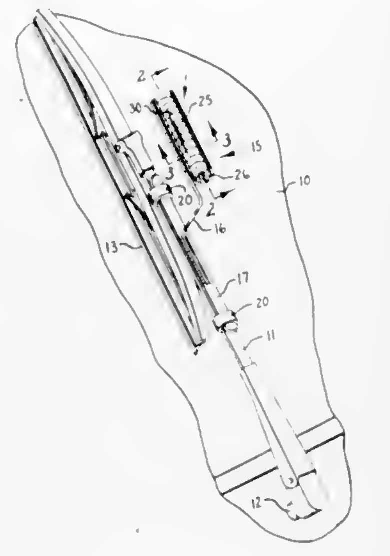


A combination dust cloth and dust mop comprising a mop head having a platform with a mop handle mounted on one side thereof and a clasping device disposed on the other side thereof, a soft pliable cloth having a dusting surface and a back surface, a separable fastening device including a first fastening member mounted in the clasping device and being removable therefrom and a second fastening member mounted on the back surface of the cloth for detachably mounting the cloth on the platform, the cloth covering the platform and extending a short distance therebeyond around the periphery of the platform to provide a marginal portion therearound.

3,792,506
DETERGENT HOLDER ON WINDSHIELD WIPER ARM

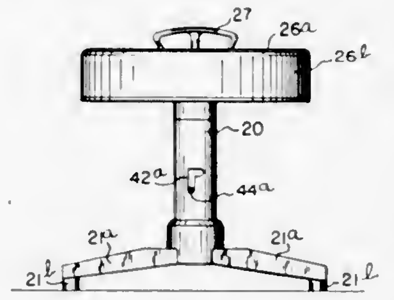
Donald E. Rouse, 1680 S.W. 132nd St., Beaverton, Oreg.
Filed June 9, 1972, Ser. No. 261,254
Int. Cl. B60s *1/00*
U.S. Cl. 15—250.03 **6 Claims**

A detergent holder has a bracket arranged for mounting on a conventional windshield wiper arm at one side of the wiper blade. A cylindrical cake of solid detergent is received in the holder. The detergent cake is molded into a coil of plastic material which is clamped by the sides of the holder. The holder has openings on its side facing the windshield and is entirely open on its opposite side for exposure to rain water. As rain water flows over the detergent cake, some of the detergent is dissolved and blown against the windshield in the area traversed by the oscillating wiper blade.



3,792,507
CLEANER STAND FOR COMPUTER DISKS

Robert H. Szabrak, and Wilbur J. Lutes, both of Sandusky, Ohio, assignors to Sam Stein Associates, Inc., Sandusky, Ohio
Filed Sept. 11, 1972, Ser. No. 287,657
Int. Cl. A47l *25/00;* **F16m** *11/20*
U.S. Cl. 15—268 **1 Claim**

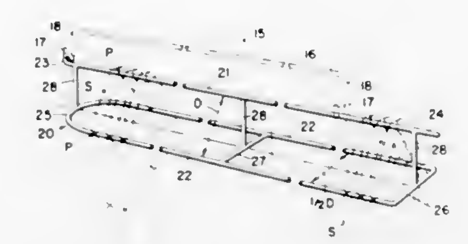


A cleaner stand is provided for manipulating a computer pack completely enclosed in a cover providing a very simple means for releasing an internal lock which normally retains the cover to the pack of computer disks, after which the cover may be removed and the disks may be rotated on the stand while they are cleaned.

3,792,508
SAUSAGE-SUPPORTING APPARATUS FOR USE IN SMOKE HOUSES AND THE LIKE

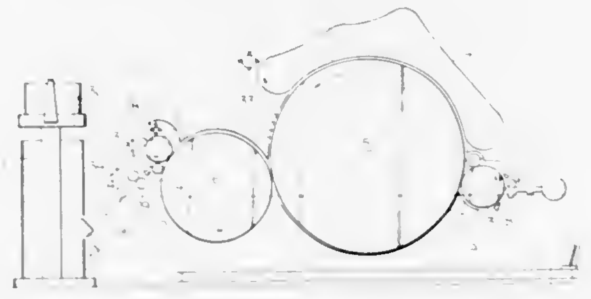
Knud Simonsen, Islington; Knud Jespersen, Terra Cotta, and Guy Edward Buller-Colthurst, Rexdale, Ontario, all of Canada, assignors to Knud Simon Industries Limited
Continuation-in-part of Ser. No. 143,779, May 17, 1971, abandoned. This application Jan. 24, 1972, Ser. No. 220,163
Int. Cl. A22c *15/00*
U.S. Cl. 17—44.4 **13 Claims**

An apparatus for use in the processing of sausage products, such as wieners, consists of an upper supporting rail for engaging and supporting a continuous length of linked sausage product festooned thereover. The upper supporting rail carries the main portion of the weight of the sausages while lower spacer rails hold the individual loops of sausages apart from each other. An eyelet is provided on one end of the upper rail so that the apparatus can be pivotally mounted on a hanger carried by an overhead monorail conveyor for continuous movement through a processing line. At its opposite end, the upper rail is provided with an end extension for engagement by an elevating mechanism at an unloading station for pivoting the upper rail out of a hook provided on the hanger at a position spaced apart relative to the eyelet. After such unhooking, the apparatus pivots downwardly to allow the sausage products to slide off.



3,792,509
HIGH SPEED CARDING ENGINE

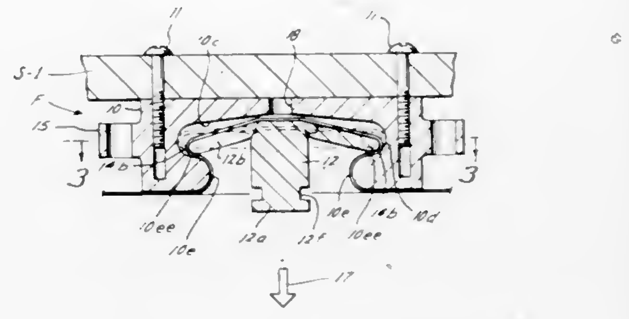
Takashi Morikawa, Hyogo; Moriichi Watanabe, Aichi, and Mikio Matano, Ishikawa, all of Japan, assignors to Daiwa Boseki Kabushiki Kaisha, Osaka and Nogoya Kinzoku Shinpu Kabushiki Kaisha, Aichi-ken, both of, Japan
Continuation-in-part of Ser. No. 46,193, June 15, 1970, abandoned. This application Jan. 18, 1972, Ser. No. 218,697
Claims priority, application Japan, June 14, 1969, 44/46505
Int. Cl. D01g *15/40, 15/46*
U.S. Cl. 19—105 **7 Claims**



This carding engine is improved in an opening and dust extracting part and a doffer part. The opening and dust extracting part has an evener roller rotatably disposed adjacent the cylinder roller and the taker-in roller, and a perforated casing partially covering the underside of the taker-in roller. The doffer part has a stripping roller disposed above the doffer and its surface cooparates with the doffer surface and also has a pair of deflectors disposed between the stripping roller and a pair of press rollers to deflect both edges of a web travelling from the stripping roller toward the press rollers. In cooperation with these two parts, the spinning productivity is greatly enhanced.

3,792,510
FASTENER

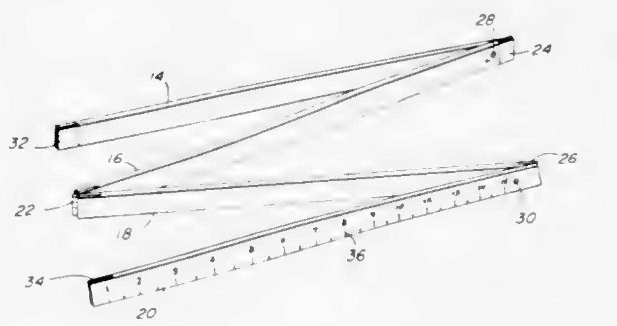
H. Lee Evett, Houston, Tex., assignor to Griffolyn Company, Inc., Houston, Tex.
Filed Mar. 22, 1972, Ser. No. 237,096
Int. Cl. A44b *21/00*
U.S. Cl. 24—243 K **11 Claims**



Apparatus for fastening a flexible material to a support such as a stationary frame or a rope means including male and female members whereby flexible material is positioned therebetween and the male member and flexible material are inserted into locked engagement with the female member.

3,792,511
DOCUMENT CLAMP

Richard L. Evans, 33 Monsignor Reynolds Way, Boston, Mass.
Filed Aug. 30, 1972, Ser. No. 284,729
Int. Cl. A44b *21/00;* **G01b** *31/06*
U.S. Cl. 24—248 PC **2 Claims**

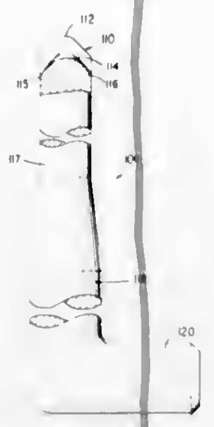


Elongated rigid leg members are pivotally connected to one another at their ends and provided with oppositely facing magnetic elements for clamping opposite sides of a sheet of paper or the like. Two center members may be hinged together at one end with an additional member pivoted to the other end of each of the two center members to permit folding about mutually perpendicular axes. The device is used primarily to clamp open large documents such as blueprints and the like that are normally stored in a rolled condition. The members are placed in opposing parallel relationship on either side of the document and extended along the document length so that the magnetic members will coact to clamp the document in a flat, open condition.

3,792,512
FORK NEEDLE

Josef Zocher, Haaren/Aachen, Germany, assignor to The Singer Company, New York, N.Y.
Filed Mar. 30, 1972, Ser. No. 239,437
Int. Cl. D04h *18/00*
U.S. Cl. 28—4 N **9 Claims**

A fork needle for punching out fibres from a pre-compacted fibre web to form a tufted loop pile structure on one surface of the web. The needle includes at least a pair of spaced tines having the cross section of the crotch therebetween arcuately curved, and preferably circular, across the entire width of each tine. Also disclosed is a fork needle having one tine substantially longer than the other tine. Further disclosed is a fork needle in which the length of the tines are substantially greater than the spacing between the tines.



3,792,513

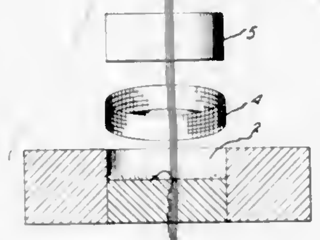
QUICK-HEATING IMPREGNATED PLANAR CATHODE AND METHOD OF CONSTRUCTION

James E. Beggs, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 85,428, Oct. 30, 1970, Pat. No. 3,710,161. This application Sept. 5, 1972, Ser. No. 286,453

Int. Cl. H01j *9/02*

U.S. Cl. 29—25.14 **4 Claims**



A quick-heating planar cathode employs a disk of fine mesh wire of refractory metal around which is bonded or sintered a porous layer of tungsten particles impregnated with electron-emissive material, a layer of inorganic insulation covering one surface of the porous cathode, and a heater on the insulating surface.

3,792,514

CUTTING TOOL

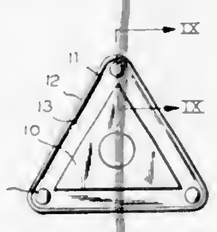
Hiroyuki Ushijima, Tokyo, Japan, assignor to Mitsubishi Kinzoku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed June 27, 1972, Ser. No. 266,750

Claims priority, application Japan, June 29, 1971, 46-56494

Int. Cl. B26d *1/00; 29 95;96*

U.S. Cl. 29—95 R **5 Claims**



A cutting insert for a machining tool suitable for chip breaking in both heavy and light cuttings, wherein at least one projection for chip breaking in light cutting is provided in a concave groove for chip breaking in heavy cutting on a nose of the insert, said projection being isolated from an island on the insert.

3,792,515

SINGLE-FACED CUTTING INSERT

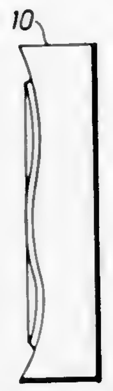
Evert Gustav Lundgren, Sandviken, Sweden, assignor to Sandvikens Jernverks Aktiebolag, Sandviken, Sweden

Filed Oct. 18, 1972, Ser. No. 299,335

Claims priority, application Sweden, Oct. 27, 1971, 13606/71

Int. Cl. B26d *1/00*

U.S. Cl. 29—95 **6 Claims**



The cutting insert of the invention is characterized in that the cutting edge and the associated chip-breaker describe a curve composed of straight and/or arched parts in the plane of the clearance — or side face. The chip-breaker,— which can have one or more steps,— is so formed that its back or inner boundary or edge connects with a central part of the cutting insert. An important feature of the new cutting insert consists in that its chipbreaker has constant width and constant depth in relation to the cutting edge.

3,792,516

DEVICE IN TOOL HOLDERS

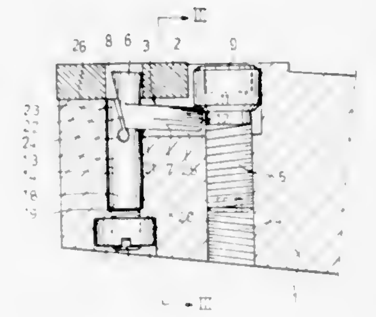
Wlajko Mihic, Tegnervagen 9, Gavle, Sweden

Filed May 16, 1972, Ser. No. 253,835

Claims priority, application Sweden, May 26, 1971, 6787/71; Apr. 18, 1972, 4982/71

Int. Cl. B26d *1/00*

U.S. Cl. 29—96 **20 Claims**



This disclosure relates to a toolholder for mounting a detachable insert of the indexable type. The tool holder utilizes a member having an arm which is engaged by a holddown member to urge the clamping member into an insert clamping position wherein the insert is clamped in a preformed socket.

3,792,517

ROTARY MACHINE CUTTING TOOLS

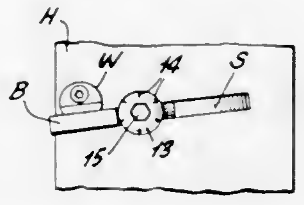
Homer D. Gage, Meadville, Pa., assignor to McCrosky Tool Corporation, Meadville, Pa.

Filed Aug. 17, 1971, Ser. No. 172,487

Int. Cl. B26d *1/12*

U.S. Cl. 29—105 **10 Claims**

A rotary machine cutting tool, such as a milling cutter, with a cutter head having a plurality of axially extending slots distributed around the periphery thereof adapted to receive flat indexable cutters of heavy duty machining alloys, which are adapted to be clamped herein with a uniform protrusion beyond the cutter head to distribute the cutting load uniformly between the several cutters. In order to compensate for any longitudinal variations in the positioning of the cutters fitted therein, rugged adjustable support for each cutter is provided at each slot comprising an angularly disposed threaded bolt having a supporting head at its outer end and a shank on the opposite inner end fitted within a threaded bore against a sufficiently strong resistance to retain the threaded bolt in its set position and with sufficient stability to withstand vibration and other stresses incident to the machining operation. The rotary adjustment of the bolt results in a comparatively slight translatory movement of the bolt head to critically vary the level of the support of the cutting insert to a tolerance of as little as 0.0001. The frictional drag to the movement of the adjusting bolts may be imposed by springs of any type, for example, Belleville springs, between the threaded bore and bolt head, or by resilient locking threads between the threaded bore and the threaded shank of the bolt. The invention is also applicable to other rotary machine cutting tools such as boring heads.



3,792,518

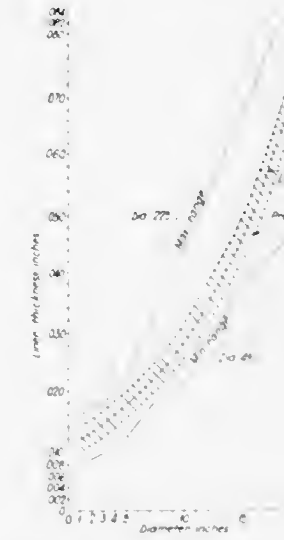
CYLINDERS FOR INTERNAL COMBUSTION ENGINES, PUMPS OR THE LIKE

Roland C. Cross, deceased, late of Bath, Somerset, England; by Clara Dunbar Cross; Catherine Cross; Philip George Chesterman, and Philip Gordon Chesterman, all of Bath, Somerset, England (executors), assignors to Cross Manufacturing Company (1938) Limited, Bath, Somerset, England

Continuation-in-part of Ser. No. 60,412, Aug. 3, 1970, abandoned. This application May 26, 1972, Ser. No. 257,192

Int. Cl. B23p *15/00*

U.S. Cl. 29—156.4 WL **7 Claims**



Liner for the bore of the cylinder of an internal combustion engine, pump, bearing, etc., the liner being made from a flat rectangular piece of thin hard springy steel strip, the liner having defined limits of thickness in relation to the bore to be lined as defined by the expression

$$\text{Log}_e \text{ Thickness} = (D(11.3_3 - 0.9)\ 10^{-2}/\text{Log}_e$$

where D is the internal bore of the cylinder being lined. This strip is sprung into a cylindrical form of outside diameter, when its edges abut together, corresponding to that of the bore.

3,792,519

METHOD FOR PRODUCING MULTI-LAYER FILTER DISCS

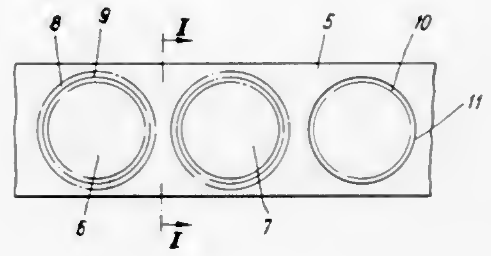
Fritz Haver, 474 Oelde, Birkenweg, Germany

Continuation-in-part of Ser. No. 726,941, May 6, 1968, abandoned. This application July 21, 1971, Ser. No. 164,911

Claims priority, application Germany, May 5, 1967, 62639

Int. Cl. B23p *15/16*

U.S. Cl. 29—163.5 F **3 Claims**



Method of producing a multi-layer filter from a multiplicity of flat filter elements such as wire gauze, perforated sheet or the like where the individual filter elements have different degrees of fineness, including arranging the multiplicity of filter elements in an assembly having smooth gradations of fineness with the finest material at one end and the coarsest material at the other end of the assembly; welding or soldering the assembly of filter elements together in an area including the periphery of the final multi-layer filter to be made; aligning the welded or soldered assembly in a conventional punching means having a punching tool with the end of the assembly containing the finest filter element directed toward the punching tool and with the punching tool aligned with the welded or soldered area, and activating the punching means whereby to cut out a filter from said assembly within the welded or soldered area and at the same time forcing the finer filter layers at least partially around the next adjacent more coarse filter layers and stretching the filter layers in proportion to their fineness.

3,792,520

NOVEL, SULFIDE-RESISTANT ANTISTATIC YARN

Robert S. Weiner, Huntingdon Valley, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Nov. 3, 1971, Ser. No. 195,483

Int. Cl. B32b *15/00*

U.S. Cl. 29—191.6 **6 Claims**

Silver coated nylon yarn can be rendered sulfide resistant without destruction of static dissipation characteristics or basic fiber characteristics by coating the yarn with particular alloys of two or more samples of the group comprising bismuth, lead, tin and cadmium.

3,792,521

COMBINATION SLIDER ASSEMBLING AND END STOP APPLYING APPARATUS

Koichi Kawakami, Toyama, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

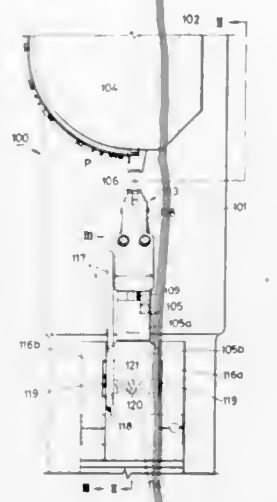
Filed Dec. 18, 1972, Ser. No. 316,250

Claims priority, application Japan, Dec. 22, 1971, 46-104812

Int. Cl. B23p *19/04*

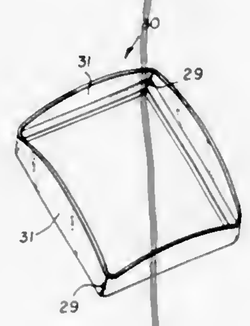
U.S. Cl. 29—207.5 R **7 Claims**

A combination slider assembling and end stop die unit is carried on an anvil and movable therewith relative to a support table. The unit is movable into and away from the path of a reciprocating hammer, viz. between a first position for assembling a slider on the fastener away from the path of the hammer and a second position registering with the path of the



hammer for applying an end stop to the assembled fastener. A limit switch is provided which senses the said second position and thereupon actuates the hammer.

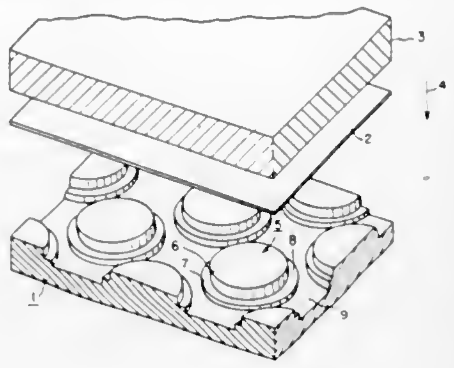
3,792,522
FRAME-MAKING METHOD
Gordon C. Gray, Bath; Joseph F. Meade, Jr., and Carl D. Kohl, both of Hammondsport, all of N.Y., assignors to Mercury Aircraft, Inc., Hammondsport, N.Y.
Continuation of Ser. No. 137,317, April 26, 1971, abandoned. This application Dec. 4, 1972, Ser. No. 311,919
Int. Cl. B23k *31/02*
U.S. Cl. 29—471.1 **6 Claims**



Metallic frames for television tubes are formed by cutting chevron-shaped pieces from a sheet of metal, welding pairs of chevron pieces together to form generally rectangular frames having open central regions, and bending the outer peripheral region of the frames into a flange approximately perpendicular to the original plane of the frame.

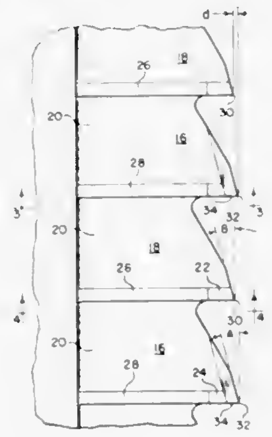
3,792,523
PROCESS OF MAKING A CUTTER FOIL FOR DRY SHAVING APPARATUS
Sigrot Grunberger, Klagenfurt, Austria, assignor to U.S. Philips Corporation, New York, N.Y.
Division of Ser. No. 74,632, Sept. 23, 1970, Pat. No. 3,714,807. This application Nov. 13, 1972, Ser. No. 306,345
Int. Cl. B23p *13/04*
U.S. Cl. 29—557 **3 Claims**

A process of making a cutter foil for dry shaving apparatus, using a rubber cushion, and a die having raised parts each of which decreases in cross section from a base to a free end, and consists of two superimposed portions between which is a step-like offset, the end portion having a height at least equal to the thickness of the foil; the process comprising a single operation of pressing the die and the cushion together with the foil between them, which causes the end portion of each raised part to punch a hole in the foil, as a first step, and directly thereafter causes the base portion to turn over the



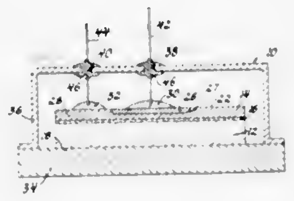
edge of the hole, as a second step; followed by removing part only of the turned-over material by grinding in a plane parallel to the surface of the foil.

3,792,524
METAL CUTTING AND FINISHING TOOL
Henry Pomernacki, Northbrook, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Oct. 13, 1972, Ser. No. 297,514
Int. Cl. B26d *1/00, 1/04*
U.S. Cl. 29—567 **12 Claims**



A cutting tool, such as a blade-type saw, which includes a plurality of alternately arranged roughing and finishing teeth, and which is provided with metal polishing or burnishing surfaces adjacent the terminal cutting edges of the teeth.

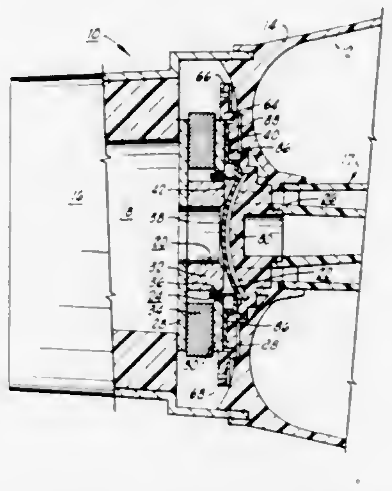
3,792,525
METHOD OF MAKING A SEMICONDUCTIVE SIGNAL TRANSLATING DEVICE
Matthew C. McKinnon, Warren, and Bernard A. MacIver, Lathrup Village, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Division of Ser. No. 168,847, Aug. 4, 1971, Pat. No. 3,764,507, Division of Ser. No. 844,817, July 25, 1969. This application May 3, 1973, Ser. No. 356,823
Int. Cl. B01j *17/00*
U.S. Cl. 29—588 **1 Claim**



An improved substrate material for semiconductor devices and methods for making same. The substrate includes a

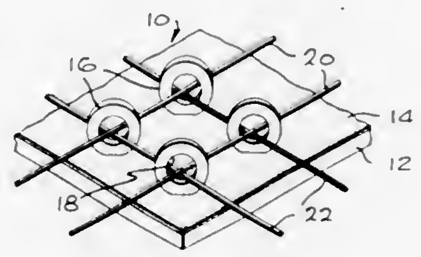
refractory like supporting layer coated with a high purity layer of reactively sputtered insulating material onto which a very high purity semiconductive layer is deposited. One device proposed for this substrate material is a diode assembly having an alumina substrate with a reactively sputtered layer of alumina on a major surface. A layer of P-type semiconductive material deposited on the sputtered layer and a P-N junction established in the layer.

3,792,526
METHOD OF SOUND TRANSDUCER CONSTRUCTION
Gerald B. Bremseth, Oklahoma City, Okla., assignor to LTV Ling Altec, Inc., Oklahoma City, Okla.
Filed Apr. 21, 1971, Ser. No. 135,886
Int. Cl. H04r *13/00*
U.S. Cl. 29—594 **4 Claims**



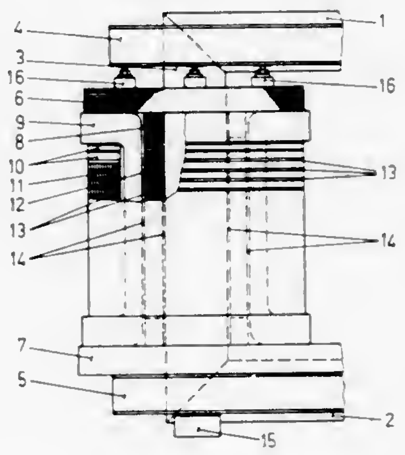
A method of constructing a sound transducer which obviates the need for certain centering and fixture practices relative to assembly of the diaphragm element and voice coil within the air gap defined by a magnet structure. The method consists of forming a rearward or forward oriented frame assembly with selected concentric configurations matingly adapted to receive similarly shaped diaphragm elements and the outer concentric edge of the magnet such that it must then follow that the voice coil is properly positioned within the air gap in non-interfering disposition.

3,792,527
APPARATUS AND METHOD FOR STRINGING MAGNETIC CORES
Niels Krag, Pacific Palisades; Ernest S. Hernandez, Hawthorne, and Kalman Horvath, Lawndale, all of Calif., assignors to Electronic Memories and Magnetics Corporation, Los Angeles, Calif.
Filed Apr. 19, 1972, Ser. No. 245,542
Int. Cl. H01f *7/06;* **H05k** *13/04*
U.S. Cl. 29—604 **16 Claims**



A matrix of magnetic cores is strung with electric wires by first laying the wires along with needles attached to their front ends on adhesive tape. The tape is pulled to advance the needles and wires towards the matrix, but the tape passes over an edge so that it separates from the needles and the needles then pass through rows of magnetic cores of the matrix.

3,792,528
PROCESS OF FOR MANUFACTURING ELECTRICAL APPARATUS SUCH AS CASING-ENCLOSED TRANSFORMERS AND REACTORS
Johannes Schober, Mellingen, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland
Filed May 3, 1972, Ser. No. 250,060
Claims priority, application Switzerland, May 19, 1971, 7355/71
Int. Cl. H01f *7/06*
U.S. Cl. 29—605 **11 Claims**



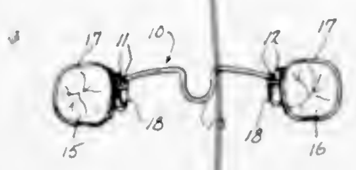
In a process and apparatus for manufacturing encased electrical equipment such as transformers or reactors, the windings are first formed and insulated by a wrapping of insulating material, e.g. paper applied to the conductor bars; the insulated windings are then dried in an oven, pressed to their final size and then sealed with a sealing agent. e.g. paraffin. Thereafter, the dried, pressed and sealed windings are assembled with their magnetic structure and installed in the casing, and apparatus is then utilized to wash out the sealing agent from the windings and dry them, after which the casing is filled with the usual insulating oil. The apparatus for washing the sealing agent from the windings and drying them includes a combined boiler-still in which the washing medium, e.g. kerosene, is heated to vaporization and delivered hot to the casing which serves to wash out the sealing agent and form a slurry with the latter. The heat from the vapor also serves to heat up and dry the windings. This slurry is pumped from the casing, passed through a filter and delivered to a combined storage tank-still from which it is pumped back to the boiler-still for re-vaporization of the washing medium and recovery of the sealing agent which is then drained off for re-use to seal other windings. A vacuum pump connected to the casing through a cooling trap serves to maintain the casing under a vacuum and also deliver water drawn off at the same time, from the cooling trap to the storage tank-still. Vaporized washing medium is also selectively delivered from the boiler-still to a condenser, and the condensed washing medium is then passed into a storage tank having an outlet by means of which the washing medium can be delivered through an equalizing conduit to the storage tank-still. The function of the storage tank for the condensed washing medium and equalizing conduit is to enable the apparatus to be operated selectively, i.e. with or without balance of the washing medium.

3,792,529
ORTHODONTIC PALATAL ARCH WIRES
Robert A. Goshgarian, 2634 Grand Ave., Waukegan, Ill.
Filed May 11, 1972, Ser. No. 252,418
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 A **4 Claims**

A removable palatal arch wire is provided having a generally U-shaped, integral compressible loop portion formed intermediate its length adapted to function as a

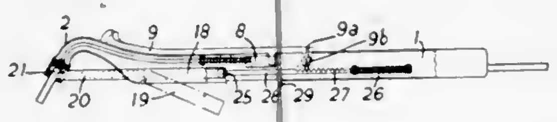
the other converter input. A comparator is connected to the converter output and is adjustable to a signal value cor-

an open trough which discharges the material at an end opposite the inlet for subsequent tumbling by the drum. A sucremovable and adjustable spring whereby the force incorporated into said wire to reciprocally rotate, expand, contract, intrude, and/or torque the upper molars to which it is attached can be varied as desired merely by compressing or expanding said loop portion, depending upon the force required to shift said molars in order to provide sufficient space for the alignment of the adjacent anterior teeth by an orthodontist or dentist.



3,792,530
DENTAL APPARATUS

Donald G. Smith, 6915 Red Rd., Coral Gables, Fla.
Continuation-in-part of Ser. No. 200,398, June 6, 1962, abandoned. This application Feb. 9, 1967, Ser. No. 628,192
Claims priority, application Great Britain, June 12, 1961, 21130/61
Int. Cl. A61c *3/08*
U.S. Cl. 32—54 **39 Claims**



Dental apparatus including a housing with an amalgam container therein and means expelling amalgam from its container into a receiver chamber, means ejecting the amalgam from the receiver chamber into a tooth cavity, the ejecting means including a packer member that forces the amalgam into the tooth cavity and packs the amalgam in the cavity.

3,792,531
DENTAL RESTORATIVE MATERIAL OF IMPROVED POLISHABILITY

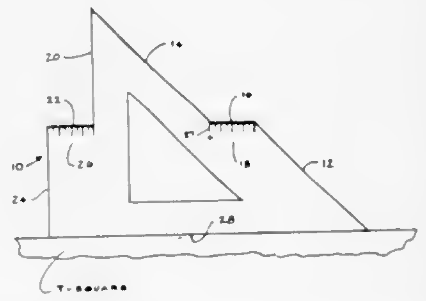
Carl J. Rossi, Orange, Calif., assignor to Lee Pharmaceuticals, South El Monte, Calif.
Filed Dec. 28, 1970, Ser. No. 102,045
Int. Cl. A61k *5/02*
U.S. Cl. 32—15 **8 Claims**

Dental restorative compositions which are a blend of a liquid polymerizable organic binder and a filler comprising vitreous particles having diameters between about 0.700 microns and 30 microns wherein said particles average by weight between 2 and 20 microns in diameter, at least one half by weight of said particles have a size range of less than 20 microns. A preferred filler is crystalline quartz wherein the particles have diameters between 0.700 microns and 30 microns and average by weight between 2 and 20 microns in diameter, and wherein 80 percent by weight of said particles are under 20 microns in diameter and at least 20 percent by weight of said particles are under 5 microns in diameter.

3,792,532
DRAFTSMAN'S CROSS-HATCHING TRIANGLE INSTRUMENT

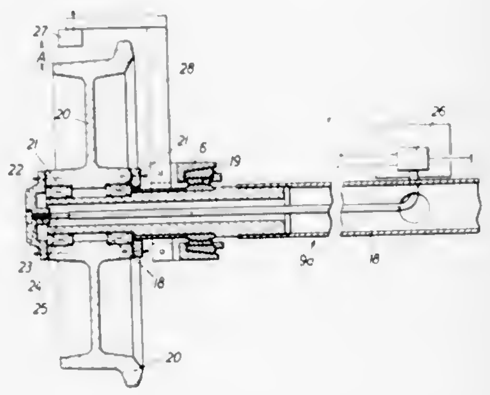
Ben L. De Jesus, 8430 E. Jefferson, Apt. 11, Detroit, Mich.
Filed Sept. 7, 1971, Ser. No. 178,169
Int. Cl. B43l *13/00, 13/24*
U.S. Cl. 33—104 **6 Claims**

The instrument has a generally triangular outline, but its acutely angled hypotenuse side is, in one version, notched to afford an upper inclined ruling edge portion for hatching, which angles upwardly and rectilinearly to an apex from a point of bottom intersection with a horizontal calibrated base portion; and the latter meets outwardly with a lower non-hatching ruling edge portion. The ruling portions parallel one another at the acute angularity of the hypotenuse side. The opposite 90° upright side of the triangle is notched somewhat differently at a calibrated horizontal base portion which connects between a lower vertical non-hatching portion and an upper vertical hatch or section line-ruling portion intersecting the inner end of the base portion at 90°. The base portions are calibrated in terms of conventional fractional inch spacings. In a second embodiment the ruling edge portions are along margins of elongated slots formed within the three rectilinear sides of the triangle, with appropriate linear calibrations of the sort mentioned above; and the instrument is used in the same general way. The instrument may be of one-piece construction, as in either of these versions, or it may be a plural-part unit including an elongated, end-calibrated base part which, in an extended position in one or another direction relative to a second triangular part, will outwardly intersect and overhang a hypotenuse or a 90° ruling edge of the triangular part at those ends, just as in the first-mentioned single part version. A third part pivotally mounted on the triangular part affords an optional protractor feature.



3,792,533
APPARATUS FOR MEASURING AND RECORDING A DISTANCE TRAVELLED BY A VEHICLE

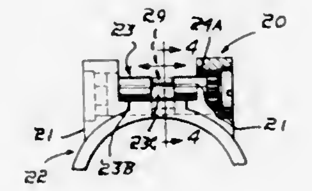
Franz Plasser, and Josef Theurer, both of Johannesgasse 3, Vienna, Austria
Filed Sept. 28, 1972, Ser. No. 292,879
Claims priority, application Austria, Oct. 4, 1971, 8528
Int. Cl. G01b *3/12, 7/04;* **G01c** *22/02*
U.S. Cl. 33—144 **11 Claims**



An apparatus for measuring and recording a distance traveled by a track survey car comprises a rotary odometer, a moving recording band, and a drive for moving the band and/or a device for applying marks to the band which indicate the traveled distance. A pulse generator is mechanically connected with the odometer and sends a set number of pulses per rotation of the odometer to one input of a digital-analog converter. A pulse transmitter at a fixed distance from the odometer axle and above the rolling surface thereof is connected to the other converter input. A comparator is connected to the converter output and is adjustable to a signal value corresponding to a predetermined distance traveled by the vehicle. The output of the comparator is connected to the drive or to the marking device.

3,792,534
FIREARM REAR SIGHT

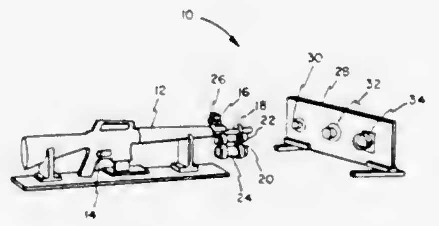
Charles E. Lowe, Jr., 54 Spring Ln., West Hartford, Conn.
Filed Mar. 13, 1972, Ser. No. 234,215
Int. Cl. F41g *1/28*
U.S. Cl. 33—257 **9 Claims**



A rear sight for firearms is disclosed in which a transverse sight member is carried by a support and includes an eccentric portion having a circumferentially disposed groove defining a notch with its upper edges being raised or lowered as the sight member is turned, thereby providing for elevation corrections. The sight member is shiftable transversely to provide for windage corrections.

3,792,535
LASER RIFLE SIMULATOR SYSTEM

Albert H. Marshall, Maitland, and George A. Siragusa, Winter Park, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Dec. 11, 1972, Ser. No. 313,704
Int. Cl. G09b *9/00*
U.S. Cl. 35—25 **6 Claims**

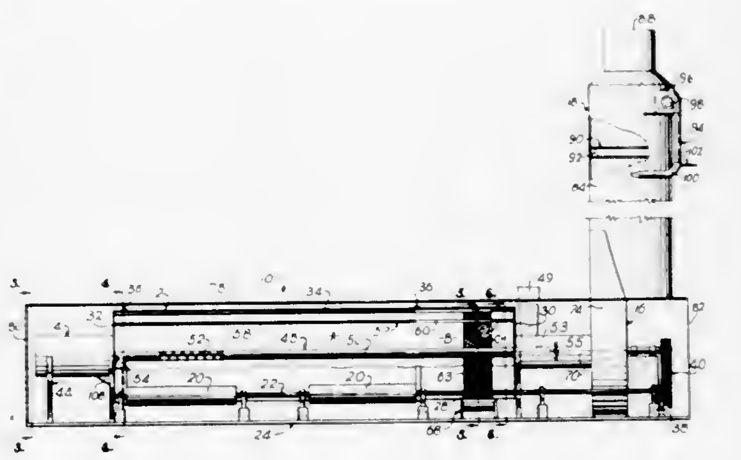


A marksmanship training system combining with a rifle a laser beam transmitter and receiver including an optics system and an indicator means, all of small size and weight and mounted on the barrel of the rifle to form a self-contained unit and including also a target having retroreflective means to provide in the combined system immediate information on hit or miss of the aimed attitude of the rifle toward the target when the rifle trigger is depressed.

3,792,536
ROTARY DEHYDRATOR-GRANULATOR

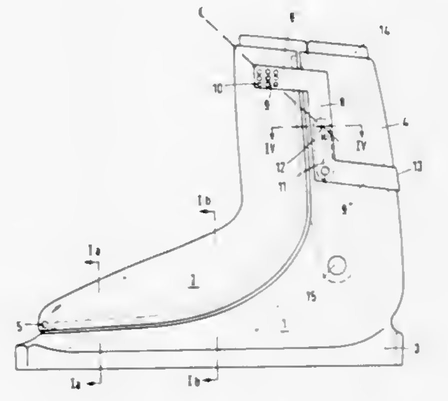
Wallace L. McGehee, Kansas City, Mo., assignor to American Pollution Prevention Co., Inc., Minneapolis, Minn.
Filed Oct. 19, 1972, Ser. No. 298,952
Int. Cl. F26b *7/00*
U.S. Cl. 34—11 **16 Claims**

A rotary dehydrator-granulator is provided for receiving viscid, high moisture content material such as middlings, bran or the like for processing into a dried granular form suitable for livestock feed. The material is conveyed through an inlet and interiorly along an elongated rotating drum by an auger in an open trough which discharges the material at an end opposite the inlet for subsequent tumbling by the drum. A suction fan draws the material, along with hot air emanating from a hot gas source, back toward a perforated screen outlet at the same end of the drum as the inlet. As the material is being tumbled, a portion of the semidried material is deposited in the open auger trough and mixed with moist material. By controlling the temperature of the hot air a predetermined amount of moisture may be removed from the thoroughly mixed material by the time it reaches the outlet, thereby lessening the adhesive quality of the material such that it separates into relatively small, substantially uniform granules of reduced moisture content which drop out of the drum through the outlet. That material which has not been sufficiently dried and formed into granules of a size to permit their exit through the outlet continue to tumble until their size becomes small enough to allow them to drop through the outlet or, in the case of overdrying, the fan draws the material past the outlet and into a dust collector from which the material is returned to the drum for remixing with moist material.



3,792,537
SKI BOOT

Wolfgang Plank, and Peter Handlbauer, both of Freiburg, Germany, assignors to Justus Rieker & Co., Tuttlingen, Germany
Filed Feb. 22, 1972, Ser. No. 227,906
Claims priority, application Germany, Feb. 24, 1971, P 21 08 711.6
Int. Cl. A43b
U.S. Cl. 36—2.5 AL **6 Claims**



The invention relates to a plastic ski boot produced by injection moulding of the type having an outer shell and inner padding. A boot is described wherein the shape of the outer shell is symmetrical about a central longitudinal plane and therefore adapted for use as either the right or left foot boot of a pair; the right or left foot shape being imparted interiorly of the shell by suitably contoured padding.

3,792,538

3,792,540

3,792,542

which may be secured to a telephone and having binding loops

3,792,538
ARTIFICIAL ISLAND FORMED OF HINGEDLY INTERCONNECTED PONTOONS

Robert De Groot, Westkinderdijk, Netherlands, assignor to N. V. Industrieele Handelscombinatie, Netherlands

Filed Jan. 17, 1972, Ser. No. 218,206

Claims priority, application Netherlands, Jan. 18, 1971, 7100649

Int. Cl. E02f *3/88;* **E02b** *17/00*

U.S. Cl. 37—67 **9 Claims**

An artificial island in the form of a mobile offshore platform comprises a pontoon and at least three columns that are movable vertically relative to the pontoon to support the pontoon in lowered position or to float with the pontoon in raised position. The pontoon is sectional and the sections are pivotally interconnected for horizontal swinging movement relative to each other so that the sections can occupy different positions relative to each other when the platform is being transported and when the platform is emptied. Each section carries at least one of the columns. A suction dredge is carried by the pivot between two adjacent sections.

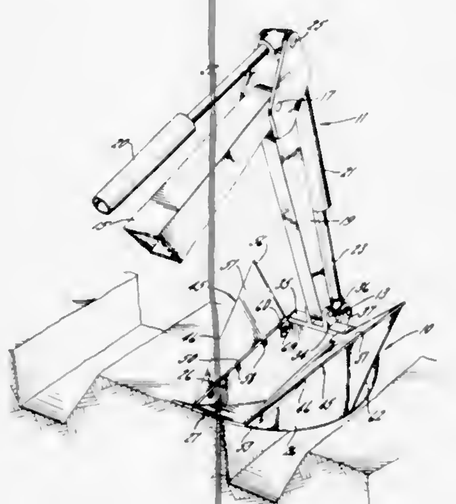
3,792,539
ATTACHMENT FOR BACKHOE BUCKET

Harry C. Clark, 226 W. Perry St., Belvidere, Ill.

Filed May 15, 1972, Ser. No. 252,981

Int. Cl. E02f *5/02*

U.S. Cl. 37—118 R **4 Claims**



A pair of triangular wings are detachably mounted on the opposite side panels of a backhoe bucket to enable the same bucket to be used efficiently to dig excavations with sloped sidewalls or with conventional vertical walls.

3,792,540
MULTI-WINDOW TYPE DISPLAY DEVICE

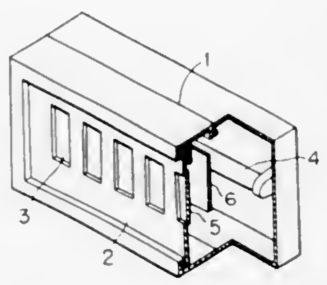
Akimasa Watanabe; Toshio Ichikawa, and Shigenari Azuma, all of Nagoya, Japan, assignors to Aiphone Kabushiki Kaisha (Aiphone Co., Ltd.), Aichi-ken, Japan

Filed Nov. 29, 1971, Ser. No. 202,844

Claims priority, application Japan, Dec. 3, 1970, 45/120768; Dec. 3, 1970, 45/120769; Aug. 19, 1971, 46/74464; Aug. 19, 1971, 46/74465

Int. Cl. G09f *11/00*

U.S. Cl. 40—28 C **2 Claims**



Disclosed herein is a multi-window type display device provided with display units each of which has a display body operated or moved to appear in its display window by means of a permanent magnet which is stably moved by attraction and repulsion forces created electro-magnetically, said display body being irradiated by only one light source common with all the display bodies.

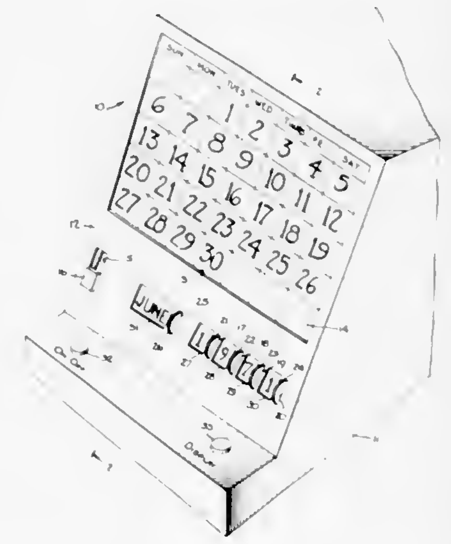
3,792,541
ELECTRONIC PERPETUAL CALENDAR

Ralph L. Engle, Jr., 1 Country Club Ln., Pelham Manor, N.Y.

Filed Oct. 16, 1972, Ser. No. 297,622

Int. Cl. G09d *3/00*

U.S. Cl. 40—107 **17 Claims**



A compact electronic perpetual calendar, capable of displaying any given monthly or yearly calendar period for any year from 0 to 9,999 in either the Julian or the Gregorian calendar, is disclosed. The apparatus includes a presettable calendar period selector circuit, and a display system control circuit utilizing the logic outputs of the selector circuit for correspondingly activating the display system. The selector circuit may utilize "read only" memories, AND gate matrices, calculator circuitry, or the like to provide the desired logic outputs. This abstract is not to be taken either as a complete exposition or as a limitation of the present invention, however, the full nature and extent of the invention being discernible only by reference to and from the entire disclosure.

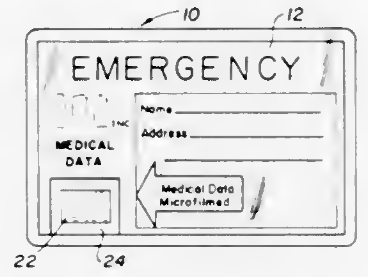
3,792,542
HEALTH INFORMATION CARD

Nathan Cohan, Hauppauge, N.Y., assignor to Medical Identification Systems, Inc., New York, N.Y.

Filed Jan. 10, 1972, Ser. No. 216,663

Int. Cl. G09f *1/10*

U.S. Cl. 40—158 B **1 Claim**



A card adapted to be carried on the person, as in the carrier's wallet, having a printed paper sheet which is folded into two card sections about a length of microfilm positioned therebetween, said microfilm occupying a display position relative to a display window in said card sections and held by said card sections against slippage from this position during the sealing of a protective plastic jacket about said paper and microfilm assembly.

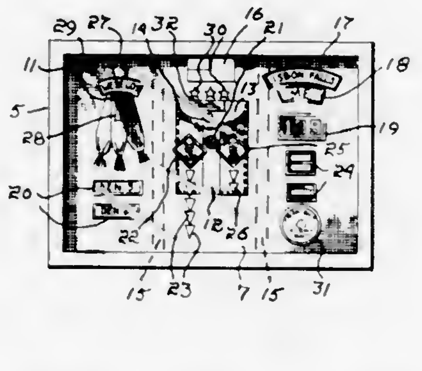
3,792,543
DISPLAY FOR AWARDS TO BE ATTACHED TO A UNIFORM

Maurice L. Powell, 28 Earle St., Lisbon Falls, Maine

Filed Aug. 25, 1971, Ser. No. 174,626

Int. Cl. G09f *1/12*

U.S. Cl. 40—160 **8 Claims**



A display is disclosed for awards to be attached to a uniform of an order and is disclosed with specific reference to Cub and Webelos Scouts. The display includes a frame and a backer covered with a fabric having a pocket and of a material and color such that the pocket area of a shirt of the uniform of the award-granting order is represented. The pocket is so located as to provide space on both sides for awards that are to be worn on the right and left sleeves.

3,792,544
TELEPHONE INDEX DEVICES

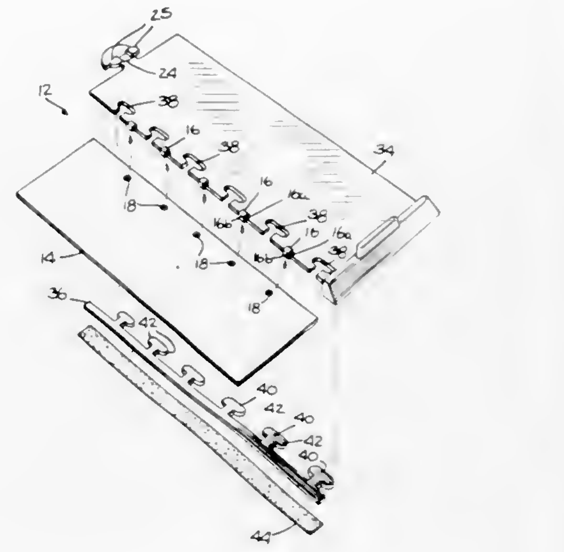
James P. Foley, Crest Rd., Katonah, N.Y.

Continuation-in-part of Ser. No. 8,660, Feb. 4, 1970, abandoned, which is a continuation-in-part of Ser. No. 837,405, June 30, 1969, Pat. No. 3,706,503. This application Feb. 18, 1971, Ser. No. 116,384

Int. Cl. G09f *3/00*

U.S. Cl. 40—336 **8 Claims**

Telephone index devices including a flat base member which may be secured to a telephone and having binding loops which may be closed and opened for replacement of index sheets. Bracket and frame devices for securing the base member in place are also described.



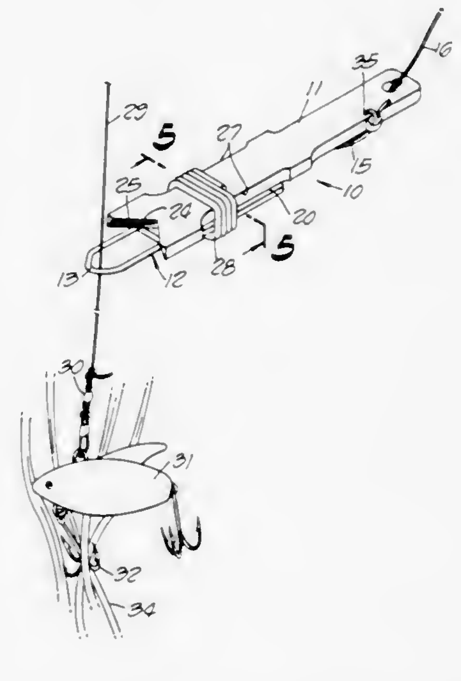
3,792,545
LURE RETRIEVER

Walter R. Hendrickson, 2265 E. Orange Grove, Pasadena, Calif.

Filed Apr. 17, 1973, Ser. No. 352,065

Int. Cl. A01k *97/00*

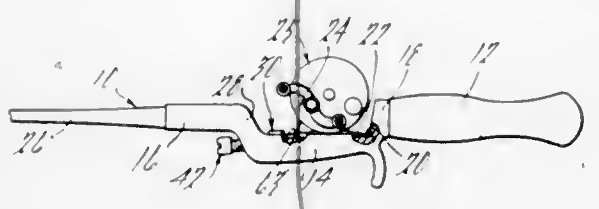
U.S. Cl. 43—17.2 **12 Claims**



A lure retriever having a notched leading end supporting a sliding loop cooperating to hold the retriever loosely assembled to a snagged fishing line until the retriever is engaged over the lure. Thereafter, the retriever draft line is operable to retract the sliding loop to lock the retriever to the lure while the draft line is used to free the lure and haul it home.

3,792,546
REEL SECURING DEVICE

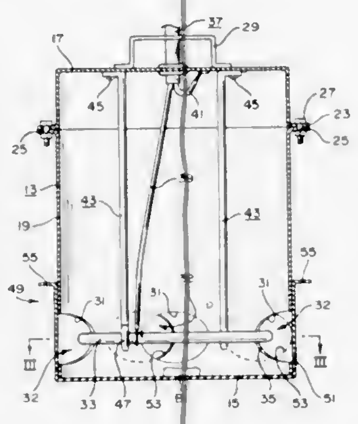
Earl E. Miller, Dowagiac, Mich., assignor to Victor Comptometer Corporation, Chicago, Ill.
Filed Apr. 9, 1970, Ser. No. 26,813. The portion of the term of this patent subsequent to May 19, 1990, has been disclaimed.
Int. Cl. A01k *87/06*
U.S. Cl. 43—22 **9 Claims**



A reel securing device for detachably securing a fishing reel to the reel mounting section of a fishing rod comprising a movable clamping hood which engages one end of the base plate reel. The hood is fabricated of a synthetic relatively resilient and deformable material and is adjustably mounted by means of an adjusting screw which is adapted to journal support the clamping hood in an extremely simple and economical manner.

3,792,547
DEVICE FOR ELECTRICALLY EXTERMINATING RODENTS

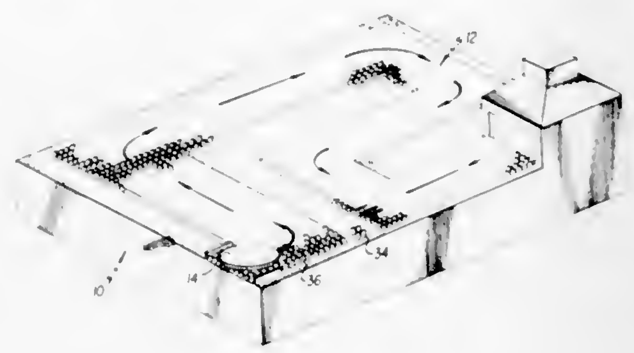
Leon E. Day, Memphis, Tenn., assignor to C. F. Easley, Millington, Tenn.
Filed Apr. 14, 1972, Ser. No. 244,215
Int. Cl. H01m *19/00*
U.S. Cl. 43—98 **3 Claims**



The subject device includes a housing having suitable bait placed therein. A plurality of apertures are provided in the lower portion of the housing for allowing the passage outwardly of the aroma of the bait and also providing passageways which the rodent is obligated to attempt to pass through in his endeavor to get to the bait. However, the passageways are purposely designed to be sligthly smaller than the head of the rodent intended to be exterminated. Therefore, the rodent must engage the housing adjacent the passageways when endeavoring to get to the bait. An electrode is connected to a voltage source and is suspended within the housing adjacent the passageways. Therefore, since the housing is also connected to the voltage source, a voltage potential exists between the structure thereof defining the passageways and the electrode. Accordingly, as the rodent endeavors to get to the bait, his head engages the structure having the voltage potential thereon which sends a lethal charge of electricity through his head. Structure is included for varying the size of the passageways or for allowing the rodent to expand a small passageway to a size which will accommodate enough of his head to allow him to simultaneously engage the internal electrode and the housing.

3,792,548
AMUSEMENT DEVICE

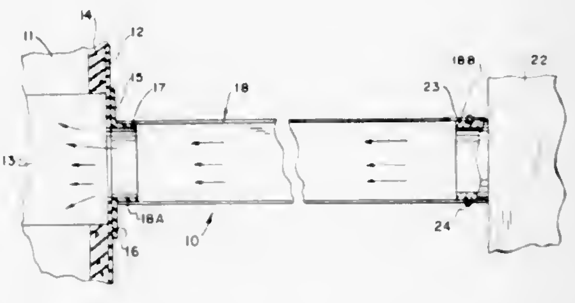
Nobuo Hamano, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan
Filed Apr. 13, 1972, Ser. No. 243,802
Claims priority, application Japan, Nov. 24, 1971, 46-94230
Int. Cl. A63h *11/02*
U.S. Cl. 46—1 C **8 Claims**



An amusement device featuring a vibrating frame upon which a mat is positioned, the mat being provided with a first group of upwardly projecting resilient fingers being generally perpendicular thereto and a second group of upwardly projecting resilient fingers being inclined at an acute angle with respect to the mat, the vibrations imparted to the mat causing one or more playing pieces to move along the second group of fingers in the direction the second group of fingers is inclined.

3,792,549
TOY VEHICLE AND PROPULSION MEANS THEREFORE

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J.
Continuation-in-part of Ser. No. 188,311, Oct. 12, 1971, Pat. No. 3,691,670. This application Sept. 19, 1972, Ser. No. 290,364
Int. Cl. A63h *33/00*
U.S. Cl. 46—1 J **10 Claims**

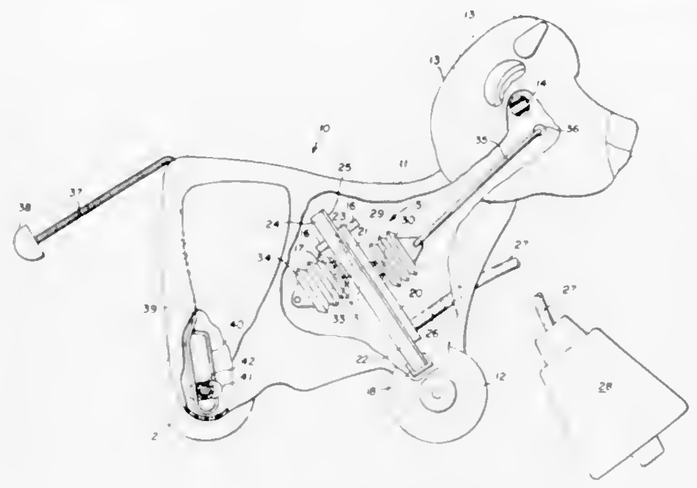


An action toy is provided such as a track toy or other form of toy which is power operated by air fed thereto and ejected therefrom. Air under pressure is fed from an air compressor or blower through a long, very light weight flexible tube made of thin sheet material which offers minimum resistence to the operation of the toy vehicle by way of drag imposed by its weight. The tube is normally in a sheet-like, flat condition and is expanded to provide an ample passageway for the air required to operate the toy, by the air applied thereto from the blower or compressor. In one form, the toy is fabricated of light weight, thin walled plastic. In another form, the toy is composed of a light weight foamed plastic shell to which one or more rigid thin walled plastic fittings have been secured with at least one fitting adapted to receive and hold an end of the thin tube conducting air to the toy.

The toy may also comprising a toy which is lifted and jet propelled above the ground by air fed thereto under pressure through a thin walled, flexible plastic tube.

3,792,550
TOY COW

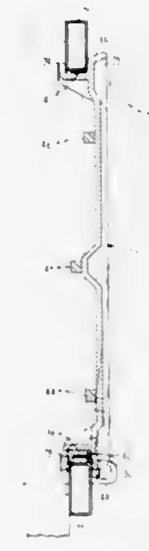
Ralph W. Crawford, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 7, 1972, Ser. No. 313,100
Int. Cl. A63h *5/00*
U.S. Cl. 46—98 **4 Claims**



A toy cow has a body on wheels containing a sounder having an inlet chamber, an outlet chamber, and an action chamber containing a vibratory reed. An expanding actuator diaphragm communicates with the inlet chamber, and an expandible reservoir diaphragm communicates with the action chamber. A bleed hole extends between the inlet chamber and the action chamber, and a tubular pull cord is secured to the sounder in communication with the inlet chamber and extends forward of the body to a squeeze bulb for forcing air through the cord to actuate the sounder to produce a moo sound.

3,792,551
INTEGRATED COVER AND LATCH FOR COMPUTER GATE HOUSING OR THE LIKE

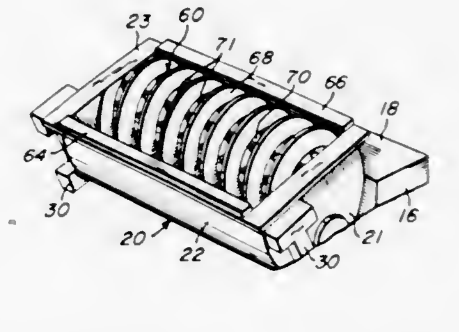
Francis J. Hallas, Johnson City, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 25, 1972, Ser. No. 256,700
Int. Cl. E06b *3/32*
U.S. Cl. 49—463 **6 Claims**



A hingeless cover for a computer gate or other housing comprises a rectangular panel which can be easily snapped into place or removed from an opening in the housing. The panel has integral frame member latch means on opposite edges designed to form channels for receiving the frame members of the housing. The latch means are integral flanges offset to form the channels and to grip the external and internal surfaces of spaced frame members when the cover is in position. Biasing springs attached to the bottom edge of the cover device permit longitudinal displacement of the panel upon application of manual force to the latch means on the opposite edge of the cover. The springs displace the cover upwardly to cause the flanges to latch the cover in place.

3,792,552
VIBRATORY APPARATUS FOR TREATING A CONTINUOUS SUPPLY OF PARTS

Max Isaacson, Dayton, Ohio, assignor to Vibrodyne, Inc., Dayton, Ohio
Filed Nov. 22, 1971, Ser. No. 201,084
Int. Cl. B24b *31/06*
U.S. Cl. 51—7 **8 Claims**



An open top container is supported by a set of spring members and is vibrated by a power operated unit to effect movement of a load of media in an orbital path within the container. A succession of parts are continuously supplied to one end of the container and are directed through the media by a helical guide member extending around a tubular core member. Peripherally spaced holes are formed within the core member and/or the helical guide member, or the helical guide member is entirely submerged within the media so that the media remains substantially in its orbital path and does not flow with the parts along the guide member. The parts are sometimes successively connected to form a continuous chain of parts, and the core member may incorporate an intermediate inner wall to prevent mixing of the media within the core member.

3,792,553
ABRASIVE POWDER OF FUSED ALUMINA CONTAINING VANADIUM TETROXIDE

Ronald H. Schleifer, Churchville; James E. Price, Abington, both of Pa., and Henry J. Bowden, Arvida, Quebec, Canada, assignors to Wallace-Murray Corporation, New York, N.Y.
Filed Sept. 28, 1971, Ser. No. 184,629
Int. Cl. C04b *31/16;* **C09c** *1/68*
U.S. Cl. 51—309 **12 Claims**

Excellent abrasive materials are provided by incorporating between about 0.1 and 7.5 percent, preferably 0.25 and 5.0 percent, and optimally about 1.5 percent by weight of vanadium tetroxide into a material high in alumina content, such as bauxite, corundum and relatively pure alumina. The vanadium tetroxide is fused per se in the alumina-containing material under nonreducing conditions or, preferably introduced as vanadium pentoxide with a stoichiometric amount of a reducing agent, such as aluminum metal, carbon, etc., to reduce the vanadium pentoxide to vanadium tetroxide.

The fusion of the vanadium tetroxide in the alumina is accomplished in an electric furnace whereby the electric current is conducted through a layer of molten alumina at the bottom of the furnace with the liquid layer being covered with a substantial layer of a mixture of powdered solid alumina and the vanadium tetroxide-providing source.

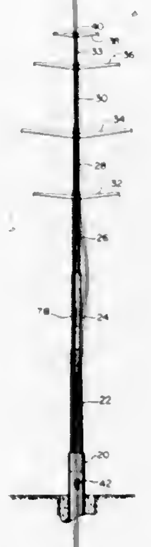
3,792,554
ANTI-ROTATIONAL LOCKING, SEALING AND STEP ATTACHMENTS FOR TELESCOPING COLUMNS

Bill Archer, Meridian, and John L. Low, III, Laurel, both of Miss., assignors to Arlo, Inc., Meridian, Miss.

Filed Feb. 15, 1973, Ser. No. 332,831

Int. Cl. E04h *12/34*

U.S. Cl. 52—115 **7 Claims**



Columns or vertical poles of the type developed from pumping of concrete into a series of interlocking, telescoping tubes, so as to extend the tubes vertically from the ground. Particularly, locking rings, locking strips and splines for locking the tubes vertically and horizontally with respect to each other as they are extended by the concrete pumping.

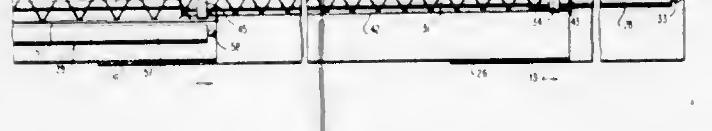
3,792,555
FIVE SECTION FULL POWERED TELESCOPIC CRANE BOOM

Fu-Tien Sung, Waynesboro, Pa., assignor to Kidde Walter & Company, Inc., Clifton, N.J.

Filed Apr. 8, 1971, Ser. No. 132,407

Int. Cl. B66c *23/04*

U.S. Cl. 52—115 **16 Claims**



A five section telescopic crane boom is extended and retracted by a pair of three section hydraulic rams which are fully enclosed by the boom and independently suspended therein. The suspension means for the rams compensates for cocking and bending of the boom sections when the latter are extended under load and relieves the rams of bending stresses and allows them to remain substantially straight, thus preventing leakage of the ram operating fluid.

3,792,556
ROOF COVERING

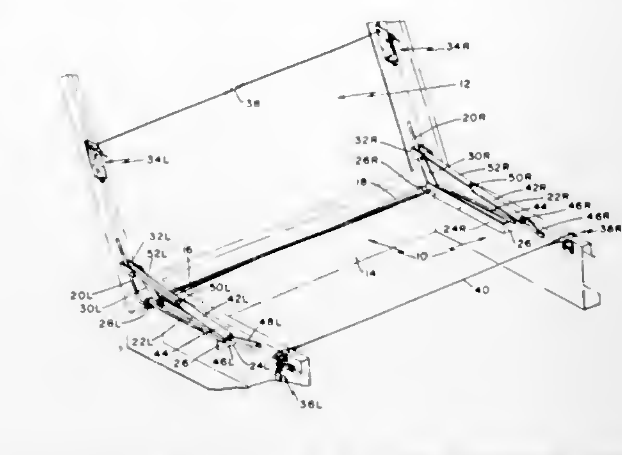
Joseph R. Anghinetti, Kennebunkport, and Paul A. Couture, Emery Mills, both of Maine, assignors to Wasco Products, Inc., Sanford, Maine

Filed Sept. 24, 1971, Ser. No. 183,318

Int. Cl. E04h *9/06;* **E05f** *15/20*

U.S. Cl. 52—1 **4 Claims**

In a roof covering of the hatch or vent type having a spring loaded cover, an improved arrangement is provided for absorbing the shock of the springs when opening the cover and also for locking the cover in an open position to preclude it from being blown shut from the wind.



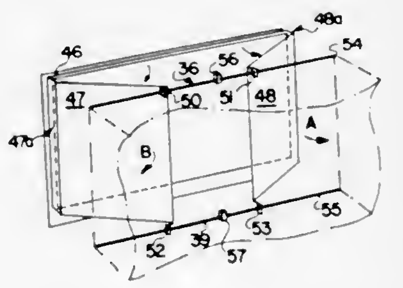
3,792,557
BUILDING STRUCTURE WITH HINGED WALLS

Marshall B. Pitts, P.O. Box 390, Nacogdoches, Tex.

Filed Sept. 28, 1972, Ser. No. 293,243

Int. Cl. E04h *1/02*

U.S. Cl. 52—65 **16 Claims**



The specification discloses a movable and collapsible building structure having a fixed wall center module and extensible side portions for tripling the floor space of the building. The extensible side portions have extensible side walls which move laterally outward from the center module and are attached thereto by means of pivotally mounted end walls. The end walls are pivotally attached to the movable side walls and are reciprocally mounted to the center module so that the vertical edges of the end walls traverse the longitudinal edges of the center portion of the module as the side wall moves from its collapsed position to its extended position. A folding floor and sliding roof are provided for the extensible portions.

3,792,558
THREE - DIMENSIONAL MODULAR TRANSPORTABLE STRUCTURES

Jacques Berce, 65, rue Michelet, Montreuil, and Enrique Ciriani, 4, rue de Tournoy, Paris, both of France

Filed Mar. 2, 1971, Ser. No. 120,202

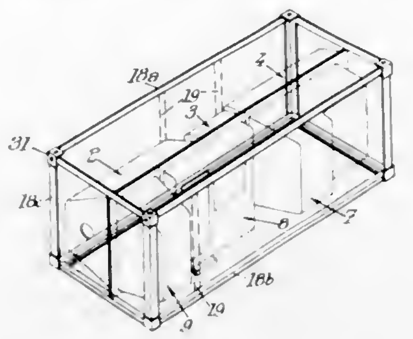
Claims priority, application France, Mar. 2, 1970, 7007446

Int. Cl. E04b *1/348*

U.S. Cl. 52—79 **9 Claims**

The structure comprises at least one standardized, rigid, paralellopipedic frame-work, and interchangeable differentiated standardized modular blocks, for constructing a dwelling. The operational elements characteristic of the dwelling are incorporated as fixtures in hulls of shapes respectively suitable for these elements. The edges of each block define a rectangle enabling fixing on the frame-work. The height of the rectangle is about equal to that of the vertical faces of the frame-work and its width is a simple ratio of the longitudinal dimension of the frame-work. The entire volume

of each hull is contained within a parallelopiped bounded by the rectangle and a third dimension less than the transverse horizontal dimension of the frame-work. The frame-work is thus adapted to serve as a container for the modular blocks on transportation of the structures. The frame-work has the standard dimensions of a transcontainer.



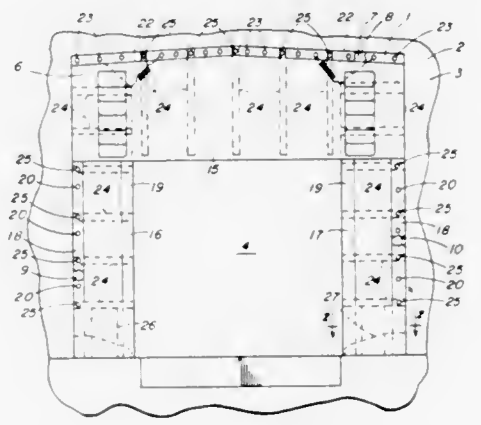
3,792,559
LOADING DOCK SHELTERS

Cyril P. Frommelt, and Sylvan J. Frommelt, both of Dubuque, Iowa, assignors to Dubuque Awning & Tent Company, Dubuque, Iowa

Filed Aug. 30, 1972, Ser. No. 285,052

Int. Cl. E04f *10/04;* **E06b** *1/56*

U.S. Cl. 52—173 **10 Claims**



A loading dock shelter embodying a cover member with a resilient pad forming the bottom wall thereof and holding the lower portion of the cover in operative position, the pad being tapered in shape and the upper wall thereof sloping downwardly and inwardly toward the center of the shelter.

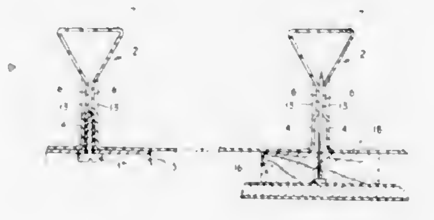
3,792,560
INTERLOCKING METAL SHEETS FOR USE AS ROOFING AND/OR WALLING AND/OR DECKING

Dudley Charles Naylor, 142 Mona Vale Rd., St. Ives, New South Wales, Australia

Filed June 2, 1971, Ser. No. 149,297

Int. Cl. E04b *5/23;* **E04f** *13/12*

U.S. Cl. 52—364 **1 Claim**



Interlocking metal sheets connected together at their longitudinal edges are used as a form and reinforcement for concrete to provide when the concrete is set, a reinforced concrete slab for building construction. Each sheet has upstanding ribs throughout its length and has interlocking clips at the longitudinal edges thereof. The ribs include a plurality of reinforcing bulges throughout their length and on both sides to connect the sheets to the set concrete and prevent separation particularly in a longitudinal or tensile direction of the metal sheets.

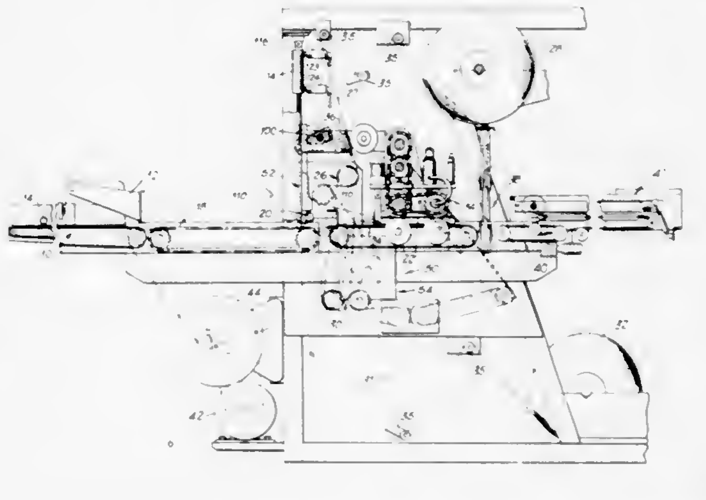
3,792,561
AUTOMATIC PACKAGING METHOD

Roy W. Carnes, Richmond, Va., assignor to AMF Incorporated, White Plains, N.Y.

Filed Nov. 19, 1971, Ser. No. 200,382

Int. Cl. B65b *9/02*

U.S. Cl. 53—28 **6 Claims**



A method of packaging articles, which comprises the steps of advancing a group of articles through a work station, rotating feed rollers to withdraw sheets of packaging material from two supplies thereof, feeding the packaging material through the work station above and below the articles as they are being advanced therethrough, sealing the two sheets of packaging material to each other to form the front of a package, pushing the group of articles against the front of the package, advancing the articles from the work area, controlling the amount of rotation of the packaging material feed rollers to provide measured lengths of the two packaging material sheets, and sealing the two sheets of packaging material to each other to form the rear of the package.

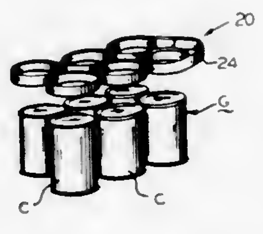
3,792,562
METHOD OF PACKAGING GROUPED ARTICLES

Scott W. Gilliam, Rush, N.Y., assignor to Container Corporation of America, Chicago, Ill.

Division of Ser. No. 8,505, Feb. 9, 1970, abandoned. This application Jan. 10, 1972, Ser. No. 216,355

Int. Cl. B65b *53/02*

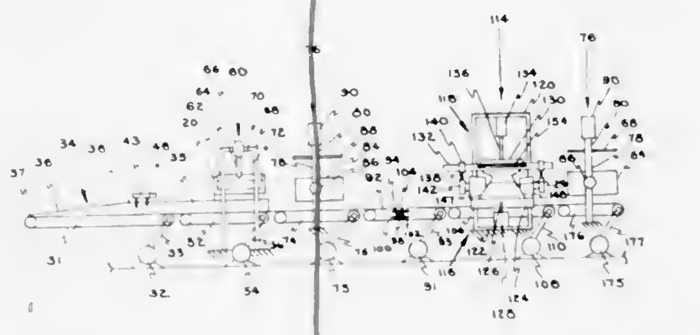
U.S. Cl. 53—30 **7 Claims**



A method of forming a carrier from resinous material consisting of conjugated tube-like elements preferably arranged to hold a group of containers such as bottles, cans or the like. The material forming the carrier is preferably from those having memory characteristics, and after the tube-like elements are placed in position around a container group, they undergo a step to cause them to engage the individual containers to provide a container package with the containers unitarily arranged.

3,792,563
PAPER PULP BALING METHOD AND APPARATUS

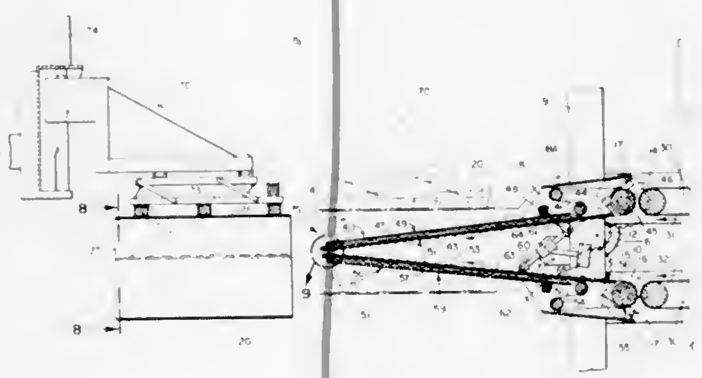
Cecil S. Mercer, 4360 Centerbury Cres., North Vancouver, B.C.; Archibald D. Beveridge, 935 Fairmile Rd., West Vancouver, B.C., and Frederick A. McDowall, 831 Fairfax Pl., Richmond, B.C., all of Canada
Continuation-in-part of Ser. No. 153,669, June 16, 1971, which is a continuation-in-part of Ser. No. 50,837, June 29, 1970. This application May 16, 1972, Ser. No. 253,760
Int. Cl. B65b *11/02*
U.S. Cl. 53—32 **7 Claims**



Method of baling bundles of paper pulp comprising overwrapping the bundle with top and bottom wrapper sheets, and thereafter forming side seams and end flaps about the bale by applying a repulpable adhesive to overlapping areas of the wrapper sheets and exerting a compressive force on these adhesive-carrying areas so as to obtain bonded side seams and end flaps. Apparatus is disclosed for baling bundles of paper pulp, including means for applying a repuplable adhesive to overlapping areas of the wrapper sheets, means for forming side seams and end flaps, and means for exerting a compressive force on the side seams and end flaps.

3,792,564
WRAPPING COMPRESSIBLE MATERIAL

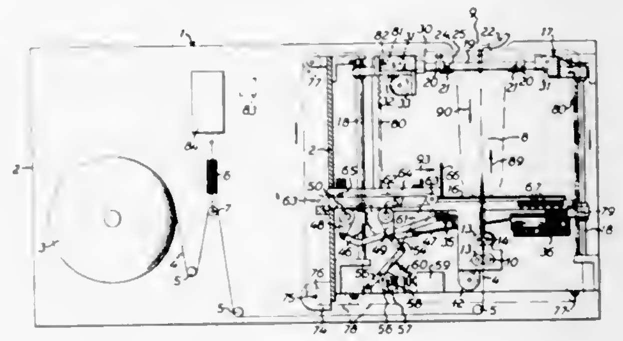
William A. Brady, Jr., Norristown, Pa., assignor to Certainteed Products Corporation, Valley Forge, Pa.
Filed Dec. 20, 1972, Ser. No. 316,684
Int. Cl. B65b *63/02*
U.S. Cl. 53—124 E **9 Claims**



Units of resilient compressed material are delivered at spaced intervals to the interior of a tubular wrapper supported by a wrapper carrier in encircling position about the upper and lower jaw members of an almost-closed or collapsed counter-balanced spout. Each of the jaw members has its own driven endless conveyor belt which cooperate to advance the compressed unit toward the almost-closed mouth of the spout, the thrust of the unit causing the counterbalanced jaws to open to allow the unit to pass therethrough. In timed relation thereto, the encircling tubular wrapper is moved by its carrier in the same direction and at the same speed as the advancing compressed unit as it emerges from the opened mouth of the spout. As the compressed resilient material emerges, it expands into pressure engagement with the encircling tubular wrapper. When the wrapper is held in encircling position about the almost-closed jaws, just prior to arrival of the next unit to be wrapped, upper and lower cover plates, above and below the moving jaw conveyors, are interposed between the moving jaw conveyor belts and the wrapper. In preferred embodiments, automatic means pick up a tubular wrapper from a supply of wrappers, spread open the picked-up wrapper in a desired position of orientation with respect to informational matter appearing thereon and also with respect to a carry-handle with which the wrapper is provided, and carry the picked-up wrapper in the desired position of orientation to an encircling position about the almost-closed jaws of the spout, in timed relation to the expected arrival of the next unit of resilient compressible material to be wrapped.

3,792,565
WRAPPING MACHINES

Pehr Gunnar Heine Goransson, Boras, Sweden, assignor to Rottneros AB, Karlstad, Sweden
Continuation-in-part of Ser. No. 40,572, May 26, 1970, abandoned. This application May 5, 1972, Ser. No. 250,666
Claims priority, application Sweden, May 27, 1969, 7392/69
Int. Cl. B65b *9/00, 5/02, 9/12*
U.S. Cl. 53—183 **3 Claims**

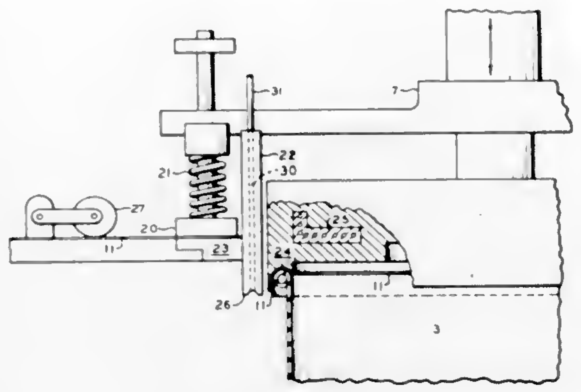


An apparatus for bagging articles to be carried home by the buyer is preferably disposed in a check-out counter and has an upwardly open compartment for the leading portion of a heat sealable material in the form of a tubular foil which is advanced from a supply of such material. The upwardly open compartment in its upper portion has means for keeping the leading end of the tube open and at its lower portion has welding jaws disposed in a vertically adjustable table for conforming the bag to the amount of articles therein.

3,792,566
CLOSURE APPLYING APPARATUS

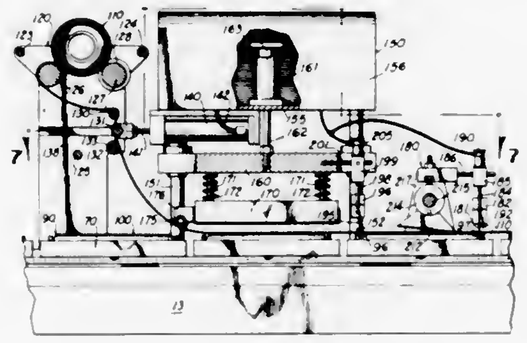
Alfred W. Kinney, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed May 30, 1972, Ser. No. 257,820
Int. Cl. B67b *3/04*
U.S. Cl. 53—298 **9 Claims**

Apparatus for closing an open-ended container in which a shearing mechanism which shears a film positioned above the container retains and moves the sheared film into contact with the rim of the container where it is formed into sealing relationship with the container to close it.



3,792,567
HEAT SEALING MACHINE

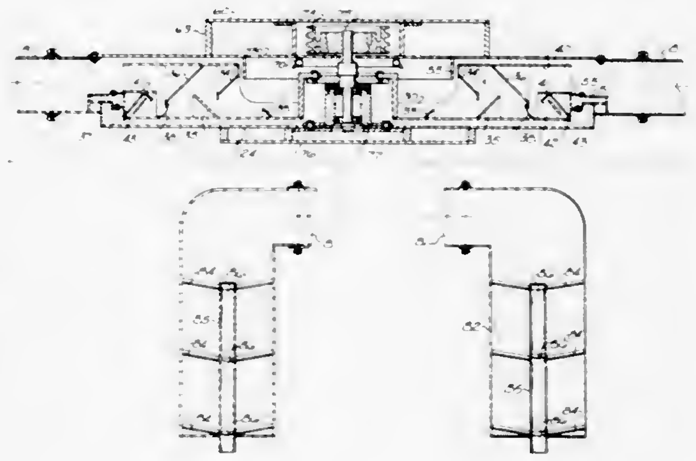
Herbert L. Balcome, Norcross, Ga., assignor to Dixie Packaging Company, Inc.
Filed Dec. 7, 1971, Ser. No. 205,635
Int. Cl. B65b *7/16*
U.S. Cl. 53—329 **15 Claims**



A heat sealing machine for use in sealing a thermoplastic cover to the upper surface of container means supported at a heat sealing position. The heat sealing machine includes endless conveyor means having a plurality of support elements designed for removably supported selected ones of a number of container support platens, wherein the container support platens are designed for supporting a number of various sized containers to be sealed. The conveyor means includes means for effecting intermittent drive to advance the support element with the platen and containers through predetermined increments of movement for positioning the containers in position adjacent a heat sealing station. The heat sealing station includes means for applying a thermoplastic film of material to the upper surface of the containers and includes a heat sealing element cyclically movable from a retracted inoperable position displaced from the container to an extended operable position in pressing engagement with the thermoplastic material and the container and wherein the heat sealing element is operable in the extended position for heating the thermoplastic material to a predetermined temperature for sealing the material to the upper surface of the containers. Severing means is located adjacent the conveyor means and positioned to sever the thermoplastic material adjacent the leading and trailing edge of the sealed container means. The severing means includes means for severing the thermoplastic material between side by side container means supported in a platen. Control means is operatively associated with the heat sealing machine for effecting cyclic operation of the conveyor drive means, the heat sealing means and the severing means.

3,792,568
AIR SCRUBBER

Theodore F. Gundlach, Belleville, Ill., and Arthur L. Hawthorne, St. Clairsville, Ohio, assignors to J.M.J. Industries, Inc., Belleville, Ill.
Continuation of Ser. No. 52,631, July 6, 1970, abandoned. This application Aug. 15, 1972, Ser. No. 280,799
Int. Cl. B01d *47/06*
U.S. Cl. 55—223 **14 Claims**



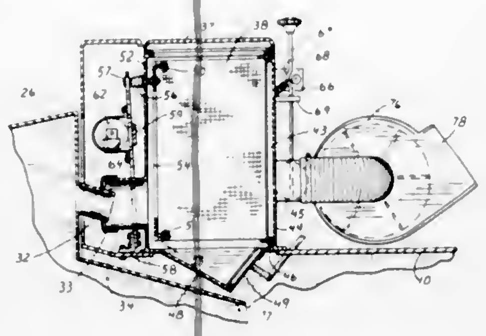
A mining machine including a mechanism for removing material from a mine face, and an air scrubber for removing polluted air including gases from the mine face and for removing the pollutants from such air. The air scrubber includes a duct located adjacent the mine face for removing the polluted air at the face, a pollutant-removal mechanism operatively connected to the duct for separating the pollutants from the air moving through the duct, and a second duct operatively connected to the pollutant-removing mechanism for directing the resultant clean air back toward the mine face.

The air scrubber has a revolving rotor mounted in a rotor housing, the rotor including a bottom plate, a top plate spaced from the bottom plate to provide a radial passage therebeween, an entrance communicating with the rotor passage, a plurality of substantially radially extending fan blades, a plurality of baffles extending into the rotor passage against which the pollutant-laden liquid impinges, the rotor passage being open peripherally of the rotor for the discharge of clean air, and means for permitting discharge of the pollutant-laden liquid through the bottom rotor plate. A spray means sprays the polluted air upon entry into the rotor or at any point in the rotor passage.

3,792,569
FILTER CHAMBER

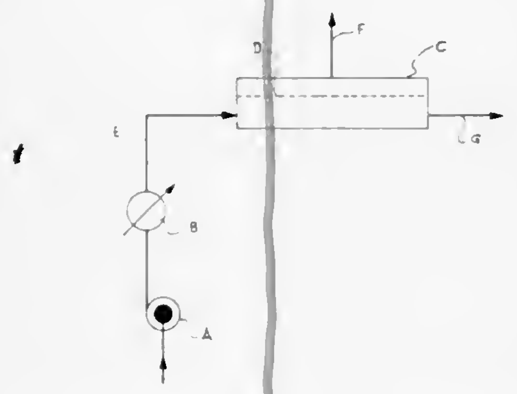
Alfred D. Carlson, and Joseph G. Kasper, both of Minneapolis, Minn., assignors to Tennant Company, Minneapolis, Minn.
Division of Ser. No. 852,326, Aug. 22, 1969, Pat. No. 3,639,940. This application Nov. 4, 1971, Ser. No. 195,873
Int. Cl. B01d *46/04*
U.S. Cl. 55—288 **3 Claims**

A filter chamber including a shaking mechanism for vibrating dust from filter bags in a sweeping machine wherein an eccentric weight is mounted onto an electric motor, and the motor in turn is mounted on spring means which are attached to the filter bags and retain the bags under spring tension. The control for turning on the vibrator motor also controls a valve which shuts off vacuum flow to the filter compartment so that the dust will more easily fall down from the sides of the filter bag at the same time the shaking occurs.



3,792,570
PROCESS AND PLANT FOR THE ISOTOPIC ENRICHMENT OF URANIUM BY MEANS OF GASEOUS DIFFUSION

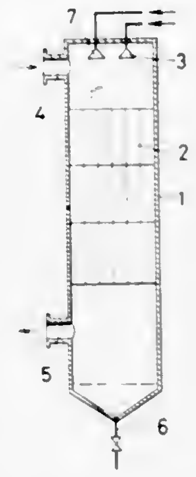
Leonardo Biondi, and Alberto Vaudo, both of Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy
Filed Oct. 26, 1971, Ser. No. 192,182
Claims priority, application Italy, Oct. 29, 1970, 89564 A/70
Int. Cl. B01d *53/22*
U.S. Cl. 55—16 **13 Claims**



Process and plant are disclosed for uranium isotopic enrichment which make use of per se known type elemental stages employed for enriching uranium through gaseous diffusion, said process and plant in their broader aspects being based on the features of enriching a flow of natural uranium hexafluoride up to the required $U^{235}F_6$ concentration by means of following partial enrichments of gradually increasing rate, obtained in a well defined set of elemental stages operating in successive periods and for different durations, according to following operative positions, under feeds at predetermined different enrichment rates, said different and gradually increasing enrichments being obtained by feeding the same set of elemental stages, in each subsequent operative position, with the product and waste flows obtained in the two contiguous operative positions, preferably replacing the gas of each stage with other gas having a concentration such as to permit said set of stages to duty operate in each of said operative positions, finally repeating or changing over said feed and said gas replacing several times, stage by stage, until the desired final concentration rate required both for the enriched and the waste flows is obtained.

3,792,571
METHOD AND APPARATUS FOR PURIFYING WASTE GAS

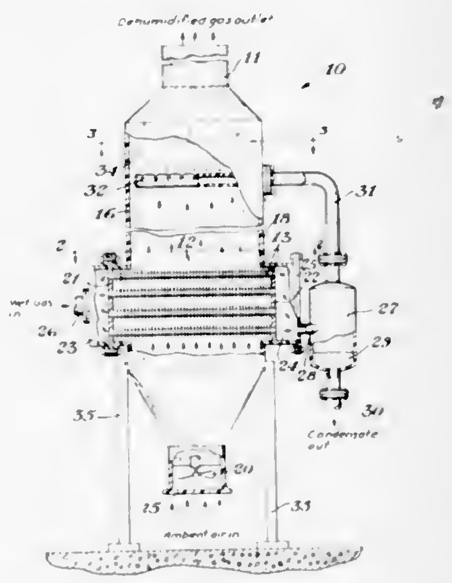
Koichi Waki, Setagaya-ku; Tadashi Suzuki, Tokyo, and Toshinobu Mitsui, Yokohama, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 2, 1971, Ser. No. 130,726
Int. Cl. B01d *53/04*
U.S. Cl. 55—74 **2 Claims**



Purification of a gas is accomplished by passing the gas through a packed bed having an adsorbent deposited thereon and means are provided for cleaning the bed and depositing fresh absorbent thereon.

3,792,572
APPARATUS FOR DEHUMIDIFYING AND DILUTING A WET GAS STREAM

Kenneth L. Turbin, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed June 2, 1972, Ser. No. 259,291
Int. Cl. B01d *53/26*
U.S. Cl. 55—269 **1 Claim**

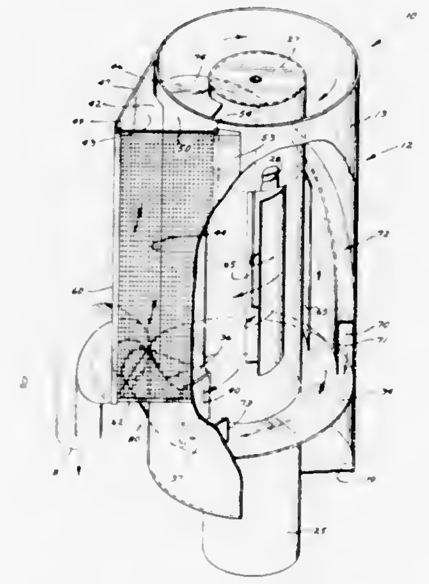


An apparatus is disclosed in which a wet gas effluent stream at a high temperature is dehumidified before discharging the stream to the atmosphere. The wet gas is passed through a heat exchanger positioned in a main chamber. Simultaneously, the wet gas stream is cooled by an ambient temperature air stream which is drawn into the main chamber and forced past the heat exchanger. The condensate in the cooled wet stream is removed in a second chamber and the remaining gas phase is dispersed back into a mixing compartment of the main chamber. In the mixing compartment the gas phase of

the effluent stream mixes with the ambient air, which dilutes the effluent and reduces its humidity, before the stream is discharged to the atmosphere. Dehumidifying the effluent stream before discharge to the atmosphere reduces the tendency of the effluent to form fog plumes and also avoids any drizzle precipitation.

3,792,573
AIR CLEANING STRUCTURE

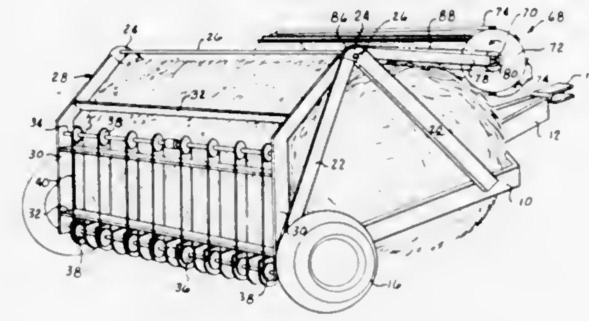
Lewis A. Borsheim, 502-31 Ave. N., Fargo, N. Dak.
Filed Apr. 6, 1972, Ser. No. 241,587
Int. Cl. B01d *45/12*
U.S. Cl. 55—337 **2 Claims**



An air cleaner for an internal combustion engine embodying a centrifuging action to direct dust particles into a duct for exhaust to the atmosphere having separated the same for air directed into a chamber of increasing size for reduction of the velocity of said air as it approaches the vents through which it is drawn for passage to said engine.

3,792,574
HAY ROLLING MACHINE WITH COMPRESSING MEANS

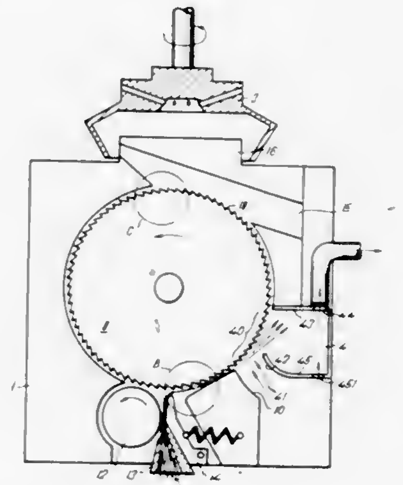
Albert M. Best, New Holland, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.
Filed Dec. 7, 1972, Ser. No. 313,038
Int. Cl. A01d *39/00*
U.S. Cl. 56—341 **14 Claims**



A hay rolling machine adapted to form rolls of hay from a swath or windrow thereof in partially cured condition while lying on a field to form a roll of hay of substantial size and weight as the machine is drawn along the field by a tractor or otherwise. A positively driven roll is mounted on the machine to engage the roll of hay being formed for purposes of (1) facilitating movement of the roll of hay and (2) compacting the roll of hay be gravity imposing the weight of the driven roll upon the roll of hay.

3,792,575
METHOD OF AND APPARATUS FOR SEPARATING IMPURITIES FROM FIBERS DURING CLEANING OF THE FIBERS

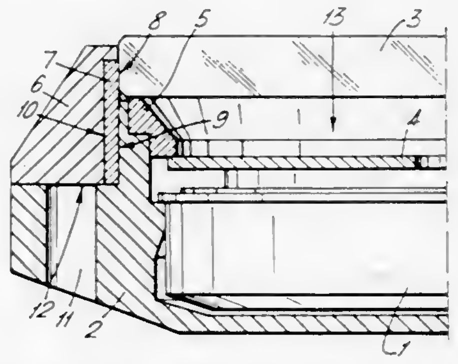
Ctibor Doudlebsky; Frantisek Jaros; Frantisek Ferkl, and Antonin Cap, all of Usti nad Orlici, Czechoslovakia, assignors to Vyzkumny Ustav Bavlnarsky, Usti nad Orlici, Czechoslovakia
Filed Mar. 22, 1972, Ser. No. 237,003
Claims priority, application Czechoslovakia, Mar. 24, 1971, 2138/71
Int. Cl. D01h *11/00, 1/12*
U.S. Cl. 57—56 **13 Claims**



Method of and apparatus for separating impurites from fibers during their cleaning between the zone of combing-out and the zone of doffing during separating which precedes the spinning of the fibers by the open-end method. A cleaning slot guides an air stream onto the combing-out roller of the cleaning mechanism, said air stream driving the impurities into a collecting area, while preventing the separated fibers from flying away. The apparatus shown comprises a separating device of a ringless spinning unit, with a cleaning slot between the combing-out zone and the doffing zone. The body of the separating device comprises a cleaning chamber with a cleaning hole forming a cleaning slot into which the tips of the combing-out roller project, there being a separating channel at the one side of the cleaning hole oriented with respect to said cleaning hole, the other side bearing a reflecting wall and an adjacent exhaust hole.

3,792,576
WATERTIGHT WATCH

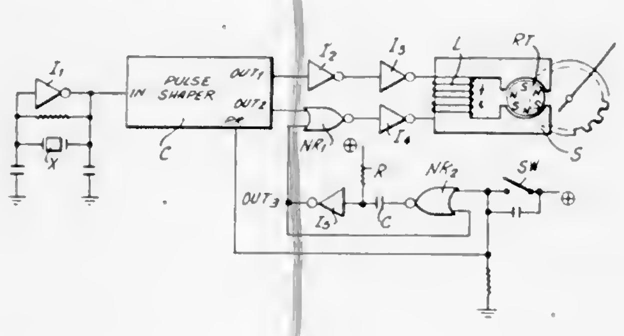
Michel Ratajski, Bienne, Switzerland, assignor to Omega, Louis Brandt & Frere S.A., Bienne, Switzerland
Filed Feb. 9, 1973, Ser. No. 330,960
Claims priority, application Great Britain, Mar. 6, 1972, 10,309/72
Int. Cl. G04b *37/08*
U.S. Cl. 58—90 R **12 Claims**



A watertight watch case of the two piece type wherein the caseband and back are formed as a single unit with a separate bezel. The bezel includes a glass snap integrally formed therewith and is assembled to the caseband and back unit with a interposed packing that is subjected to radial compression between the bezel acting on one surface, and the glass and caseband and back unit acting on the opposite surface. The arrangement assures resistance to water and at the same time maintains the assembly of the watch case.

3,792,577
QUARTZ CRYSTAL WRIST WATCH

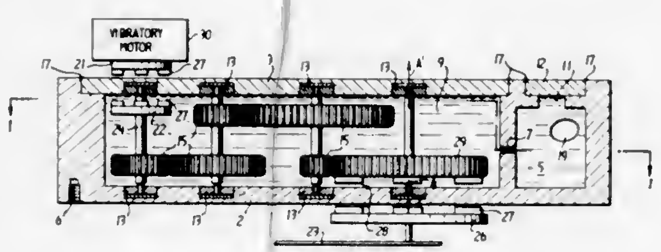
Kinji Fujita, 10616, Takaki, Shimosuwa-machi, Suwa, Japan
Filed Nov. 20, 1972, Ser. No. 308,214
Claims priority, application Japan, Nov. 18, 1971, 46/91893
Int. Cl. G04c *3/00*
U.S. Cl. 58—23 R **3 Claims**



A wrist watch having a quartz crystal time standard oscillator driving a pulse shaper circuit including counters for reducing the frequency of the signal from said oscillator to a timekeeping frequency for application to an electro-mechanical converter. A quick-feed correcting cirucit operated by a manual operating switch corrects the second hand indication.

3,792,578
LOW FRICTION MINIATURE GEAR DRIVE FOR TRANSMITTING SMALL FORCES, AND METHOD OF MAKING SAME

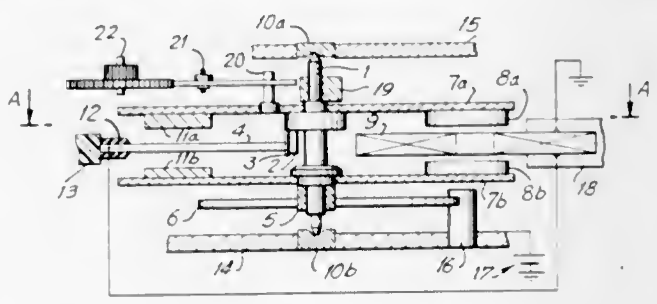
Max Hetzel, Biel, Switzerland, assignor to Societe Suisse pour l'Industrie Horlogere, Management Services SA, Bienne, Switzerland
Filed Jan. 10, 1973, Ser. No. 322,381
Claims priority, application Switzerland, Feb. 28, 1972, 2806/72
Int. Cl. G04c *3/00;* **G04b** *19/02*
U.S. Cl. 58—230 **5 Claims**



A miniature gear drive, such as that used in clockworks, is disposed in one chamber of a housing having two chambers interconnected by a capillary channel. The chamber containing the gears is sealed except for the channel, and the entire assembly immersed in a lubricant liquid within a vacuum chamber. The vacuum chamber is evacuated and then the vacuum removed so that the lubricant completely fills both chambers of the housing. The assembly is removed from the vacuum chamber and heated whereby the liquid expands and a portion of the liquid escapes through an opening in the second housing chamber. The assembly is then cooled so that an air bubble is formed in the second housing chamber, and the second chamber is then sealed. The input power to the gear drive, and the output power therefrom are obtained by magnetic coupling through the housing. The air bubble permits expansion of the liquid within the housing due to temperature changes, but the capillary channel prevents this bubble from reaching the chamber containing the gear drive hence the gears are always completely immersed in the liquid.

3,792,579
ELECTRIC CONTACTING DEVICE FOR TIMEPIECES

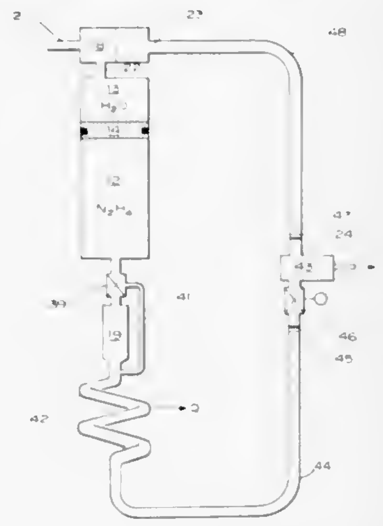
Tokuichi Inagaki, 166-2, Hosokubo, Shiga,, Suwa, Japan
Filed Oct. 21, 1971, Ser. No. 191,391
Claims priority, application Japan, Oct. 22, 1970, 45/92514
Int. Cl. G04c *3/04*
U.S. Cl. 58—28 A **4 Claims**



An electric contacting device for timepieces wherein a first spring contact member is fixedly mounted at one end for periodic engagement by a second displaceable contact member at its other end. A vibration absorbing member is mounted on said first spring contact member adjacent the base thereof. The vibration absorbing member extends axially relative to the first spring contact member a distance equal to less than one-half the length of said first spring contact member.

3,792,580
PORTABLE UNDERWATER FUEL FEED SYSTEM

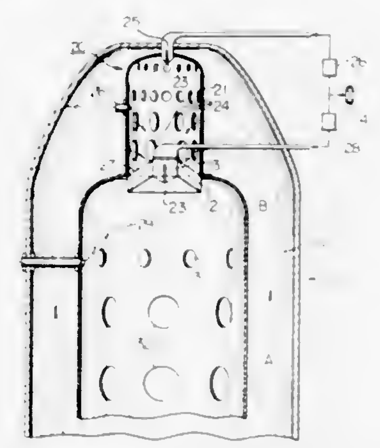
Robert J. Geres, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Dec. 29, 1971, Ser. No. 213,573
Int. Cl. C06d *5/04*
U.S. Cl. 60—643 **5 Claims**



A portable underwater hydrazine feed system for feeding hydrazine to a hydrazine decomposition reactor. The gas from the reactor may be used to drive a power tool, a swimmer propulsion device or the like with the exhaust gas from the driven device being employed to drive a gas operated differential area piston pump. The gas operated pump forces water into a chamber containing hydrazine. The hydrazine is isolated from the water by a slidable piston or expandable bellows and is displaced into the hydrazine decomposition reactor by the water.

3,792,581
SYSTEM AND METHOD USED IN A GAS TURBINE ENGINE FOR MINIMIZING NITROGEN OXIDE EMISSION

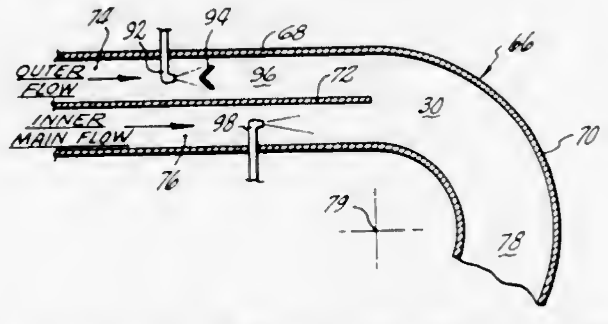
Noritoshi Handa, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan
Filed Dec. 1, 1971, Ser. No. 203,546
Claims priority, application Japan, Dec. 22, 1970, 45/129344
Int. Cl. F02c *3/04, 7/14*
U.S. Cl. 60—39.02 **9 Claims**



A system and method used in a gas turbine engine for minimizing nitrogen oxide content in the exhaust gases of the gas turbine engine. According to the method having the step of feeding partially contaminated air at least into primary air intakes of the combustor of the gas turbine engine, the system comprises a preliminary combustor for putting the step into practice. The preliminary combustor includes primary air intakes communicating with the air compressor of the gas turbine engine for receiving primary air therefrom, additional air intakes communicating with the air compressor for receiving therefrom additional air as a diluent, a fuel injector communicating with the fuel pump of the gas turbine engine for receiving a liquid fuel therefrom, and an outlet connected to the combustor or the air compressor upstream thereof for introducing the diluted burned gases into the combustor of the gas turbine engine as primary air therefor. Thus, the maximum temperature in the combustion zone of the gas turbine engine is effectively reduced with a resultant reduction in the nitrogen oxide emission. The system may be provided with a heat exchanger interposed between the outlet of the preliminary combustor and the primary air intakes of the gas turbine engine for improving reduction efficiency of the nitrogen oxide emission.

3,792,582
COMBUSTION CHAMBER FOR DISSIMILAR FLUIDS IN SWIRLING FLOW RELATIONSHIP

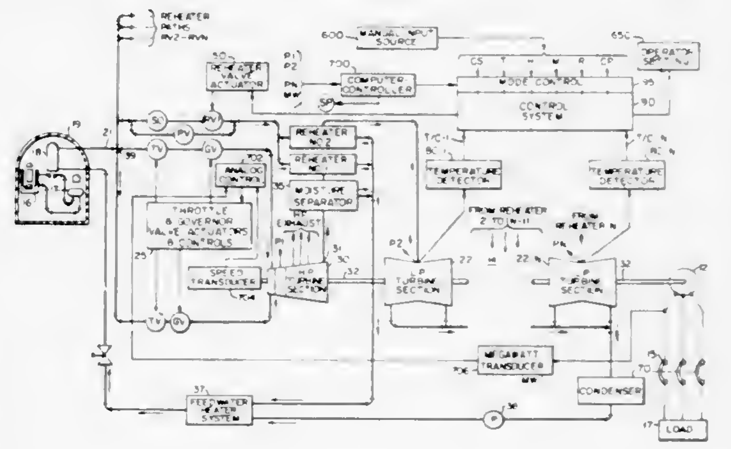
Stanley J. Markowski, East Hartford, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Division of Ser. No. 84,086, Oct. 26, 1970. This application Apr. 18, 1973, Ser. No. 352,137
Int. Cl. F02g *1/00*
U.S. Cl. 60—39.72 R **8 Claims**



The characteristics of thermodynamically and aerodynamically dissimilar fluids in swirling flow relationship are established and/or varied to accelerate mixing and hence combustion in the combustion zone and mixing and hence cooling of the products of combustion, in the dilution zone of an annular burner.

3,792,583
ELECTRIC POWER PLANT SYSTEM AND METHOD FOR OPERATING A STEAM TURBINE ESPECIALLY OF THE NUCLEAR TYPE PREFERABLY WITH ELECTRONIC REHEAT CONTROL AND AN ELECTRONIC REHEATER

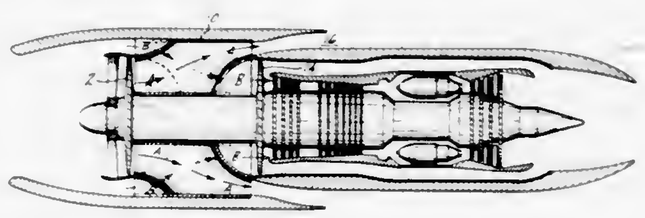
Michael C. Luongo, Brookhaven; James A. Martin, Jr., Newtown Square, and Donald N. Tapper, Media, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Mar. 9, 1972, Ser. No. 233,076
Int. Cl. F01k *7/16*
U.S. Cl. 60—686 **49 Claims**



An electronic system is provided for operating an electric power plant of the nuclear type with an electronic steam reheating control system applied to the nuclear turbine system which operates in response to low pressure turbine temperatures. The control system is adapted to operate in a plurality of different automatic control modes to control reheating steam flow and other steam parameters, each of such modes of control permitting turbine temperature variations within predetermined constraints and according to predetermined functions of time.

3,792,584
INCREASED OR VARIABLE BYPASS RATIO ENGINES

Garry W. Klees, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.
Continuation-in-part of Ser. No. 196,422, Nov. 8, 1971. This application Feb. 16, 1972, Ser. No. 226,850
Int. Cl. F02k *3/04*
U.S. Cl. 60—204 **35 Claims**



Air breathing gas turbine engine design concepts, methods and apparatus for economically increasing the bypass ratio of conventional engine designs and/or for providing a variable bypass ratio feature. The disclosed preferred embodiments each involve a flow control system for internal management of intake and exhaust air within the engine comprising separated annular first and second duct means shaped and arranged to cross-over or invert air flow patterns within the confines of an annular passageway having an area substantially equal to the combined area of the two separated flow patterns. In this manner the quantities of air which pass to or from the various engine components can be routed without interference, necking down, or departure from the confines of the annular passageway. The system may be modified to achieve variable bypass ratio by providing a means for switching flow patterns between adjacent duct means of separated upstream and downstream portions to switch from inverted to straight through flow. The duct means comprise a plurality of conformably nesting basic duct elements of unique configuration and have utility in solving a variety of engine air flow control problems. The disclosed variable bypass engine concepts can be used in present aircraft propulsion systems to reduce jet and turbomachinery noise, to improve the installed drag characteristics of multimission propulsion units, and to improve fuel consumption rates.

3,792,585
HYDRAULIC COUPLING

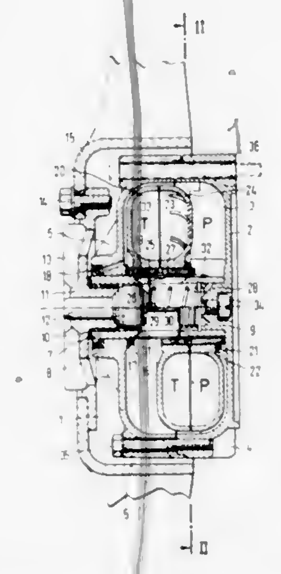
Siegfried Eisenmann, Sigmaringendorf, and Hermann Harle, Lauchertha, both of Germany, assignors to Furstlich Hohenzollernsche Huttenverwaltung, Laucherthal, Germany

Filed Jan. 24, 1972, Ser. No. 220,249

Claims priority, application Germany, Jan. 26, 1971, P 21 03 598.3

Int. Cl. F16h *41/10*

U.S. Cl. 60—353 **10 Claims**



This invention relates to an improvement in a hydraulic coupling operating according to the Foettinger principle, with a turbine vane ring and a pump vane ring mounted axially adjacent thereto within a housing, and wherein there is assigned to each of the two vane rings a reversing wheel rotating concomitantly therewith and being open toward the other vane ring, the improvement comprising means for varying the distance between the two vane rings.

3,792,586
BEARING ASSEMBLY SYSTEMS

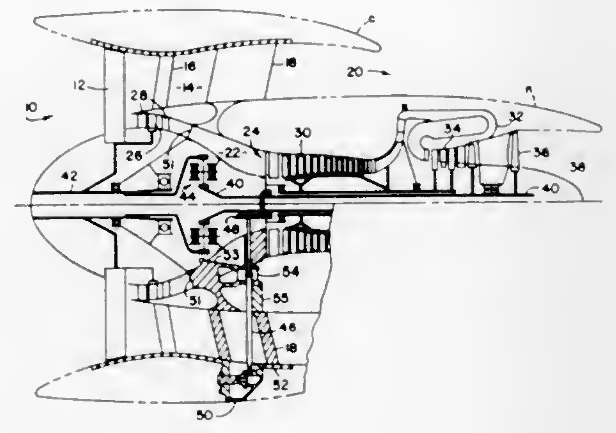
Joseph R. Kasmarik, Stratford, and Ambros S. Hoffmann, West Haven, both of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Jan. 22, 1973, Ser. No. 325,137

Int. Cl. F02c *3/06, 7/06*

U.S. Cl. 60—226 R **5 Claims**

A mid-span bearing support for the power take-off shaft of a fan type gas turbine engine is described. The power take-off shaft extends radially through frame struts in the core engine inlet and fan ducts of the engine. These struts are separated by a gap in which a bearing assembly is mounted to journal the power take-off shaft. This assembly includes a spring bellows which permits the height of the assembly to be reduced by a rotatable sleeve to permit retraction of interdigitating locating means in the installation and removal of the assembly. The spring bellows also provides sealing pressure of the assembly against opposed surfaces of the gap so that oil may flow through the struts and assembly for return to the engine's oil pump.



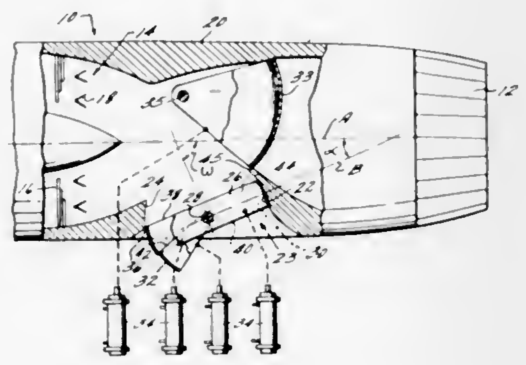
3,792,587
EXHAUST VECTORING MEANS

Peter Gottfried Kappus, Cincinnati, Ohio, assignor to General Electric Company, Lynn, Mass.

Filed July 17, 1972, Ser. No. 272,471

Int. Cl. F02k *1/12*

U.S. Cl. 60—229 **7 Claims**



An exhaust vectoring means is provided for use with an aircraft gas turbine engine in order to vector the exhaust stream from the engine in the generally vertical direction for vertical landing and takeoff. The exhaust vectoring means is installed forward of the engine variable exhaust nozzle and is compatible for use with afterburning engines. The vectoring means includes a series of articulated shells disposed in an opening through the underside of the engine housing. Thrust vectoring is accomplished by rotating the shells about fixed points of pivot. During the vertical mode of operation, a door covers the duct leading to the variable exhaust nozzle thereby directing the exhaust stream through the vectoring means. The door may be pivoted to seal the vectoring means during normal horizontal flight.

3,792,588
TRICKLE IRRIGATION UNIT

Yigal Gilaad, Yechezkiel 18, Tel Aviv, Israel

Filed May 15, 1972, Ser. No. 253,452

Claims priority, application Israel, May 23, 1971, 36901

Int. Cl. E02b *13/00*

U.S. Cl. 61—12 **6 Claims**

An emitting unit for use in trickle irrigation systems comprises a pair of telescopic members, one of the members being formed with a continuous groove forming with the other member a large cross-section flow path having continuous direction-changing bends.

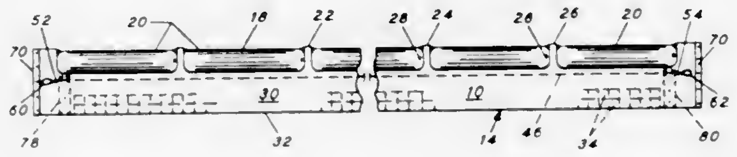
3,792,589
FLOATING BARRIER

James A. Sayles, Kensington, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 17, 1972, Ser. No. 218,253

Int. Cl. E02b *15/04*

U.S. Cl. 61—1 F **10 Claims**



A boom for collecting material floating on the surface of a body of water which can be deployed and recovered expeditiously and without damage to the structure of the boom, and which is made to be stored in a compact condition either as flat layers of folded material or by rolling it on a roller. The boom is constructed to have a continuously smooth outer surface without projections or fixtures or metal parts appearing on its outer surface throughout substantially its entire length, both to eliminate the hazard of such parts being snagged or caught on sharp edges of wharfs or portions of a ship while the boom is being played out or retrieved thereby reducing the possibility of the fabric of the boom being torn and damaged, and also to prevent injury to the men handling the boom by suffering cuts, bruises and wounds from such projecting elements. Particular attention is given to means for distributing stresses imposed on the boom in use to prevent damaging concentration of stress on any part of the fabric from which it is in part made. The boom is made with inflatable flotation chambers from which the air is released when the boom is retrieved and stored and all of the elements of the combination that make up the boom such as the stress cables, stress plates and ballast weights are placed between and within the impervious sides of the boom so that when the air chambers are collapsed the boom has a thickness throughout its total area which is not substantially greater than the thickness of the folded impregnated fabric of which it is made.

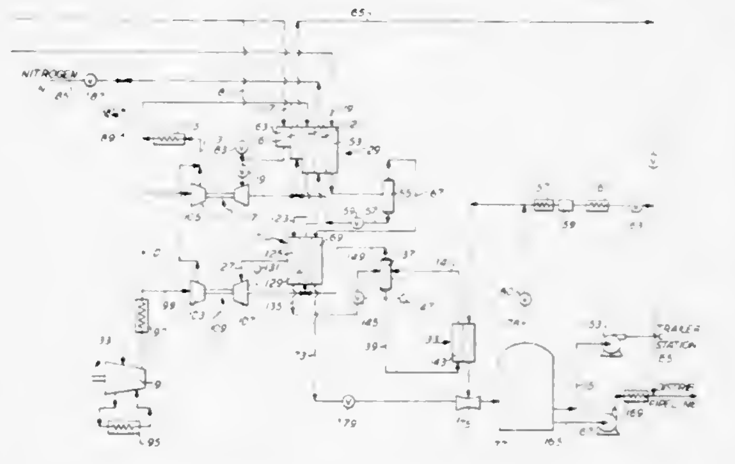
3,792,590
LIQUEFACTION OF NATURAL GAS

Antony Lofredo, Springfield, and Domenick R. Biava, both of Somerset, N.J., assignors to Airco, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 843,427, July 22, 1969. This application Dec. 21, 1970, Ser. No. 99,973

Int. Cl. F25j *1/00, 1/02, 3/06*

U.S. Cl. 62—38 **10 Claims**



A process and system for purifying and liquefying a natural gas stream. The stream initially is passed through driers and filters. The stream is then split and a minor fraction is passed through CO_2 adsorbers and enters the refrigeration cycle for liquefaction. The major fraction of said split stream is work-expanded and passed through a heat exchanger wherein it is utilized for high level refrigeration. The said fraction is then sent to the distribution pipeline and not further used in the cycle. The remaining refrigeration is effected by a nitrogen cycle, which provides low level refrigeration, as well as part of the high level refrigeration requirements.

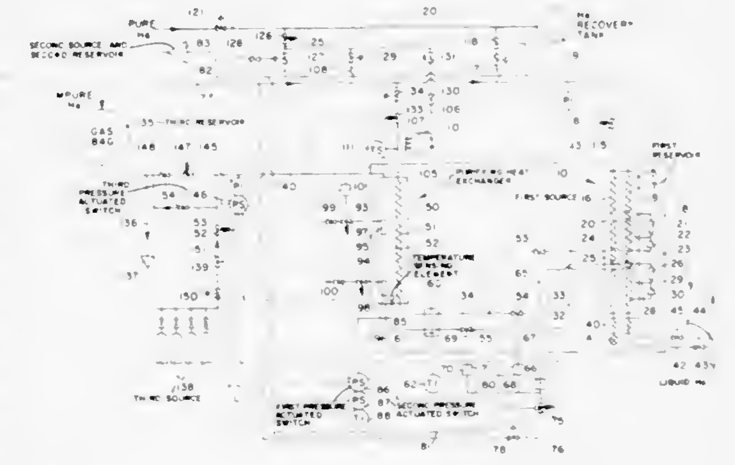
3,792,591
HELIUM PURIFICATION METHOD AND APPARATUS

Samuel C. Collins, Belmont, Mass., assignor to Cryogenic Technology, Inc., Waltham, Mass.

Filed Mar. 24, 1970, Ser. No. 22,262

Int. Cl. F25j *1/00, 3/00*

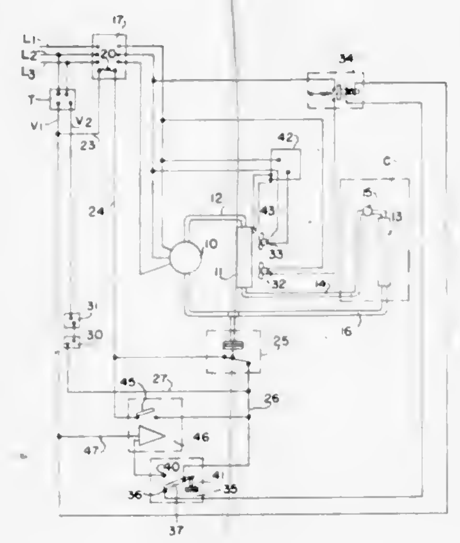
U.S. Cl. 62—40 **11 Claims**


PURE He
20
He RECOVERY TANK
SECOND SOURCE AND SECOND RESERVOIR
IMPURE He
THIRD SOURCE
FIRST PRESSURE ACTUATED SWITCH
SECOND PRESSURE ACTUATED SWITCH
LIQUID He
78
76

Method and apparatus for removing condensable gaseous impurities from helium gas. The impure helium is cooled by indirect heat exchange with cold pure helium to condense out impurities. The fluid flow within the purifying heat exchanger is automatically controlled and cooling of the impure stream is periodic, being carried out during those periods when the heat exchanger registers a temperature within a predetermined range in its coldest section. Warm pure helium is used for periodic warmup to remove condensed impurities. The purification system is conveniently integrated into a cryostat such as that described in U.S. Pat. No. 2,458,894 or U.S. Pat. No. 3,250,079.

3,792,592
COLD WEATHER STARTING CONTROL MEANS FOR REFRIGERATING SYSTEMS

Russell E. Cook, Columbus, Ohio, assignor to Ranco Incorporated, Columbus, Ohio
Filed June 30, 1972, Ser. No. 267,910
Int. Cl. G05d *23/32*; **F25d** *17/00*
U.S. Cl. 62—158 **7 Claims**

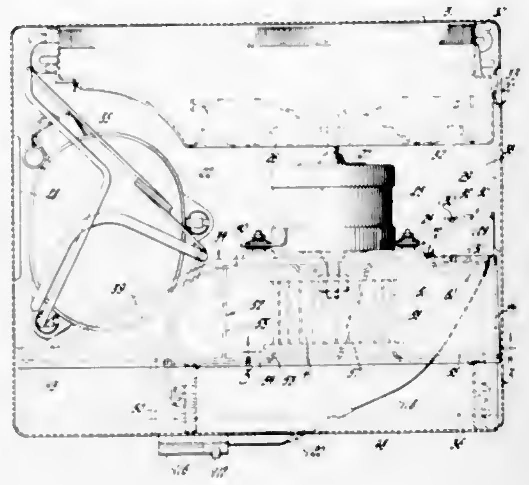


An electric motor powered compressor-condenser-expander type refrigerating apparatus having its compressor and condenser outdoors and the condenser cooled by one or more motor driven fans is controlled by a thermostatic switch inside a compartment cooled by the expander or evaporator. A pressure responsive switch normally terminates operation of the compressor when a low pressure limit is reached. An outdoor temperature responsive switch causes a timer to shunt out the pressure responsive switch for a limited period when a refrigerating cycle is initiated and the outdoor temperature is sufficiently low to reduce the refrigerant pressure in the low side of the system to a point otherwise causing the pressure switch to terminate compressor operation. The outdoor temperature responsive switch also controls a condenser cooling fan to reduce cooling air flow over the condenser.

3,792,593
FRESH AIR DAMPER ARRANGEMENT FOR ROOM AIR CONDITIONER

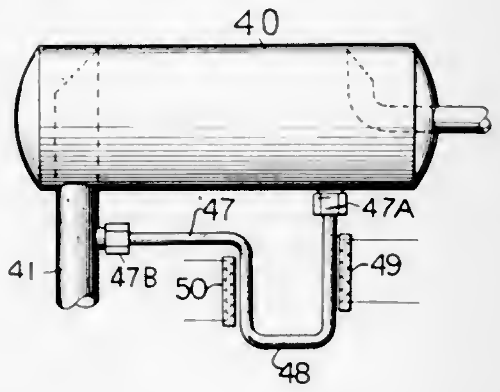
John H. Loos, Dayton, and Emerson L. Wark, Vandalia, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 10, 1972, Ser. No. 279,541
Int. Cl. F25d *23/12*
U.S. Cl. 62—262 **3 Claims**

An air conditioning unit having a louvered fresh air opening located in an evaporator blower scroll housing side wall in the vertical exhaust air passageway such that recirculated room air from the blower wheel is passed over a plurality of angularly disposed horizontally extending louvers cooperating with the upward flow of air in the scroll housing thereover present Venturi creating deflectors which draw outside fresh or make-up air into the scroll housing to be mixed with the recirculated conditioned room air. A damper door and overlying three-sided channel duct are positioned on the condenser compartment side of the louvers such that when the door is opened it forms an elbow duct scoop-like air intake conduit directing a portion of the outside air flow through the louvered scroll housing opening and when the door is closed the open-sided channel duct presents minimal interference with the outside air being drawn into the condenser compartment by fan means for cooling the condenser.



3,792,594
SUCTION LINE ACCUMULATOR

Daniel E. Kramer, Yardley, Pa., assignor to Kramer Trenton Company, Trenton, N.J.
Division of Ser. No. 858,749, Sept. 17, 1969, Pat. No. 3,636,723. This application Sept. 20, 1971, Ser. No. 182,236
Int. Cl. F25b *43/00*
U.S. Cl. 62—503 **2 Claims**



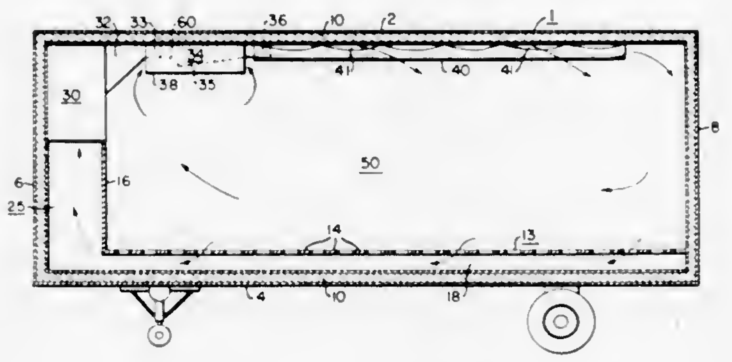
A refrigerant accumulator in the suction line of a closed refrigeration system, provided with a controllably heated metering tube between the bottom of the accumulator and a downstream point in the suction line, to ensure at least adequate re-evaporation of the refrigerant, to eliminate slugging and to return oil to the compressor, particularly during the hot gas defrosting portion of the refrigeration cycle, the heating being effected electrically or by means of hot gas from the compressor.

3,792,595
TRANSPORTABLE REFRIGERATION APPARATUS FOR PRESERVING PERISHABLES

Leonard L. Willis, Minneapolis, Minn., assignor to Thermo King Corporation, Minneapolis, Minn.
Filed Oct. 26, 1972, Ser. No. 301,010
Int. Cl. F25d *17/06*
U.S. Cl. 62—414 **5 Claims**

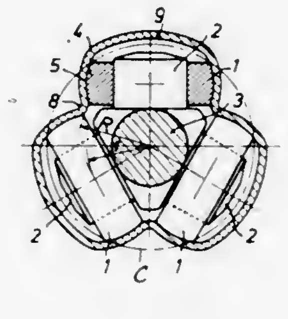
This invention relates to cooling apparatus used within a transportable refrigeration compartment for preserving

perishables. The apparatus includes the combination of a heat exchanger having an exit nozzle for producing and discharging a gaseous cooling medium and a venturi-type conduit. The venturi conduit comprises an exit end and a flared inlet end which is aligned longitudinally apart from the heat exchanger exit nozzle and in a predetermined spaced relationship therewith. Gas ambient to the compartment and the cooling medium being ejected from the heat exchanger can be mixed within the flared end, with the tempered mixture being exhausted through the venturi conduit exit end and into the storage compartment. To provide an induced circulation of the tempered mixture throughout the compartment, the venturi conduit flared inlet end and the heat exchanger exit nozzle may be enclosed by a hollow duct having both the front and back walls removed so as to induce an aspiration effect therein.



3,792,596
HIGH-CAPACITY HOMOKINETIC COUPLING

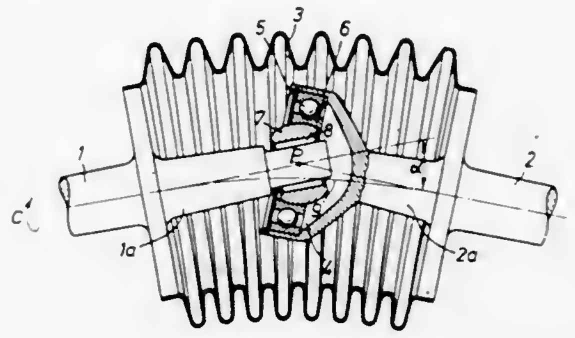
Michel Orain, Conflans-Sainte-Honorine, France, assignor to Societe Anonyme: Glaenzer Spicer, Poissy, France
Filed July 7, 1972, Ser. No. 269,572
Claims priority, application France, Jan. 25, 1972, 72.02364
Int. Cl. F16d *3/30*
U.S. Cl. 64—21 **8 Claims**



A high-capacity coupling for the homokinetic transmission of rotary movement comprises a shell rigidly attached to a shaft or other transmission element. It defines three rectilinear rolling ways for part-spherical rollers which rotate and slide axially on respective axles carried by a transmission shaft. In transverse section the rectangles circumscribing the roller profiles intersect in pairs at their inner corners. The roller diameter and axial length and the distance of the centre of each roller from the axis of the coupling are so chosen that their product is maximal for a given diameter of the circumscribing the rollers and for a shaft resistance homogenous with that of the rolling bodies. This product is indicative of the capacity of the coupling.

3,792,597
RADIAL CENTERING DEVICE FOR HIGH SPEED TRANSMISSION COUPLINGS

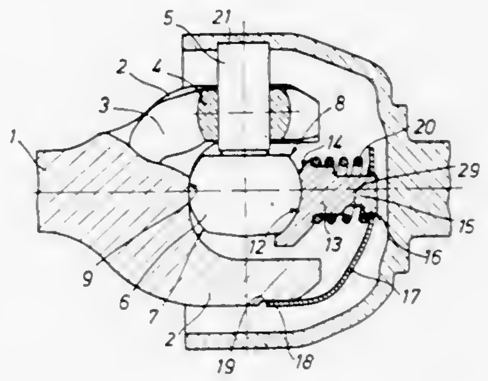
Michel Orain, Conflans Sainte-Honorine, France, assignor to Societe Anonyme: Glaenzer Spicer, Poissy, France
Filed Nov. 15, 1971, Ser. No. 198,734
Claims priority, application France, Nov. 24, 1970, 7042175
Int. Cl. F16d *3/16*
U.S. Cl. 64—7 **7 Claims**



A radial centering device for high speed transmission couplings of the type having a ball-and-socket joint. The ball is disposed at the end of an extension of a first shaft and the socket is disposed at the end of an extension of a second shaft. A first bearing is interposed between the needle or roller and the extension of the first shaft and a second bearing is interposed between the socket and the extension of the second shaft. The ball sliding relative to the shaft on during a change of the operating between the two shafts.

3,792,598
INTERNAL BIASING ASSEMBLY AXIALLY RETAINING COUPLINGS

Michel Orain, Conflans-Saintephonorine, France, assignor to Societe Anonyme: Glaenzer Spicer, Poissy, France
Filed Jan. 19, 1973, Ser. No. 324,991
Claims priority, application France, Mar. 14, 1972, 72.08866
Int. Cl. F16d *3/30*
U.S. Cl. 64—21 **15 Claims**



An assembly for internal biasing and axially retaining a constant velocity universal joint of the type having a cup-shaped member, a forked member, spindles received in rollers for rolling and sliding in races formed between the prongs of the forked member, the spindles being associated with a knoblike portion. The assembly assures a constant biasing force for maintaining the contact between the knoblike portion and the closed inner end wall of the forked member. The biasing force is exerted by a coil spring arranged between the knoblike portion and a retaining clip adapted to be secured onto the prongs of the forked member for effectively joining the cup-shaped member to the forked member. A push member is provided having a spherical cavity for contact with the knoblike portion at one end and a portion with an enlarged polygonal cross-sec-

3,792,602

ans on at least one of said members so as to plastically deform tion at its other end which extends through a corresponding hole in the retaining clip when the arms are being secured to the prongs and retracted when the other end portion is in alignment with the hole in the clip for guiding thereon. The apices of the portion having the polygonal cross-section latch the push member relative to the clip, and may be released by pivoting the forked member relative to the cup-shaped member which causes cam surfaces on the push member to rotate the push member into or out of alignment with the corresponding hole in the clip. In addition or alternatively fingers with latching teeth may be provided with an equal number of corresponding holes in the clip.

3,792,599
TRANSMISSION DEVICE FOR DRIVING COAXIAL PINIONS, PARTICULARLY FOR THE SYNCHRONISED DRIVING OF TWO NEEDLE BEDS OF A CIRCULAR KNITTING MACHINE

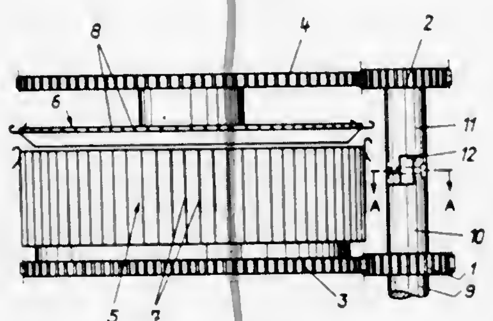
Norbert Paul Bourgeois, Troyes, France, assignor to Etudes et Bonneterie SA, Lausanne, France

Filed Jan. 13, 1972, Ser. No. 217,525

Claims priority, application Switzerland, Jan. 26, 1971, 1157/71

Int. Cl. D04b *9/06*

U.S. Cl. 66—28 **6 Claims**



In a circular knitting machine with two needle beds and a pair of coaxial pinions each meshing with a toothed crown integral with a respective needle bed, the pinions are driven by two members each coaxial to and integral with a respective one of the pinions and secured together with a wedge-shaped part between two spaced-apart facing bearing surfaces of the members. By inverting the wedge-shaped part, the relative angular disposition of the pinions is modified and consequently the needles of one bed are shifted in relation to the needles of the other bed.

3,792,600
DISCHARGING DEVICE ON A ROTATABLE DRUM

Lars-Goran Hendriksson, Ronneby, Sweden, assignor to Aktiebolaget CTC, Gothenburg, Sweden

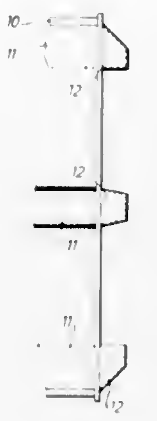
Filed Aug. 22, 1972, Ser. No. 282,800

Claims priority, application Sweden, Aug. 23, 1971, 10681/71

Int. Cl. D06f *39/12*

U.S. Cl. 68—210 **5 Claims**

A device at the discharge end of a rotating drum, e.g. in a washing machine, through which elongated, flexible objects such as bed sheets are transported, for preventing the discharged objects from being twisted or turned when placed on a conveyor band located below the drum. The drum is, at the discharge end, provided with projecting members designed to lift momentarily a discharged portion of an object from the conveyor band during the rotation of the drum.



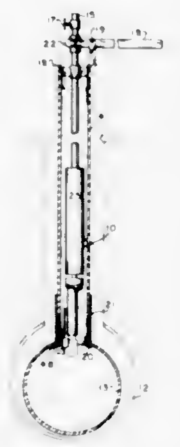
3,792,601
PNEUMATIC TOOL FOR REVERSE WORKING SEWER CONNECTIONS

Frank W. Dillingham, Boerne, and J. C. Dudley O'Fiel, Jr., Houston, both of Tex., assignors to Shur-Flo, Inc., Houston, Tex.

Filed Oct. 26, 1972, Ser. No. 301,229

Int. Cl. B21b

U.S. Cl. 72—76 **11 Claims**



A rotating, air driven working tool which may be placed in a sewer line a distance remote from the operator and be controlled and caused to reverse peen or roll a lead collar thereby securely attaching a house lateral to the primary sewer line. The preferred embodiment of the tool comprises a spring loaded air hammer tiltably secured to a housing containing pressure regulator and oiler connected to an air motor, planetary reduction gears rotatibly drive the lower component and the air hammer. In the secondary embodiment, a reverse tolling tool is utilized in lieu of the air hammer. The tool is positioned and controlled by an extension arm adjustably secured to a lateral tubing insert tiltably supporting a control handle which positions and tensions the tool in operating contact.

3,792,602
APPARATUS FOR FORMING PLATES OF IRREGULAR SHAPE IN CROSS-SECTION

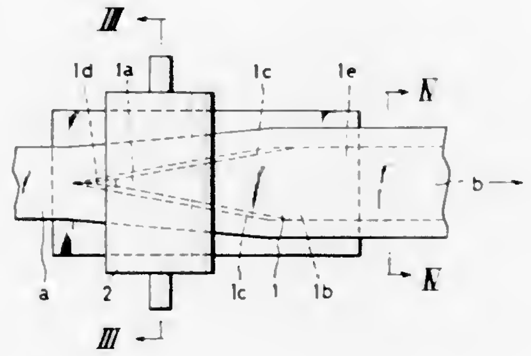
Hiroshi Fukuda, Iwata, Japan, assignor to Kabushiki Kaisha Kawai Gokki Seisakusho, Hamamatsu-shi, Shizuoka-ken, Japan

Filed Aug. 30, 1972, Ser. No. 284,869

Claims priority, application Japan, Aug. 19, 1972, 46-82465

Int. Cl. B21d *7/02*

U.S. Cl. 72—220 **11 Claims**



A plate-form die is used in combination with a reciprocating roller, a strip of plate material being passed incrementally between the roller and die. The die includes a wedge shaped leading end portion to form a groove in the plate material.

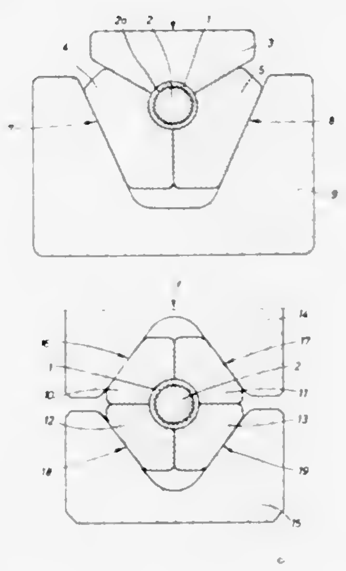
3,792,603
APPARATUS FOR ASSEMBLING TWO PARTS INTO INTERLOCKED AND INTERFITTING RELATIONSHIP

Michel Orain, Courbevoie, France, assignor to Societe Anonyme: Glaenzer Spicer, Poissy, France

Continuation of Ser. No. 833,373, June 16, 1969, abandoned.
This application July 26, 1972, Ser. No. 275,288

Int. Cl. B21d *41/00;* **B21j** *7/16*

U.S. Cl. 72—402 **6 Claims**



The present invention relates to a process consisting essentially, for permanently assembling an outer tubular part, or a part comprising a tubular portion and an inner part having a grooved profile, and of greater hardness than the outer part, in carrying out a strong radial clamping, by means of an hydraulic or other type of press, simultaneously on at least a large portion of the periphery of the said outer part by means of a tool capable of carrying out the said radial clamping in accordance with at least three equidistant radii and comprising at least three members exerting thrusts directed towards the longitudinal axis common to both parts, by means of the press ans on at least one of said members so as to plastically deform the said outer part by swaging ans by inserting in the bore thereof the grooves of the inner part positionned on either side of the thrust lines.

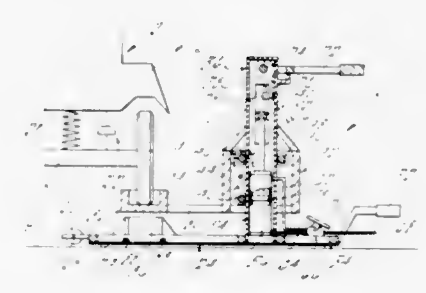
3,792,604
SHOCK ABSORBER TESTING APPARATUS

John H. Fader; Johan H. Keijzer, both of Hasselt, and Willy R. J. Pierle, Hakendover, all of Belgium, assignors to Monroe Belgium N.V., St. Truiden, Belgium

Continuation of Ser. No. 876,546, Nov. 13, 1969, abandoned.
This application Jan. 7, 1972, Ser. No. 216,308

Int. Cl. G01m *17/04*

U.S. Cl. 73—11 **11 Claims**



An apparatus for testing vehicular shock absorbers in situ upon a vehicle having a sprung portion and supporting wheels, the apparatus comprising a support structure, elevating means on the structure engageable with one supporting wheel of a vehicle and adapted to exert an upwardly directed force thereagainst and thereby raise the wheel and that portion of the vehicle supported thereby from a relatively non-elevated position to a relatively elevated position, means for permitting the elevated wheel and portion of the vehicle supported thereon to fall from the elevated position to the non-elevated position, and means for sensing the relative motion between the sprung portion of the vehicle and the vehicle wheel during and after the fall thereof and thereby determine the rebound and compression characteristics of the associated shock absorber.

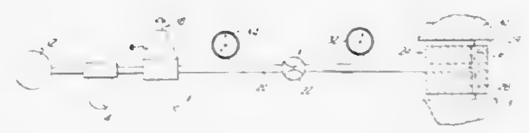
3,792,605
METHOD AND CIRCUIT FOR FLUID PRESSURE GAGING

Richard Rabenau, Tipp City, Ohio, assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 20, 1972, Ser. No. 236,006

Int. Cl. G01b *13/00, 13/10*

U.S. Cl. 73—37.9 **2 Claims**



A back pressure gaging circuit is disclosed of the type wherein gage tooling provided with one or more fluid jets disposed to be directed at a surface of a workpiece, with variations in the distance between the gage tooling and the workpiece causing variations in the effect the workpiece has on the pressure upstream of the jet, which effect is utilized to measure this distance. In the present invention, the pressure upstream of a fixed restriction which is in turn upstream of the gage tooling is adjusted so as to maintain a constant pressure at the reading head through variations in distance to the workpiece. The variations in pressure upstream of the restriction are then utilized to measure the variations in distance to the workpiece.

3,792,606

placed in separate receptacles, subject to a fluid pressure and

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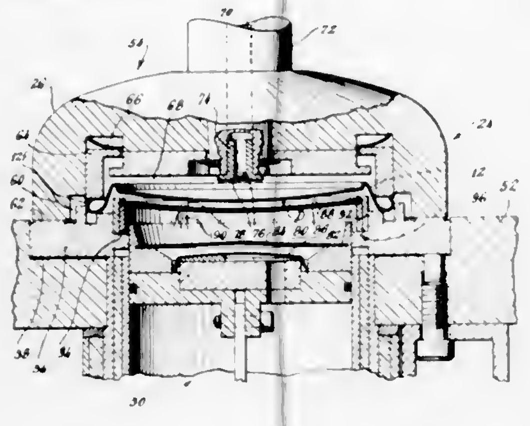
3,792,606
METHOD AND APPARATUS FOR ENHANCING DETECTION OF SMALL LEAKS IN ARTICLES

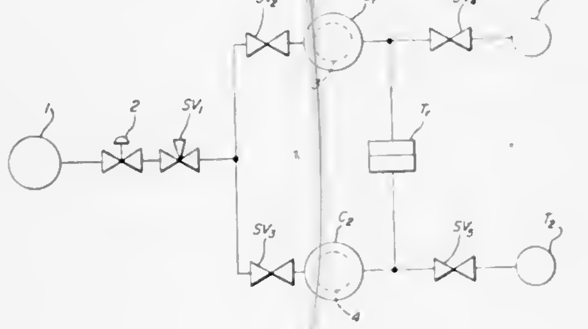
Donald W. Munger, New Milford, Conn., assignor to American Can Company, Greenwich, Conn.
Filed Apr. 17, 1972, Ser. No. 244,807
Int. Cl. G01m *3/24*
U.S. Cl. 73—40 **12 Claims**



In testing apparatus used for high speed production line leak testing of container ends, bodies and the like, and of the type comprising means for applying pressurized fluid such as air to a surface of the article to be tested and detecting means such as a microphone positioned adjacent the article to respond to high frequency sound vibrations caused by passage of the pressurized fluid through leakage openings, there is provided an improved sound augmentation means and method capable of enhancing the detectibility of leakage openings in the tested articles. The sound augmentation means comprises a fine mesh screen or grid positioned out of contact with the article but closely adjacent and uniformly spaced from the surface thereof for intercepting the passage of the pressurized fluid through any leakage openings in the article. At least some of the energy of said leaking pressurized fluid is converted to a form to which said detecting means responds, thereby augmenting the detection of leakage vibrations by the detecting means. To detect leakage openings in typical applications, the screen is spaced from the surface of the article to be tested by a distance of e.g., about one-sixteenth to one-eighth inches, and the screen is of fine mesh, e.g., 120 mesh screen made with stainless steel wire of 0.003 to 0.007 inches diameter.

3,792,607
AIR LEAKAGE DETECTOR USING A DIRECT PRESSURE SYSTEM

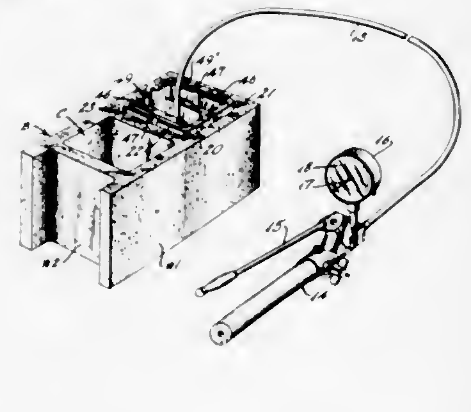
Akira Fukuda, 2-22-8 Kasuga-cho, Nerima-ku, Tokyo, Japan
Filed May 5, 1972, Ser. No. 250,751
Claims priority, application Japan, Aug. 7, 1971, 46-59834
Int. Cl. G01m *3/02*
U.S. Cl. 73—49.3 **1 Claim**



An apparatus for the detection of both small and large leaks in articles. A test article and a reference article are each placed in separate receptacles, subject to a fluid pressure and the receptacles isolated from each other. Should a small leak be present a difference in pressure will appear between the two receptacles. For detecting large leaks, an additional receptacle is placed in communication with each of the receptacles and the pressure difference is checked.

3,792,608
TENSION TESTING OF BUILDING UNITS

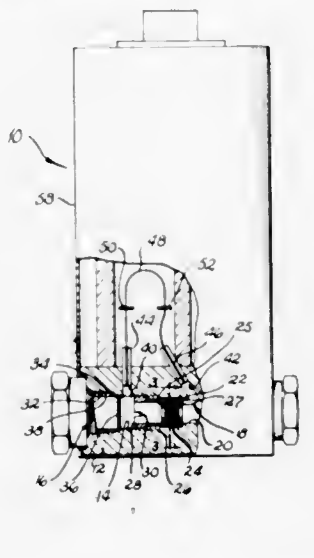
Thomas A. Holm, Waldwick, N.J., and Lester K. Childress, Richmond, Va., assignors to Solite Corporation, Richmond, Va.
Continuation-in-part of Ser. No. 75,907, Sept. 28, 1970, abandoned. This application Sept. 8, 1972, Ser. No. 287,313
Int. Cl. G01n *3/10*
U.S. Cl. 73—97 **9 Claims**



Building units, such as concrete blocks, are tested by inserting an expandable member within a core of the block with means for applying uniaxial force from the expandable member against opposite walls of the core at the appropriate location and properly oriented so that the force is distributed along such walls, and increasing the force until the walls fracture, the force required to fracture the wall being measured by the apparatus.

3,792,609
FLOW SPLITTER

Richard F. Blair; Roger J. Hill, both of Torrance, and Dan B. Le May, Palos Verdes Estates, all of Calif., assignors to Tylan Corporation, Torrance, Calif.
Filed May 10, 1971, Ser. No. 141,897
Int. Cl. G01f *1/00*
U.S. Cl. 73—205 R **14 Claims**

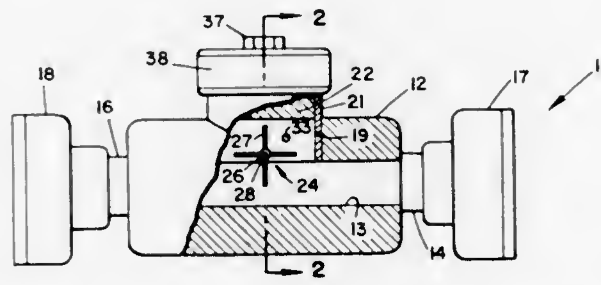


A flow splitter in which a laminar flow conduit is connected in parallel to a flow element defining large numbers of closely spaced passageways, each passageway having an effective diameter sufficiently small for assuring laminar fluid flow.

Linear flowmeters are provided which include as flow restrictors: a plurality of fine mesh disks juxtaposed to obtain a predetermined pressure drop; screen material formed into a hollow, length-adjustable member; screen material spirally wound around a mandrel; and a porous plug of compressed, sintered particles.

3,792,610
FLOW METER

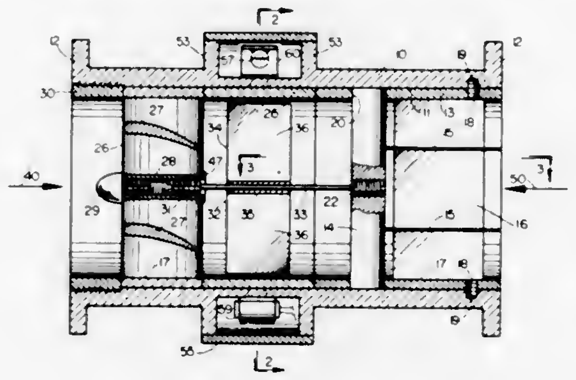
Bill Kountanis, Oakley, and Paul V. Piper, Hayward, both of Calif., assignors to BPN Associates, Inc., Oakley, Calif.
Filed Oct. 4, 1971, Ser. No. 186,019
Int. Cl. G01f *1/06*
U.S. Cl. 73—229 **6 Claims**



A flow meter wherein increased linear flow range is obtained by providing a straight through flow path with very little pressure drop through the device in conjunction with a paddle wheel of low inertia design and detection system devoid of the introduction of rotational drag. The meter also features a simple pulse detection and digital processing circuit for processing the detected flow rate signal without requirement of expensive regulated power supplies and precision components.

3,792,611
UNIDIRECTIONAL FLOWMETER INDICATING CHANGES OF FLOW DIRECTION

Zdenek Vaclav Kozak, 5656 Bakman Ave., and Josef Jaromir Stupecky, 5650 Fair Ave., both of North Hollywood, Calif.
Filed Jan. 17, 1972, Ser. No. 218,094
Int. Cl. G01f *1/00*
U.S. Cl. 23—231 R **11 Claims**

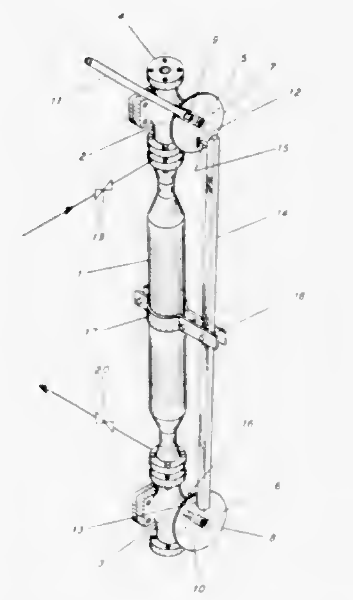


A unidirectional flowmeter of the design having a central bore with a stator installed therein, and a rotor mounted axially in the bore. The stator is assembled from a plurality of helically curved vanes, each of them having a curved peripheral support mating the next vane in the stator assembly. These vanes, extend to the center of the bore, and form an enclosure for the upstream bearing housing. The stator introduces rotary motion into the flow of fluid through the meter body and thereby the rotor having two straight radial blades, is rotated.

In the event that reversed flow of fluid occurs, a bearing support column produces a wake in the flow of fluid within the meter body. The wake is separated from streamlined flow by a barrier of intensive vortices. These vortices causing the rotor to stop within the wake and align itself with the bearing support column. A photo-electronic pickup device is used to respond to the rotation of rotor and to indicate its position while being stopped.

3,792,612
SAFETY INTERLOCK FOR A PARTICULATE SOLIDS SAMPLER

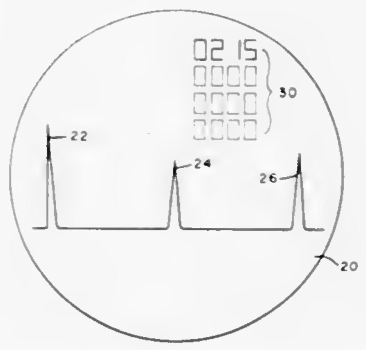
David G. Lammel, Manhattan Beach, and Ronnie C. Neidigh, Anaheim, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.
Filed Feb. 1, 1973, Ser. No. 328,801
Int. Cl. G01n *1/10*
U.S. Cl. 73—421 B **3 Claims**



An apparatus for withdrawing samples of particulate solids, e.g., catalysts, from a bed of particulate solid material located in a vessel. The apparatus prevents simultaneous opening of both sampler valves which can lead to fire or personal injury, since the material is normally under superatmospheric pressure and at elevated temperatures. The apparatus comprises a sample receiver, an inlet and outlet valve, and an interlock for the valves to insure that both cannot be opened simultaneously.

3,792,613
PULSE-ECHO ULTRASONIC TEST APPARATUS WITH CATHODE RAY TUBE DIGITAL DISPLAY

John W. Couture, Danbury, Conn., assignor to Krautkramer-Branson, Incorporated, Stamford, Conn.
Filed May 19, 1972, Ser. No. 255,187
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.9 **28 Claims**

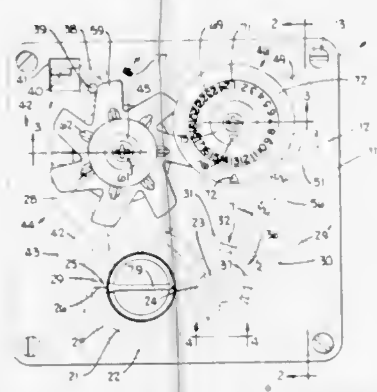


In an ultrasonic pulse-echo test apparatus a two-coordinate display and digital data correlated with certain parameters of

direction. The unbalance shaft has bores. A socket head cap member is permitted. With this arrangement, and for either the two-coordinate display are displayed on the same cathode ray tube screen. To this end, the apparatus comprises a pulse-echo ultrasonic circuit and a digital character writing circuit. Both circuits are synchronized by a common timing means and are alternatingly coupled by multiplexing means to the deflection amplifiers of the CRT. Means are provided to convert pulse-echo analog information to digital information, to select the desired analog information for display, and to cyclically control the writing of the two-coordinate display and of the digital information.

3,792,614
PROGRAMMER GEAR DEVICE WITH SLIDABLE ACTUATOR BAR

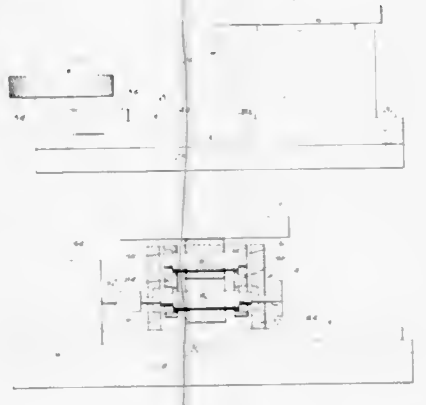
Earl P. Brane, P.O. Box 605, Largo, Fla.
Filed May 23, 1972, Ser. No. 256,172
Int. Cl. F16h *5/82*
U.S. Cl. 74—3.54 **7 Claims**



A programmer device having a controllable output shaft. An electric motor is mounted to a frame and is coupled through gears to a clock drum which has a projection thereon. A multiarm member is rotated by the projection and has movable pins thereon engageable with a slidable arm which moves against a stop on a geared wheel causing rotation thereof. The motor is coupled through a plurality of gears to a driver which is in meshing engagement with the geared wheel. A gap in the teeth of the geared wheel allows for the disengagement with the driver until the arm causes rotation of the geared wheel so that the driver is positioned out of the gap. An output shaft is connected to the geared wheel and rotates therewith.

3,792,615
PRECISION POSITIONING MECHANISM, PARTICULARLY FOR POSITIONING TEST PROBES AND THE LIKE WITH RESPECT TO MICRO-ELECTRONIC UNITS

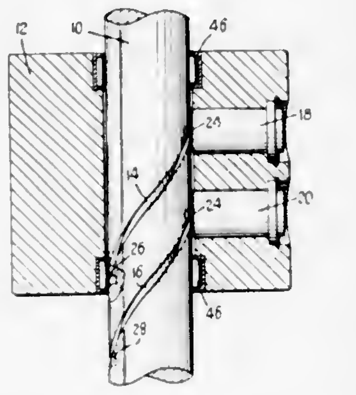
John S. MacIntyre, Lynnfield, and Johnny T. Kirpatrick, Lowell, both of Mass., assignors to Teledyne, Inc., Hawthorne, Calif.
Filed May 15, 1972, Ser. No. 253,333
Int. Cl. F16h *21/22*
U.S. Cl. 74—44 **6 Claims**



A Z axis movement, for causing movement of an array of microelectronic units into and from contact with test probes or the like comprises a base plate, which can be levelled with the aid of an associated bubble level and a three point set of adjusting screws, and a vertically reciprocable support for the array, which is constrained by depending tongues that slide in guideways fixed with respect to the base plate and by an eccentric linkage that controls extreme positions of the support in response to precision actuation of a stepping motor.

3,792,616
RECIPROCATING DRIVE

Milford N. Wentzel, Rye, N.Y., assignor to Norco, Inc., Ridgefield, Conn.
Filed Feb. 7, 1973, Ser. No. 330,280
Int. Cl. F16h *25/12*
U.S. Cl. 74—57 **7 Claims**



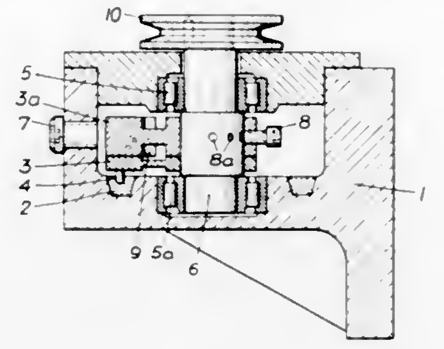
A reciprocating drive mechanism comprising an elongate shaft and a collar which fits around the shaft and is slidable lengthwise thereof. The shaft has one or more grooves cut into it, each groove constituting a closed loop. If multiple loops are provided on the shaft they are all identical to and arranged in conformity with each other. The collar has one or more roller pins projecting into its bore and adapted to be accommodated respectively in the grooves of the shaft. The roller pins are carried by means of anti-friction bearings which enable them to turn easily and with the least amount of friction. The shaft grooves preferably have divergent walls, and the rollers have conical tips adapted to engage and ride along the walls in the manner of a roller following a track. Additionally, the rollers are spring biased inwardly to insure proper loading contact of each roller with a wall of its respective groove. At its two ends, the collar carries annular needle bearing assemblages which ride on the shaft and centralize the latter in the collar as well as providing a low friction bearing for the shaft. Any continued relative movement between the shaft and collar is characterized by a reciprocation of the latter with respect to the shaft.

3,792,617
UNBALANCE VIBRATOR FOR SETTING OF CONCRETE IN SHEET-STEEL-MOLDS OF MACHINES FOR PRODUCTION OF CONCRETE-STONES OR CONCRETE-FINISHED PRODUCTS

Heinrich Strasser, Teufenbach 134, and Hans Krapinger, Teufenbach 60, both of Teufenbach, Austria
Filed Aug. 3, 1972, Ser. No. 277,770
Int. Cl. F16h *7/08*
U.S. Cl. 74—87 **4 Claims**

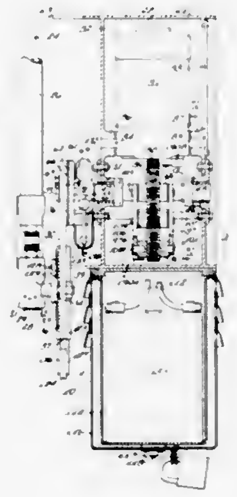
An unbalance vibrator for setting of concrete in steel-sheet molds of machines for the production of concrete stones or concrete finished articles, which comprises a housing, a vertical unbalance shaft, two unbalance weights settable relative to each other and disposed on top of each other, to provide an upper and a lower unbalance weight. The lower unbalance weight is rigidly secured to the unbalance shaft by means of a hub. The upper unbalance weight is settable in peripheral

direction. The unbalance shaft has bores. A socket head cap screw is received in the hub of the upper unbalance weight, and enters the bores of the unbalance shaft. The housing has an opening, and a cover screw closes the opening, and the latter renders accessible the socket head cap screw.



3,792,618
SWITCH OPERATING DEVICE

Matthew L. Worrix, Sheridan, Oreg., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Dec. 18, 1972, Ser. No. 316,363
Int. Cl. F16h *27/02*
U.S. Cl. 74—89.15 **6 Claims**

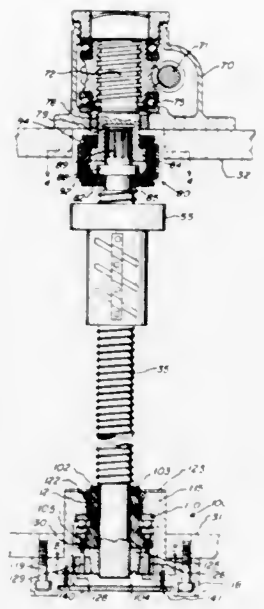


A remotely located self-contained switch operating device is provided which includes an independent power source connected to energize a drive motor that is arranged to actuate a screw and nut drive mechanism for effecting the operation of a remotely located switch in an opening or closing movement.

3,792,619
CONSTANT TENSION BALL SCREW FEED DESIGN

Robert E. Cannon, Box 629, Hibbing, Minn., and Walter L. Pehoski, St. Paul, Minn., assignors to said Cannon, by said Pehoski
Filed Aug. 31, 1972, Ser. No. 285,531
Int. Cl. F16h *27/02*
U.S. Cl. 74—89.15 **11 Claims**

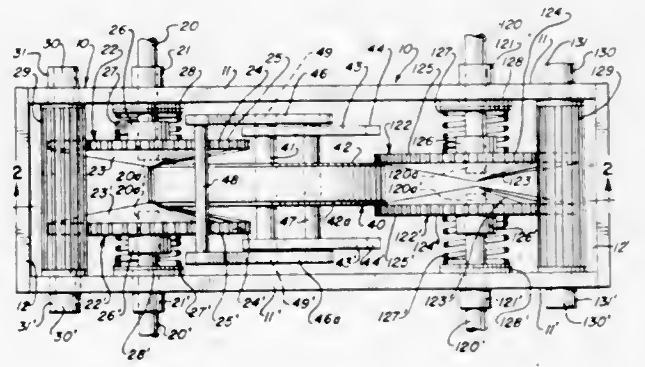
The invention herein is directed to a constant tension arrangement for a lead or ball screw drive for the purpose of preventing compressive forces from acting on an elongated ball screw or lead screw member to deform the same. The constant tension arrangement is provided by means of a bearing mounting in which thrust bearings are positioned on the ends of the screw member in such a manner that axial displacement in the direction of the support for the screw member is permitted. With this arrangement, and for either direction of motion of the driven nut thereon, any loading will effect a constant tension force on the ball or lead screw



member opposite that of the loading permitting the remainder of the screw member to move axially and prevent compressive loading of the same.

3,792,620
INFINITELY VARIABLE ROTATIONAL SPEED TRANSMITTING DEVICE

Emery J. Lukitsh, 10 S. 151 Wileden, Naperville, Ill.
Filed Aug. 14, 1972, Ser. No. 280,213
Int. Cl. F16h *15/08*
U.S. Cl. 74—200 **6 Claims**



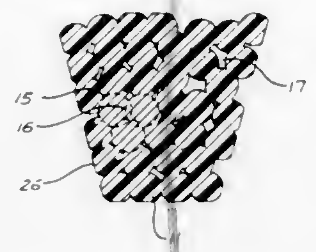
The present invention provides a low cost, versatile rotational speed changing and transmitting device which operates by transmission of power from conical input disks to a centrally located movable idler disk to conical output disks for transmission to an output shaft, the position of the idler disk determining the output speed.

3,792,621
DRIVE BELT

Thomas R. Smith, 710 W. 11th St., Newton, Iowa
Filed Oct. 11, 1972, Ser. No. 296,516
Int. Cl. F16g *5/00*
U.S. Cl. 74—231 R **5 Claims**

A drive belt is formed of a generally continuous filament of polyurethane material extending repeatedly around the length

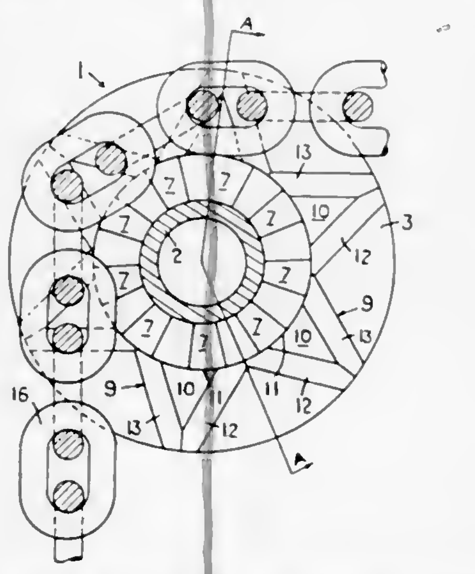
bush insertion holes is increased compared of the belt to form a multiplicity of strands. The circumferential strands are integrally interconnected along the con-



tiguously adjacent surfaces of the individual strands to form a generally unitary belt construction.

3,792,622
ROPE AND CHAIN HAULING DEVICES

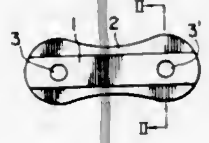
Gordon M. Lyall, Glasgow, Scotland, assignor to Simpson-Lawrence Limited, Glascow, Scotland
Division of Ser. No. 121,400, March 5, 1971. This application Feb. 21, 1973, Ser. No. 335,135
Int. Cl. F16h *55/30*
U.S. Cl. 74—243 H **2 Claims**



A rope and chain hauling device according to the invention is used for hauling aboard ship the anchor which is normally secured to the ship by a rope and chain. The device, which is in the form of a gipsy or chain wheel, has a hub with side portions so constructed adjacent the boss as to wedgedly grip a rope and having protuberances remote from the hub adapted to engage the links of a chain.

3,792,623
ROLLER CHAINS AND THE METHOD OF MANUFACTURING THE SAME

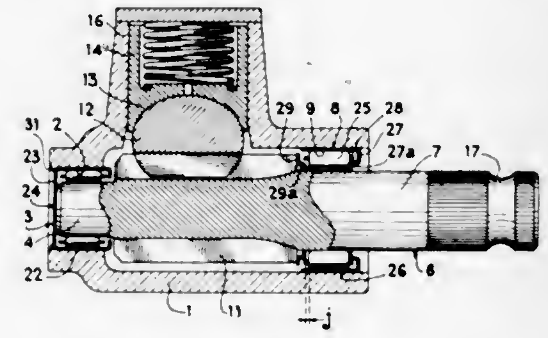
Tatsuo Kuratomi, 2-18, 4-Chome, Hamatake, Kanagawa Prefecture, Chigasaki, Japan
Filed May 2, 1972, Ser. No. 249,657
Claims priority, application Japan, May 12, 1971, 46-31184; May 12, 1971, 46-31185
Int. Cl. F16h *13/02*
U.S. Cl. 74—250 R **3 Claims**



Improvements in and relating to roller chains and method of manufacturing the same, wherein axial dimension of the pin insertion holes or bush insertion holes is increased compared to the case of a planar link plate to increase the contact area between link plate and pin or bush, thereby preventing the elongation of the chain due to abnormal deformation resulting in the contact portions.

3,792,624
PINION ASSEMBLY DEVICE IN PARTICULAR FOR A RACK STEERING MECHANISM

Alfred Pitner, Paris, France, assignor to Nadella, Rueil-Malmaison, France, a part interest
Filed Mar. 13, 1972, Ser. No. 233,938
Claims priority, application France, Mar. 15, 1971, 7108940
Int. Cl. B62d *3/12;* **F16h** *1/12*
U.S. Cl. 74—422 **10 Claims**

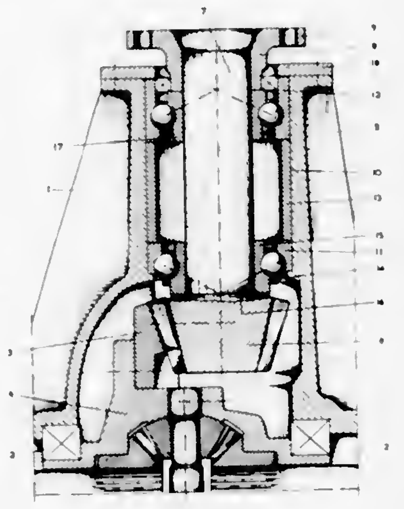


Device comprising a pinion with a rack, in particular for a vehicle rack and pinion steering mechanism. A radial rolling bearing journals one portion of a shaft element having the pinion in a bore of a case. The elongate rolling members of the bearing bear at their ends axially against a radial flange of the ring of the bearing and against a continuous face associated with and in fixed relation to the pinion. A second rolling bearing comprising elongate rolling members contained in a cup journals an end portion of the shaft element in the bore of the case. A radial face on the cup serves directly or indirectly as an abutment for a corresponding face on the shaft element.

A method and an apparatus are disclosed for producing the device.

3,792,625
PINION GEAR TRANSMISSION

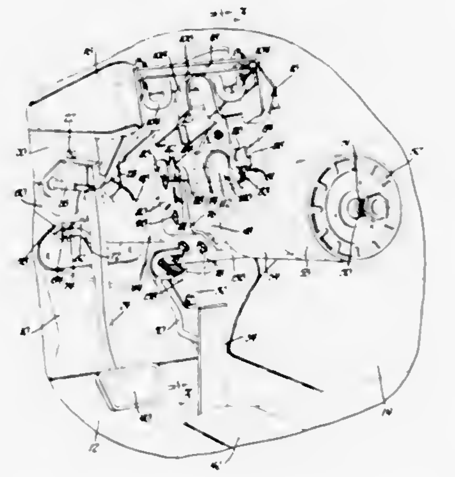
Sture Asberg, Savedalen, Sweden, assignor to SKF Industrial Trading and Development Co. N.V., Overtoom 141-145, Amsterdam, Netherlands
Filed June 28, 1971, Ser. No. 157,594
Int. Cl. F16h *1/14*
U.S. Cl. 74—424 **17 Claims**



Pinion gear transmission comprising a pinion shaft, a pinion wheel at one end of said shaft, connecting means at the opposite end of said shaft for connecting said pinion wheel and shaft to drive means, a housing, bearing means for rotatably supporting said pinion shaft and connecting means relative to said housing, said pinion shaft and connecting means movable axially relative to one another to preload said bearing means and means for permanently fixing said shaft and connecting means with said bearing means preloaded, said shaft, bearing means and connecting means forming an integral unit.

3,792,626
VEHICLE STEERING COLUMN INSTALLATION

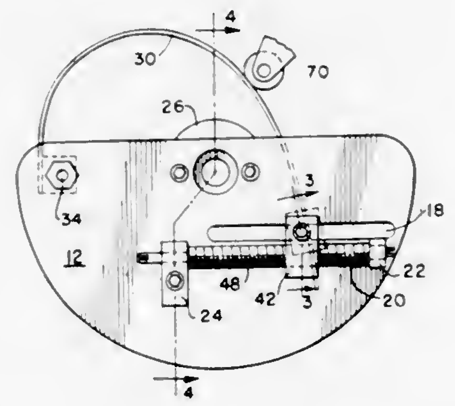
Lyle H. Durkee, Hemlock, and Gail M. Cunningham, Frankenmuth, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Dec. 22, 1972, Ser. No. 317,726
Int. Cl. B62d *1/18*
U.S. Cl. 74—492 **6 Claims**



A vehicle steering system wherein the steering column assembly is adapted for simplified and accurate installation on the body portion of the vehicle, the system including a yoke at the lower end of the steering column assembly defining a pair of trunions, a pair of receptacles on the body portion for receiving the trunions to support the column assembly on the body portion for pivotal movement to a fully installed position, a striker on the body portion, and a latch bolt on the steering column adapted for automatic latching engagement on the striker when the steering column assembly achieves the fully installed position thereby to maintain the column assembly in the fully installed position.

3,792,627
ADJUSTABLE CAM ASSEMBLY

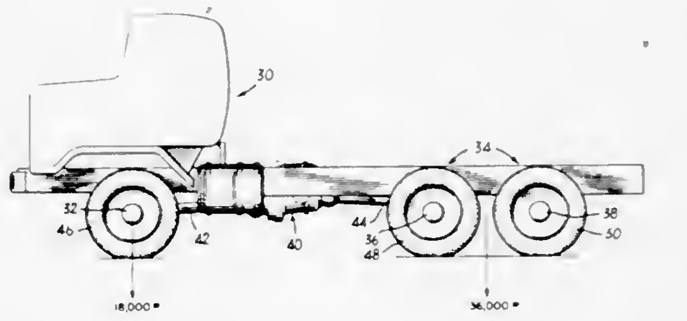
William Robert Tarello, Rockville, Md., assignor to Survival Technology, Inc., Bethesda, Md.
Filed June 21, 1973, Ser. No. 372,297
Int. Cl. F16h *53/00*
U.S. Cl. 74—568 FS **4 Claims**



An adjustable cam assembly wherein the adjustable cam element is a spring strip element having provision for adjustment of length and position of said element to thereby control the cam contour.

3,792,628
TORQUE PROPORTIONING AND SPIN LIMITING DIFFERENTIAL

Robert W. Stieg, Emmaus, Pa., assignor to Mack Trucks, Inc., Allentown, Pa.
Filed July 3, 1972, Ser. No. 268,502
Int. Cl. F16h *1/42, 1/44*
U.S. Cl. 74—714 **13 Claims**



An inter-axle differential for multiple driving-axle vehicles divides the engine-transmission output torque between two axles or axle groups in proportion to the load distribution among the axles or axle groups. The differential is of the planetary-gear type, with one side gear coupled to one axle or group and the other side gear coupled to the other axle or group. The appropriate torque division between the axles is accomplished by sizing the side gears such that the ratio of their diameters approximates that of the respective axle or axle group loads. A spin limiting feature is also provided. A pinion cage is coupled to the engine-transmission system and retains a plurality of pinions on their outside diameters in hardened cylindrical bores which include longitudinally spaced cut away portions on generally opposite sides of the pinions. The two side gears mesh with the exposed portions of the pinion gears, so that when the pinions rotate in the bores, gear separation forces are developed between the pinions and the side gears that are productive of couples which act across the pinions and urge them against the bore walls, thereby transferring torque to the high load side of the differential.

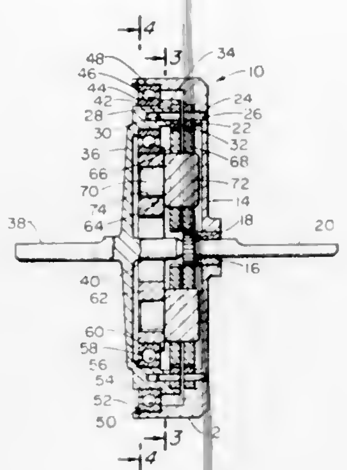
3,792,629
SPEED REDUCER WITH RING AND PLANET GEARS HAVING DIFFERENT CIRCULAR PITCHES

Walter T. Applebury, Long Beach, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.
Filed Dec. 30, 1971, Ser. No. 214,229
Int. Cl. F16h *1/28*
U.S. Cl. 74—801 **2 Claims**

A single stage speed reducer having a speed reduction ratio capability of from 1:1 to over 100,000:1. Ring gear modification of either or both of a static and a mobile ring gear by removal or addition of a tooth and respacing those remaining without changing the ring gear diameter causes the planet gear to "creep" relative to the ring gear as it orbits about the sun

3,792,633

of the programme, I provide an electronic cut correction store gear, the creep occurring at the planet gear/ring gear interface. This results in a mobile ring gear output of one modified tooth spacing orbit of the planet gear about the sun gear. Other configurations result in a partial tooth spacing output movement per orbit.



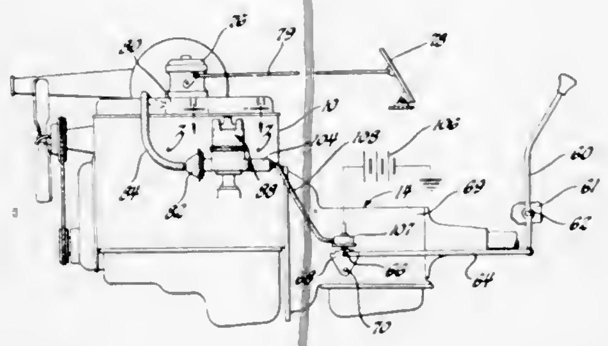
3,792,630
LOW TORQUE SHIFT CONTROLS FOR TRANSMISSIONS

Gilbert K. Hause, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 24, 1972, Ser. No. 309,139

Int. Cl. B60k *21/00, 19/00;* **F02p** *5/04*

U.S. Cl. 74—860 **3 Claims**



When the shift lever of a geared transmission is moved to change the gear ratio, a solenoid is energized to rotate the engine ignition distributor to a maximum spark retard position reducing engine torque to an operating minimum during the shift transition. As the shift is completed the solenoid is deenergized so that the distributor is adjusted to a spark advance position providing the appropriate firing of the combustion chambers for good engine performance.

3,792,631
SPEED RATIO COMPARATOR UNIT FOR CONTROL SYSTEM OF AUTOMOTIVE AUTOMATIC TRANSMISSION

Yoichi Mori, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

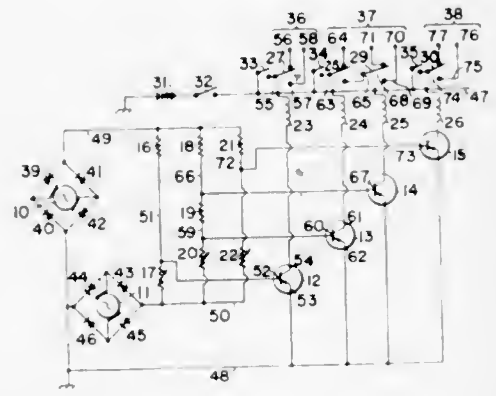
Continuation-in-part of Ser. No. 872,325, Oct. 29, 1969, abandoned. This application Jan. 10, 1972, Ser. No. 216,408

Claims priority, application Japan, Oct. 30, 1968, 43-78834

Int. Cl. B60k *21/00*

U.S. Cl. 74—866 **1 Claim**

An electronic control device used in an automatic transmission of an automotive vehicle having a plurality of forward gear ratios, for generating a plurality of corresponding synchronized signals when the automatic transmission is in a synchronized condition between the engine speed and the vehicle speed multiplied by one of the gear ratios at which ratio shifting of the transmission is to be effected. In the control device, the engine speed is detected at an output shaft of the engine, while the vehicle speed is detected at a driven shaft of the engine and is multiplied by the particular gear ratio selected to be shifted thereto. These two signals are then converted into respective d.c. voltages and subsequently compared with each other by a set of voltage dividers. These voltage dividers render in turn a set of corresponding transistors when the divided voltage assumes a predetermined level dictating that the automatic transmission is in the synchronized condition. With at least one of the transistors rendered conductive, a set of corresponding relays are actuated to switchover its contacts to generate one of the synchronized signals at a correspondingly different output terminal through a governor switch. When the automatic transmission is in an a synchronized condition, on the other hand, the control device generates at its another terminal through the governor switch a throttle control signal indicating that the throttle valve should be opened or closed to make the engine speed change to be synchronized speed in the particular running condition.



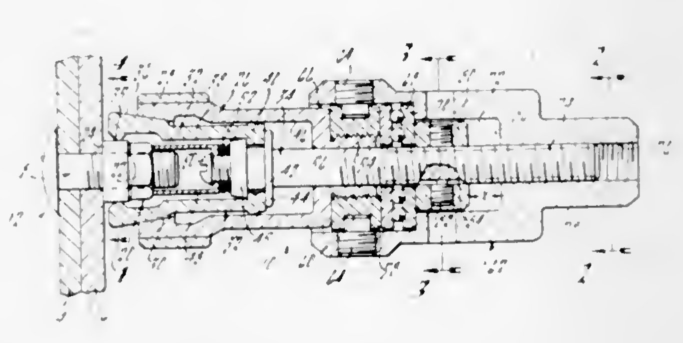
3,792,632
TOOL FOR TORQUING AND CRIMPING FASTENERS

William E. Pinkerton, Dearborn Heights, Mich., assignor to Huck Manufacturing Company, Detroit, Mich.

Continuation-in-part of Ser. No. 112,746, Feb. 4, 1971, abandoned. This application Sept. 14, 1971, Ser. No. 180,328

Int. Cl. B25b *27/00*

U.S. Cl. 81—10 **36 Claims**



A tool for driving and setting fasteners generally of the type shown in the U.S. Pat. to Orloff et al. No. 3,421,562 issued Jan. 14, 1969; this application is a continuation in part of the co-pending U.S. Pat. application Ser. No. 112,746, filed Feb. 4, 1971, now abandoned.

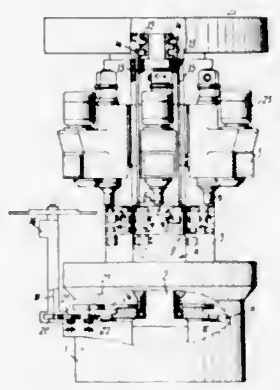
3,792,633
VERTICAL MULTISPINDLE CONTINUOUS LATHE

Vadim Alexandrovich Filipiev, Yaltinskaya 7, kv. 19; Vyacheslav Vladimirovich Kogtev, Kakhovka 27, korpus 1, kv. 70; Tamara Tikhonovna Panferova, Petrozavodskaya 5, korpus 1 kv. 108, and Stanislav Vasilievich Podsoblyaev, Bolshoi Devyatinski per 5, kv. 47, all of Moscow, U.S.S.R.

Continuation-in-part of Ser. No. 316,559, Dec. 19, 1972, which is a continuation-in-part of Ser. No. 57,127, July 22, 1970, abandoned. This application Apr. 2, 1973, Ser. No. 346,906

Int. Cl. B23b *13/04*

U.S. Cl. 82—2.5 **2 Claims**



Each spindle assembly of the lathe has an individual drive and is arranged in a separated housing secured to a face of a rotatable pillar whose faces are intended for accommodating groups of tool rests so that the spindle of each assembly is positioned above the corresponding group of tools. The lathe is provided with a device for loading workpieces and a device for unloading finished articles, which makes the lathe fully automatic. The lathe is particularly effective for machining mass-production articles, e.g., pistons of internal combustion engines, when high efficiency, machining precision and good finish of surfaces are ensured.

3,792,634
APPARATUS FOR CORRECTING PARAMETERS OF THE CUT MADE BY A PAPER GUILLOTINE, AND A PAPER GUILLOTINE HAVING SUCH APPARATUS

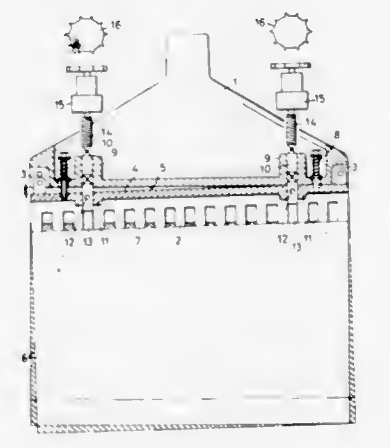
Rudolf Mohr, Hattersheimerstrasse, Hofheim Taunus, Germany

Filed July 28, 1972, Ser. No. 276,158

Claims priority, application Germany, Aug. 2, 1971, 2138499

Int. Cl. B26d *7/06;* **B65h** *7/00*

U.S. Cl. 83—71 **7 Claims**



Paper guillotines can perform repeated cutting cycles in accordance with a predetermined programme which controls the motion of a feed slide of the guillotine; in order to avoid the necessity for manual corrections during the whole course of the programme, I provide an electronic cut correction store so that corrections made by an operator during a first cutting cycle can be fed into the store and used to make the same corrections during subsequent cutting cycles.

3,792,635
APPARATUS FOR HANDLING, TRANSPORTING, AND CUTTING OF STILL UNHARDENED CELLULAR LIGHTWEIGHT CONCRETE BODIES

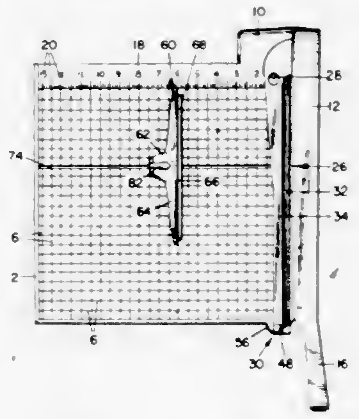
Rolf Erik Goransson, Akarp, Sweden, assignor to Internationella Siporex Aktiebolaget, Malmo, Sweden

Filed Aug. 28, 1972, Ser. No. 284,007

Claims priority, application Sweden, Sept. 8, 1971, 11362/71

Int. Cl. B26d *7/06, 5/20, 7/02*

U.S. Cl. 83—154 **11 Claims**



In manufacturing cellular lightweight concrete products a huge, flat, molded body of still unhardened, semi-plastic cellular concrete mass is transferred from a first support to a second support by an apparatus comprising a vertically and horizontally movable, frame-like body-gripping device rotatable about a horizontal axis, cutting of the body, and, if desired, planing of the top and bottom surfaces thereof, being effected during the transfer by means included in the apparatus. The worked body may be deposited on the second support in its original or in an upside down position.

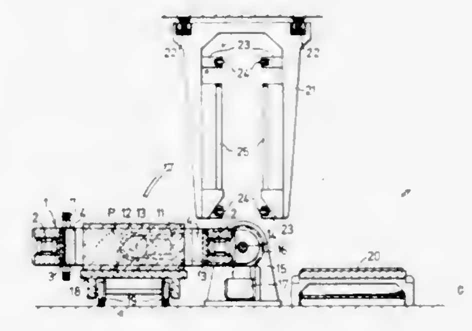
3,792,636
PAPER TRIMMER

Alvin R. Pottern, Longmeadow, Mass., assignor to Milton Bradley Company, East Longmeadow, Mass.

Filed Dec. 5, 1972, Ser. No. 312,319

Int. Cl. B26d *7/16, 7/22*

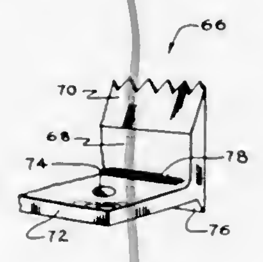
U.S. Cl. 83—468 **6 Claims**



In a trimming board, a rectangular platform having a plane top face and a vertically-disposed metal cutting edge along one side thereof, a cutting knife pivoted to the platform near one end of the cutting edge, a straight edge abutment running along one side of the platform at right angles to the cutting edge, a slot in the plane top face of the platform extending in a direction away from the cutting edge, a guide assembly slidably disposed in the slot in the platform and having a stop portion facing the cutting edge against which one edge of a paper sheet may extend, a releasable lock for locking the guide means within the slot, a finger guard overlying the cutting edge and a releasable lock for releasably locking one end of the finger guard relative to the platform.

3,792,637
ROTARY DIE AND CUTTING RULE

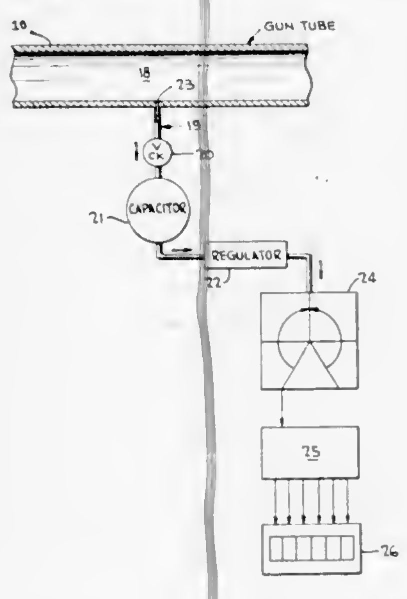
Philip G. Saunders, Toledo, Ohio, assignor to Container Graphics Corporation, Toledo, Ohio
Filed June 7, 1972, Ser. No. 260,482
Int. Cl. B26d *1/12;* **B23d** *35/00*
U.S. Cl. 83—673 **7 Claims**



An improved rotary die and steel cutting rule are provided. The die includes a die plate of precise, uniform thickness throughout its length and width, with the thickness of all die plates being consistent. The steel cutting rule for the die plate includes a metal strip having an upper cutting edge and a structurally-integral flange formed at substantially right angles to the cutting strip with the juncture of the flange and the strip being parallel to the upper cutting edge. The flange of the cutting rule is provided with suitable openings to receive fasteners by means of which the flange is fastened to the upper surface of the die plate. The cutting rule can be provided with a projection or projections on or adjacent the flange to penetrate the upper surface of the die plate to aid in holding the cutting rule in a predetermined position on the die plate.

3,792,638
FLUIDIC ARTILLERY ROUND COUNTER

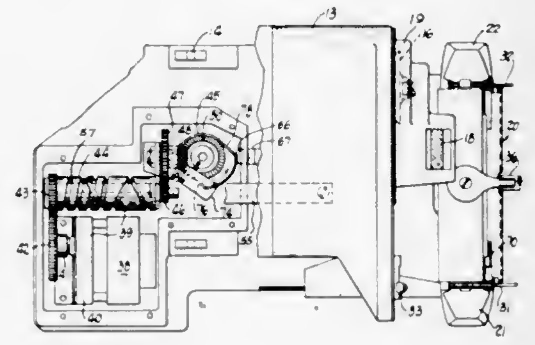
Lyndon S. Cox, Silver Spring, and James W. Joyce, Jr., Rockville, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Aug. 9, 1972, Ser. No. 279,144
Int. Cl. F41f *17/00*
U.S. Cl. 89—14 R **9 Claims**



An apparatus for providing an accurate count of the effective number of rounds fired from an artillery gun tube is provided in combination with such tube. This apparatus uses fluidic components to sense the zone charge and compute the effective rounds fired. The number for the effective rounds is displayed on a mechanical register. The gas from the gun tube is the only source of power for this apparatus. It consists of a check valve, a volume capacitor, a regulator, oscillator, a counter, and a mechanical summing register. Each time an artillery round is fired, gas from the gas tube passes through the check valve, a fluidic diode, and into the capacitor. The gas thus collected in the capacitor is then fed to a fluidic oscillator via a regulator. The fluidic oscillator is the type that has the output frequency independent of temperature. The collected pressure will be a function of the zone charge used, and consequently, the duration of oscillator output is directly related to the zone charge used. Thus, each round fired produces a weighted number of oscillations from the oscillator which in turn are fed into the counter and then to the register for storage and visual display.

3,792,639
KEY MACHINE DRIVE

Robert H. Richens, Macedonia, and Charles A. Garner, Strongsville, both of Ohio, assignors to Cole National Corporation, Cleveland, Ohio
Filed Nov. 20, 1972, Ser. No. 308,284
Int. Cl. B23c *3/35*
U.S. Cl. 90—13.05 **10 Claims**

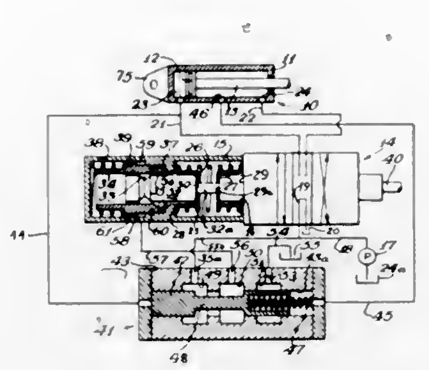


A key machine drive is disclosed wherein a cam drum with first, second and third sections of a cam track have different pitches and cross each other to establish a small compact drive for the key machine and which may establish an automatic cycle of the cutting action of the key machine. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,792,640
AUTOMATIC BUCKET POSITIONING DEVICE

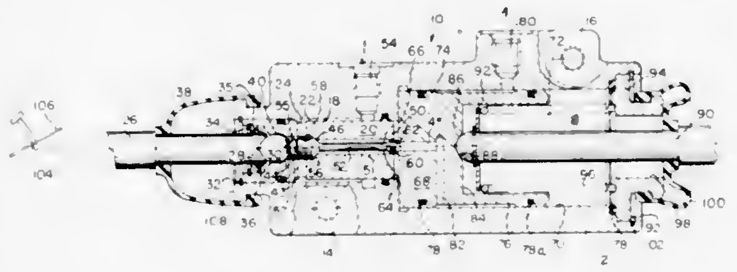
Daniel B. Shore, Niles, Ill., assignor to International Harvester Company, Chicago, Ill.
Division of Ser. No. 71,778, Sept. 14, 1970, Pat. No. 3,698,583. This application Aug. 7, 1972, Ser. No. 278,510
Int. Cl. F15b *13/01, 13/16*
U.S. Cl. 91—358 A **3 Claims**

Hydraulic means operating in conjunction with an hydraulic power unit for automatically stopping in an intermediate position a device whose position is controlled by the hydraulic power unit. A digging bucket is automatically stopped at a digging position intermediate to dumping and breakout positions with respect to a boom arm. A pilot valve connected to an intermediate region of a cylinder of the hydraulic power unit regulates a dump-hold-rack back or roll hack valve for the power unit.



3,792,641
POWER BOOSTER

Radisko S. Gladic, Chicago, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed Apr. 13, 1972, Ser. No. 243,721
Int. Cl. F15b *9/10;* **F16j** *15/18*
U.S. Cl. 91—372 **1 Claim**

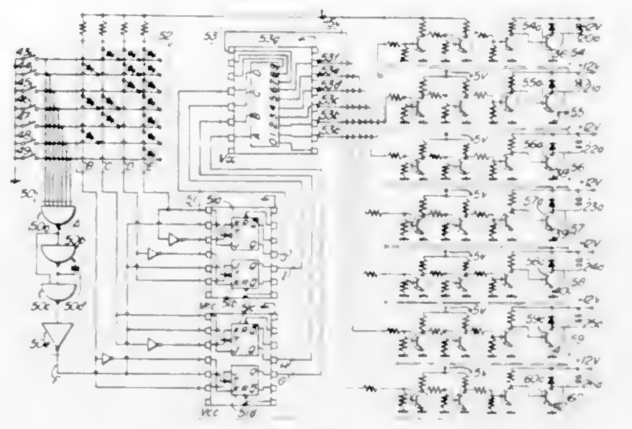


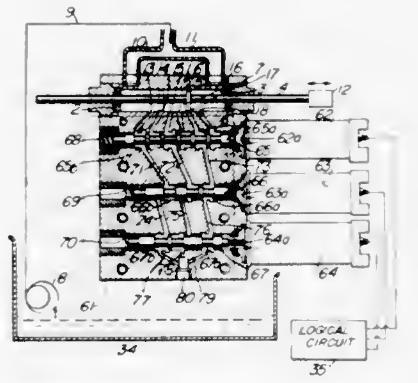
An input piston carrying a double poppet valve which, during actuation, opens a high pressure fluid inlet in the input piston and seals a dump channel in an output poppet valve to form a hydraulic chamber during actuation. Upon deactuation the double poppet valve seals the high pressure fluid inlet channel in the input piston and opens the dump channel.

3,792,642
SYSTEM FOR ELECTRICALLY CONTROLLING THE MOVEMENT OF A LOAD FOR STOPPING SAME AT ONE OF A PLURALITY OF PREDETERMINED POSITIONS

Hiroshi Arai, and Toshihiro Kamiya, both of Toyota, Japan, assignors to Nippondenso Co., Ltd., Kariya-shi, Japan
Filed Feb. 25, 1972, Ser. No. 229,467
Claims priority, application Japan, Mar. 4, 1971, 46-11651
Int. Cl. F15b *9/03, 13/044*
U.S. Cl. 91—51 **5 Claims**

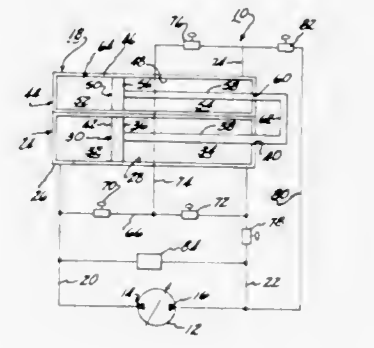
A system for electrically controlling the operation of a spool valve disposed in a hydraulic circuit in a fluid controlled automatic transmission for automotive vehicles so that the valve spool can be reliably moved to and stopped at one of a plurality of predetermined positions thereby changing over fluid passages leading to clutch servo chambers for the engaging and disengaging of the clutches.





3,792,643
FLUID SYSTEM

Robert E. Scheafer, 3325 Newgate Rd., Troy, Mich.
Filed Feb. 17, 1972, Ser. No. 227,057
Int. Cl. F15b *11/16*
U.S. Cl. 91—411 B **10 Claims**



A fluid system having a variable displacement pump fluidly connected through valving means to a fluid linear actuator in such a manner that fluid pressure directed to one portion of the linear actuator causes expansion thereof at a selected rate, while fluid pressure directed to another portion of the linear actuator causes contraction thereof at the same rate. The fluid linear actuator comprises a main fluid cylinder having a piston reciprocably mounted therein, with a piston rod extending from one side of the piston and externally of the main fluid cylinder. The piston divides the main fluid cylinder into expansible pressure chambers, one of which is exposed to the rod carrying side of the piston to generate a force thereagainst when pressurized to move the piston in one direction, while the opposite side of the piston is exposed to the pressure of the fluid in the other pressure chamber which exerts a force to move the piston in an opposite direction. A secondary fluid cylinder is carried by the main fluid cylinder with the longitudinal axes of the secondary and main fluid cylinders being radially spaced and parallel to one another. The secondary cylinder has a piston reciprocably mounted therein forming one pressure chamber on the side of the piston in which a second piston rod is mounted and which piston rod extends from the secondary cylinder for connection with the piston rod of the main fluid cylinder, such that the main cylinder piston and the secondary piston reciprocate together as a unit. The effective pressure responsive area of the side of the piston in the main cylinder opposite the rod carrying side thereof is substantially equal to the sum of the effective pressure responsive area of the rod side of the piston in the main cylinder and the effective pressure responsive area of the rod side of the piston within the secondary cylinder, such that the force generated against the two pistons for moving the pistons in one direction is equal to the force exerted against the pistons for moving the same in the opposite direction. Valving means are provided for interconnecting the pressure chambers associated with both the main and secondary fluid cylinders so that the rate of expansion and contraction of the cylinders may be selectively increased as the force exerted on the pistons is decreased and vice versa to provide a fluid linear actuator having a wide speed-force range.

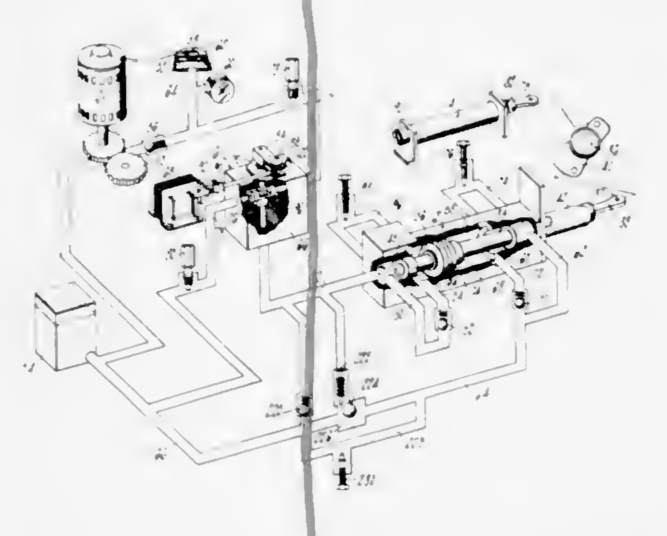
3,792,644
HYDRAULIC OPERATOR AND CIRCUIT THEREFOR

Harold W. Ferguson, New Hartford, and Paul C. Schultheiss, Bristol, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Continuation of Ser. No. 94,479, Dec. 2, 1970, abandoned. This application May 14, 1973, Ser. No. 359,914

Int. Cl. F15b *11/08, 13/04, 15/22*

U.S. Cl. 91—420 **1 Claim**



Disclosed is a hydraulic operator for an automatic door having a hydraulic circuit in which the inlet and discharge lines from the power cylinder are interconnected by a spring-biased operator for a oneway valve disposed in one of the parallel paths of the discharge line. Pressure in the inlet line prevents the seating of the valve to allow unimpeded flow through the discharge line during normal powered operation. Absence of pressure in the inlet line, as under manual operation when power is shut off, allows the valve to seat and discharge flows through a parallel path which is restricted to provide for the controlled manual opening of the door as well as the controlled opening and closing of the door during emergency manual door operation in the opposite from normal direction. Also disclosed is a checking piston design in which the checking piston has an annular clearance with the supporting piston rod for self-alignment with the checking chamber to accommodate misalignment between the checking chamber and the piston rod. Resilient O-rings in the end wall of the checking piston frictionally engage a mating wall to hold the checking piston in its laterally adjusted position.

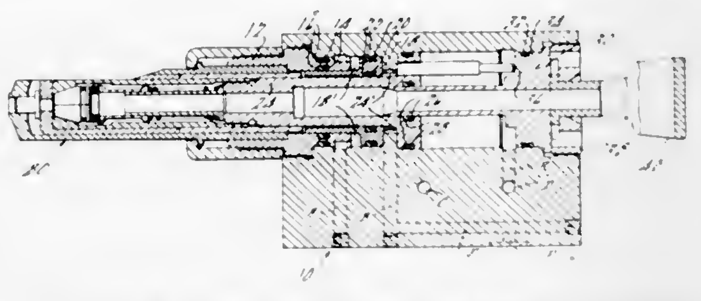
3,792,645
DOUBLE ACTION TOOL CONSTRUCTION

Peter R. Chirco, Utica, and George J. Van Hecke, Fenton, both of Mich., assignors to Huck Manufacturing Company, Detroit, Mich.

Filed Nov. 22, 1972, Ser. No. 308,690

Int. Cl. F15b *11/20*

U.S. Cl. 91—412 **8 Claims**



A new double action tool for use in installation of fasteners and having a new shift valve means construction.

3,792,646
APPARATUS FOR MANUFACTURING A TRAY FOR PACKAGING GOODS IN SHRINKABLE SHEETING

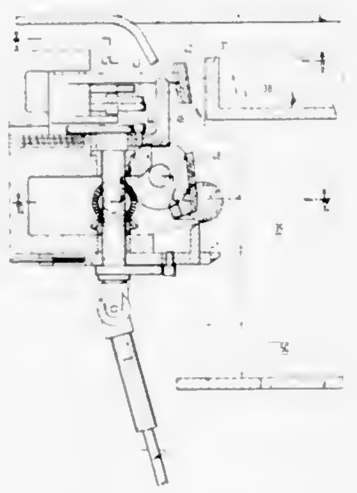
Everhard Bauer, Hudeweg 2, Paderborn, Germany

Filed Jan. 11, 1972, Ser. No. 217,018

Claims priority, application Germany, Jan. 19, 1971, 2102431

Int. Cl. B31b *1/44*

U.S. Cl. 93—51 **2 Claims**



The tray consists of flexible material, preferably cardboard, and has a polygonal base, an even number of corners, and vertical side walls. Alternating side walls have outwardly directed, infoldable extension flaps. The two corner portions between each side wall and the adjacent side walls are tucked in toward the side wall provided with an infoldable flap and are covered by the flap, which has a tapered end portion, which is locked in an aperture at the edge of the bottom of the tray.

3,792,647
ELECTRONIC SHUTTER DEVICE HAVING AN EXPOSURE METER CIRCUIT

Yukio Mashimo, Tokyo; Mutsunobu Yazaki, and Mutsuhide Matsuda, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

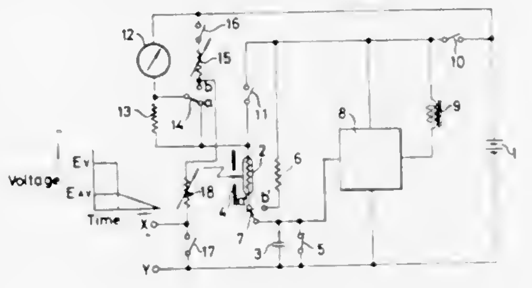
Filed June 13, 1972, Ser. No. 262,284

Claims priority, application Japan, June 15, 1971, 46/42770

Int. Cl. G03b *7/08*

U.S. Cl. 95—10 CT **8 Claims**

In a camera, a shutter with a shutter release iniates and terminates an exposure interval. A diaphragm controls the exposure intensity. Coupling means couple a capacitor to a pole of a power source through a photoelectric sensor that responds to the illumination of a scene being photographed in order to charge the capacitor at a rate determined by an electric value varied by the photoelectric sensor. Indicating means coupled to the photoelectric sensor and the power source establish the opening of the diaphragm. The shutter release opens a first switch connected in parallel with the capacitor so as to allow charging of the capacitor through the photoelectric sensor. Second switch means connect short-circuit forming means across the indicating means during flash photography. A variable resistive means whose value corresponds to the distance between the camera and the scene being photographed, is connected between the second switch means and another pole of the power source so that during flash operation the indicating means is connected with the variable resistive means. The second switch means connects the indicating means to the photoelectric means during ordinary daylight operation. The variable resistance means and the sensor respectively vary the changing rate of the capacitor for the flash and daylight operation of the camera. The shutter is closed when the charge on the capacitor reaches a predetermined value.



3,792,648
EXPOSURE WARNING CIRCUIT FOR PHOTOGRAPHIC CAMERAS

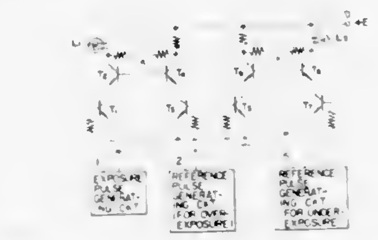
Yasuo Ishiguro, Tokyo, Japan, assignor to Kabushiki Kaisha Koparu, Tokyo-to, Japan

Filed Feb. 23, 1973, Ser. No. 335,430

Claims priority, application Japan, Feb. 25, 1972, 47/19470

Int. Cl. G03b *7/00*

U.S. Cl. 95—10 CE **14 Claims**


1
2
EXPOSURE PULSE GENERATING CKT
REFERENCE PULSE GENERATING CKT (FOR OVER-EXPOSURE)
REFERENCE PULSE GENERATING CKT FOR UNDER-EXPOSURE

An exposure warning circuit for accurately warning whether a photograph to be taken will be over-exposed, properly exposed or under-exposed prior to photographing, comprising an exposure pulse generating circuit, reference pulse generating circuits, pulse-width comparison circuits and indicating means.

3,792,649
AUTOMATIC RETURN MECHANISM FOR AN EXPOSURE TRIM ASSEMBLY

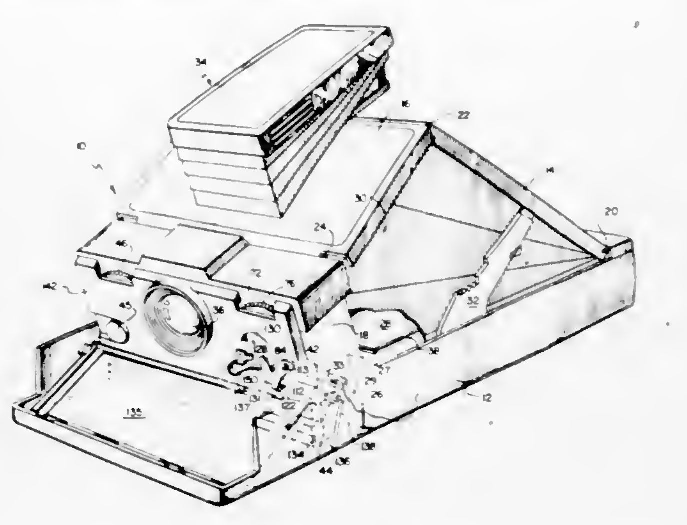
Lawrence M. Douglas, South Easton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 25, 1972, Ser. No. 300,819

Int. Cl. G03b *19/00, 17/04, 7/00*

U.S. Cl. 354—192 **15 Claims**

An automatic return mechanism for a manually adjustable trim assembly is provided for use in conjunction with a foldable camera having an automatic exposure control system. The camera includes a number of housing members interconnected for movement between an erected configuration and a folded configuration for convenient carrying and storage. The automatic return mechanism is disposed within one of the housing members and operates in response to return of the camera into its folded configuration.



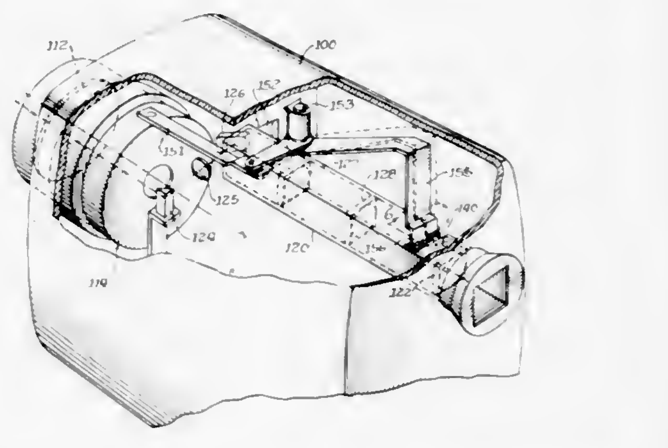
3,792,650
CAMERA FOCUS INDICIA SYSTEM

Arthur C. Mueller, Niles, and Donald W. Irkfetz, Mt. Prospect, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed July 31, 1972, Ser. No. 276,647

Int. Cl. G03b *13/16*

U.S. Cl. 95—44 R **5 Claims**



A camera system having means for registering the focal condition of the lens system of the camera. The system includes a camera lens shiftable between multiple focus positions and a view finder for viewing the subject image sensed by the lens system. Focus indicia are arranged to be illuminated in the view finder, and masking means are provided to mask the illumination selected focus indicia in response to the focal condition of said lens system.

3,792,651
PHOTOGRAPHIC PROCESSING APPARATUS

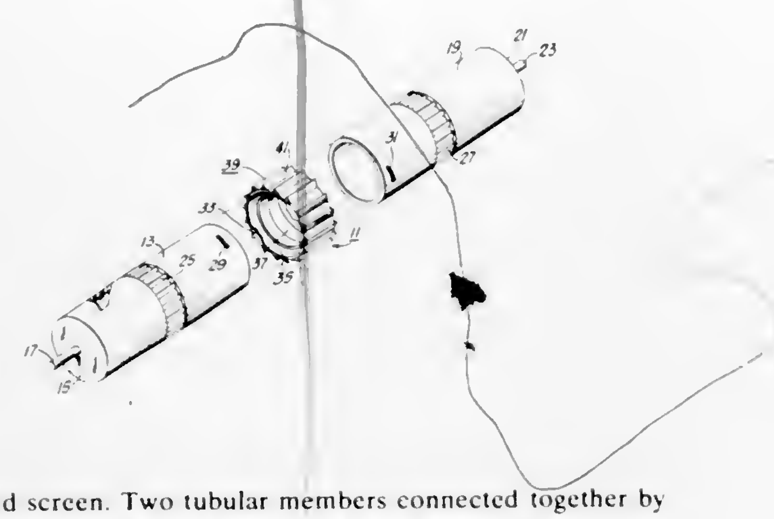
Duane G. Banks, 532 Fieldstone Dr., Monroeville, Pa.

Filed Feb. 29, 1972, Ser. No. 230,379

Int. Cl. G03d *3/08*

U.S. Cl. 354—340 **7 Claims**

A tubular member having one open end is adapted to receive a flexible or rigid screen, within which is placed an exposed sheet of photographic paper. After developing chemicals are poured into the tubular member, it is closed by a cap and the assembled unit is rotated about a horizontal axis. A second screen may be placed within the first screen and exposed photographic paper placed within this second screen, and even a third screen and paper may be placed within the second screen. Two tubular members connected together by an adapter can be used to process large prints and such connected tubular members contain one or two screens as desired.



3,792,652

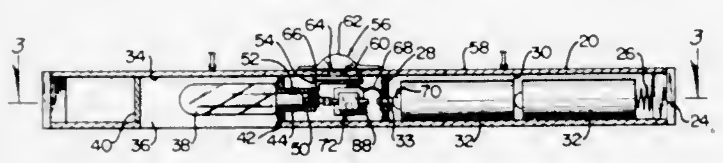
AUTOMATIC PURSE LIGHT

Rhinhold J. Zeeb, Lesterville, S. Dak.

Filed Mar. 14, 1972, Ser. No. 234,600

Int. Cl. A45c *15/06*

U.S. Cl. 240—6.45 P **1 Claim**



A ladies handbag is provided with hollow upper frame portions, one of which is adapted to receive a light bulb and energizing batteries. A manually operable thumb switch on the outside of one frame portion sets an electric circuit, so that when the handbag is opened a limit switch completes the circuit to energize the light bulb. Conversely when the handbag is closed, the limit switch breaks the circuit to de-energize the light bulb. The thumb switch can also be positioned to maintain the light bulb in a de-energized state regardless of whether or not the handbag is open or closed.

3,792,653

TOASTER

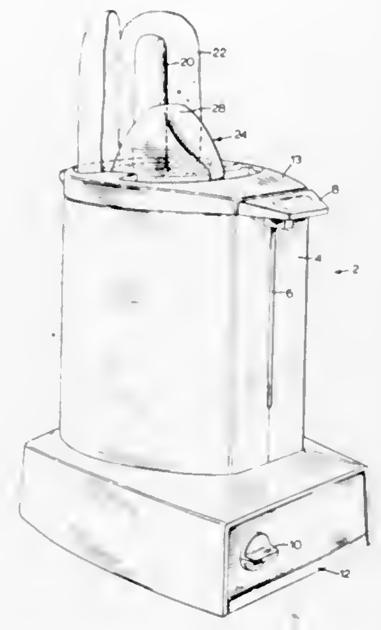
Brian Davidson, 34 Pineway Blvd., Willowdale, Ontario, Canada

Filed Mar. 20, 1972, Ser. No. 235,927

Int. Cl. A47j *37/08*

U.S. Cl. 99—339 **9 Claims**

A toaster for frankfurters and buns, having a circular frankfurter heating chamber formed by two apertured reflective removable shields. The shields have inturned ends forming two spaced cylindrical frankfurter guides. Two arcuate bun heating chambers partly encircle the frankfurter heating chamber, with a frankfurter guide between the arms of each bun heating chamber. A common elevator raises and lowers both frankfurters and buns simultaneously. Part of the heat from an element in the frankfurter heating chamber passes through apertures in the shields to toast buns in the bun heating chambers, and the remainder is reflected back to augment the heat applied to the frankfurters, so the frankfurters and buns will be finished together. Since each bun is toasted in partly opened configuration, it will not split in two, and since it pops-up partly encircling its frankfurter, it can be used to grasp and remove the frankfurter.



3,792,654

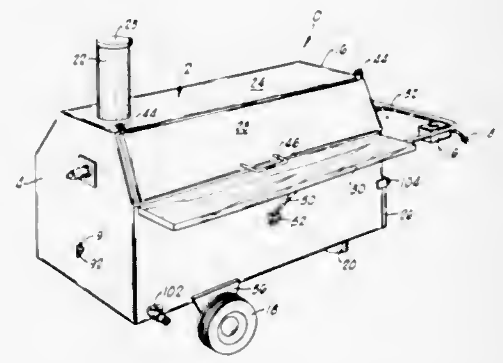
COOKING AND SMOKING APPARATUS

Anthon H. Turner, Kingfisher, Okla., assignor to Turnes Blackjack, Inc., Oklahoma City, Okla.

Filed Apr. 20, 1971, Ser. No. 135,626

Int. Cl. A23b *1/04;* **A47j** *43/18*

U.S. Cl. 99—427 **11 Claims**



The present invention relates to cooking and smoking apparatus of the general type which includes a substantially closed housing having an access door, means for supporting food materials such as meat and the like to be cooked and smoked within the housing and means for generating heat and smoke within the housing. By the present invention, a horizontal shaft is provided journaled within the housing having a pair of vertically positioned circular plates concentrically attached thereto. A plurality of perforated shelf members for supporting food materials to be cooked and smoked are positioned horizontally between the plates having the ends thereof rotatably attached to the plates at equidistant points around the peripheries thereof so that upon rotation of the shaft, the shelf members remain positioned horizontally and successively pass one above the other between an upper portion of the housing and a lower portion of the housing. Means for rotating the shaft are attached to the shaft and to the housing.

3,792,655

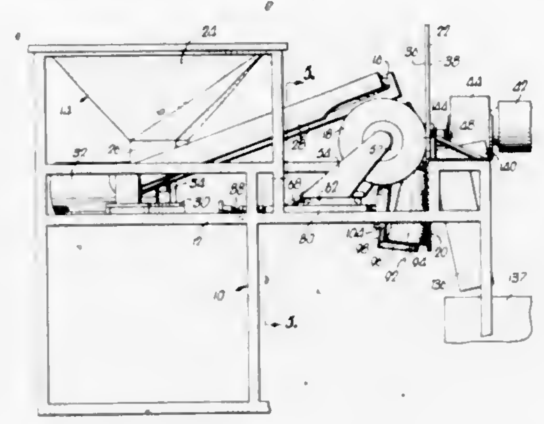
APPARATUS FOR THE RECOVERY OF BUTTER, OLEOMARGERINE, CHEESE OR THE LIKE

Bobby Gene Caddell, Kansas City, and Harry E. Gordon, Raytown, both of Mo., assignors to Kansas City Enterprises, Inc., Shawnee Mission, Kans.

Filed Feb. 18, 1972, Ser. No. 227,478

Int. Cl. B30b *9/06, 3/02*

U.S. Cl. 100—116 **8 Claims**



Apparatus is presented for physically separating butter, oleomargerine, cheese or like viscous substance from sheet material carrying the viscous substance as individual "reddies" or equivalent units in order to permit recovery and reprocessing of the substance from improperly formed or packaged reddie units. At least one frustoconical roller drum firmly engages one side of a perforated separator disc and rotates synchronously therewith to squeeze the reddies therebetween and force the butter or like substance through the disc perforations while the sheet material remains on the one side of the disc. The roller removably and adjustably mounts upon a unitary frame carrying the disc into a desired contacting alignment with portions of the disc to create a controlled degree of sliding between the disc and roller for increasing the efficiency of the separating action of the apparatus. A conveyor delivers the reddie units from a collecting hopper to the disc and roller, and substance and sheet material scrapers engage opposite sides of the disc to effect removal of the separated substance and sheet material respectively.

3,792,656

PRESSING DEVICE FOR THE REMOVAL OF WATER FROM CELLULOSE OR THE LIKE

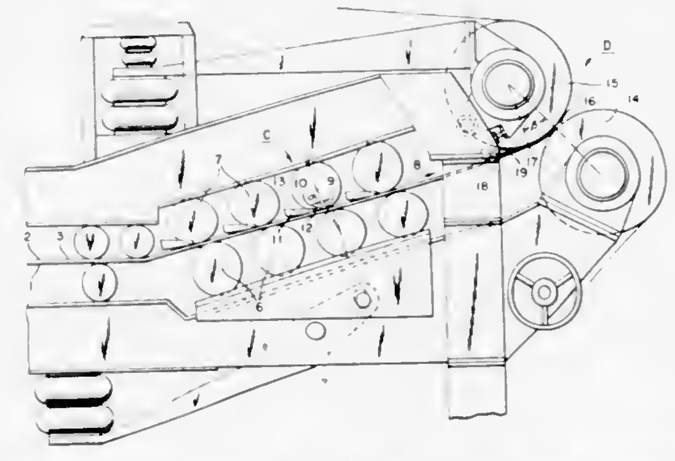
Otto Heissenberger, Graz, Austria, assignor to Maschinenfabrik Andritz Actiengesellschaft, Graz Andritz, Austria

Filed Mar. 27, 1972, Ser. No. 238,450

Claims priority, application Austria, Apr. 5, 1971, 2890/71

Int. Cl. B30b *9/24, 5/04*

U.S. Cl. 100—118 **9 Claims**



This invention relates to an improvement in a pressing device for the removal of water from solid materials, particularly cellulose or similar fibrous material, comprising a preliminary pressing station and a main pressing station including pairs of upper and lower horizontal rollers between which a sheet or web of material to be dehydrated is passed, on a sieve or between two sieves. The improvement comprises a lower roller mounted ahead of the paired upper rollers in a staggered manner in the traveling direction of the sieve, in at least one of said preliminary and main pressing stations.

3,792,657

SCREEN PRINTING MACHINE FOR CYLINDRICAL OR CONICAL BODIES

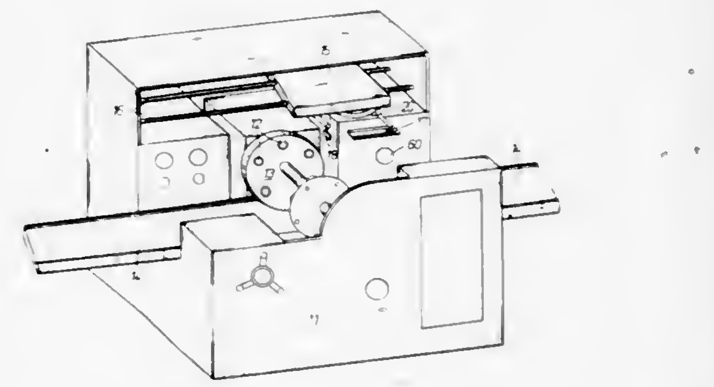
Wilfried Kammann, 1 Bustedter Strasse, Suedlengern, Ueber Buende, Germany

Filed June 26, 1969, Ser. No. 836,865

Claims priority, application Germany, June 29, 1968, 6751436

Int. Cl. B41f *17/22, 17/28*

U.S. Cl. 101—38 R **1 Claim**



A screen printing machine for monochrome and polychrome printing of cylindrical and conical bodies. The machine comprises a printing stencil secured to a reciprocating slide. A fixed doctor blade is also provided. The stroke of the reciprocating slide is infinitely adjustable. The bodies to be imprinted are rotated about their longitudinal axes in synchronism with the printing stencil. There is further provided an eccentric drive for linearly displacing the printing stencil.

3,792,658

ROTARY PRINTING MACHINE WITH STOP MEMBERS FOR CYLINDER ADJUSTMENTS

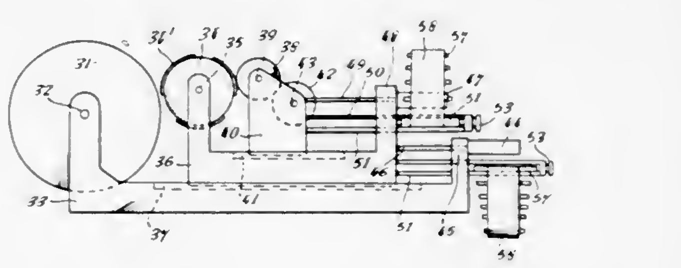
Donald Arthur Shore, and David Edward Hart, both of Bristol, England, assignors to Colodense Limited, Bristol, England

Filed Feb. 15, 1972, Ser. No. 226,637

Claims priority, application Great Britain, Feb. 19, 1971, 4975/71; Aug. 25, 1971, 39818/71; Nov. 11, 1971, 52522/71

Int. Cl. B41f *13/34, 31/30*

U.S. Cl. 101—247 **19 Claims**



The plate roller of a printing machine is urged at each end towards its operative position in contact with the impression roller. Detachable stop members of preselected size are provided at each end to limit the forward movement of the plate roller at its operative position. At each end various sizes of stop members can be provided on a carrier arranged to move

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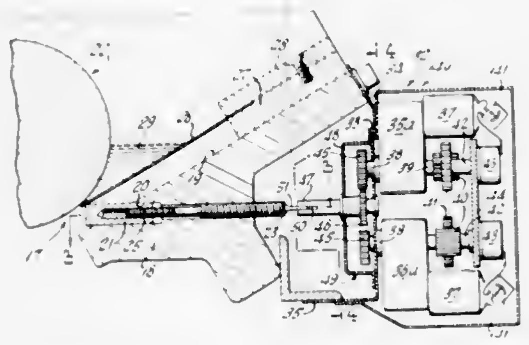
them individually into position. The stop members can act between pairs of abutments and counter abutments, at least one of which is movable to provide fine adjustment. Screw adjustments, optionally remotely controlled, can be provided for final adjustment of the position of each end of the plate roller. A similar arrangement is provided for determining the position of the transfer roller in relation to the plate roller.

3,792,659
MULTIPLE POINT INK CONTROL APPARATUS FOR PRINTING PRESSES

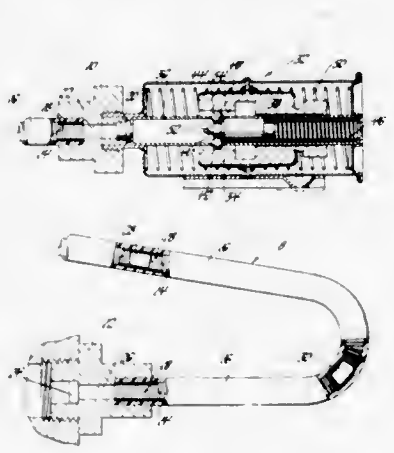
Herbert W. J. Alhrecht, Harrison, N.Y., assignor to George Hantscho Company, Inc., Mt. Vernon, N.Y.
Filed Aug. 16, 1971, Ser. No. 172,065
Int. Cl. B41f *31/04*
U.S. Cl. 101—365 **6 Claims**



Ink control apparatus for printing presses which includes means for adjusting the position of a doctor blade relative to an ink roll to meter the ink supply and remote control means for modifying the position of the doctor blade even while the press is in operation. The apparatus also includes means for use in multi-color presses for selectively connecting the remote control to the doctor blade adjusting means of each unit to enable all of the doctor blades to be adjusted from the remote location.

3,792,660
FLEXIBLE PYROTECHNIC RELAY

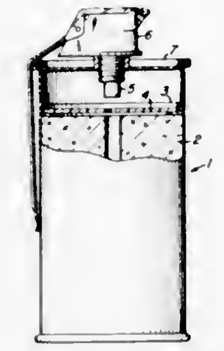
Roy D. Plumer, Santa Barbara, Calif., assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 31, 1972, Ser. No. 239,948
Int. Cl. C06c *5/00*
U.S. Cl. 102—27 R **4 Claims**



A flexible pyrotechnic relay includes a spiral-wound wire tube covered by a flexible plastic sheath and having an initiating explosive charge adjacent one end thereof, one or more explosive relay charges spaced along the interior thereof, and a flame sensitive receptor charge adjacent the other end thereof. The detonation of the initiating charge is propagated by the relays along the tube to fire the flame-sensitive primer.

3,792,661
PLASTIC BONDED FIRST FIRE

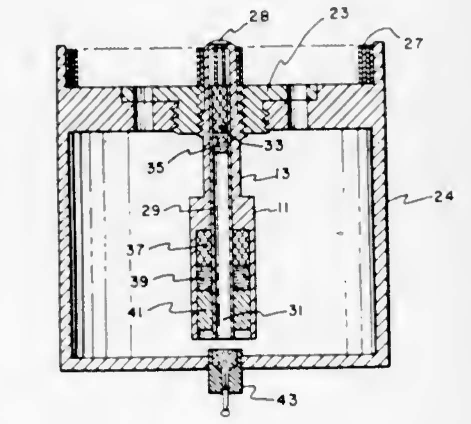
Abraham L. Turetsky, Bel Air, and Woodrow W. Reaves, Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Nov. 3, 1970, Ser. No. 86,450
Int. Cl. F42b *27/00*
U.S. Cl. 102—65 **5 Claims**



An improved method of assembly and first fire means for use in munitions; the improvement being a first fire structure having the particles of an oxidizing material, such as potassium chlorate, bonded together by a polymer produced by a reaction between a thioepoxy resin and a mercapton. The bonding is accomplished by mixing the oxidizer, resin, and mercapton to a homogeneous slurry, pouring the slurry into molds of desired geometric configuration, and allowing the slurry to cure.

3,792,662
DELAY DETONATOR WITH BY-PASS EXPLOSIVE BOLT SYSTEM

William G. Wolterman, Huntington Beach, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Aug. 4, 1972, Ser. No. 278,128
Int. Cl. F42c *15/36;* **F42b** *23/24;* **F42d** *1/02*
U.S. Cl. 102—70 R **3 Claims**

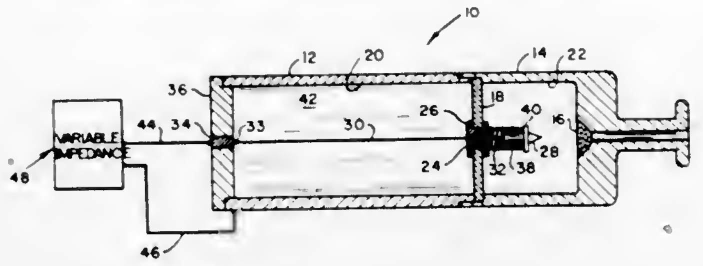


A system for the removal of an attachment from one end of a detonating device prior to the detonation of the main charge.

3,792,663
ELECTROCHEMICAL TIMING APPARATUS

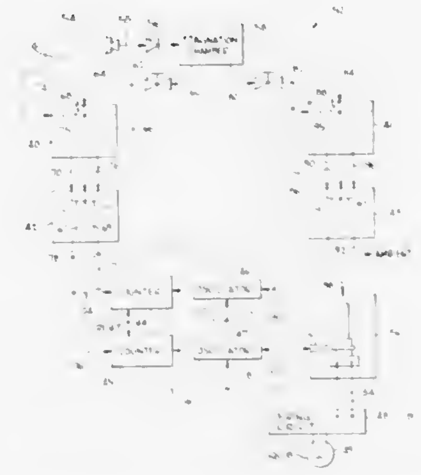
Clayton J. Schneider, Jr., Elma, N.Y., assignor to Cornell Aeronautical Laboratory, Inc., Buffalo, N.Y.
Filed Dec. 23, 1971, Ser. No. 211,206
Int. Cl. F42b *21/34, 21/38*
U.S. Cl. 102—70.2 **12 Claims**

An electrochemical timing apparatus for a fuse or the like wherein a thin wire retaining a firing pin is located in an electrolytic solution spaced from a material of lower activity and a variable impedance is provided between wire and the material to control the rate of destruction of the wire by cathodic corrosion to compensate for the effects of ambient temperature on such rate of destruction.



3,792,664
FLUIDIC-ELECTRIC SWITCH AND SAFETY, ARMING AND DETONATING SYSTEM USING SAME

Carl J. Campagnuolo, Potomac, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Sept. 26, 1969, Ser. No. 862,645
Int. Cl. F42c *5/00, 15/06*
U.S. Cl. 102—70 R **23 Claims**

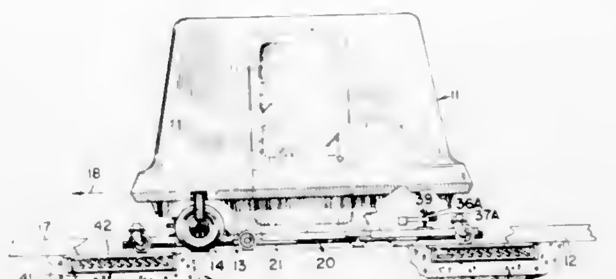


A fluidic safety, arming and detonating system for use in a weapon-carrying missile whose power output is controlled by a fluidic-electric switch. The system's operation is based on two external environmental signatures plus two internal fluidic signatures. The two external environmental signatures, which are prerequisite to subsequent operation of the system, are provided by combustion gases during ignition of the missile and by ram air after lift-off. The two internal fluidic signatures, which are required to arm and detonate the explosive carried by the missile, are provided by the fluidic-electric switch actuated and controlled by two preset fluidic timers, each of which comprises an oscillator coupled with a binary counter. The two timers turn the fluidic-electric switch first ON, which arms the firing circuit, then OFF, which triggers the firing circuit to detonate the explosive.

3,792,665
LINEAR INDUCTION CONTROL SYSTEM

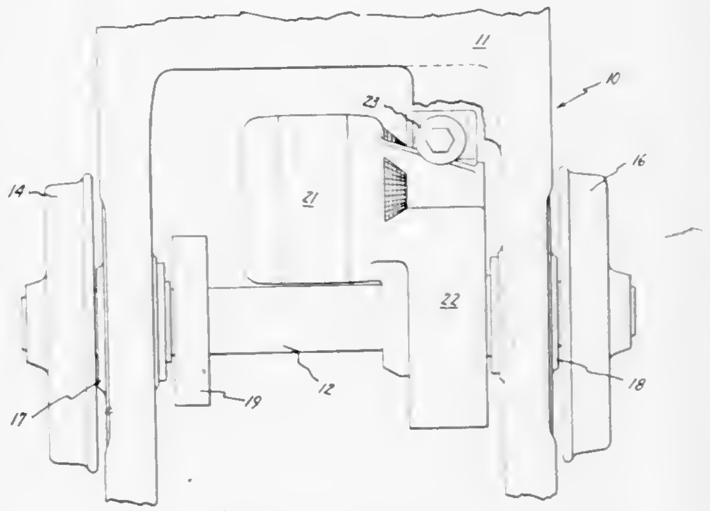
Roy A. Nelson, Grand Prairie, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.
Filed Aug. 16, 1972, Ser. No. 281,262
Int. Cl. B61b *13/12*
U.S. Cl. 104—148 LM **4 Claims**

A control system is employed in a linear induction propulsion system of the type having linear induction primary elements which are fixedly mounted at spaced intervals along a guideway and linear induction secondary structures which are carried by respective movable structures driven along the guideway by the propulsion system. Sensing devices are provided for detecting proximity of the linear induction secondary structures to respective ones of the primary elements, and apparatus is provided for conducting electrical power to any of the primary elements which are in alignment with any portion of one of the secondary structures. The control system is operable to regulate the spacing between successive movable structures.



3,792,666
RAILWAY TRUCK MOTOR SUSPENSION

Owen C. Coho, and Malcolm W. Waite, both of Erie, Pa., assignors to General Electric Company, Erie, Pa.
Filed Aug. 4, 1972, Ser. No. 278,002
Int. Cl. B61c *3/00, 9/36, 9/48*
U.S. Cl. 105—136 **9 Claims**

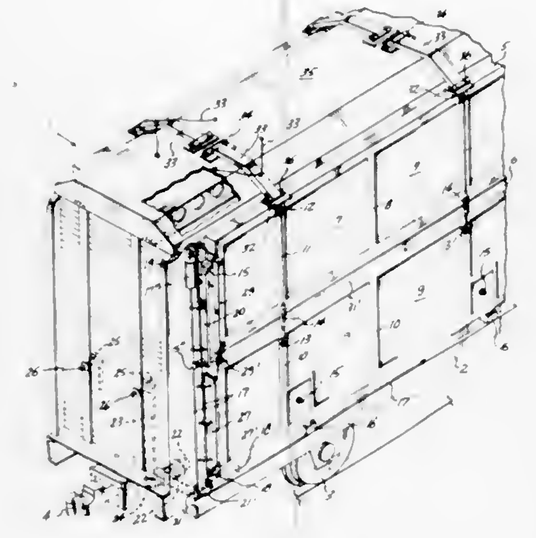


A rail vehicle drive assembly having an a-c motor whose rotor is rigidly coupled to and overhung from the pinion of a gear train operably connected to drive the axle. The motor stator is likewise integrally overhung from a gear train housing journaled to the axle, and the combination is flexibly mounted to the vehicle truck. Advantages include the obviation of the flexible couplings, rotor bearings, and axle support of the motor, by direct connection thereto.

3,792,667
TWO-AXLE BOXCAR WITH FULL-SIDE CLOSURE

Hamilton Neil King Paton, 2521 W. Montlake Pl. E., Seattle, Wash.
Division of Ser. No. 821,384, May 2, 1969, Pat. No. 3,687,186. This application Aug. 24, 1972, Ser. No. 283,356
Int. Cl. B61d *39/00*
U.S. Cl. 105—404 **7 Claims**

Cooperating upper and lower closure sections for each side of a two-axle boxcar extend over the full length of the boxcar. A hoisting line, screw, chain or fluid-pressure jack raises the lower closure section into overlapping relationship with the upper closure section and then raises both closure sections conjointly above the side opening. The lower section is guided by cam tracks to move outward as it moves upward and the upper edge of the upper closure section is guided by swinging arms as the sections move about the boxcar body. Alternatively, the lower closure section can swing downward and the upper closure section can be raised edgewise upward to clear the side opening. Retractable props can provide support for the boxcar roof at locations between its ends.



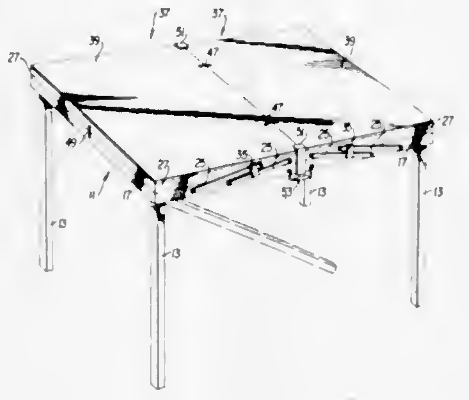
3,792,668
JIGSAW PUZZLE ASSEMBLY APPARATUS

Priscilla B. Ward, Rt. 1, Box 197, Westover, Md.

Filed Apr. 18, 1972, Ser. No. 245,152

Int. Cl. A47h *25/00*

U.S. Cl. 108—69 **9 Claims**



A table especially adapted for use in the assembly of jigsaw puzzles is described. The table comprises a horizontal planar surface or top supported by four legs. Attached to the top are a pair of leafs or piece trays. The piece trays are attached in a manner such that they remain parallel to the top when moved outwardly with respect to the top. In addition, covers are provided for covering the piece trays. When the piece trays are moved inwardly so that they overlie the top; the covers are attached; and, the legs folded, the puzzle assembly table is collapsed to a size convenient for storage. When thusly collapsed, the lower surface of the piece trays maintain the assembled portion of the puzzle in its assembled state while the covers retain the unassembled jigsaw puzzle pieces firmly in the piece trays.

3,792,669
HYBRID FUEL BURNING SYSTEM

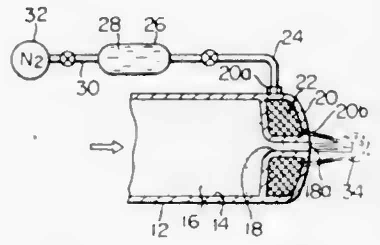
Zene Ueno, Tokyo; Tadahiko Nagaoka, Tokorozawa; Katsuaki Kosala; Akira Morita, both of Tokyo; Seiki Koga, Iruma, and Fumio Wagatsuma, Kawagoe, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 1, 1973, Ser. No. 328,637

Claims priority, application Japan, Feb. 2, 1972, 47-12047; Feb. 21, 1972, 47-17933

Int. Cl. F23g *7/00*

U.S. Cl. 110—1 H **15 Claims**



To reduce the overall dimensions of a fuel burning system using a solid or semisolid fuel and to eliminate the toxic compounds in the exhaust gases from the system, the solid or semisolid fuel is combusted with the agency of a liquid oxidizer which may be liquid oxygen or liquid hydrogen peroxide. The liquid oxidizer is exothermically decomposed in the presence of a suitable catalyst and produces hot oxygen gas by which the solid or semisolid fuel is liquidized or gasified and combusted. The hot oxygen gas may be passed through at least one preheating chambers so that the fuel is preheated and emulsified before it mixes with the hot oxygen gas. The solid or semisolid fuel may be formed of waste plastic materials which are solidified to a block form, thereby contributing to resolution of the contamination problems resulting from the scraps and garbage of used plastic products. By reason of the compact and small-sized construction, the fuel burning system is compatible with driving or heating sources of mobile or portable equipment such as power driven vehicles.

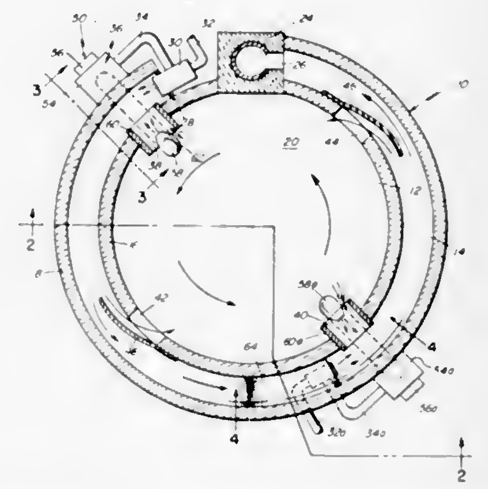
3,792,670
CYCLONIC FLOW INCINERATOR

Robert D. DiNozzi, Dedham, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed July 3, 1972, Ser. No. 268,413

Int. Cl. F23g *5/12*

U.S. Cl. 110—8 R **11 Claims**



An incinerator having means for achieving particularly efficient disposal of trash products, and which comprises primarily a centrally located trash compartment and an encircling afterburner having one or more burners therein with communicating means therebetween to provide controlled air circulation whereby combustion products from the trash chamber will circulate through the after burner for incineration.

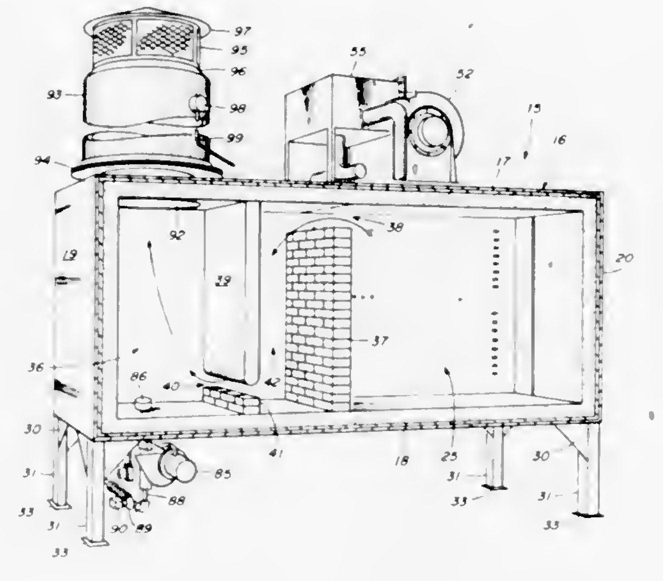
3,792,671
INCINERATOR WITH AFTERBURNER

Maurice G. Woods, Oklahoma City, Okla., assignor to The Clean-Air-Ator Corporation, Oklahoma City, Okla.

Filed May 17, 1972, Ser. No. 254,307

Int. Cl. F23g *5/12*

U.S. Cl. 110—8 R **49 Claims**



A method and apparatus for the complete thermal conversion of waste solids such as paper and cardboard to essentially pollution free products of combustion is disclosed. The incinerator apparatus includes a housing having a primary burning chamber supplied with combustion air by a blower discharging into the chamber through a series of selectively arranged and oriented nozzles in the chamber top and side walls. Two vertical baffle walls in the housing define a vertical flow passage from the top of the primary chamber to the bottom of an afterburner chamber supplied with fuel and air through a burner. The rate of the fuel supplied from the burner is controlled to maintain a constant temperature in the afterburner exhaust chamber as sensed by a thermocouple. The method includes maintaining an excess air environment in the primary chamber and introducing the product off-gases or effluent into the afterburner chamber at a velocity and direction with respect to the burner nozzle to achieve complete mixing. The air/fuel ratio is controlled to utilize the excess air in the off-gas to maintain a predetermined constant temperature in the afterburner to effect complete combustion.

3,792,672
APPARATUS FOR CUTTING, FOLDING AND ATTACHING TABS OF FLEXIBLE RIBBON-LIKE MATERIAL

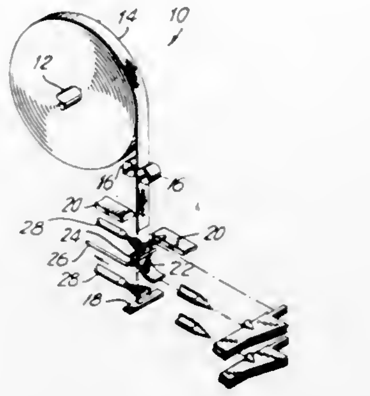
Raymond Friedman, Queens Village; Sheldon Friedman, Lake Success, both of N.Y., and Anthony Kalamaridls, Bergenfield, N.J., assignors to Frank Friedman & Sons, New York, N.Y.

Filed June 29, 1971, Ser. No. 157,963

Int. Cl. D05b *3/20*

U.S. Cl. 112—104 **26 Claims**

Methods and Apparatus for automatically advancing a length of ribbon from a roll, severing a desired length therefrom, turning the ends inwardly towards the center, folding the length generally centrally to position the cut ends generally adjacent within the central fold, positioning the double folded length to cover the end of a garment seam and stitching the resultant seam end cover to the garment.



3,792,673
SEWING MACHINE HAVING AUTOMATIC PATTERN SEWING DEVICE

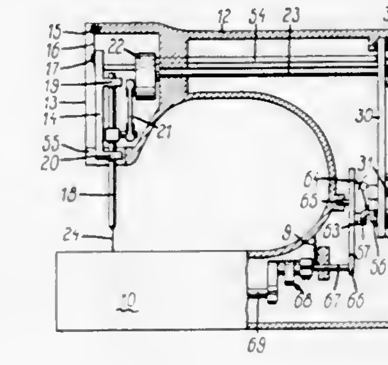
Nereo Bianchi, Via Marchesi, 127100 Pavia, Italy, assignor to Necchi S.p.A., Pavia, Italy

Filed Jan. 31, 1972, Ser. No. 222,053

Claims priority, application Italy, Feb. 6, 1971, 42903 A/71

Int. Cl. D05b *3/02*

U.S. Cl. 112—158 A **6 Claims**



The invention relates to a sewing machine which incorporates a device for automatically controlling the transverse displacements of the sewing needle and for controlling the fabric feeding mechanism in order to obtain various stitching patterns. The device is of the type which comprises a stack of axially displaceable rotary cams and the aforementioned controlling is achieved through the use of two separate cam followers, each of which includes separate follower points which respectively may be acted upon by either the rotary cams or by other non-rotary elements.

3,792,674
SEWING MACHINE

Ramon Casas-Robert, Geneva, Switzerland, assignor to Mefina S.A., Fribourg, Switzerland

Division of Ser. No. 879,418, Nov. 4, 1969, Pat. No. 3,645,220. This application Sept. 28, 1971, Ser. No. 184,565

Int. Cl. D05b *47/02*

U.S. Cl. 112—254 **3 Claims**

A sewing machine wherein the upper thread spool is held fast on its spindle within the housing provided for it while the thread is wound off the spool in a direction extending substantially in alignment with the spool axis. The cover of the housing may be shifted outwardly together with the spindle which is secured to it to allow removing and replacing the spool. A

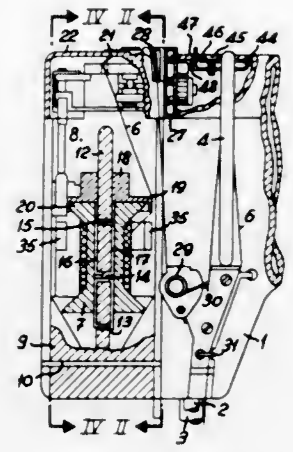
cap-shaped member fitted loosely over the spool includes a broad flange guiding the thread as it passes off the spool while

inwardly of the boat while traveling at high speed and extended to stabilize the boat while moving at low speed or not moving at all.

of its ends inserted into the base structure and its other end connected to the display member whereby the display

3,792,680
FLAG POLE

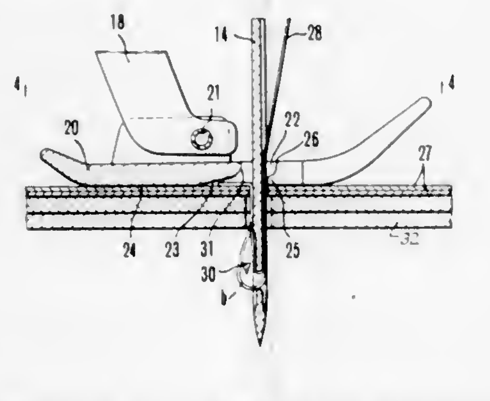
cap-shaped member fitted loosely over the spool includes a broad flange guiding the thread as it passes off the spool while



means are provided to lock the cover in its closed position and to lift the cap-shaped member off the spindle before releasing the cover.

3,792,675
PRESSER FOOT FOR SEWING MACHINE

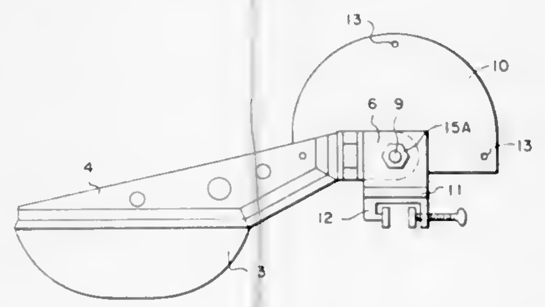
Toru Kuromegawa, Osaka, Japan, assignor to Maruzen Sewing Machine Co., Ltd., Osaka, Japan
Filed Apr. 27, 1972, Ser. No. 248,216
Int. Cl. D05b *29/00*
U.S. Cl. 112—235 **8 Claims**



A presser foot for a zigzag sewing machine for preventing the skipping of stitches in the sewing of fabrics. The presser foot is provided with a generally rectangular needle aperture having its major axis extending transversely of the movement of the fabric. The elongated front edge of the aperture has a lip preferably formed of plastic material and extending rearwardly in close proximity to the needle.

3,792,676
BALLAST ATTACHMENT FOR BOATS

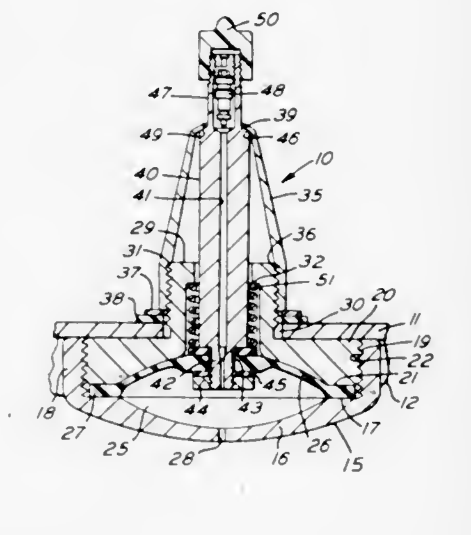
Walter Boone Craft, 2208 Brownlee Rd., Bossier City, La.
Filed Mar. 20, 1972, Ser. No. 236,202
Int. Cl. B63b *43/14*
U.S. Cl. 114—123 **5 Claims**



An adjustable ballast attachment for use on boats for stability and to prevent capsizing, which attachment may be folded inwardly of the boat while traveling at high speed and extended to stabilize the boat while moving at low speed or not moving at all.

3,792,677
PRESSURE INDICATOR FOR PNEUMATIC TIRE WHEELS

John E. Frost, 10 W. Braddock Dr., Somers Point, N.J.
Filed June 12, 1972, Ser. No. 261,704
Int. Cl. B60c *23/02*
U.S. Cl. 116—34 R **8 Claims**

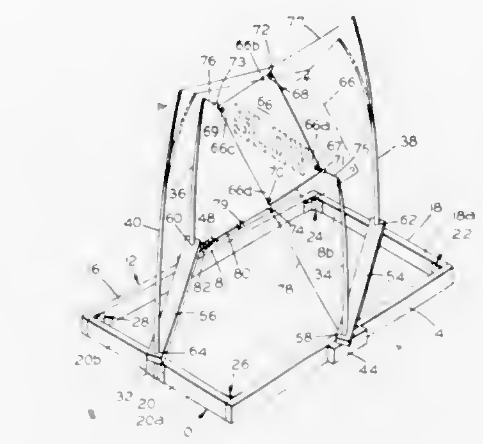


A hollow chamber having an internal flexible diaphragm and carried by a pneumatic tire wheel in fluid communication with the pneumatic pressure thereof on one side of the diaphragm, a tubular stem extending shiftably into the chamber on the other side of the diaphragm and anchored to the latter for extension and retraction upon flexure of the diaphragm, a check valve in the stem, and resilient means urging the stem and diaphragm toward said one side of the latter against the pneumatic pressure of the tire wheel.

3,792,678
EMERGENCY WARNING SIGN WITH READILY COLLAPSIBLE FRAME

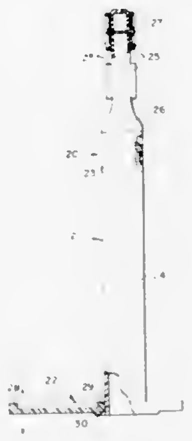
William P. Rowland, Southington, Conn., assignor to Rowland Development Corporation, Kensington, Conn.
Filed Sept. 27, 1972, Ser. No. 292,826
Int. Cl. E01f *9/10*
U.S. Cl. 116—63 P **9 Claims**

A readily collapsible display device comprises a collapsible base structure on which a plurality of poles are detachably mounted. The poles are adapted to support a display member such as a sign or the like therebetween. The base structure consists of a pair of side base members to which a pair of end base members are pivotally attached by means of hinges. Each of the pair of end base members is of two-part construction and is hinged at its middle such that the end members are capable of collapsing as the base structure collapses. The poles each comprise an elongated tapered fiber glass reinforced plastic tube characterized by its ability to deflect without incurring damage thereto. Each of the poles has one of its ends inserted into the base structure and its other end connected to the display member whereby the display member is supported such that when the poles deflect in response to having a force applied thereto such as the force capable of being imparted thereto by the wind, etc., the display member will deflect also along with the poles.



3,792,679
SELF-RIGHTING ROAD MARKER

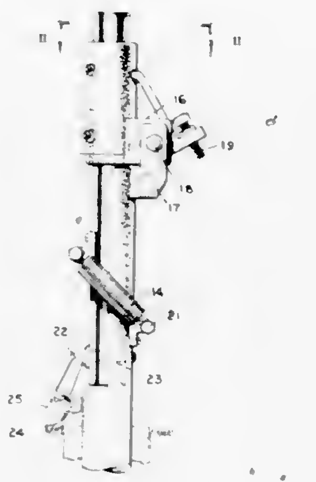
John W. Duckett, Tiburon; Edward A. Brooks, Novato, and Clarke Reynolds, Tiburon, all of Calif., assignors to American Molded Products Ltd., Sausalito, Calif.
Division of Ser. No. 69,008, Sept. 2, 1970, Pat. No. 3,705,566. This application June 5, 1972, Ser. No. 259,698
Int. Cl. E01f *9/10*
U.S. Cl. 116—63 P **13 Claims**



A road marker comprises a vertically disposed member, such as a cone, attached to a horizontally disposed elastomeric base. The marker is constructed to have a very low center of gravity and to permit a substantial portion of the base to remain in contact with the ground to constantly maintain the marker's pivot axis and center of gravity substantially within the confines of the base. In addition to such positioning of the marker's pivot axis and center of gravity, means for automatically self-righting the marker comprises a suitably composed and constructed base which exhibits predetermined degrees of elasticity and flexibiliy.

3,792,680
FLAG POLE

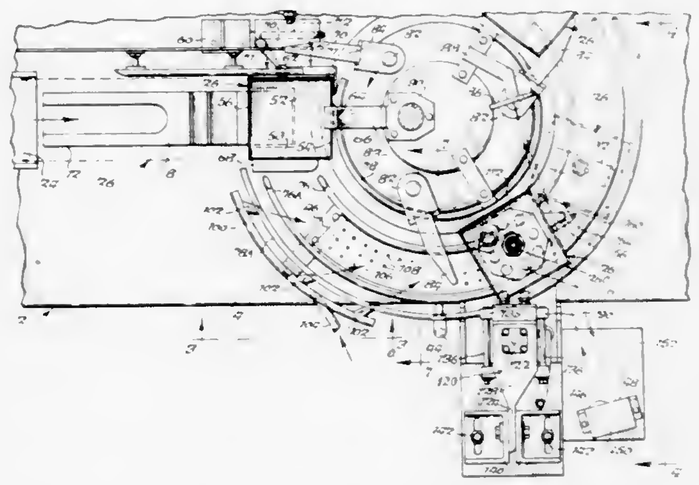
Francis R. Allen, Partridge Hill Rd., Charlton, Mass.
Filed June 7, 1971, Ser. No. 150,384
Int. Cl. G09f *17/00*
U.S. Cl. 116—173 **5 Claims**



In general, this invention relates to a flag pole whose entire length can be easily made accessible from the ground, because the pole is hinged and counter-weighted adjacent its lower end.

3,792,681
APPARATUS FOR INJECTION SPRAYING OF CONTAINERS

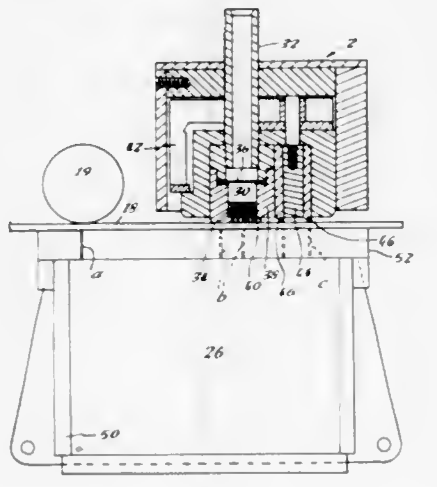
Walton B. Jones, Richboro; James N. Ademino, Ambler, both of Pa.; Neil D. Black, deceased, late of Philadelphia, Pa., and Ilene Black, administratrix, Melrose Park, Pa., assignors to International Paper Company, New York, N.Y.
Filed Feb. 16, 1970, Ser. No. 11,733
Int. Cl. B05c *7/02, 11/14*
U.S. Cl. 118—5 **6 Claims**



Apparatus for injection spraying of the inner surface of a container comprising a container loading arm for orienting containers in an upright position on the apparatus and a slide guide having its input end in the vicinity of the container loading arm. The slide guide guides the upright container through the apparatus. An injection spray gun is mounted along the slide guide on a piston. A cooling fountain is situated under the slide guide between the input of the slide guide and the injection spray gun. The carton is moved, by means of air nozzles, along the slide guide and over the cooling fountain in order to pre-cool the bottom of the container prior to spraying. The piston is activated by means of a cammed timer switch and by the proper positioning of the container. The gun descends into the container to spray the bottom surface of the container and the lower portions of the vertical sides of the container with a sealing material. After the gun has sprayed the bottom surface of the container, it is withdrawn from the container and a pusher rod contacts the container and pushes the container through a heater station where the sealing material is heated and blended to form a uniform bottom seal. After heating the sealing material within a container, the carton is pushed off of the injection spray apparatus by the pusher rod.

3,792,682
APPARATUS FOR COATING

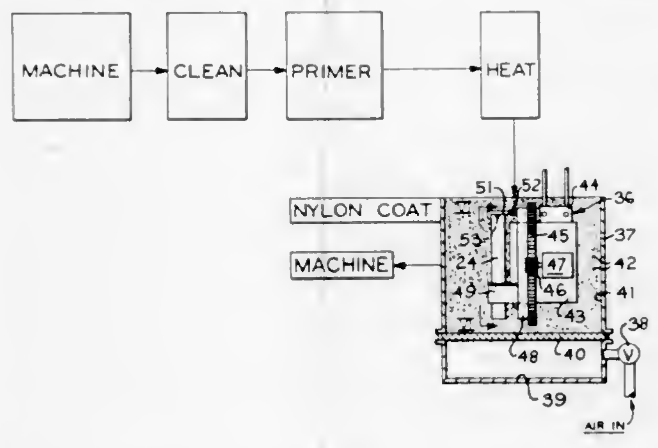
Raymond Harold Phipps, Bristol, England, assignor to The Robinson Waxed Paper Company, Limited, Bristol, England
Continuation-in-part of Ser. No. 873,053, Oct. 31, 1969, abandoned. This application Mar. 6, 1972, Ser. No. 232,007
Claims priority, application Great Britain, Dec. 1, 1968, 51829/68; June 16, 1969, 30484/69
Int. Cl. B05c *5/02*
U.S. Cl. 118—62 **5 Claims**



An apparatus is described for applying coating material in a fluid state to a receptor surface (in the form of a moving web) through a porous member having a large number of fine drillings. The porous member may be a block of epoxy resin and a base plate of a chamber containing the epoxy resin block.

3,792,683
APPARATUS FOR COATING A TORSIONAL VIBRATION DAMPER WEIGHT

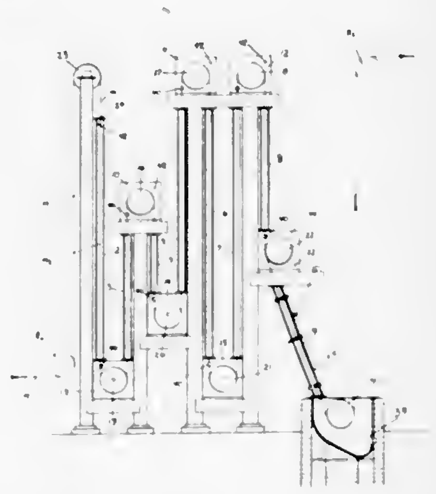
Gary O. Bragg; Russel F. Bahr, and Shellie P. Williamson, all of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Division of Ser. No. 146,257, May 24, 1971, Pat. No. 3,716,901. This application Aug. 21, 1972, Ser. No. 282,496
Int. Cl. B05c *3/00*
U.S. Cl. 118—416 **2 Claims**



A fluidized bed coating apparatus is used to substantially cover the weight of a torsional vibration damper with a thin coating of nylon. The apparatus comprises a weight-carrying support rotatably mounted in a tank and a drive motor connected to the support to rotate it during coating of the weight.

3,792,684
TREATMENT OF CONTINUOUS LENGTHS OF METAL BY ELECTRICAL RESISTIVE HEATING

Vladimir Janatka, Woodbury, and James J. Dolan, Southport, both of Conn., assignors to Thomas M. Dolan, Fairfield, Conn., a part interest by said James J. Dolan
Filed Mar. 19, 1973, Ser. No. 342,818
Int. Cl. B05c *5/00, 3/02*
U.S. Cl. 118—620 **6 Claims**

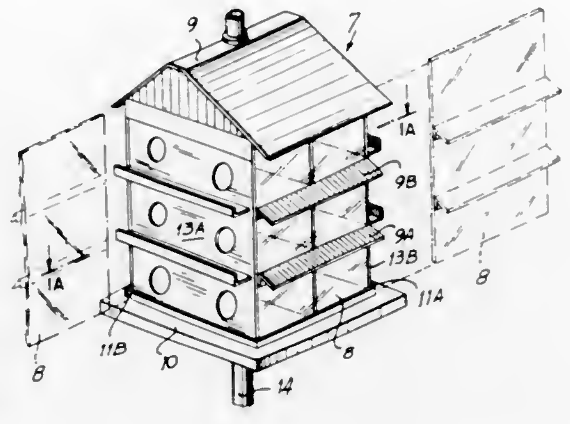


An apparatus for heat-treatment of continuous lengths of metal, particularly continuous bands, strips, sheets or wires of ferrous metal, to effect the annealing or tempering thereof, and/or the reduction of the oxides thereon, preparatory to the passage thereof through a liquid treating bath, for example, a molten metal coating bath, such as aluminum, zinc, tin or the like, if an effective protective corrosion-resistant coating on the ferrous metal is sought to be attained. The continuous length of metal is heated by the direct application of electrical energy thereto as the same travels between conveyor or guide rolls to which the electrical potentials are applied to generate heat, by the Joule effect, in the transient lengths between the rolls, while the metal travels in otherwise unheated chambers, which may contain a suitable protective gaseous atmosphere. The spacing between the conveying rolls is diminish-ed, corresponding to the increasing thermal content of the travelling length of metal beyond the inlet and towards the outlet, and the eventual treating bath, to equalize the electrical heat energy, represented by the product I^2R, in the successive lengths between the rolls, to compensate for the higher resistivity of the hotter lengths of metal in the advanced path thereof, so that the current loadings of the multiple stages of the power supply are substantially equalized.

3,792,685
PURPLE MARTIN BIRDHOUSE

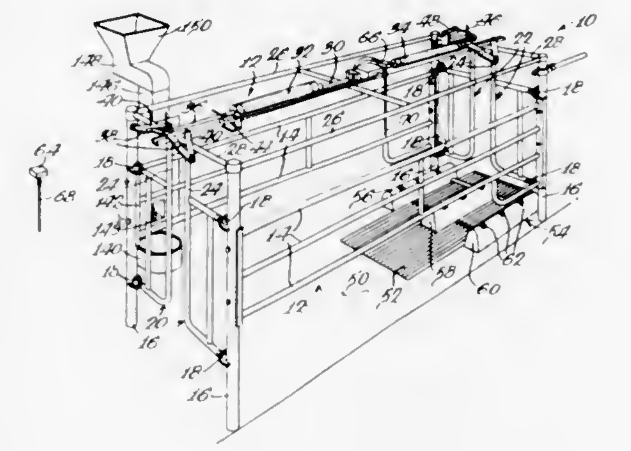
Elliot Wiener, Staten Island, N.Y., assignor to Armond Industries, Inc., New York, N.Y.
Filed Dec. 3, 1971, Ser. No. 204,523
Int. Cl. A01k *31/00*
U.S. Cl. 119—23 **9 Claims**

A purple martin birdhouse having opaque roof structure and exterior walls of a transparent composition through which light may pass providing for a lighted interior of the birdhouse whereby starlings make no attempt to nest within the birdhouse. Preferably the exterior walls in their entirety are easily removable to expose and gain access to one or more interior compartments for cleaning between seasons, the exterior wall(s) having a separate opening for each separate compartment of the birdhouse. The birdhouse has a plurality of separate interconnected compartments with a separate entrance for each compartment defined in the respective exterior walls for that particular compartment. Preferably the entire birdhouse has tubular structure extending between the upper roof and the lower floor through which a pole is insertable and over which the birdhouse is slidable downwardly to a lower level by a line attached to the birdhouse extending upwardly to a pulley at an upper end of the pole, downwardly through the pole and around a pulley in an opening at the lower end of the pole and upwardly to an attaching point at the base of the lower floor of the birdhouse.



3,792,686
COW PREPARATION STALL FOR MILKING PARLORS

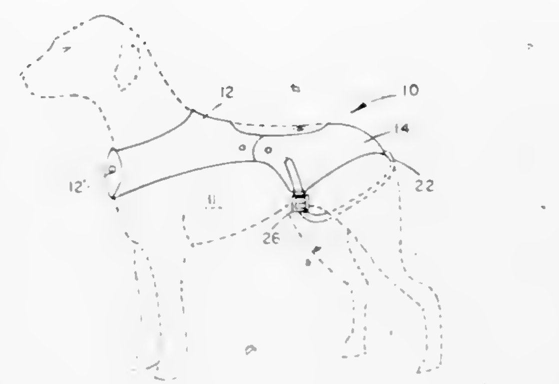
Lyle L. Needham, Bellwood, and Harold V. Swanson, Downers Grove, both of Ill., assignors to Babson Bros. Co., Oak Brook, Ill.
Continuation-in-part of Ser. No. 75,951, Sept. 28, 1970, abandoned. This application June 13, 1972, Ser. No. 262,359
Int. Cl. A01j *05/00*
U.S. Cl. 119—14.03 **14 Claims**



Apparatus for automatically preparing a cow for milking. The apparatus includes a stall having front and rear gates for confining the cow with the front gate being openable to permit the cow to leave the stall and the rear gate being openable to permit another cow to enter the stall. Located just forwardly of the rear gate is a spray assembly which is operable to sequentially spray a cow's udder with a cleaning solution and a rinsing solution. A detector located forwardly of the stall determines when a cow has left the same to be milked for automatically closing the front gate and opening the rear gate to admit another cow. A detector within the stall senses when the other cow has entered the same to close the rear gate and actuate the spray assembly. Also included is a mechanism for dispensing feed to a feed trough in the stall so that a cow may be fed while undergoing preparation for milking.

3,792,687
ANIMAL WASTE RECEIVING DEVICE

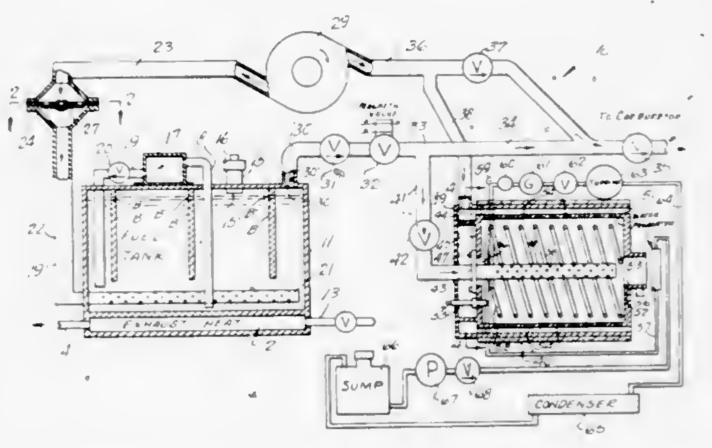
Alexander Ehrman, Brooklyn, N.Y., assignor to Excello-Film Pak, Inc., Brooklyn, N.Y.
Filed Aug. 11, 1972, Ser. No. 279,932
Int. Cl. A01k *23/00*
U.S. Cl. 119—95 **11 Claims**



A device for receiving waste products of a dog has a harness to be securely placed on the dog. The harness has two elongated straps, each adapted to extend from the top of the hind end of the dog, under a respective leg to a buckle on the side of the dog. A normally flat opaque polyethylene bag having an opening and two side flaps disposed about the opening is connected to the harness in a position to receive the waste products of the dog. The straps are advantageously made from a vinyl plastic material and the bag is connected to the straps by means of two-sided adhesive pressure transfer tape which is releasably connected to the straps.

3,792,688
ANTI-POLLUTION GASIFIED LIQUID FUEL SYSTEM

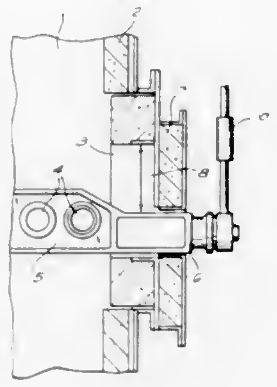
Lewis M. D. Grainger, Rt. 1, Glen Allen, Va.
Filed Nov. 9, 1972, Ser. No. 304,932
Int. Cl. F22b *37/10*
U.S. Cl. 122—248 **6 Claims**



A system in which liquid fuel is gasified by being heated and having air bubbled therethrough to produce a gaseous fuel which is fed directly to an internal combustion engine or may be burned in a steam boiler producing steam to operate a turbine, a reciprocating steam engine or any other steam actuated device.

3,792,689
REFORMER HEATER

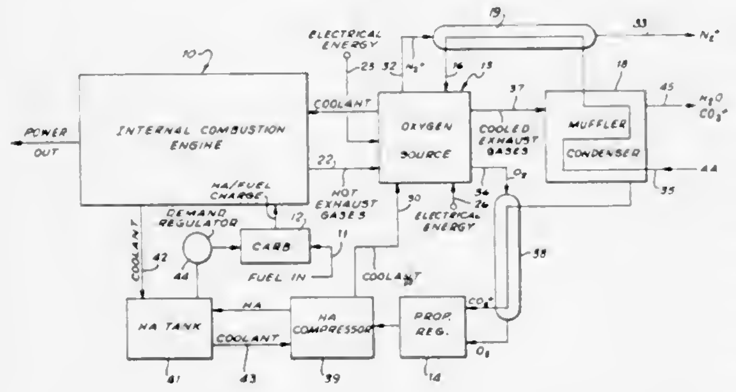
Alan N. Cross, Little Neck, N.Y., assignor to The Lummus Company, Bloomfield, N.J.
Filed Nov. 13, 1972, Ser. No. 305,979
Int. Cl. F22b *37/24*
U.S. Cl. 122—510 **6 Claims**



A wall bounding in part a heating chamber of a furnace has an opening. A bank of tubes extends in cantilevered relationship through the chamber; the free ends of these tubes are subject to vertical and horizontal displacement when the tubes expand and contract due to heating. A connecting element connects the free ends of the tubes and moves with them. A portion of the connecting element extends through the opening of the wall and is engaged from above by a constant-support hanger. The opening is closed by a cover which is carried on the connecting element portion and movable with the same. The connecting element portion can move vertically and horizontally in the opening.

3,792,690
METHOD AND SYSTEM FOR OPEN CYCLE OPERATION OF INTERNAL COMBUSTION ENGINES

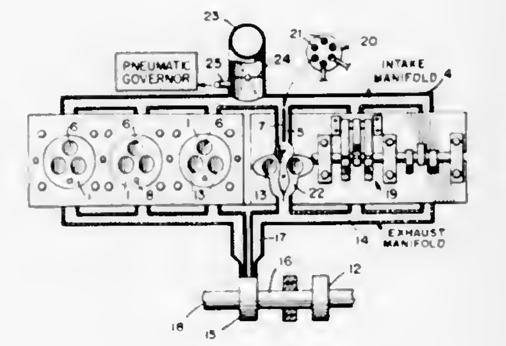
Theodore W. Cooper, 1269 Parkwood Dr., Novato, Calif.
Filed Mar. 22, 1972, Ser. No. 236,818
Int. Cl. F02b *51/00*
U.S. Cl. 123—3 **16 Claims**



A method and system for the open cycle operation of an internal combustion engine to achieve more complete combustion and increased efficiency, and to effectively reduce or eliminate harmful exhaust pollutants. A combustible charge is formed in a combustion chamber of the engine with a given ratio of hybrid air and fuel. The hybrid air is comprised essentially of oxygen from a diatomic oxygen source or in part by oxygen and in part by an oxygen diluent from the engine's products of combustion. The system provides a fuel limited combustion process by establishing a stoichiometric excess of oxygen in the hybrid air of the combustion charge and with the oxygen diluent comprising essentially gaseous carbon dioxide, or a mixture of gaseous carbon dioxide and water, with little or no nitrogen. The combustion process is highly efficient and produces relatively little or no unburned fuel components, and relatively little or no nitrogen oxides, in the exhaust. In one embodiment a portion of the exhaust gases is diverted to produce the diluent which is then combined with diatomic oxygen to form hybrid air in a preset ratio to provide the stoichiometric excess of oxygen with respect to the fuel charge, and the hybrid air is then directed to the combustion chamber on a demand basis. In another embodiment the oxygen is first combined with fuel to form an oxygen/fuel mixture which is added to the exhaust product diluent in an intake manifold. In another embodiment an oxygen/fuel mixture is added, to the exhaust product diluent in the combustion chamber. In another embodiment the rate of combustion is limited by providing a hybrid fuel which includes a fuel diluent. In another embodiment the oxygen source comprises a chemical process utilizing a reducing agent for combination with oxygen in atmospheric air by formation of an oxide, followed by an endothermic dissociation of the oxide to release the oxygen for storage under pressure. In another embodiment the oxygen source comprises a physical process which includes liquifying air to extract nitrogen therefrom by fractional distillation and returning the nitrogen to the atmosphere after transferring heat to it from the air being taken in for liquification.

3,792,691
AIR COOLED ANTIPOLLUTION ENGINE

George Sahnas, 6032 W. Irving Park Rd., Chicago, Ill.
Filed Sept. 15, 1971, Ser. No. 180,649
Int. Cl. F02b *41/00*
U.S. Cl. 123—26 R **6 Claims**

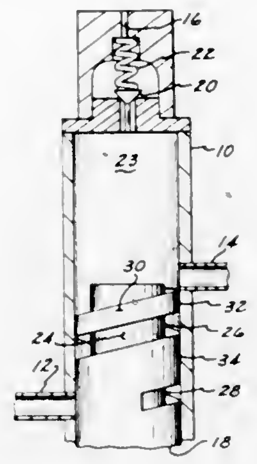


An antipollution engine admits supercharged or compressed air into each cylinder each time the piston therein moves downwardly and just before it reaches lower dead center. This compressed air is in addition to the atmospheric air which mixes with the fuel and is ignited. The compressed air for each cycle enters the cylinder the first time on the downward stroke of the piston when the mixture of fuel and atmospheric air is admitted through the intake valve. After ignition a second charge of compressed air is admitted just before the next time the piston reaches lower dead center. This second charge not only cools the cylinder and piston, but also insures further and complete burning of the combustion gases so that the gas which is exhausted is clean and pure.

3,792,692
FUEL INJECTION DEVICE

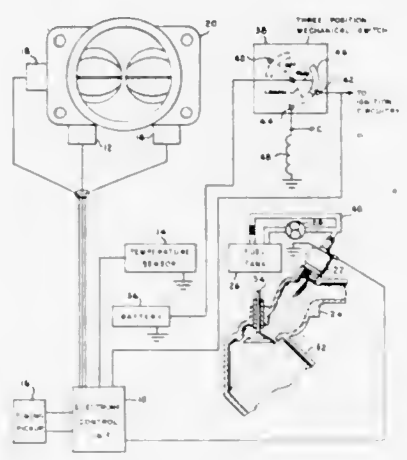
Leo R. Kiley, Groose Pointe Woods, Mich., assignor to Teledyne Industries, Inc., Los Angeles, Calif.
Filed Mar. 22, 1972, Ser. No. 237,089
Int. Cl. F02m *45/06*
U.S. Cl. 123—32 G **10 Claims**

A fuel injection device for an internal combustion engine provides for a first injection, or preinjection, and a second injection, or main injection, of fuel; the duration of the injections and the interval of time between injections being controlled by a helical groove and helical flat-topped ridge on a rotatable piston. The ridge has upper and lower portions of varying widths to control the duration of the two injections, and the groove has an upper portion of varying width to control the time interval between injections and has a lower portion to terminate the second injection.



3,792,693
STORED TEMPERATURE COLD START AUXILIARY SYSTEM

David G. Luchaco, Horseheads, N.Y., assignor to The Bendix Corporation, Southfield, Mich.
Filed Sept. 10, 1971, Ser. No. 179,390
Int. Cl. F02m *51/00;* **F02b** *3/00;* **F02n** *17/00*
U.S. Cl. 123—32 EA 5 Claims

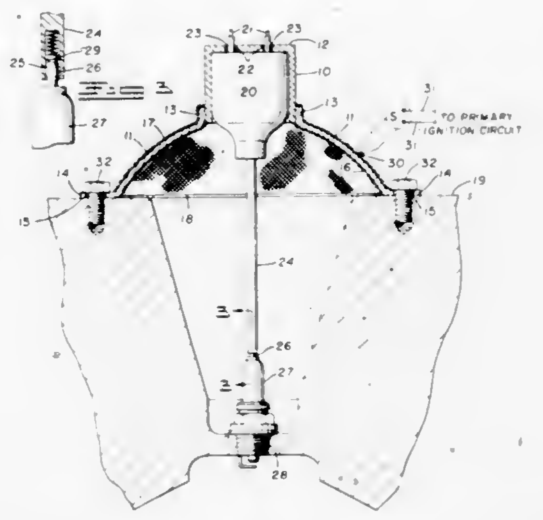


A cold start auxiliary circuit for use in conjunction with an electronically controlled fuel supply system is disclosed herein. The cold start auxiliary circuit is comprised of a first circuit which receives and stores a signal indicative of instantaneous engine temperature during the time period when the electrical system energization of the vehicle is substantially stable and a second circuit which is energized by the vehicle electrical system and is triggered upon the initiation of engine cranking but which is otherwise not influenced by the electrical energization fluctuation incident to the cranking cycle. The cold start circuit produces an output signal which is substantially proportional to the difference between the sensed engine temperature and an established reference upon triggering of the second circuit.

3,792,694
SPARK PLUG SAFETY SHIELD

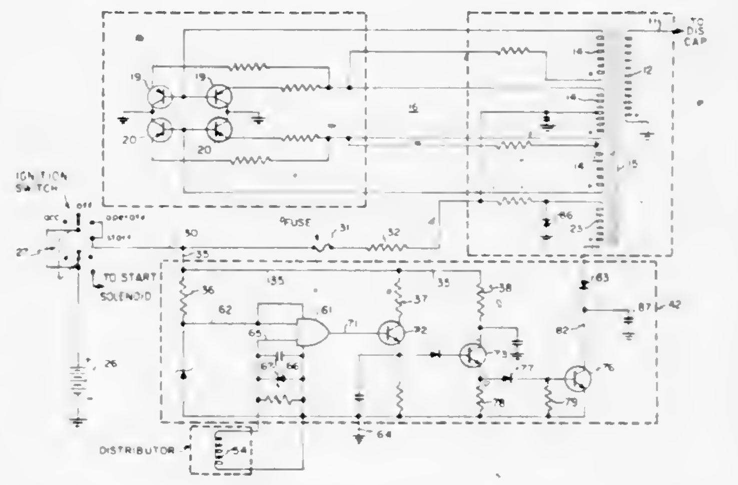
Alfred R. Brenholts, Houston, Tex., assignor to Stitt Spark Plug Company, Conroe, Tex.
Filed Mar. 30, 1972, Ser. No. 239,554
Int. Cl. F02p *11/00*
U.S. Cl. 123—148 A **5 Claims**

A flame and explosion preventive safety shield for detachable securement to the head block of an internal combustion engine in surrounding and encasing relation to each spark plug to provide a structural flame barrier between the spark plug and its high tension lead and the ambient atmosphere surrounding the engine. The safety shield incorporates a spark coil and a secondary lead for supplying high voltage current to the spark plug and one or more fine mesh wire screens arranged to form a heat sink-type flame barrier around the spark plug and the high voltage secondary lead of the spark coil to thereby isolate the spark plug and its high voltage lead from a potentially combustible atmosphere surrounding the engine.



3,792,695
CONTINUOUS-WAVE IGNITION SYSTEM

Robert E. Canup, Richmond, Va., assignor to Texaco Inc., New York, N.Y.
Filed Oct. 29, 1971, Ser. No. 193,909
Int. Cl. F02p *3/02*
U.S. Cl. 123—148 E **4 Claims**



A high-frequency continuous-wave ignition system. It employs a control winding with DC bias, to start and stop an oscillator. The start time and duration of oscillator operation takes place as timed by a breaker-pointless means under control of engine crank-shaft angle.

3,792,696
COMBUSTION ENGINE THROTTLE CONTROL

Jesse R. Hollins, One Chester Dr., Great Neck, N.Y.
Filed Feb. 14, 1972, Ser. No. 225,875
Int. Cl. F02b *77/08*
U.S. Cl. 123—198 DB **5 Claims**

A system for preventing an internal combustion spark ignition engine from dieseling after the ignition thereof has been shut off. Said system includes manually operable means for moving the carburetor throttle toward a position wherein a

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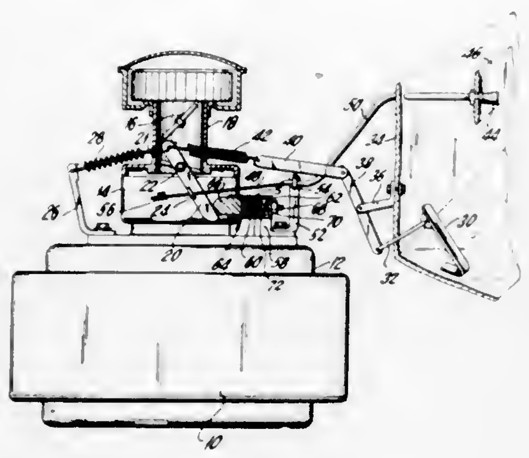
3,792,700

The mechanical means in a specific embodiment comprises minimum of fuel/air mixture is directed to the intake manifold and combustion chambers. The operator of the vehicle by so moving the carburetor throttle when the ignition is off and the engine is dieseling halts said dieseling causing the engine to cease cycling.



3,792,697
COOLING FANS FOR LIQUID-COOLED INTERNAL COMBUSTION ENGINES

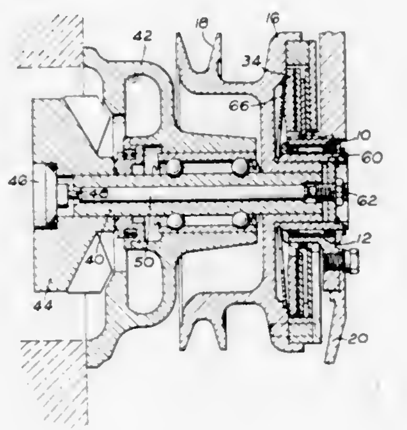
Robert Dennis Walter, Coventry, and William Frederick Pitcher, Birmingham, both of England, assignors to Concentric Pumps Limited, Birmingham, England

Filed Apr. 17, 1972, Ser. No. 244,632

Claims priority, application Great Britain, July 31, 1971, 36117/71

Int. Cl. F01p *7/08*

U.S. Cl. 123—41.12 **2 Claims**



A hollow drive spindle fast with a pulley is drivingly connected to a pump impeller, and a fan assembly is mounted for rotation with respect to said pulley and said drive spindle. Friction clutch means comprising clutch plates respectively drivingly connected to the fan assembly and to the pulley is provided with a pressure plate operable to frictionally engage said clutch plates and thereby drivingly connect the pulley and the fan assembly. A wax cell thermostat is mounted in the pump impeller for exposure to coolant fluid, and a rod slidably received in said hollow drive spindle is axially moved therein by expansion and contraction of the thermostat. A part fast with said pulley has a diametral bore, and a diametrally extending member is loosely received in said bore and is engageable with said pressure plate. Said rod is engageable with said member, in response to expansion of said thermostat, to displace said member axially and thereby displace the pressure plate to operate the clutch means.

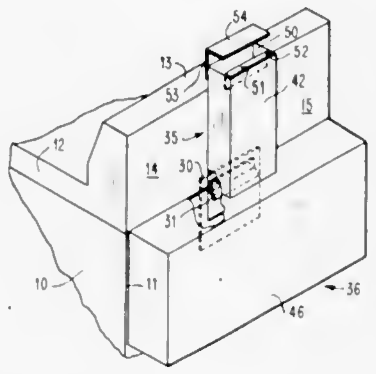
3,792,698
MEANS FOR MUFFLING EXHAUST OF PRESSURE COOKING APPARATUS

Eugene A. Pottinger, Louisville, and Winston L. Shelton, Jeffersontown, both of Ky., assignors to Commercial Appliances, Inc., Jeffersontown, Ky.

Filed June 8, 1973, Ser. No. 368,246

Int. Cl. A47j *36/38;* **F24c** *15/20*

U.S. Cl. 126—299 A **6 Claims**



A readily cleanable muffler is provided for receiving the greasy steam exhaust of a pressure cooking apparatus and for venting the exhaust in a quiet manner. The muffler is detachable for cleaning and for removal of collected condensate.

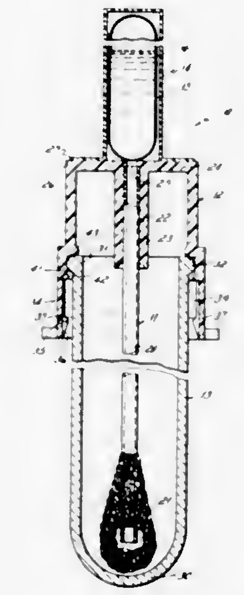
3,792,699
DISPOSABLE SWAB UNIT

Ronald B. Tobin, Lockbourne, and Charles C. Waldbillig, Columbus, both of Ohio, assignors to Medex, Inc., Hilliard, Ohio

Filed May 30, 1972, Ser. No. 257,850

Int. Cl. A61b *10/00*

U.S. Cl. 128—2 W **6 Claims**



A swab unit comprising an enclosure, a cap for the enclosure, a hollow stemmed swab secured to the cap and in communication with a flexible walled housing mounted on the cap. A frangible liquid filled ampoule is located in the housing. Upon squeezing of the flexible walls of the housing, the ampoule is broken, permitting the liquid to flow through the hollow stem of the swab to moisten absorbent material secured to the end of the swab.

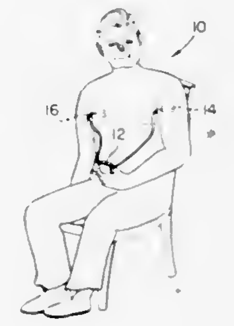
3,792,700
APPARATUS AND METHOD OF MONITORING THE ELECTRICAL ACTIVITY OF THE HEART OF A HUMAN WITH ARMPIT LOCATED ELECTRODES

Stanley J. Sarnoff, Bethesda, Md., and Herbert E. Reinhold, Jr., River Vale, N.J., assignors to Survival Technology, Inc., Bethesda, Md.

Filed Mar. 1, 1972, Ser. No. 230,753

Int. Cl. A61b *5/04*

U.S. Cl. 128—2.06 R **8 Claims**



Apparatus and method for quickly, easily and reliably monitoring the electrical activity of the heart of a human. In the exemplary embodiment there is provided an electrode construction for use with well-known cardiac monitoring means comprising a carbon impregnated plastic body having a conductive grid embedded therein with a lead electrically connected thereto and extending from the body. These electrodes are adapted for placement and retention in the user's armpits to pick up the heartbeat signal and transmit it to the cardiac monitor.

3,792,701
NEUTRALISING DEVICE FOR URINARY, URETERAL AND KIDNEY PELVIS CALULI

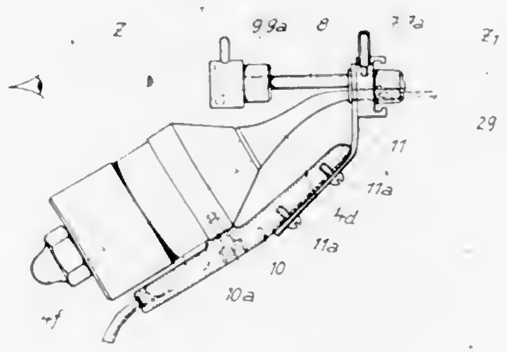
Eduard Kloz, and Heinz Kloz, both of 36 Teufenstrasse, Villingendorf, Germany

Filed Nov. 2, 1971, Ser. No. 194,833

Claims priority, application Germany, Nov. 3, 1970, 2053982

Int. Cl. A61b *1/30*

U.S. Cl. 128—7 **11 Claims**



A device for neutralization of calculi in the urinary tract, ureteral tract and kidney comprising a probe means and a piezoelectric transducer for producing ultrasonic vibration in the probe means. The transducer has piezoelectric discs disposed between a base member and a sound transmitting member. Mechanical means are provided to tightly hold the base member, piezoelectric discs and sound transmitting member together. The transducer is interconnected with the probe means for transmitting ultrasonic vibrations from the transducer to the probe means.

The mechanical means in a specific embodiment comprises a one-piece bolt having a cross-section along its end portion of an exponential horn which is reduced exponentially as a function of its length. The end of the horn-shaped end portion is designed as a cylindrical, straight socket having an internal bore into which rigid or flexible vibrating probes may be attached. the probe means includes a light conductor of a cystoscope with a common flushing probe member about which water circulates.

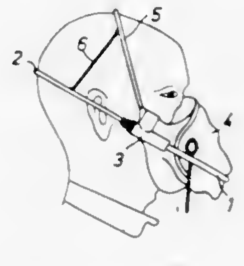
3,792,702
HARNESS FOR RAPIDLY PLACING IN POSITION A DEVICE SUCH AS A RESPIRATOR MASK

Rene Delest, Meudon, France, assignor to Societe Ulmer & Co., Paris, France

Filed Apr. 10, 1972, Ser. No. 242,655

Int. Cl. A62b *18/08*

U.S. Cl. 128—146.7 **14 Claims**



A harness for rapidly placing in position a device, such as a respiratory mask, comprising at least one guide case fixed to said device, at least one semi-rigid strap slidably mounted in said case, elastic means for causing upon their release the sliding of said semi-rigid strap and locking means for locking said elastic means in a position of tension.

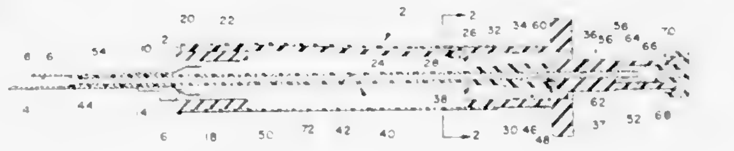
3,792,703
CATHETER PLACEMENT UNIT

Harvey Robert Moorehead, Salt Lake City, Utah, assignor to Deseret Pharmaceutical Co. Inc., Sandy, Utah

Filed July 10, 1972, Ser. No. 270,342

Int. Cl. A61m *5/00*

U.S. Cl. 128—214.4 **4 Claims**



A catheter placement unit comprising means for maintaining a catheter in alignment with the bore of a stylet needle and support means extendable through the bore of said catheter and advanceable with said catheter through said needle to prevent misalignment of said catheter with said needle during placement.

3,792,704
PIPE TOBACCO SMOKING SYSTEM

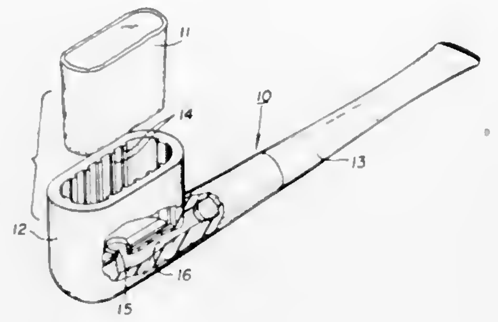
Melvin A. Parker, 56 Viola Dr., Glen Cove, N.Y.

Filed May 12, 1971, Ser. No. 142,689

Int. Cl. A24d *01/14*

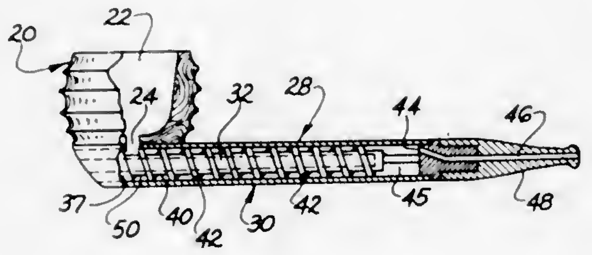
U.S. Cl. 131—3 **15 Claims**

A tobacco pipe smoking system wherein a pipe and tobacco capsule are mutually designed to yield a slim-line smoking combination that can be manufactured from relatively low temperature thermo-plastic materials. The pipe includes a bowl and stem. The bowl is designed to support the capsule spaced from the inner walls and includes a tunnel extending across the bottom thereof. One end of this tunnel opens upwardly into the tobacco capsule and the other end communicates directly with the pipe stem. The capsule comprises a charge of particulate smoking tobacco within a sheath of imperforate incombustible sheet material, having a passage through the bottom thereof. The capsule may include a filter surmounted by a wafer located between the charge and the bottom passage in one embodiment, and a circuitous air space in place of the wafer, in another.



3,792,705
SMOKING PIPE

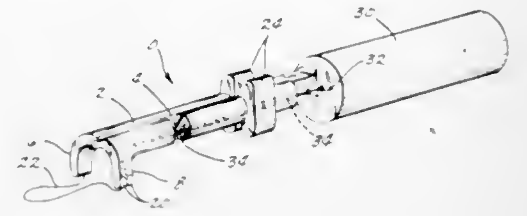
J. Robert Frederick, 3130 State Road, Ashtabula, Ohio
Continuation-in-part of Ser. No. 22,252, March 24, 1970, abandoned. This application Oct. 13, 1972, Ser. No. 297,438
Int. Cl. A24f *1/16, 13/04*
U.S. Cl. 131—209 **9 Claims**



A smoking pipe which is characterized by an improved stem which includes a condenser portion provided with a groove having a configuration which increases the effective path of the smoke drawn from the bowl to the user. The condenser portion is slideably and removably mounted in the tubular stem. The stem includes a conical nest portion having an upper shoulder and a lower opening and a pair of aligned openings adapted to receive the inner end of the condenser portion. The lower end of the bowl has a conical exterior which mates with the conical nest portion and has a through passage adapted to receive the condenser portion whereby the inner end of the condenser portion removably secures the bowl in said nest portion. Suitable passages are provided whereby smoke can be drawn from the bowl, through the condenser portion and through a mouthpiece connected to the outer end of the stem. A second embodiment is disclosed wherein an upper and lower annular shoulder on the bowl cooperate with a through hole in the nest portion to assure proper and vertical and rotational alignment between the bowl and nest portion. In addition, the same annular shoulders of the bowl cooperate with the inner end of the condenser portion to appropriately align the smoke-receiving passages therein to assure the passage of smoke through the desired sequence of smoke-receiving passages before being emitted through the mouthpiece.

3,792,706
DENTAL FLOSS HOLDER

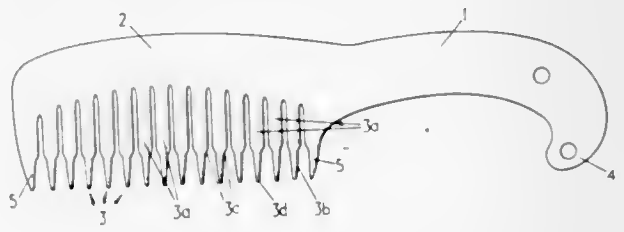
Alfred E. Keese, 232 S. Story St., Boone, Iowa
Filed July 31, 1972, Ser. No. 276,663
Int. Cl. A61c *15/00*
U.S. Cl. 132—91 **6 Claims**



A pair of elongated members are pivotally and slidably interconnected and each includes at one end perpendicular finger portions to which a length of dental floss is connected. Shoulders are provided intermediate the ends of the elongated members for pivoting and sliding the members relative to each other. A housing having a chamber is provided on the end of one of the members and functions as a handle and a storage receptacle for a roll of dental floss which extends therefrom through an elongate passageway in one of the members to a gripping station on the end of the associated finger portion. An alternate structure includes an elongated flexible member adapted to be snapped between opposing positions and has spaced apart fingers including a length of dental floss extending therebetween. An elongated actuating member is connected to the outer end of the elongated flexible member for moving the flexible member between its two positions. A supply of dental floss is provided in a housing at the opposite end of the flexible member. The finger portions are resilient and will deform to a position parallel to each other and perpendicular to the flexible member upon sufficient forces being applied thereto by the dental floss.

3,792,707
GROOMING IMPLEMENT

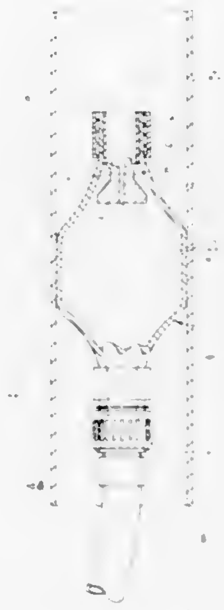
Earl Silas Tupper, Nassau, Bahamas, assignor to Tup! (Panama) S.A., Panama City, Panama
Filed July 26, 1972, Ser. No. 275,439
Claims priority, application Great Britain, July 30, 1971, 36074/71
Int. Cl. A45d *24/00*
U.S. Cl. 132—150 **6 Claims**



A comb or like grooming implement has a back and generally parallel integral teeth each of a rounded cross-section which is at least as wide as it is thick. A preferred cross-section is circular, and such circular teeth with an inner portion of greater diameter than a (preferably tapered) outer portion, and with a smooth transition region, are preferred. Such combs are more resistant to breakage and more effective in combing difficult hair.

3,792,708
FLUID FLOW DIRECTOR

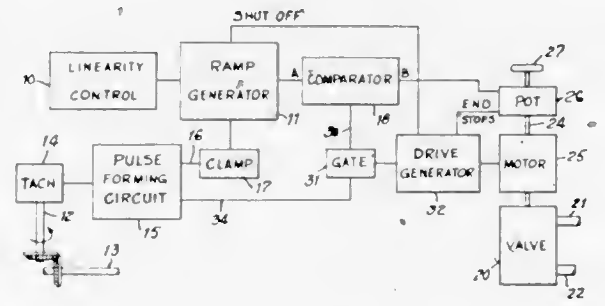
George Tash, 6539 Gaviota Ave., Van Nuys, Calif.
Continuation-in-part of Ser. No. 108,436, Jan. 21, 1971, abandoned. This application June 16, 1971, Ser. No. 153,585
Int. Cl. B08b *9/02;* **F16k** *15/14*
U.S. Cl. 134—167 C **7 Claims**



A valved flushing device consisting of an elastomeric tube having one end adapted to be connected to a suitable source of water and having a valve disposed in its opposite end, the valve opening in response to the expansion of the elastomeric member into sealing engagement with the internal diameter of a pipe that it is desired to unclog. The alternate opening and closing of the valve due to pressure build up and release causing the valve to emit pulsating jets of high pressure water into the clogged pipe in order to dislodge the material clogging the pipe.

3,792,709
SPREAD RATE CONTROLLER

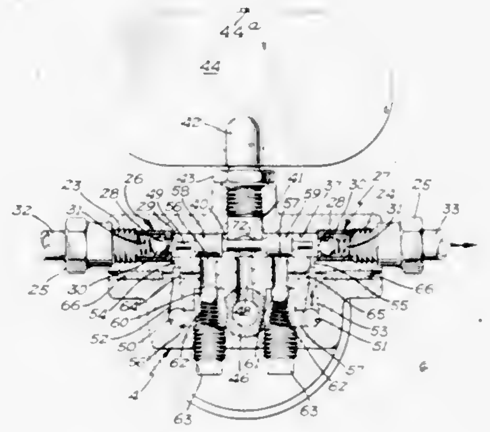
Theodore E. Johnson, Jr., South Hamilton, and Edward W. Dahn, Chelmsford, both of Mass., assignors to Comdell, Inc., Beverly, Mass.
Filed Aug. 21, 1972, Ser. No. 282,557
Int. Cl. B05b *9/06*
U.S. Cl. 137—47 **7 Claims**



Apparatus for sensing the rotational speed of a shaft and positioning a control device in a position predetermined relative to the speed of the shaft, the apparatus being particularly suited for the operation of mobile spreading equipment in which the spreading rate is controlled relative to the drive shaft speed of the vehicle. The controller converts the rotational speed of the shaft and the position of the control device to comparable electrical signals which are then compared to produce a resultant to effect further positioning of the control device. Both linear and nonlinear weighting is applied to produce the desired function in the resultant.

3,792,710
PUMP AND VALVE MEANS

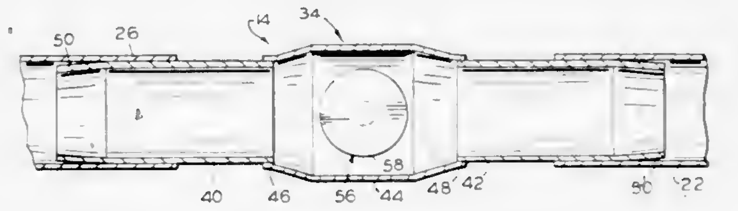
Hugh L. McDermott, Minneapolis, Minn., assignor to Safe Way Hydraulics, Inc., Minneapolis, Minn.
Filed May 22, 1972, Ser. No. 244,946
Int. Cl. G05d *7/01;* **F15b** *7/06*
U.S. Cl. 137—102 **2 Claims**



A motor driven pump and valve assembly including a reversible pump and valve mechanism for controlling flow of fluid between the pump and a fluid pressure operated device driven by fluid from the pump. The valve mechanism includes a movable valve element and check valve operative to provide a fluid lock for the device when the pump is inoperative.

3,792,711
IRRIGATION TRAIL LINE DRAIN VALVES

Joseph A. Bedard, Eugene, Oreg., assignor to Ireco Industries, Inc., Eugene, Oreg.
Filed Oct. 17, 1972, Ser. No. 298,334
Int. Cl. E03c *1/10;* **F16k** *45/00*
U.S. Cl. 137—217 **2 Claims**



A trail line press-in drain valve has a pair of press-in tubes having tapered ends and joined to tapered ends of an enlarged drain tube having a hole in its side in which a check valve is mounted. The press-in tubes are pressed into trail line pipe sections to drain the trail line when the trail line extends downhill. A similar press-in drain valve connects a trail line shoe to a trail line.

3,792,712

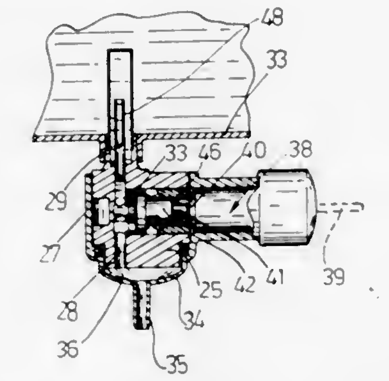
piston reciprocable therein. A flow passage intersects and

vided a check valve surrounding the poppet valve for the purpose of permitting the free flow of line pressure from the first

The flow control members moved by the diaphragm members regulate flow through the regulator.

3,792,712
ANTI-THEFT DEVICE FOR FUEL LINE FROM FUEL TANK OF MOTORCYCLES, CARS OR OTHER VEHICLES

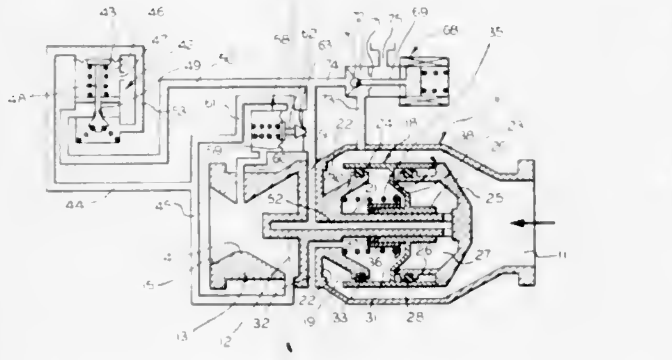
Toriddo Fontana, Bologna, Italy, assignor to S.p.A. (Fabbrica Accessori Auto Bolognese), Bologna, Italy
Filed Apr. 10, 1972, Ser. No. 242,356
Claims priority, application Italy, Apr. 29, 1971, 3414 A/71
Int. Cl. C16k *35/06*
U.S. Cl. 137—384.2 **1 Claim**



Anti-theft device for isolating and reconnecting the pipe line leading, in particular, from the fuel tank of motorcycles, cars and other vehicles, by means of which the danger is eliminated both of fuel being removed through the said pipe line and of the vehicles themselves being stolen.

3,792,713
PRESSURE REGULATOR WITH FLOW LIMITER

Vijay K. Zadoo, Mt. Prospect, Ill., assignor to Vapor Corporation, Chicago, Ill.
Filed May 21, 1973, Ser. No. 362,458
Int. Cl. F16k *31/363*
U.S. Cl. 137—486 **6 Claims**

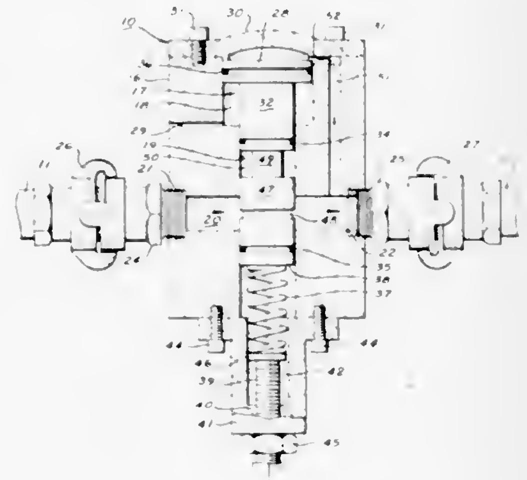


An inline fluid flow control valve having a pressure regulating means for modulating the valve position to maintain a relatively constant output pressure and a fluid flow limiting means for overriding the pressure regulating means in the event of loss of downstream pressurization to limit the fluid flow through the valve to a nominal value.

3,792,714
SAFETY VALVE STRUCTURE

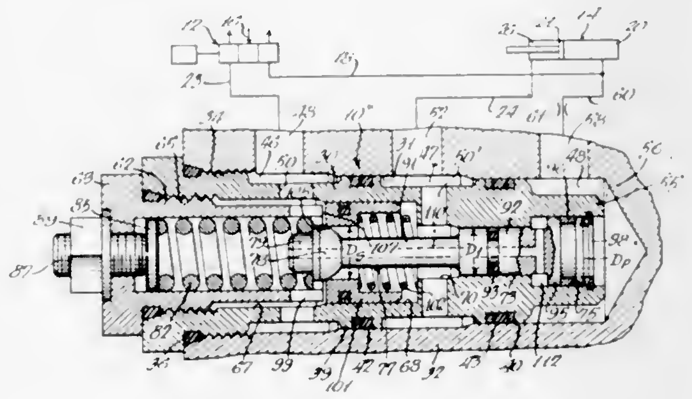
William S. Miller, 2306-32rd Ave., San Francisco, Calif.
Filed May 4, 1972, Ser. No. 250,207
Int. Cl. F16k *31/143*
U.S. Cl. 137—494 **3 Claims**

A safety valve structure for use in the pneumatic supply line between an air compressor and an pneumatic tool operated thereby to sharply reduce the flow of air through the supply line in response to an abnormal decrease in pressure adjacent the tool below a predetermined value such as will occur upon breakage of the supply line. The safety valve structure includes a casing defining an axially extending cylinder having a piston reciprocable therein. A flow passage intersects and traverses the cylinder, and a valve element carried by the piston so as to be movable therewith is adapted to open and close the flow passage so as to control the movement of air therethrough. The piston is spring biased toward an inactive position in which the valve element is in its closed position; and a channel provided by the valve element permits a controlled minimum-flow of air therepast to the downstream side of the flow passage whenever the valve element is closed. A passageway interconnecting the downstream end portion of the flow passage and an end portion of the cylinder is adapted to permit the development of a pressure within the cylinder space effective to displace the piston against the biasing force of the spring into its active position in which the valve element is opened. Any sharp reduction in pressure in the downstream end portion of the flow passage enables the spring to return the piston and valve element to their inactive and closed positions, respectively.



3,792,715
SINGLE SEAT HOLDING VALVE

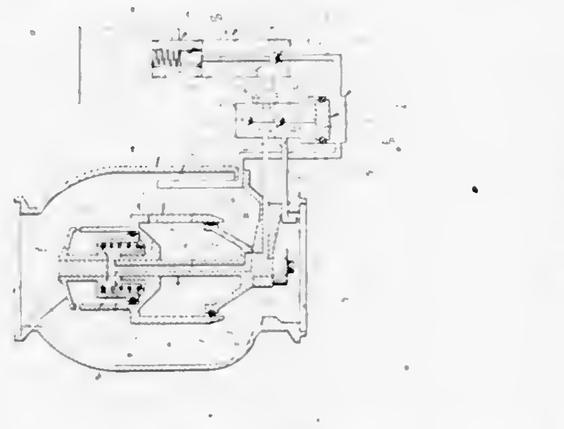
John T. Parrett, St. Joseph, and Donald J. Blenderman, Benton Harbor, both of Mich., assignors to Koehring Company, Benton Harbor, Mich.
Filed Mar. 26, 1973, Ser. No. 344,593
Int. Cl. F16k *11/10*
U.S. Cl. 137—493 **10 Claims**



A holding valve for regulating the exhaust flow of fluid from a hydraulic actuator including a cartridge defining a first port adapted to be connected to a directional control valve, a second port adapted to be connected to one side of the hydraulic actuator and a third port adapted to be connected to the other side of the hydraulic actuator, there being provided a pilot operated poppet valve that closes in opposition to fluid pressure in the actuator through the second port to control exhaust flow from the actuator and also to prevent exhaust flow when the directional valve is in neutral, there also being provided a check valve surrounding the poppet valve for the purpose of permitting the free flow of line pressure from the first port to the second port and the hydraulic actuator, with this check valve being annular in configuration, surrounding the poppet valve and having a shoulder defining the seat for the poppet valve to improve the characteristics of the holding valve and also to permit the simple replacement of the main poppet valve seat when necessary.

3,792,716
INLINE VALVE WITH REVERSE PRESSURE CLOSING MEANS

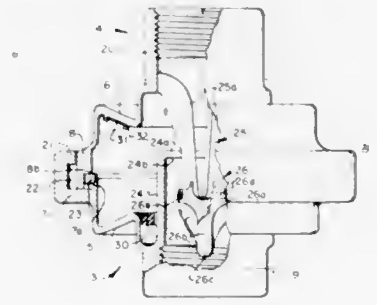
Malcolm A. Sime, Des Plaines; Eugene Lambeau, Park Ridge, and Vijay K. Zadoo, Mount Prospect, all of Ill., assignors to Vapor Corporation, Chicago, Ill.
Filed June 13, 1973, Ser. No. 369,589
Int. Cl. F16k *31/363*
U.S. Cl. 137—492 **4 Claims**



An inline valve for a pressurized fluid system including a sleeve type closure member, a pilot valve and a control valve wherein during normal flow operation the control valve operates to open and close the sleeve type closure member and in the event of pressure reversal when the valve is open the pilot valve will cause the valve to close.

3,792,717
PRESSURE REGULATOR

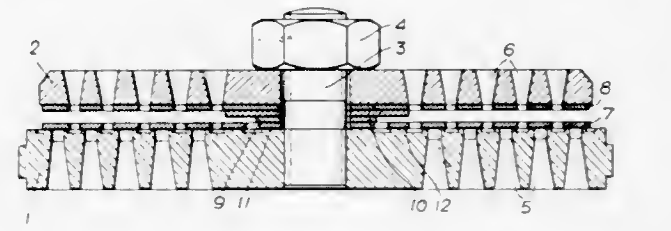
Edward Camp Tibbals, Jr., 240 Brook Pl., Boulder, Colo.
Filed June 15, 1972, Ser. No. 262,992
Int. Cl. F16k *31/365*
U.S. Cl. 137—505.25 **6 Claims**



A low cost, easily assembled pressure regulator having flow control members operable to move with small incremental changes in output pressure near to a set pressure between fully open and completely closed positions in response to sensed pressure conditions. The pressure regulator of the invention consists of a housing formed in two body sections, which are coupled together and that each contain a structural diaphragm member arranged to deflect as a specially proportioned Belleville spring upon sensing of predetermined pressures. Each diaphragm member may serve as a wall interconnecting an essentially rigid coupling ring and an essentially rigid, interiorly threaded sleeve adapted to be connected into a fluid system. The flow control members moved by the diaphragm members regulate flow through the regulator.

3,792,718
PLATE VALVE ASSEMBLY

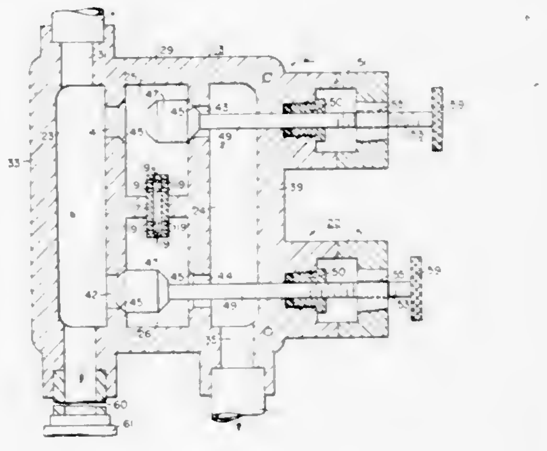
Robert Felix Kohier, Schongau/Lech, Germany, assignor to Hoerbiger Ventiwerke Aktiengesellschaft, Vienna, Austria
Filed Feb. 18, 1972, Ser. No. 227,398
Claims priority, application Australia, Feb. 19, 1971, 1456/71
Int. Cl. F16k *15/14*
U.S. Cl. 137—514 **8 Claims**



A plate valve assembly for a piston compressor which comprises a spaced valve seat and catcher, a valve plate between the valve seat and catcher, a guiding system for the valve plate consisting of at least one flexible link having one extremity integral with the valve plate and at least one abutment overlying the valve plate for limiting deflection of said link in the direction of the catcher.

3,792,719
SELF-CLEANING FLOW RESTRICTING DEVICE

John D. Dickinson, Swarthmore, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 20, 1971, Ser. No. 190,942
Int. Cl. F16k *51/00*
U.S. Cl. 137—546 **4 Claims**

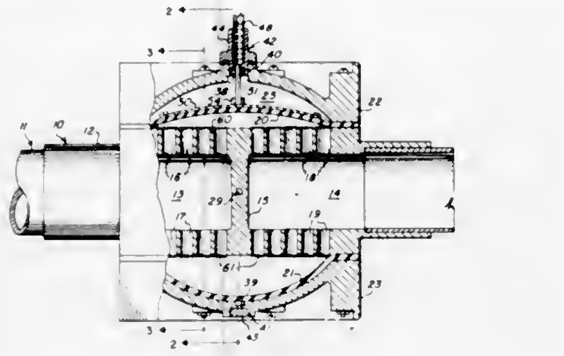


A continuous blow down having a plug-resistant flow restricting device and a pair of two-way valves so disposed in a single housing that the flow through the restricting device can be easily reversed to facilitate cleaning the restricting device while it is in service.

3,792,720
DIAPHRAGM VALVE

James F. Robbins, Westford, Mass., assignor to Sybron Corporation, Rochester, N.Y.
Continuation-in-part of Ser. No. 93,137, Nov. 27, 1970, Pat. No. 3,727,623. This application May 9, 1972, Ser. No. 251,757
Int. Cl. F16k *7/16, 7/17*
U.S. Cl. 137—625.28 **20 Claims**

A diaphragm valve is provided with means to prevent wrinkling of the diaphragm and to accurately control the flow through the valve. The valve has a body with at least one substantially flat valve seat on an exterior surface. Passages extend from an inlet chamber to the valve seats and from the valve seats to an outlet chamber. Each valve seat is covered by a diaphragm, overlying and extending beyond the valve seat, which in turn is covered by a cap. The caps and diaphragms define control cavities overlying the valve seats which may be pressurized to force the diaphragms against the valve seats.



Preferably, at least one of the caps supports a mechanical flow regulator which comprises a flexible backing member and means for moving the backing member towards and away from the valve seat, thereby controlling the freedom of movement of the diaphragm in the control cavity. Also, the diaphragm is preferably pretensioned and a rigid reinforcing member adapted to bear at least part of the tension in the diaphragm is attached to a portion of the diaphragm which extends beyond the valve seat.

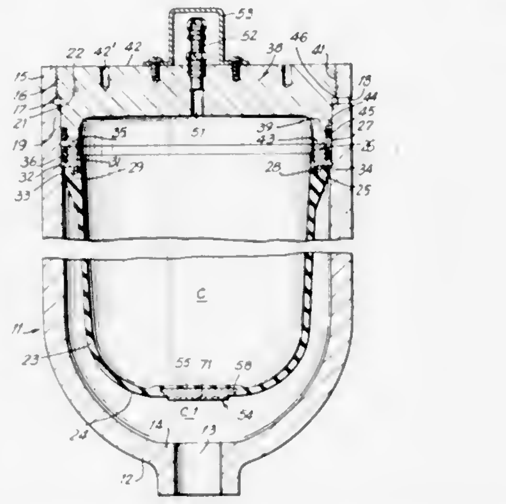
3,792,721
PRESSURE ACCUMULATOR

Abduz Zahid, Monterey Park, Calif., assignor to Greer Hydraulics, Inc., Los Angeles, Calif.

Filed July 28, 1972, Ser. No. 276,147

Int. Cl. F16l *55/04*

U.S. Cl. 138—30 **8 Claims**



This invention relates to the art of pressure vessels, more particularly of the type having a rigid container with a deformable bladder therein dividing the container into two variable volume chambers, each adapted to receive fluid under pressure. A port is in communication with one of said chambers and a valve member mounted axially on the bladder and molded integrally therewith is associated with said port to close the latter. The valve member is molded into the bladder in such manner that the force exerted by the compressed gas in the bladder will exert a minimum of shearing stress against the molded junction of the valve member to the associated end of the bladder to prevent shearing. In addition, the valve member has a portion extending axially behond the molded junction thereby eliminating impact against such molded junction when the valve member seats to close the port.

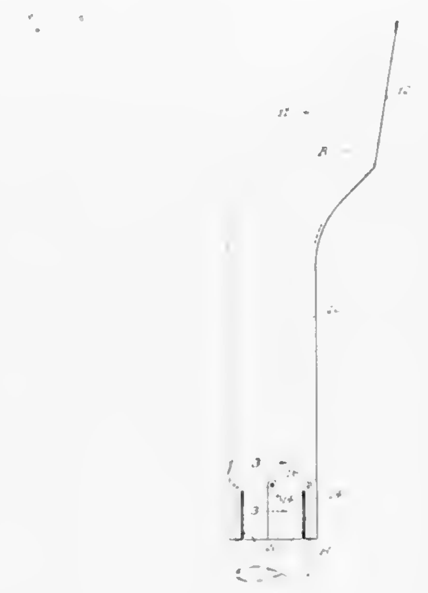
3,792,722
EXHAUST PIPE ATTACHMENT

Marshall C. Harmon, Waterloo, Iowa, assignor to Waterloo Foundry Co., Inc., Waterloo, Iowa

Filed Jan. 12, 1972, Ser. No. 217,126

Int. Cl. F01n *7/00*

U.S. Cl. 138—108 **7 Claims**



Attachment for the discharge end of an upright exhaust pipe of internal combustion engines and Diesel engines.

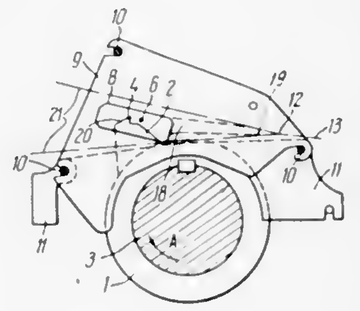
3,792,723
WEFT THREAD END CATCHING AND HOLDING MECHANISM

Dmitry Vladimirovich Titov, 13 Parkovaya ulitsa, 27, 2 korpus, kv. 49, Moscow, U.S.S.R.

Filed Feb. 8, 1972, Ser. No. 224,450

Int. Cl. D03d *49/70*

U.S. Cl. 139—194 **3 Claims**



A weft thread end catching and holding mechanism which includes a stationary plate with an elongated slot therein for the passage of the carrier of the weft thread and a rotary plate in the form of a ring with a projecting tooth mounted on a drive shaft. The tooth is adapted to catch the end of the weft thread emerging from the carrier and is biased into engagement with the stationary plate, for holding the weft thread end caught thereby and for forwarding the same toward the fell of the cloth. The mechanism includes a second stationary plate adjacent the first plate for biasing the tooth into engagement with the first stationary plate.

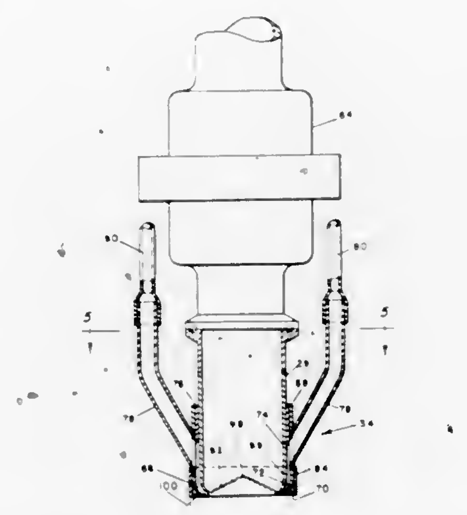
3,792,724
BAG FILLING MACHINE

Donald Arthur Hunter, Mississauga, Ontario, Canada, assignor to Delamere & Williams Company, Limited, Toronto, Canada

Filed May 15, 1972, Ser. No. 253,128

Int. Cl. B67c *3/02*

U.S. Cl. 141—115 **10 Claims**



A bag making and liquid filling machine characterized by a drip-free structure whereby to prevent contamination of the bag making material in an area where a heat seal is to be made.

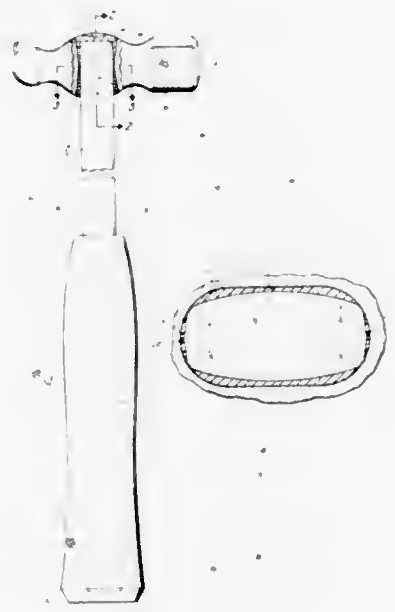
3,792,725
HAMMER

Oscar Burge Burgeson, Bristol, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed Nov. 17, 1972, Ser. No. 307,443

Int. Cl. B25c *1/00;* **B25d** *1/00*

U.S. Cl. 145—29 R **8 Claims**



A new and improved interconnection is provided between the striking element and handle of a percussive tool. The striking element is provided with an eye having side walls converging from both ends thereof to provide a portion of reduced cross section located at the axis of percussion of the tool and the tool handle is of generally rectangular cross section with its corners tangentially and frictionally engaging the portion of reduced cross section to provide an interference fit therewith. The interconnection permits adjustable positioning of the head relative to the handle for achieving a balanced angular relationship between the striking face of the head and the handle of the tool. A suitable impact resistent resin fills the cavity between the handle and the side walls of the eye to form a sleeve extending continuously along the length of the aperture on each side of the handle, but gradually increasing in thickness toward both ends of the eye.

3,792,726
METHOD FOR STRENGHTNENING A METAL SURFACE

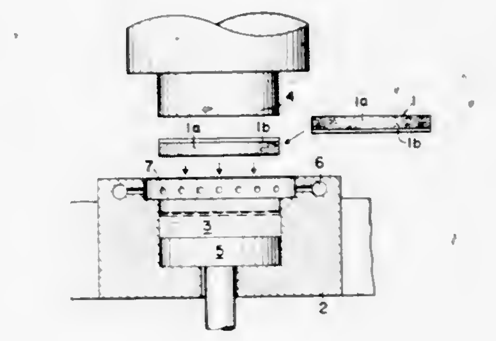
Yoshifumi Sakai, Chiryu; Takeshi Sumi, Chita; Atsushi Wada, Tokai; Mitsuo Morishima, Tokai; Shigeto Kawakaki, Tokai, and Takashi Kozawa, Nagoya, all of Japan, assignors to Daido Deiko Kabushiki Kaisha, Aichi-ken, Japan

Filed Dec. 22, 1971, Ser. No. 210,733

Claims priority, application Japan, Dec. 29, 1970, 45/121220

Int. Cl. B22d *19/00, 27/18*

U.S. Cl. 164—59 **2 Claims**



A metal surface strengthening method comprising attaching, with or without pressure, a preformed plate formed of a metal surface strengthening powder to a fundamental molten metal kept in a gas sprayed protective atmosphere in the mold.

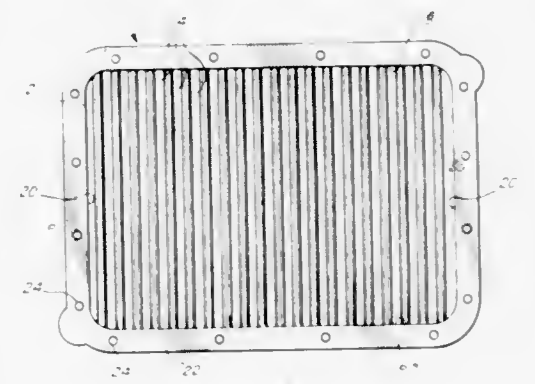
3,792,727
AUTOMOTIVE OIL COOLER

Francis V. Stephenson, Arvada, Colo., assignor to Integrity Transcool Incorporated, Arvada, Colo.

Filed Apr. 19, 1972, Ser. No. 245,519

Int. Cl. B60h *3/00*

U.S. Cl. 165—44 **8 Claims**



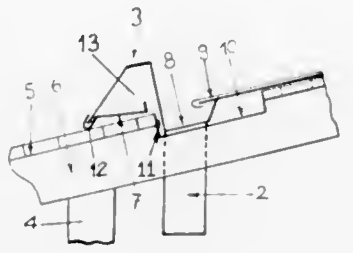
An oil cooler for attachment to a transmission of an automotive vehicle includes a pan with means for attaching the pan to the transmission whereby oil will be continually cooled and retained for use in the pan. The pan includes a single row of tubular members which pass through the pan and have open ends disposed exteriorly of the pan. The tubular members are exposed within the pan in contact with the oil and the movement of air through the tubular members conducts away the heat which otherwise builds up in the oil.

3,792,728

3,792,730

3,792,728
APPARATUS FOR REMOVING SNOW FROM PITCHED ROOFS

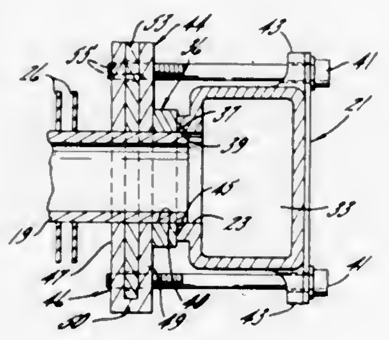
Oscar Bernardi, 50 Via Nevel, Ortesei, Italy
Filed Jan. 19, 1973, Ser. No. 324,962
Int. Cl. E04d *13/10*
U.S. Cl. 165—47 **8 Claims**



Apparatus for removing snow from pitched roofs, comprising an upwardly projecting barrier disposed near the bottom edge of the roof and extending parallel thereto, which stops snow from sliding off the roof. On the upper side of the barrier is a channel and downspout to drain off melted snow. the bottom of the channel protrudes down into the interior of the building, where it is warmed by the interior heat, and the downspout is also disposed within the interior. On the lower side of the channel, the barrier is formed with a full-length enclosure which has an opening to the interior of the building, so that warm air from inside the building can rise into the enclosure and warm the barrier to melt snow. The melted snow then runs off through the channel and downspout.

3,792,729
HEAT EXCHANGER

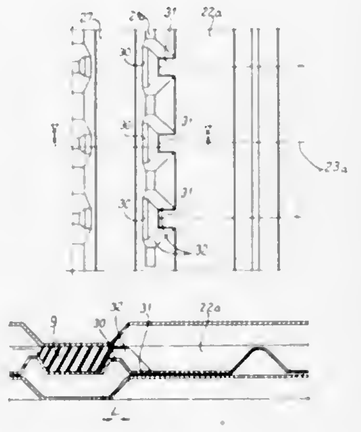
Richard C. Perry, 205 S. 6th Ave., La Grange, Ill.
Filed July 7, 1972, Ser. No. 269,878
Int. Cl. F28f *9/06*
U.S. Cl. 165—76 **1 Claim**



A heat exchanger includes two spaced, hollow headers each with a plurality of openings through one side. A plurality of finned tubes are connected between the headers and communicate through the openings with the insides of the headers. Interfitting parts mounted on opposite ends of the tubes are clamped together with the headers by bolts to hold sealing surfaces between the tubes and the headers together with a watertight fit, the bolts being removable to unclamp the parts with the headers to enable the tubes to be removed individually and replaced.

3,792,730
PLATE HEAT EXCHANGER

Jarl Anders Andersson, Lund, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden
Filed Mar. 12, 1973, Ser. No. 340,044
Claims priority, application Sweden, Mar. 14, 1972, 3206/72
Int. Cl. F28f *3/08*
U.S. Cl. 165—167 **5 Claims**



The distribution surface of each heat exchange plate has furrows and ridges extending between the inlet opening and the main heat exchanging surface of the plate. A gasket groove adjacent the distribution surface has a side wall formed by one of the ridges and merging into the bottom of the gasket groove along a continuous line. The side of this one ridge remote from the groove is provided with recesses forming extensions of the bottom of the furrow next to this ridge, these extensions being in the direction toward the gasket groove and being aligned with the regions where said furrow bottom is supported by the ridges of the adjacent plate. The latter ridges extend sufficiently to engage these extensions of the furrow bottom, thereby lending support to the bottom of the gasket groove.

3,792,731
SECONDARY RECOVERY PROCESS USING SURFACTANT MIXTURES

David G. Feuerbacher; George A. J. Homolka, both of Bellaire, and Gerald W. Alves, Houston, all of Tex., assignors to Texaco Inc., New York, N.Y.
Filed May 8, 1972, Ser. No. 251,729
Int. Cl. E21b *43/22*
U.S. Cl. 166—274 **14 Claims**

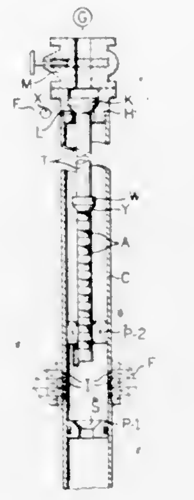
Improved recovery in a waterflood process is effected by the use of a saline, aqueous slug containing a mixture of a nonionic and an anionic surfactant, followed by a drive agent such as water, brine or thickened water or brine.

3,792,732
WELL FLOW CONTROLLING SYSTEM AND APPARATUS

Norvin G. Stewart, Houston, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed Apr. 28, 1971, Ser. No. 138,069
Int. Cl. E21b *33/00*
U.S. Cl. 166—315 **17 Claims**

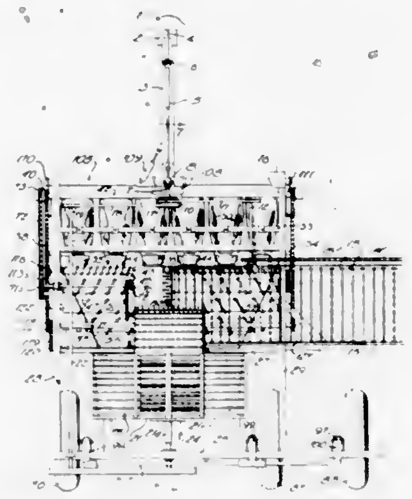
A method of controlling flow from the producing formation of a well upon the occurrence of a disaster, an accident or a fire which could result in turning the well loose for wild flow of the well fluids from the well out of control, as might occur in the event of a bombing, a ship striking a marine type installation, a storm or other disaster. The method contemplates movement of the producing tubing string downwardly through at least two spaced packers one above, and one below the producing formation, the tubing having sealing assemblies

connected therein in sufficient length to seal with the two spaced packers to close off entrance of well fluids into the tubing string when the tubing has been moved downwardly to the lower position. The movement may result from destruction of the suspension for the tubing string accidentally or intentionally upon the occurrence of the disaster or hazard. Means is also disclosed for closing the upper packer in the event the tubing string parts and a shorter section passes completely through the upper packer.



3,792,733
BEET HARVESTING MACHINE

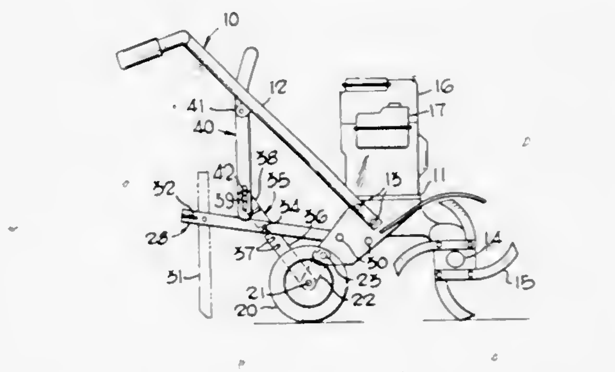
Olon F. Crandall, P.O. Box 54, Hammett, Idaho, and Ralph Thompson, P.O. Drawer H, Glenns Ferry, Idaho
Filed Feb. 15, 1973, Ser. No. 332,768
Int. Cl. A01d *17/16*
U.S. Cl. 171—58 **10 Claims**



A harvester for root crops having a series of spaced apart pairs of digging wheels of known construction operable to lift the roots from several rows of growing crops and metal lifters to move the roots rearwardly from the wheels, has a plurality of transverse supporting rollers receiving the roots and provided with spiral ribs extending from the sides of the machine toward the center to concentrate the roots midway between the sides of the machine. A lower chain type conveyor receives the concentrated flow of roots. A flail over the rollers urges the roots on to the chain type conveyor. A large cylindrical elevator-sorter cage surrounds the rear portion of the conveyor. It sorts the flow of roots and soil, retaining the larger roots therein and dropping them on to an upper chain conveyor that extends forwardly above the lower conveyor from the rear wall of the cage out of the cage. An elevating and loading conveyor beneath the front end of the upper conveyor and in front of the cage, moves the roots laterally and upwardly. The machine has a tongue at the front end adjustably supporting the front end thereof on a tractor for movement up and down and laterally with respect to the tractor. Rear wheels support the cage and are movable laterally with respect to the machine for lateral alignment of the rear end of the machine.

3,792,734
SELF-PROPELLED TILLER

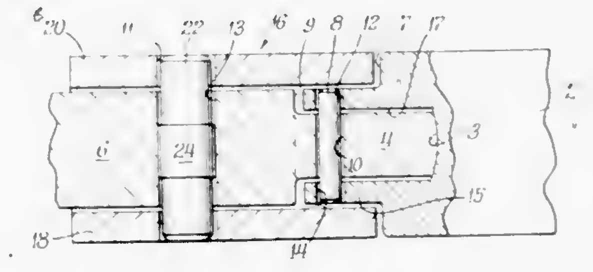
Ray G. Ellis, and Glenn A. Delf, both of c/o Atlas Tool Manufacturing Co., 5147 Natural Bridge Ave., St. Louis, Mo.
Filed Jan. 10, 1972, Ser. No. 216,699
Int. Cl. A01b *33/00*
U.S. Cl. 172—43 **1 Claim**



The tiller includes a chassis having a rearwardly mounted handle. A tines shaft is pivotally mounted forwardly of the frame and a shaft carrying a pair of ground wheels is mounted to the chassis by a pair of link plates pivotally mounted to the frame between the tines shaft and the handle. A rearwardly extending yoke including a latch pin is attached to the chassis and a notched latch bar mounted to the ground wheel shaft is engageable with the latch pin to hold the link plates in selected angular positions relative to the chassis. Adjustment of the latch bar permits control of the relative elevation between the wheels and the tines without substantial change in the handle hand-grip elevation. The latch bar is actuated by a lever pivotally connected to the handle.

3,792,735
RIPPER TIP WITH SHIN GUARD CONFINED RETAINING PIN

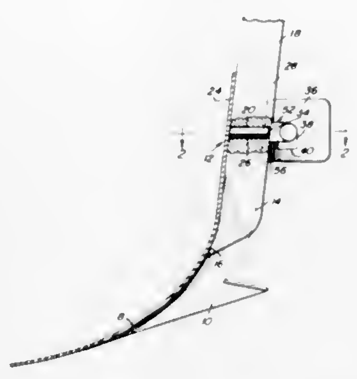
Michael T. Radigan, Manhattan, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Mar. 26, 1973, Ser. No. 345,125
Int. Cl. A01b *15/00*
U.S. Cl. 172—753 **8 Claims**



A ripper tip assembly for an earthmoving vehicle having a top member retained upon a shank member solely by means of frictional engagement with the shank member and by means of a bar made from unmachined, common bar stock. The bar is retained in position upon the shank member by means of the overlapping disposition with respect thereto of a shank protecting shin guard, which shin guard is itself retained upon the shank member by means of a single pin fastener.

3,792,736
MOUNTING MEANS FOR PLOW SWEEP

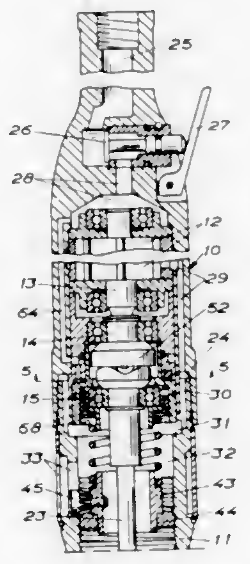
Glenn Gondeiro, Box 16, Sun River, Mont.
Filed May 5, 1972, Ser. No. 250,811
Int. Cl. A01b *15/00*
U.S. Cl. 172—751 **4 Claims**



A plow sweep having its median upper edge portion equipped with an integral upstanding adapter sleeve which is channel-shaped in cross section and embodies a web which is imperforate and opposed spaced parallel lateral marginal flanges. A conventional type shank has a lower end portion conformingly lodged in and filling and removably seated in the channel between the flanges. A median portion of the web has a rigid keeper stud which projects laterally and telescopingly into a bolt hole in an oriented position of the shank in a manner to hold the shank in place and, with the flanges, to hold the same against vertical displacement. A manually insertable and removable shank fastening pin bridges and retains and binds the shank in the channel and is specially constructed, as will be revealed, and means is provided on the flanges for operatively mounting the pin on said flanges in such a way that the pin well serves its clamping purpose.

3,792,737
POWER WRENCH WITH A TORQUE LIMITING COUPLING

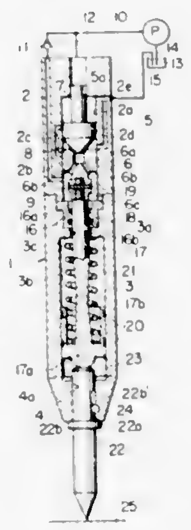
Sven Ake Bratt, Tyreso, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden
Filed May 17, 1972, Ser. No. 254,107
Claims priority, application Sweden, May 19, 1971, 6507/71
Int. Cl. B25b *23/14*
U.S. Cl. 173—12 **15 Claims**



A power wrench has a torque responsive clutch with a clutch member which starts a disengaging axial movement at a pre-determined torque load. In its axial movement, the clutch member causes a piston to move a short distance so as to open a pressure passage to a cylinder chamber bounded by a face of the piston. When the cylinder chamber is suddenly pressurized, the piston is forced to disengage the clutch member quickly and completely.

3,792,738
HYDRAULIC BREAKER

Osamu Mori; Hideki Tohi, and Kiyoo Kawai, all of Asa-Gun, Japan, assignors to Yutani Juko Kabushiki Kaisha, Tokyo-to, Japan
Filed Mar. 17, 1972, Ser. No. 235,504
Claims priority, application Japan, Mar. 27, 1971, 46/18276; July 17, 1971, 46/62955; July 19, 1971, 46/63883; Aug. 12, 1971, 46/72503; Aug. 12, 1971, 46/72504
Int. Cl. B25d *9/18*
U.S. Cl. 173—119 **11 Claims**

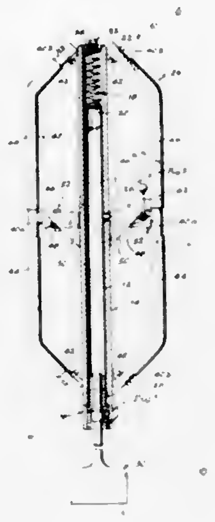


In a hydraulic breaker utilizing an oil pressure, mitigation of impact given to the machine body in order to prevent its damage as well as the damage of the rod portion which couples the piston integrally to the hammer head, and smoothening of the action of said hammer head, are both accomplished by the provision of: a bush mounted at the partition wall which defines the upper cylinder from the lower cylinder and provided with a conical recess for receiving a part of the oil which is used to control the motion of said piston; said piston having, at its end portion, a conical portion which can be loosely received in the conical recess of said bush; said rod portion having an intermediate portion whose diameter is smaller than that of the remaining portions thereof; and said hammer head slidably mounted in the lower cylinder and having a portion capable of sliding on the inner circumference of the lower cylinder, said portion having a length which is at least 1.3 times the inner diameter of said lower cylinder, said hammer head being mounted slidably in said lower cylinder via a liner provided on said hammer head.

3,792,739
JACK HAMMER

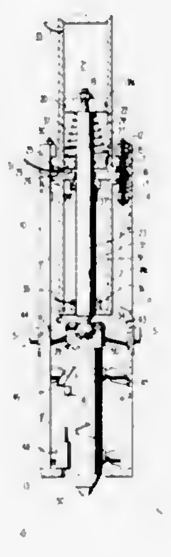
Robert F. Deike, Cheyenne, Wyo., assignor to William H. Chamberlain and Anna B. Chamber, Cheyenne, Wyo., part interest to each
Continuation-in-part of Ser. No. 123,787, March 12, 1971, Pat. No. 3,735,822, and a continuation-in-part of Ser. No. 163,696, July 19, 1971, Pat. No. 3,747,690. This application Mar. 20, 1972, Ser. No. 236,103
Int. Cl. E02d *7/04;* **B25d** *1/00*
U.S. Cl. 173—118 **2 Claims**

A manually actuated Jack Hammer or impacting device includes a cylindrical, relatively thin wall anvil tube having an anvil projecting radially from adjacent its lower end; a cylindrical, relatively thick wall hammer tube telescoped downwardly over the anvil tube for end engagement with the anvil; a recoil spring arranged between upper ends of the tubes; and a pair of operator handles fixed to the hammer tube. The lowerend of the anvil tube may be fitted with an improved tool holder or left open to receive a post or pile to be driven; and one of the operator handles is fitted within an improved lock for selectively holding the tubes in telescoped relationship.



3,792,740
HYDRAULIC POWERED HAMMER

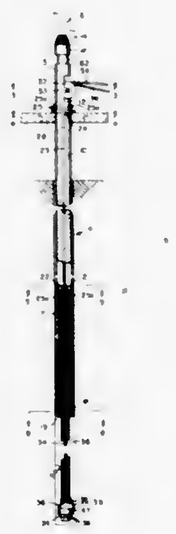
William C. Cooley, 5400 Pooks Hill Rd., Bethesda, Md.
Filed Apr. 5, 1972, Ser. No. 241,121
Int. Cl. B25d *9/02*
U.S. Cl. 173—119 **14 Claims**



A gas spring-driven hydraulically cocked powered hammer wherein the hammer head is resiliently guided by liquid springs to absorb the energy of glancing blows and includes a ball joint disposed between the head and driving shaft, the driving piston being slidably fitted into a cylinder which is also resiliently mounted, the piston shaft and head being cocked by hydraulic pressure against a floating ring and being held in the cocked position by a friction lock while the ring is retracted, the friction lock then being released to fire the hammer with shock absorbers to engage the head and dissipate the energy should the head fail to strike its target.

3,792,741
JET SPALLING ASSEMBLY AND DRILL-SPALLING RIG

Robert B. Hopler, Jr., Succasunna, N.J., assignor to Hercules, Incorporated, Wilmington, Del.
Filed Jan. 6, 1972, Ser. No. 215,884
Int. Cl. E21b *7/14*
U.S. Cl. 175—11 **9 Claims**



A jet spalling assembly for use as a unit of a mobile drill-spalling rig, comprising a plurality of telescoping tubes; an upper end section of the outermost tube disposed out of the telescoping relationship; a plurality of conduits extending into the upper end tube section through a side thereof, and then downwardly through the tubes to an externally disposed burner attached to the end of the innermost tube, for conveying materials for combustion in the burner, and water for cooling the burner during combustion; and means for discharge of separate streams of water and hot combustion product from the burner for the spalling action.

The tubular spalling assembly is retractable to provide an overall length adaptable to transport on a mobile least from site to site, but is extendible at the site to accomplish spalling action at correspondingly greater borehole depths.

A now preferred embodiment comprises a mobile drill-spalling assembly including a plurality of stem members including at leas one drill stem and a jet spalling unit above described, successively supportably movable into, and from, operating position, and means for operating each stem member.

This embodiment provides for both drilling and spalling during a single emplacement of the mobile assembly to thereby eliminate the numerous disadvantages inherent in the prior art practice of drilling a borehole, moving the drilling unit from the site, and then moving a separate spalling unit into place for the spalling action.

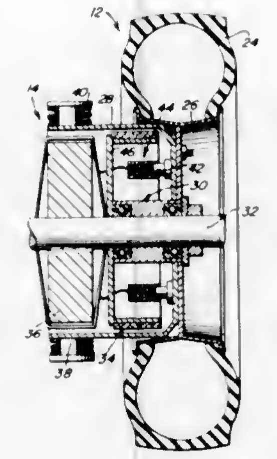
3,792,742
ELECTRIC MOTOR OPERATED VEHICLE

Charles J. Mager, Box 353A R.D. No. 4, Quakertown, Pa.
Filed Feb. 8, 1972, Ser. No. 224,475
Int. Cl. B60l *7/24;* **B60k** *7/00*
U.S. Cl. 180—65 F **2 Claims**

A vehicle is propelled by wheel mounted drive motors to which energy is supplied from a battery. During vehicle brak-

cal journal. Auxiliary left and right cables are connected at

plement, when the vehicle is headed downwardly on a slope, ing by a mechanical brake, a switching control is operative on the motor windings to produce a regenerative action causing electrical braking. The regenerative energy produced during the braking operation, is utilized to charge the battery.



3,792,743
SUSPENSION SYSTEM FOR ENDLESS TRACK VEHICLE

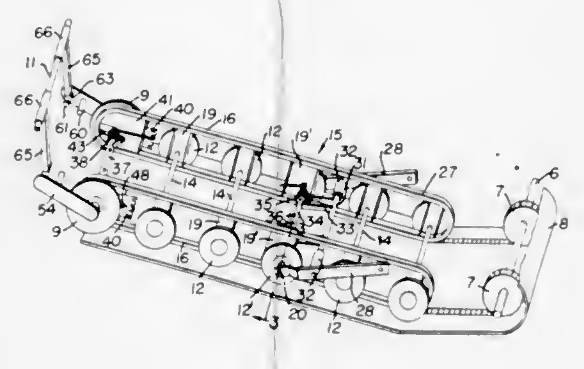
Lawrence J. Mauws, Portage La Prairie, Manitoba, Canada, assignor to Roll-O-Flex 1970 Ltd., Regina, Saskatchewan, Canada

Filed June 2, 1972, Ser. No. 259,122

Claims priority, application Canada, June 21, 1971, 116172

Int. Cl. B62m *27/02*

U.S. Cl. 180—5 R **6 Claims**



A snowmobile suspension system includes a knee-action linkage near the rear end of the vehicle between the axle of the idler wheels in the endless track and the vehicle frame permitting relatively large, resilient vertical displacement of the rear end of the vehicle relative to the endless track or belt. Torsion springs mounted co-axially on a sleeve secured to the idler wheel axle bias the rear end of the vehicle upwardly or downwardly depending on the direction of vertical displacement of the rear end of the endless track.

3,792,744
DRIVE CONTROL APPARATUS FOR VEHICLES

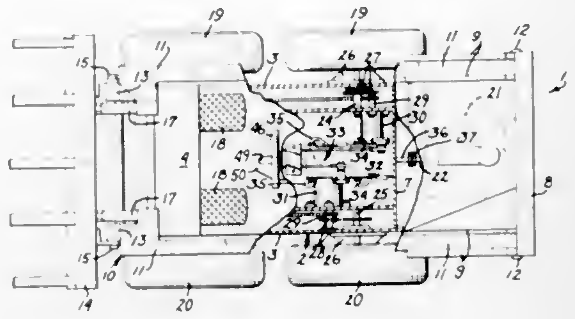
Paul D. Gray, Owatonna, Minn., assignor to Owatonna Manufacturing Company, Inc., Owatonna, Minn.

Filed May 19, 1972, Ser. No. 255,142

Int. Cl. B62d *11/04*

U.S. Cl. 180—6.48 **6 Claims**

Control apparatus for a vehicle driven by a pair of hydraulically operated motors imparting rotation to rotary members at opposite sides of the vehicles. A pair of variable displacement pumps, each hydraulically connected to a different one of the motors, are controlled as to speed and direction by direction and displacement control arms on the pumps, a manually operated control rod, and linkage connecting the control rod with the control arms on the pumps.



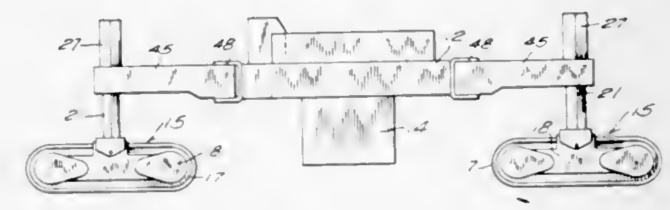
3,792,745
STEERING SYSTEM FOR TOOL-CARRYING VEHICLE

Thomas I. Files, Madison, Ind., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Mar. 10, 1972, Ser. No. 233,468

Int. Cl. B62d *11/20, 55/10*

U.S. Cl. 180—9.46 **12 Claims**



A vehicle includes a frame and four individual traction carriages. A vertical post and a horizontally extending leg connect each carriage and a corner of the frame. The legs are pivotally connected to the frame for horizontal adjustment and each post is telescopic. Power means for steering the carriages and "feedback" controls coordinate the parallel positioning of the carriages as required.

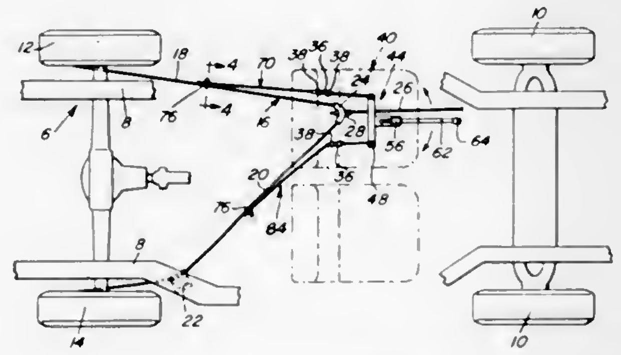
3,792,746
SELECTIVE REAR WHEEL EMERGENCY BRAKE ACTUATOR

Stanley C. Phillips, P.O. Box 424, Shelton, Wash.

Filed Nov. 6, 1972, Ser. No. 303,820

Int. Cl. B60k *27/00;* **B60t** *1/00*

U.S. Cl. 180—82 **10 Claims**



An extricating device for use when a motorist gets stuck in sand, mud or snow and desires to extricate himself without assistance from other motorists or a costly tow truck. This device is usable in conjunction with customary emergency brake cables which serve to simultaneously apply and release the power driven rear wheel brakes. A T-shaped actuator is pivotally mounted on a floor-supported adapter having a vertical journal. Auxiliary left and right cables are connected at forward ends to an actuator and have rearward ends joined by cable clamps, to the respectively cooperable reach portions of the main cables. A selectively switchable projectable and retractable lever is operatively mounted atop the actuator. By switching the handle of the lever to the right rotation of the left wheel can be stopped, and, conversely, switching it to the left rotation of the right wheel can be stopped. This principle of selectively stopping one wheel and permitting the other one to turn usually provides the traction needed to extricate the vehicle.

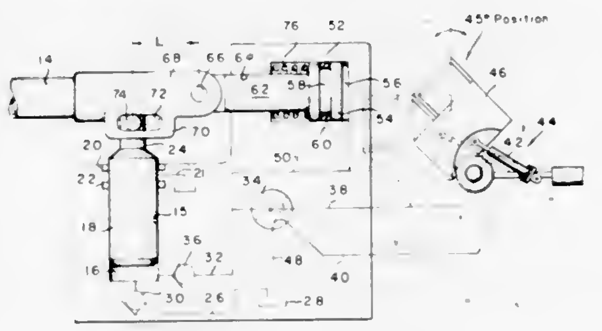
3,792,747
PRESSURE-COMPENSATED HAND PUMP

Dale A. Knutson, Oconomowoc, Wis., assignor to Applied Power Industries, Inc., Milwaukee, Wis.

Filed Dec. 21, 1971, Ser. No. 210,484

Int. Cl. B62d *27/06*

U.S. Cl. 180—89 A **2 Claims**



A hand pump having compensating means thereon for optimizing displacement per stroke while the force required to operate the pump is maintained at a relatively constant level over a widely variable load pressure range.

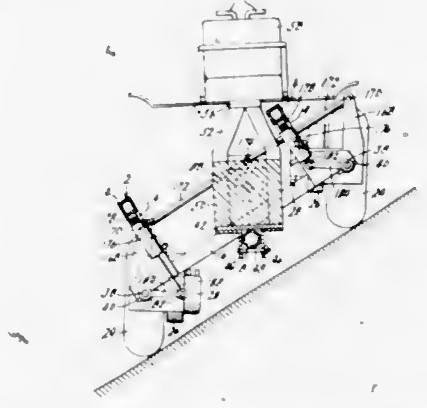
3,792,748
ANTI-OVERTURNING IMPLEMENT VEHICLE

John W. Regier, Moundridge, Kans., assignor to Excel Industries, Inc., Hesston, Kans.

Filed Jan. 18, 1972, Ser. No. 218,741

Int. Cl. B60s *9/00*

U.S. Cl. 180—104 **5 Claims**



An anti-overturning system for an implement vehicle having a frame, a propelling engine, ground-engaging drive wheels at its sides, an operator's platform, and adapted to carry a ground-engaging implement at its forward end for vertical movement to follow ground contour, the system including automatic mechanism operable on laterally inclined ground to maintain the drive wheels, engine, and operator's platform in their normal upright position and to maintain the center of gravity of the engine and operator's platform laterally midway between the wheels so as to prevent lateral overturning, and mechanism operable to inhibit upward movement of said implement, or to exert a positive downward pressure on the implement, when the vehicle is headed downwardly on a slope, whereby to prevent forward overturning or tipping of the vehicle.

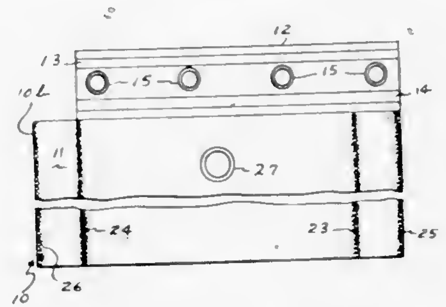
3,792,749
PORTABLE, CRASH-EMERGENCY GROUND EFFECTS SKIRT

Joseph E. Krysiak, 8990 Billings Rd., Willoughby, Ohio

Filed May 23, 1972, Ser. No. 256,066

Int. Cl. B60v *1/16*

U.S. Cl. 180—127 **5 Claims**



A portable, ground effects skirt adapted to be wrapped around the fuselage of a crashed aircraft and consisting of a plurality of releasably interconnected skirt sections having an enlarged top seam with a series of spaced-apart openings engaged with, and supported in depending relation from, a plurality of bolts previously attached at designated spots along the fuselage of the aircraft. Sealing means disposed along the top seam are held in air-tight relation with the fuselage when the skirt is assembled thereto, and air inlet means provide for the admission of compressed air between the fuselage and skirt in a downward direction to thereby form an air cushion with the ground.

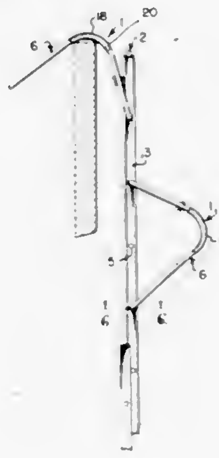
3,792,750
SAFETY DEVICE FOR LADDERS

Burton D. Madison, 3320 Jefferson, Kansas City, Mo.

Filed Feb. 20, 1973, Ser. No. 334,099

Int. Cl. E06c *1/36, 7/14*

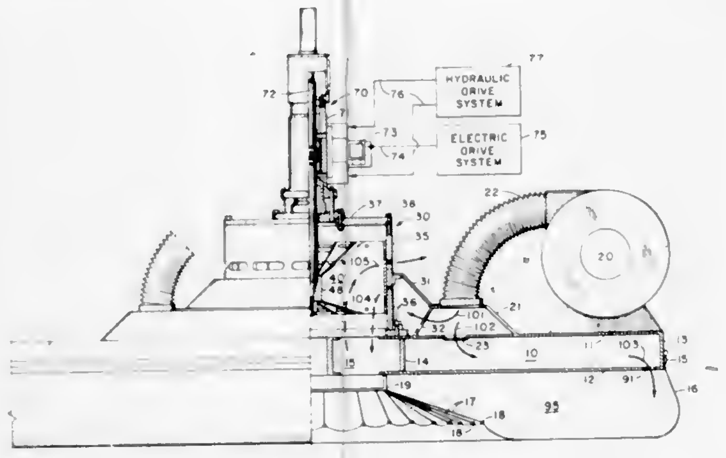
U.S. Cl. 182—206 **11 Claims**



A safety device for use with a ladder having a pair of laterally spaced rails and a plurality of rungs extending between and spaced along the rails with opposed bores spaced along said rails in the rungs or otherwise wherein the safety device includes a pair of side members each positioned adjacent a respective one of the rails and having opposite end portions thereof each extending into a respective one of the bores and receiving a respective end portion of a respective one of a pair of connector members each adapted to be positioned in a selected one of the bores. A tie member extends between and has opposite end portions thereof connected to an intermediate portion of each of the side members. The tie member, side members, and the ladder define a cage structure for protecting a person on the ladder.

3,792,751
AIR CUSHION SEISMIC SIGNAL SOURCE

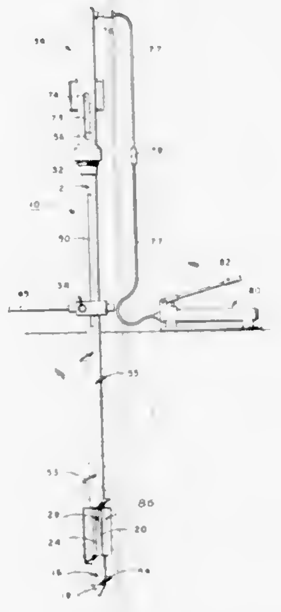
Delbert W. Fair, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.
Filed Aug. 2, 1972, Ser. No. 277,434
Int. Cl. G01v *1/22*
U.S. Cl. 181—.5 VM **8 Claims**



An air cushion seismic signal source having a plenum chamber, a source of compressed air connected to the plenum chamber, and an air cushion attached to the underside of the plenum chamber, a restricted air passage couples the plenum chamber to the air cushion, a spool valve is attached to the plenum chamber so that air passes from the plenum chamber through the valve and into the air cushion when the spool valve is operated in one direction and from the air cushion to the atmosphere when the spool valve is operated in the other direction, the pressuring and depressuring of the air cushion causing a seismic signal to be generated into the earth.

3,792,752
PORTABLE SEISMIC TOOL

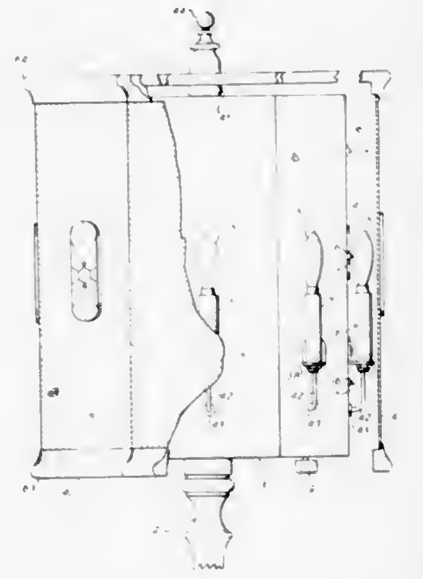
William A. Knox; Hillman Southwick, and Marion L. Parker, all of Houston, Tex., assignors to Western Geophysical Company of America, Houston, Tex.
Filed Dec. 4, 1972, Ser. No. 312,002
Int. Cl. G01v
U.S. Cl. 181—.5 XC **3 Claims**



A portable tool for use in seismic operations comprises a two-part auger including a tubular housing section and a bit section. Plunger means are slidably disposed in the housing section for downwardly driving engagement with a stem secured to the bit section thereby to forcibly projecting the bit section into the earth relative to the housing and forming a cavity communicating with an outlet port in the stem.

3,792,753
ACOUSTICAL DEVICE

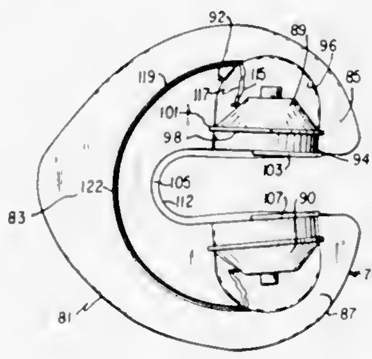
James Smith, 57A Island Blvd., Bohemia, N.Y.
Filed Feb. 18, 1972, Ser. No. 227,532
Int. Cl. G10k *13/00;* **H04r** *1/28*
U.S. Cl. 181—31 B **4 Claims**



An acoustical chamber being shaped and positioned at the proper level for maximum effectiveness. The chamber is constructed of relatively thin wood, is octagonal in shape and includes a resonance chamber. The resonance chamber acts in conjunction with a plurality of audio speakers mounted vertically thereon to impart a rich, full tone to the emitted sound. The chamber is formed as part of a lamp. The walls of the chamber serve as a support for the lighting fixtures of the lamp and for the shade. The lamp shade also acts to filter the sound to produce the superior audio effects and also to shade the glare of the lamp. The shade also acts to conceal the lamps and the chamber.

3,792,754
HEADPHONE ASSEMBLY

Stephen C. Hanson, Downers Grove, Ill., assignor to Hear-Muffs, Inc., Downers Grove, Ill.
Filed May 19, 1972, Ser. No. 254,872
Int. Cl. G10k *13/00;* **H04m** *1/11;* **H04r** *1/28*
U.S. Cl. 181—31 B **7 Claims**



A headphone assembly which may be used with a sterophonic audio system, includes a U-shaped block of soft resilient material having a rear portion adapted to engage the back of the head of the user and having a pair of leg portions extending in a spaced-apart manner to grip snugly the head of the user therebetween and to engage the ears of the user, and a pair of speakers mounted within a pair of cavities in the ear-engaging portions of the legs, the openings to the cavities being oppositely disposed so that when placed about the head of the user the speakers are axially aligned to convey sound to the ears of the user. A fabric covering may be disposed over the block. In one embodiment, a cavity at the inside of the rear portion of the block guides the sound from both of the speaker cavities to the back of the skull bone of the user to enhance the enjoyment of the assembly.

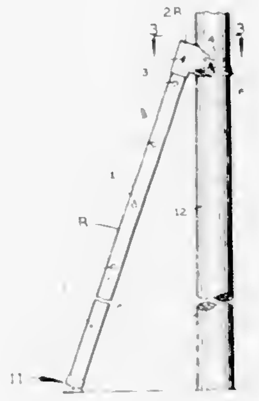
3,792,755
METHOD OF SUPPRESSING NOISE IN HERMETIC COMPRESSORS

Keshav S. Sanvordenker, Ann Arbor, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.
Filed Mar. 26, 1973, Ser. No. 344,703
Int. Cl. F04b *21/00*
U.S. Cl. 181—33 B **15 Claims**

The method of attenuating the noise produced by an operating hermetic compressor unit by adding a foaming agent to the lubricating oil of the unit and agitating the oil during operation of the unit.

3,792,756
SAFETY ATTACHMENT FOR LADDER

Herbert Kelly, 300 Seville Ave., Coral Gables, Fla.
Filed Apr. 25, 1973, Ser. No. 354,366
Int. Cl. E06c *5/36, 7/48*
U.S. Cl. 182—93 **5 Claims**



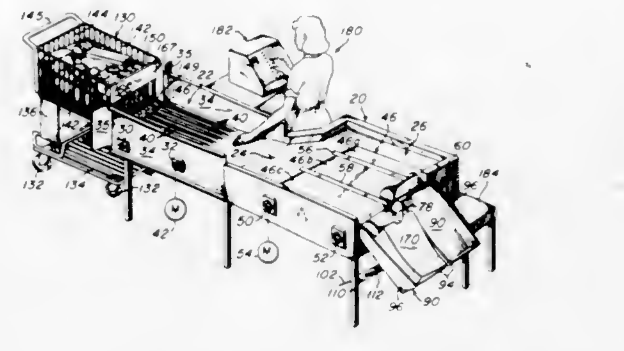
A conventional ladder means with the upper ends of the parallel side members terminating in a pair of right and left brackets, which brackets retain the end portions of an adjustable abrasive coated front belt for contact against the front side of a pole or tree with a second adjustable strap means pivotally secured to opposite brackets for snugly surrounding the rear portion of said pole or tree for preventing displacement of the ladder when in use.

ERRATUM

For Class 182—206 see:
Patent No. 3,792,750

3,792,757
BASKET-CART UNLOAD APPARATUS FOR SUPERMARKETS

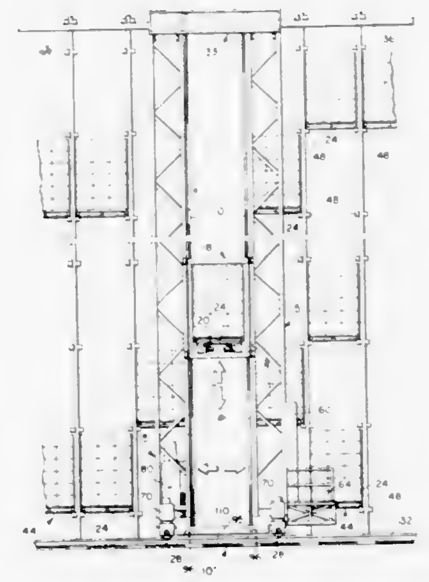
Malcolm E. Musser, P.O. Box 386, Jackson Center, Ohio
Division of Ser. No. 50,467, June 29, 1970, Pat. No. 3,678,660.
This application May 17, 1972, Ser. No. 253,972
Int. Cl. B65g *15/44*
U.S. Cl. 186—1 AC **11 Claims**



Apparatus for checking out articles of merchandise in a supermarket type of operation. A checkout counter includes mechanism for unloading a basket-cart.

3,792,758
STACKER CRANE CONSTRUCTION

Edward A. Wentz, Gaithersburg, Md., assignor to American Chain & Cable Company Inc., Bridgeport, Conn.
Continuation of Ser. No. 840,667, July 10, 1969, abandoned.
This application Nov. 15, 1971, Ser. No. 198,917
Int. Cl. B65g *1/06*
U.S. Cl. 187—9 **6 Claims**



A stacker crane storage arrangement wherein a tray is supported for reversible extension transversely of a tower which is movable on a track, so as to deposit cargo laden pallets in cells or cubicles of open sides storage grids on both sides of the track. The tray of the tower is movable by a compact mechanism, utilizing telescopically and reversibly extending drive members carried by pairs of cantilever beams and driven by sprocket chains and hydraulic cylinders in a dual system which effects reversible motion of a tray to either side of the tower. The telescopic tray mechanism provides for moving a cargo laden tray to either a part distance or a full distance transversely of the tower, so that pallets can be stored in or retrieved from double depth storage grids. The specific racks or cells can hold two pallets in tandem, there being a first pallet position and a second pallet position in each cell. The arrangement and construction has features whereby very tall towers are usable.

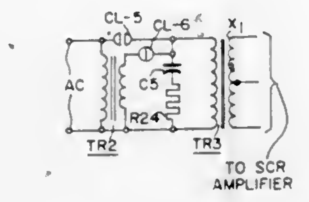
3,792,759
ELEVATOR SYSTEM

Andrew F. Kirsch, Edison, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 22, 1972, Ser. No. 317,881

Int. Cl. B66b *13/24*

U.S. Cl. 187—29 R **10 Claims**



An elevator system including first and second detectors arranged to modify the elevator control to take a predetermined course of action in the event of an earthquake. The first detector is highly sensitive to acceleration forces applied to the building, and it operates at a predetermined force level, selected to indicate the mere possibility of an earthquake. The first level detector, when actuated, stops the cars at a landing, and opens their doors. The elevator system is automatically put back into service if the second detector is not actuated, a predetermined period of time after the acceleration forces drop below a predetermined level. Operation of the second detector, which may be either responsive to a still higher level of accelerating forces, and/or to some other condition such as a specific type of mechanical damage, shuts the elevator system down and requires authorized personnel to put the system back into operation.

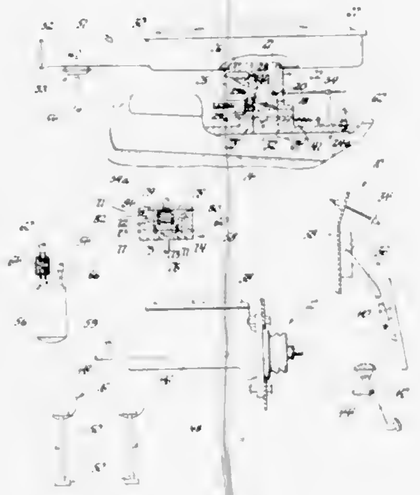
3,792,760
THROTTLE OVERRIDE CONTROLLED BY BRAKE SYSTEM

Ronald H. Haas, Okemos, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 11, 1972, Ser. No. 313,814

Int. Cl. F16d *67/00, 71/00*

U.S. Cl. 192—3 M **4 Claims**



A throttle override for a conventional throttle controlled internal combustion engine wherein an additional valve is positioned in the engine induction passage and is operable by the brake system of the vehicle to control the flow of air in the induction passage.

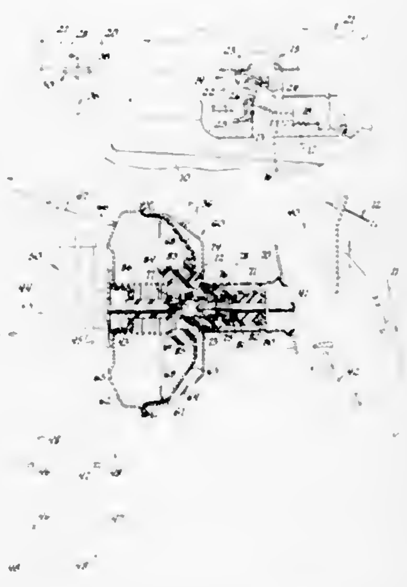
3,792,761
THROTTLE OVERRIDE CONTROLLED BY A VACUUM BOOSTED POWER BRAKE SYSTEM

Frank W. Ball, and Harold L. Howard, both of Lansing, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 8, 1972, Ser. No. 313,605

Int. Cl. F16d *67/00, 71/00*

U.S. Cl. 192—3 M **2 Claims**



A throttle override for a conventional throttle controlled internal combustion engine wherein an additional valve is positioned in the engine induction passage and is held closed by a spring but is normally held open during normal operation by a vacuum motor connected to the vacuum boosted power brake system of the vehicle.

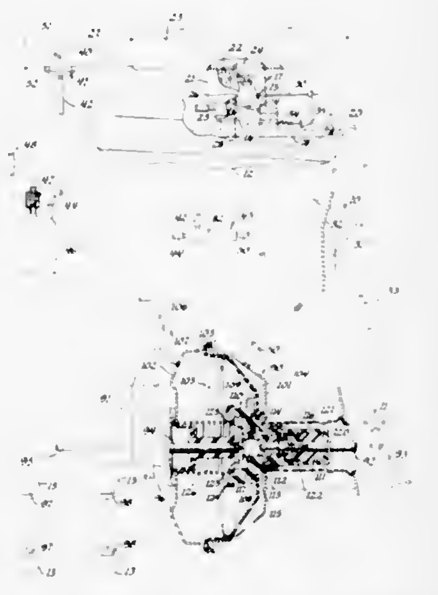
3,792,762
THROTTLE OVERRIDE CONTROLLED BY A VACUUM BOOSTED POWER BRAKING SYSTEM

Frank W. Ball, and Harold L. Howard, both of Lansing, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 11, 1972, Ser. No. 313,779

Int. Cl. F16d *67/00, 71/00*

U.S. Cl. 192—3 M **4 Claims**



A throttle override system for a conventional throttle controlled internal combustion engine wherein an additional valve is positioned in the engine air induction passage and is normally held open by a spring and is closed by operation, above a predetermined force, of the vacuum boosted power braking system of the vehicle to thereby control the airflow through the induction passage.

3,792,763
TIMING VALVE FOR AN AUTOMATIC POWER TRANSMISSION

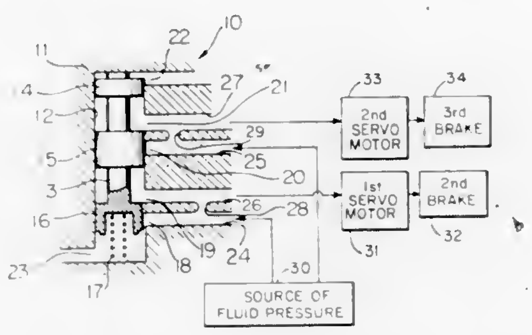
Koji Enomoto, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Oct. 27, 1971, Ser. No. 193,015

Claims priority, application Japan, Oct. 29, 1970, 45-107901

Int. Cl. B60k *21/00;* **F16d** *25/10*

U.S. Cl. 192—.075 **1 Claim**



A timing valve for controlling a fluid pressure operated servo motor, which timing valve includes a valve body having therein a valve chamber with inlet port, an outlet port and throttle pressure port, a first passageway communicating with the inlet port and connected to a source of fluid pressure, a second passageway communicating with the outlet port and connected to the fluid pressure operated servo motor, an orifice formed in the valve body between the first and second passageways to allow the fluid pressure in the inlet port to pass to the second passageway at the restricted flow rate, a valve spool slidably disposed in the valve chamber for controlling communication between the inlet and outlet ports, and a spring for urging the valve spool thereby to interrupt communication between the inlet and outlet ports. The one end portion of the valve spool is exposed to the throttle pressure in the throttle pressure port and biased in one direction by the force developed thereby against the force of the spring to establish communication between the inlet and outlet ports when the throttle pressure reaches a predetermined level.

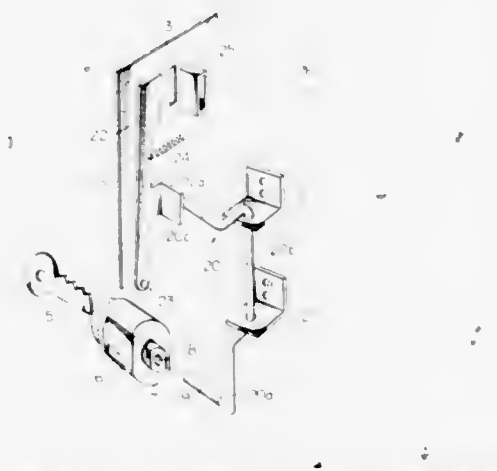
3,792,764
DEVICE FOR AUTOMATIC CLOSURE OF COIN SLOT OF RENTAL LOCKER

Yoshio Kinoshita, Himeji, Japan, assignor to Glory Kogyo Kabushiki Kaisha, Hyogo-ken, Japan

Filed Sept. 15, 1972, Ser. No. 289,277

Int. Cl. G07f *17/12*

U.S. Cl. 194—1 R **5 Claims**



A rod received in a bore formed in the lock mechanism of a rental locked is pressed inwardly upon insertion of a key into a keyhole formed in the front panel of the locker, and a substantially crank-shaped lever is provided to convey this motion of the rod to a swingably mounted shutter, which then opens a coin slot formed in the front panel, the shutter being spring-energized to close the coin slot when the key is pulled out of the keyhole. In another embodiment of the invention, the shutter is made of magnetic material to be moved by an electromagnet which is connected to a switch operated by the aforesaid rod.

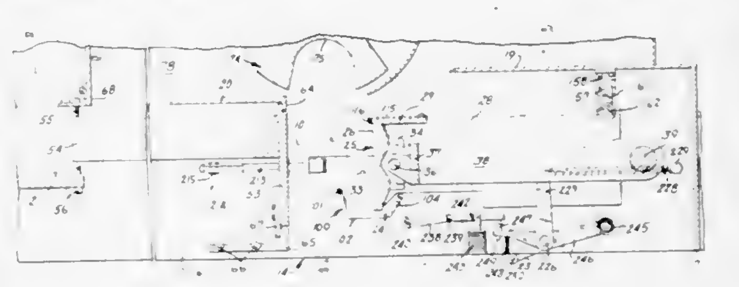
3,792,765
APPARATUS FOR CRUSHING CONTAINERS AND DISPENSING TOKENS

Ewald A. Arp, Hopkins, Minn., assignor to Arnold W. G. Larson and Sheldon D. Moody, Minneapolis, Minn.

Filed Mar. 9, 1972, Ser. No. 233,178

Int. Cl. G07f *7/06*

U.S. Cl. 194—4 C **9 Claims**



Apparatus for crushing containers, such as metal cans, so that the container material may be reused; and means for dispensing a token signifying acceptance and crushing of a container having predetermined physical characteristics. Control means, including a container engaging sensing element, renders the token dispensing means inoperative to dispense a token responsive to reception in the crushing apparatus of a container having physical characteristics other than those required by the apparatus, or to the absence of a container in the crushing area of the apparatus.

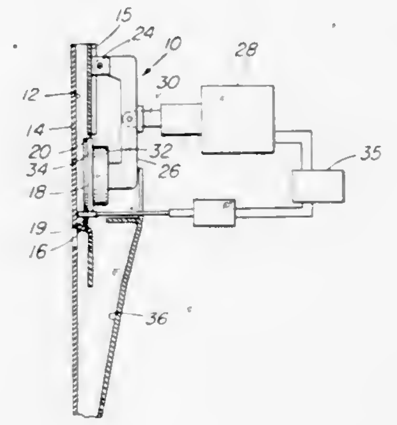
3,792,766
MAGNETIC COIN ELIMINATOR

Guy L. Fougere, Lincoln, Mass., assignor to Mars Incorporated, Hackettstown, N.J.

Continuation of Ser. No. 66,126, Aug. 21, 1970, abandoned, Continuation of Ser. No. 808,943, March 20, 1969, abandoned. This application June 26, 1972, Ser. No. 266,375

Int. Cl. G07f *3/02*

U.S. Cl. 194—101 **12 Claims**



What is disclosed is a magnetic coin eliminator for removing from a passageway coins having a magnetic permeability to density ratio in excess of a predetermined value, the eliminator including a magnetic means which has a magnetomotive force sufficient to effect substantially horizontal movement of the coin while the coin is supported vertically in the passageway but which force is insufficient to support the coin when the passageway support is removed resulting in the coin falling from the eliminator.

3,792,767

3,792,769
COKING OVEN

3,792,771
PACKAGE FOR PLATES

3,792,773
APPARATUS AND METHOD FOR TREATING WASTE

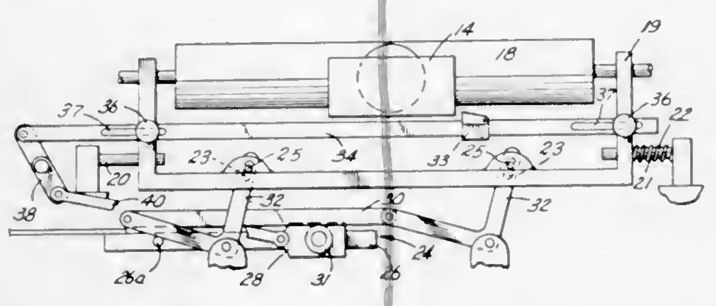
3,792,767
JUSTIFYING TYPEWRITER WITH CONJOINTLY OPPOSITELY MOVABLE TYPE HEAD AND PLATEN

Helmut Marum, Dover, N.J., assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 65,565, Aug. 20, 1970, abandoned. This application Mar. 17, 1972, Ser. No. 235,586

Int. Cl. B41j *19/58*

U.S. Cl. 197—84 A **3 Claims**



A justifying typewriter of the class having a movable matrix type head which head advances relative to the platen wherein the justification takes place by incrementally moving the platen in a direction opposite to the movement of the matrix type head during spacing between words when the justified line is written.

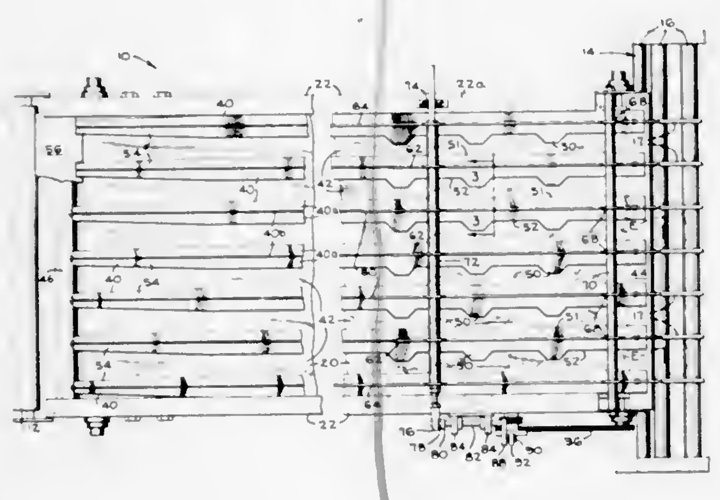
3,792,768
EGG ACCUMULATION CONVEYOR

William C. Cheeseman, Chino, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Oct. 10, 1972, Ser. No. 296,413

Int. Cl. B65g *47/26*

U.S. Cl. 198—30 **11 Claims**



An egg accumulation conveyor includes an endless conveyor belt adapted to receive the eggs at one end and to convey them to the other end while allowing the eggs to accumulate if they cannot be removed from the downstream end at a fast enough rate. A plurality of generally flat slats in a spaced and aligned arrangement are placed atop the belt to relieve the forward conveying pressure on the eggs as they accumulate to thereby prevent damage to the eggs. The slats are formed with non-linear portions at their downstream ends to further relieve the conveyor pressure on the accumulated eggs. Also at the downstream end of the belt means are provided for channeling the eggs into lanes so that they can be removed from the accumulation conveyor in rows and at a predetermined discharge rate.

3,792,769
COKING OVEN

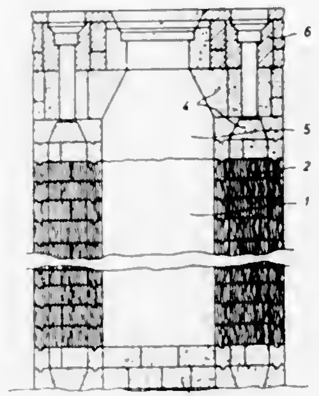
Heinrich Echterhoff, Essen, Germany, assignor to Firma Bergwerksverband G.m.b.H., Essen, Germany

Filed Nov. 8, 1971, Ser. No. 196,420

Claims priority, application Germany, Nov. 14, 1970, 2056119

Int. Cl. C10b *29/02*

U.S. Cl. 202—267 **6 Claims**



A coking oven has refractory walls surrounding at least one chamber and including a bottom wall of a material having a given thermal conductivity, a peripheral wall extending upwardly from the bottom wall and having a taller lower section of a material having a higher thermal conductivity and in its shorter upper section a thermal conductivity corresponding to the given conductivity. The roof is composed in part of the material having the given conductivity.

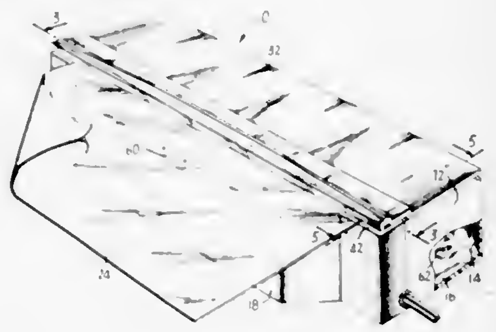
3,792,770
PLASTIC BAG FABRICATING, DISPENSING AND SEALING UNIT

Max Freeman, 75 Arleigh Rd., Great Neck, N.Y.

Division of Ser. No. 82,621, Oct. 21, 1970, abandoned. This application Dec. 6, 1971, Ser. No. 205,109

Int. Cl. B65d *85/67*

U.S. Cl. 206—58 **3 Claims**



A plastic bag fabricating, dispensing and sealing unit includes a housing formed with a compartment and closed with a hinged lid that receives a cartridge containing a roll of double-layered folded plastic film open at one side. A wire mounted on the housing extends along an insulating strip. A circuit to heat the wire is energized by closing and pressing the lid against the housing. An insulating strip on the lid presses the plastic film against the heated wire, thereby severing and sealing the layers of plastic film to form a bag. After filling the bag, the remaining opening therein can be sealed by inserting it between the housing and lid and closing and pressing the lid against the housing.

3,792,771
PACKAGE FOR PLATES

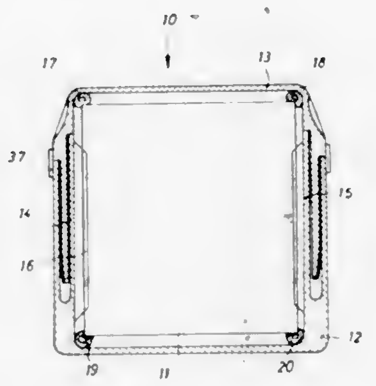
Francois Auguste Bonjean, Edegem, Belgium, assignor to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Aug. 23, 1971, Ser. No. 174,040

Claims priority, application Great Britain, Aug. 24, 1970, 40,671/70

Int. Cl. B65d *85/48*

U.S. Cl. 206–455 **3 Claims**



A package for storing and transporting rectangular glass plates such as high resolution photographic plates for use in the manufacturing of masks for integrated circuits.

The plates are immobilized in the package by resilient contact with at least two elongated resilient tubes engaging corresponding corners of the plates and being yieldingly compressed between the plate corners and the container.

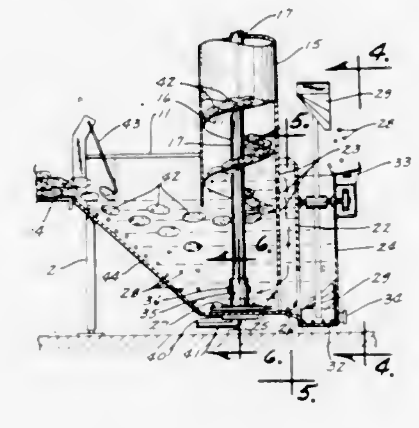
3,792,772
SEPARATING APPARATUS WITH COMBINED AUGER AND ROTATING DISC FOR DISCHARGING

Joseph E. Wallace, Creston, Iowa, assignor to Vanmark Corporation, Creston, Iowa

Filed Mar. 1, 1972, Ser. No. 230,822

Int. Cl. B03b *3/38*

U.S. Cl. 209—173 **5 Claims**



An apparatus for separating heavier objects such as stones from lighter objects such as vegetables is disclosed herein. A vertically oriented conveyor extends into a fluid-containing receiving tank for conveying lighter objects upwardly from the receiving tank, and a passageway from the receiving tank into a collection tank is provided for removal of heavier objects. A rotating disc at the bottom of the receiving tank expels the heavier objects which settle thereon outwardly through the passageway into the collection tank.

Paddle means are disclosed for continuously sweeping the heavier objects from the collection tank and depositing them outside the collection tank.

A chamber is provided at the rear of the vertical conveyor housing for receiving liquid from the conveyor housing and discharging the liquid downwardly toward the passageway between the two tanks to establish fluid circulation contra to the movement of the heavier objects through the passageway.

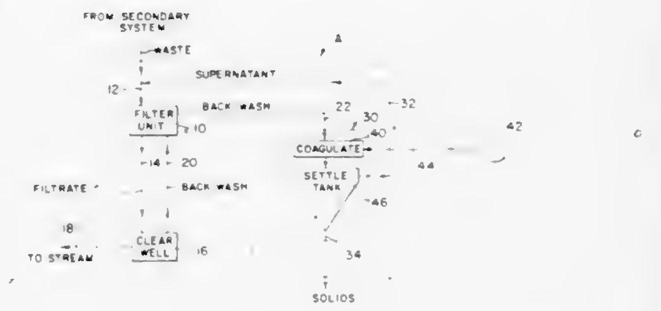
3,792,773
APPARATUS AND METHOD FOR TREATING WASTE LIQUID

David S. Ross, Lorain, Ohio, assignor to Hydro-Clear Corporation, Avon Lake, Ohio

Filed Sept. 30, 1971, Ser. No. 185,059

Int. Cl. B01d *47/02*

U.S. Cl. 210—42 **44 Claims**



An apparatus and method for treating waste effluent from a sewage treatment plant using a filter unit having a backwash arrangement, wherein the backwash liquid, after backwashing, is subjected to flocculation, coagulation and settlement to produce a supernatant and, then, introducing the supernatant directly into the inlet of the filter without returning the backwash liquid to the sewage treatment plant. The solids in the backwash liquid are concentrated and removed without being reintroduced into the sewage treatment plant.

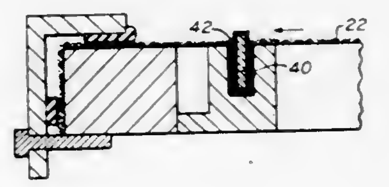
3,792,774
VIBRATORY SEPARATOR SCREENS

Jesse Rosenblum, 112 Roosevelt St., Closter, N.J.

Filed Apr. 5, 1972, Ser. No. 241,142

Int. Cl. B07b *1/28*

U.S. Cl. 210—495 **4 Claims**



A number of vibratory separator screens which are each assembled in accordance with a multi-stage tensioning method. One specific separator screen, for example, comprises a frame including a continuous groove formed therein and into which a segment of a cloth of desired mesh is driven to thereby mount said cloth to the frame at a desired level of tension.

A multi-stage tensioning method for assembling the specific separator screen above described comprises the steps of tensioning the cloth to a level of tension less than said desired level of tension; positioning the cloth over the frame with a segment of the cloth covering the groove; driving the cloth segment into the groove thereby further tensioning the screen to said desired level, and bonding the screen to the frame at said desired level of tension.

An apparatus for assembling the specific separator screen above described comprises means for tensioning a cloth of desired mesh to a level of tension less than a desired level, and means for driving a segment of the cloth into a continuous groove of a frame thereby further tensioning the cloth on the frame to said desired level of tension.

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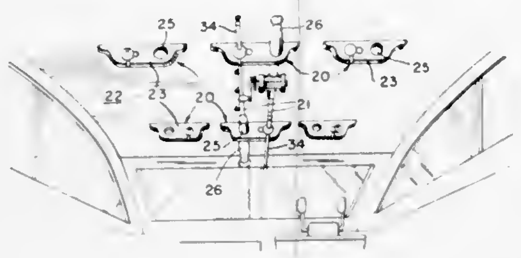
web and the engagement means includes a plunger which

3,792,775
FISHING POLE SUPPORTS

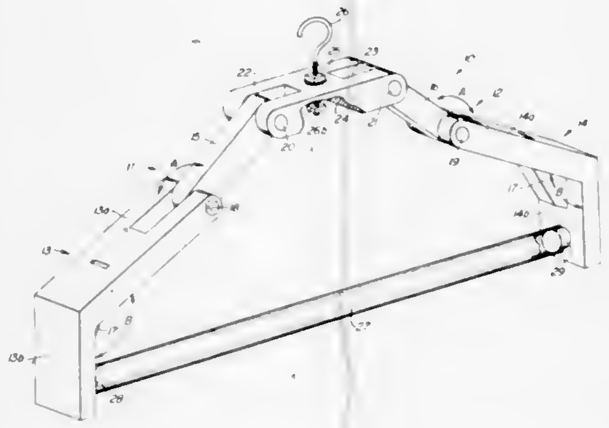
Franklin D. Riddle, 24 Maulden St., Greenville, S.C., and John T. Willis, 5391 N.W. 167th St., Miami, Fla.
Division of Ser. No. 73,999, Sept. 21, 1970, Pat. No. 3,672,513. This application Mar. 16, 1972, Ser. No. 235,430
Int. Cl. A01k *97/10;* **A47f** *7/00*
U.S. Cl. 211—60 R **2 Claims**



A pair of coacting reversely mounted support brackets receive the butt and rod ends of a pair of fishing poles in reverse direction to support the same securely beneath the roof of a cabin cruiser or the like. The rods are stored out of the way in overhead positions. Positive locking means on the brackets assure that the rods will not drop due to vibrations or movement of the boat. The locking means are releasable manually.

3,792,776
DRAPERY HANGER

Walter D. Kenison, 2040 Terra Linda Dr., Salt Lake City, Utah
Filed Aug. 25, 1972, Ser. No. 283,826
Int. Cl. A47f *7/16*
U.S. Cl. 211—118 **5 Claims**

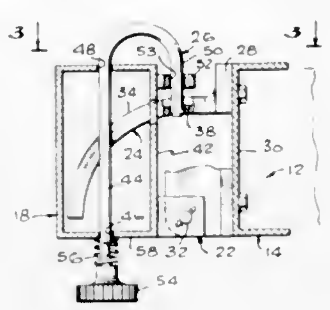


A drapery hanger having linked arms adapted to receive a tubular support rod carrying drapery panels and the like, of varying widths and materials.

3,792,777
LOCK FOR HINGED RACK

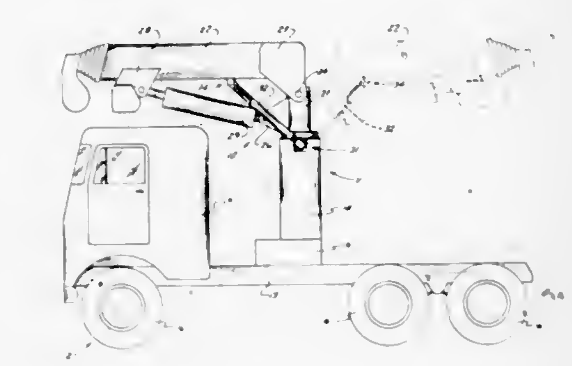
King B. Drake, Chatsworth, Calif., assignor to Dracon Industries, Chatsworth, Calif.
Continuation-in-part of Ser. No. 15,506, March 2, 1970, Pat. No. 3,664,514. This application May 22, 1972, Ser. No. 255,423
Int. Cl. A47f *5/12*
U.S. Cl. 211—169 **8 Claims**

A rack for heavy equipment is hinged on a post and the lock is secured therebetween. A finger extends from the rack into an opening in the post and engagement means secures the finger with respect to the post to lock the rack with respect thereto. The finger is a curved channel having openings in its web and the engagement means includes a plunger which selectively engages the web openings for locking the position of the rack with respect to the post. The engagement means is provided with selectively operable latch means for holding it in an unlocked position.



3,792,778
CRANE BOOM STOWING MECHANISM

Arthur F. Sholl, Omaha, and Donald L. Wolfe, Wahoo, both of Nebr., assignors to Paxton Mitchell Company, Omaha, Nebr.
Filed Sept. 20, 1972, Ser. No. 290,463
Int. Cl. B66c *23/00*
U.S. Cl. 212—1 **6 Claims**

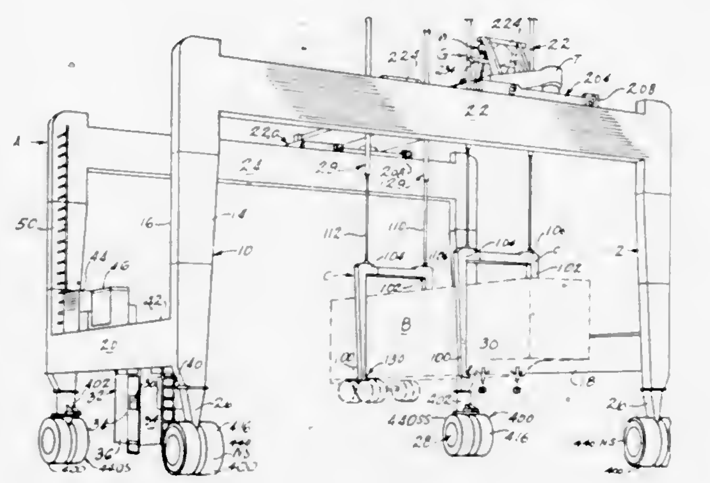


A crane boom stowing device having a pair of stowing legs secured to the crane frame by means of a universal type joint and detachably securable to a saddle mounted on the boom, thus permitting the boom to be locked in a predetermined position when the crane is transported or stowed.

3,792,779
GANTRY CRANES

James W. Brazell, Atlanta, Ga., assignor to U.S. Railway Mfg. Co., Chamblee, Ga.
Division of Ser. No. 770,170, Oct. 26, 1968, Pat. No. 3,645,406. This application June 2, 1971, Ser. No. 149,393
Int. Cl. B66c *13/16*
U.S. Cl. 212—2 **6 Claims**

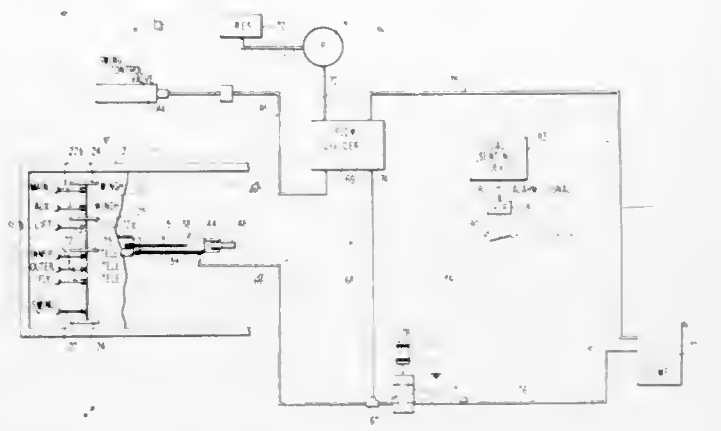
A gantry crane suitable for service in so-called piggyback operations where trailers or containers are handled to and from railroad cars. With a typical capacity of 50 tons the crane can move cargo with its bottom lift grappling arms or with optional spreader beam for top lift containers. Essentially hydraulic, the crane is self-propelled using a V-8 diesel engine to drive a plurality of hydraulic pumps. All power for load handling and crane movement is transmitted hydraulically. A stepless, reversible hydrostatic drive propels the crane in either direction at typical speeds up to 465 feet per minute. a hydraulic cylinder in each of the grappling arms provides the load clamping force. Two cylinders are connected to each of the grappling arms for hoisting. A counterbalance valve at each of the hoisting cylinders provides fail-safe suspension of the load. Another hydraulic cylinder moves one grappling arm relative to the other so that loads of varying lengths can be handled properly. A stepless reversible hydrostatic drive is incorporated in each of two trolley trucks, which are controlled independently so the operator can rotate the load in a horizontal plane, plus or minus typically 35° from the track centerline, and also the operator can move the trolley toward or away from his location. A servo-controlled power steering arrangement, incorporating a conventional Davis steering gear, allows steering about either pair of the non-steered wheels. An automatic weighing system is incorporated to accurately determine and record the weight of the load simultaneously as the load is being handled. Load cells are used which are transducers that relate tensile force to an electrical signal which can be used to indicate the weight of the load and to print a ticket. The load cells are suspended from a frame. Drive wheels are driven directly from a hydraulic motor without the use of any gearing. Two steered struts include two hydraulic motors each, one for each wheel. The hydraulic motor may be of the fixed displacement type powered by a variable displacement pump which is reversible and driven by the engine at constant speed whereby the operator may vary the direction of travel and travel speed with a single control. Since the motors are connected in parallel, differential motion for steering and or maneuvering is available. The crane has a very short turning radius and under ideal conditions could approach pivoting about each of the fixed (non-steered) struts. The trolley which supports the grappling arms is positioned by two independently driven trolley trucks that operate along rails mounted on girders. A trolley beam includes inverted rails which ride on double flanged wheels of a spider assembly. This arrangement allows a variation in truck pivot centers as the trolley displaces the angular relationship and a dashpot at the end limits the travel of the spider and thus a displacement angle.



3,792,780
MECHANISM FOR POSITIONING AND RESTRICTING CRANE CONTROL LEVERS TO PREVENT DANGEROUS LOAD CONDITION

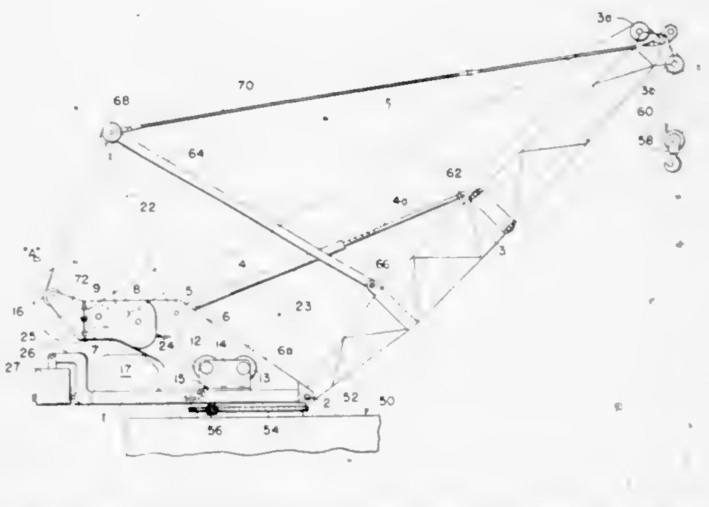
Stanley R. Spain, Greencastle, Pa., assignor to Kidde, Walter & Company, Inc., Clifton, N.J.
Filed Dec. 2, 1971, Ser. No. 203,994
Int. Cl. B66c *13/48*
U.S. Cl. 212—39 R **17 Claims**

A safe load sensing device on a crane produces a signal to which a control means responds to operate an actuator for a mechanism which automatically returns manual control levers on the crane to neutral. The mechanism restricts the movement of certain control levers in a direction which would increase unsafe crane loading.



3,792,781
HYDRAULIC TRAVELING CRANE CONSTRUCTION

Helmut Blase, Dortmund-Derne, and Richard Gorl, Dortmund, both of Germany, assignors to Rheinstahl Union Aktiengesellschaft, Dortmund, Germany
Filed June 14, 1971, Ser. No. 152,865
Claims priority, application Germany, Mar. 28, 1970, P 20 15 087.2
Int. Cl. B66c *23/06*
U.S. Cl. 212—59 **7 Claims**



A hydraulically operated traveling crane includes a chassis or support constructed and arranged to permit the crane to be operated with a lattice boom or with a telescopic boom. The carrying chassis includes plates which are mounted on a base and which include an inclined front wall with a pivot bearing at the lower end for either the lattice boom or for a whipping cylinder for a telescopic boom. The upper end of the inclined front edge provides a rotatable support for a pivot journal for a backdrop support for the lattice boom or for the pivotal support for the telescopic boom. The mounting plates on the carrying chassis include a rearward extension providing a rotatable support for two rotatable pulleys of the hoisting gear around which connecting cables for the telescopic boom or the lattice boom or an extension of either may be connected. The mounting platform of the chassis provides means for mounting a support plate for cable winches which are employed with the lattice boom and these may be easily removed when the telescopic boom is positioned on the chassis. The cable winches include the cable lines which are provided for raising and adjusting the lattice boom. A pump unit for the hydraulic controls is arranged below the rearward extension mounting the cable winches. Guide pulleys for the boom cables are advantageously mounted on a combining unit which

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includes an adjustable triangular plate member mounting the

3,792,784

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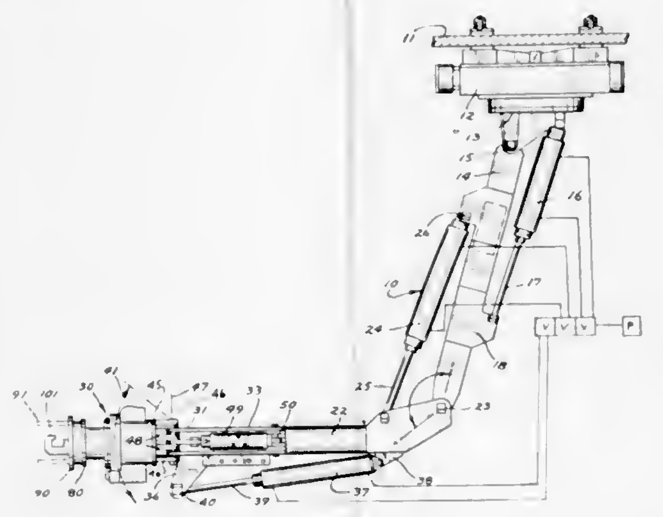
from a truck to a boom conveyor to a stacker crane, and the

manually into engagement with the second component and includes an adjustable triangular plate member mounting the pulleys.

3,792,782
GRAPPLE ASSEMBLY

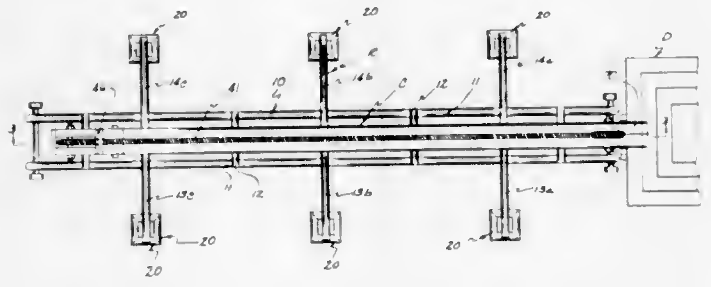
Donald F. Melton, Minneapolis, Minn., assignor to Programmed & Remote Systems Corporation, St. Paul, Minn.
Continuation of Ser. No. 866,197, Oct. 14, 1969, abandoned. This application Dec. 10, 1971, Ser. No. 206,760
Int. Cl. B66c *1/66*
U.S. Cl. 214—1 BD **14 Claims**

A grapple assembly for boom type material handling members permits limited swiveling movement for the grapple member when the member is being attached or disconnected from a heavy item to be moved and which when actuated becomes a rigid unit to permit positioning with its actuating boom.



3,792,783
PIPE HANDLING SYSTEM

Cicero C. Brown, 8490 Katy Freeway, Houston, Tex.
Continuation-in-part of Ser. No. 125,740, March 18, 1971, Pat. No. 3,706,347. This application May 24, 1972, Ser. No. 256,255
Int. Cl. E21b *19/14*
U.S. Cl. 214—2.5 **8 Claims**

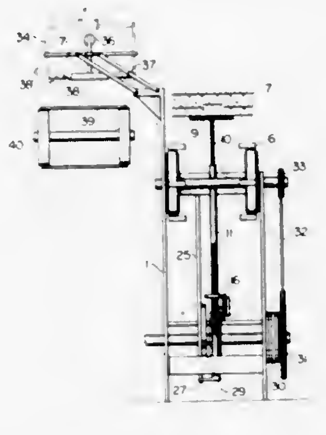


A pipe handling system for delivering pipe sections to a well drilling derrick, comprising: pipe rack means; elongate conveyor means disposed alongside the rack means; feed means movable from an inoperative position to an operative position by which a section of pipe may be lifted from the rack means for transfer to the conveyor means; and means mounted on the conveyor means for advancing pipe sections received thereon to the derrick.

3,792,784
DEVICE FOR HANDLING EGG TRAYS

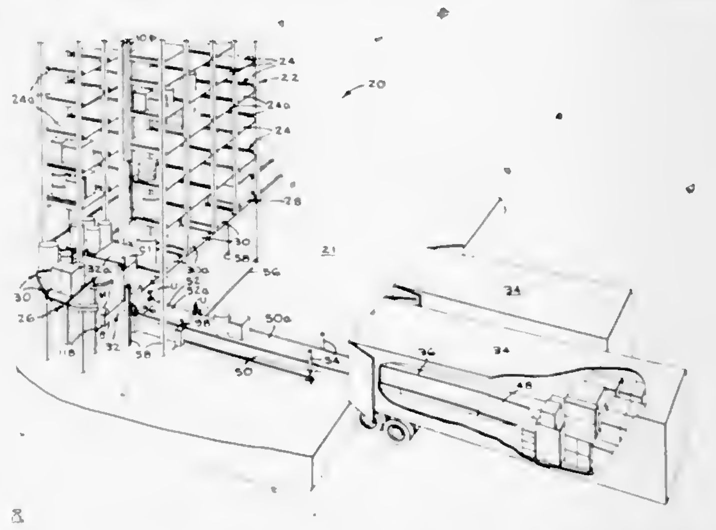
Jacob H. Mosterd, Stationsweg 117, Barneveld, Netherlands
Filed May 24, 1972, Ser. No. 256,335
Claims priority, application Netherlands, June 9, 1971, 7107931
Int. Cl. B65g *57/06*
U.S. Cl. 214—6 H **4 Claims**

The invention provides a device for automatically removing egg-trays from a stack, in which each tray is rotated about 90° with respect to the preceding tray, the device containing a support that is vertically movable and rotatable about a vertical axis such that a predetermined vertical displacement equalling the vertical distance between two successive trays in the stack corresponds to a rotation of about 90°, and a gripper for removing the uppermost tray from the stack. The device can also be used for forming a stack of trays as described.



3,792,785
AUTOMATED STORAGE AND FREIGHT TERMINAL APPARATUS

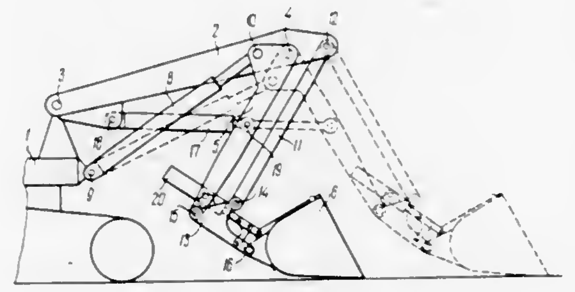
Stanley M. Weir, Santa Clara, Calif., assignor to FMC Corporation, San Jose, Calif.
Filed Jan. 26, 1973, Ser. No. 326,932
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.4 A **17 Claims**



An automated freight terminal wherein a plurality of stacker cranes transfer shipments between load-unload boom conveyors, shipment staging compartments, and an indexible distribution conveyor comprised of a series of interconnected carts. The stacker cranes are provided with elevators, and each elevator supports an endless belt conveyor that can be sideshifted toward selected carts of the distribution conveyor or toward staging compartments which components are also provided with endless belt conveyors. The conveyors on the carts or in the staging compartments are powered from the stacker crane conveyor, and shipments can be moved off the crane conveyor onto the conveyors of the compartments or cart, or vice versa. Incoming freight shipments are routed from a truck to a boom conveyor to a stacker crane, and the stacker crane transfers the shipments directly to the staging compartments or to the distribution conveyor for transfer to the operating area of another stacker crane. The distribution conveyor is indexed in predetermined distances to bring different sets of carts to the stacker cranes so that shipments can be routed anywhere in the terminal. Outgoing freight shipments are handled in a reverse manner.

3,792,786
SINGLE-BUCKET EXCAVATOR

Vladimir Kelmanovich Goikhburg, 1 Mosfilmovsky pereulok 5a, kv. 81; Georgy Ivanovich Finikov, Likhoborskie bugry, 6, kv. 3, both of Moscow; Viktor Alexandrovich Svirsky, Moskovskoi oblasti, ulitsa Shevlyakova, 45, kv. 11, Ljubertsy, Moskovskoi Oblasti; Vladimir Yakovlevich Shklovsky, Molodogvardeiskaya, 24, Lorpusi, kv. 69, Moscow; Mikhail Lvovich Kuperman, Novomytischinsky prospekt, 31, korpus 2, kv. 20, Mytischi, Moskovskoi Oblasti; Oleg Arkadievich Smirnov, ulitsa Efremova, 14, kv. 16, Moscow; Adolf Petrovich Fedorov, Suborovsky prospekt, 65, kv. 20, Leningrad; Gennady Mikhailovich Piskarev, Dalnevostochny proezd, 28, kv. 19, Leningrad; Lev Illarionovich Averynov, ulitsa Lenina, 12/6, kv. 7, Leningrad; Nikolai Ivanovich Gavrilov, Sojuznaya ulitsa, 23; Anatoly Efimovich Litvak, 1 Artemovskaya ulitsa, 34, kv. 46, both of Kovrov, Vladimirskoi Oblasti; Petr Moiseevich Khanokh, Saratovskaya ulitsa, 12/28, kv. 64; Avram Yakovievich Rozenblat, Lagernaya ulitsa, 44, kv. 242, both of Kiev, and Alexandr Vladimirovich Rannev, Veernaya ulitsa, 3, kv. 68, Moscow, all of U.S.S.R.
Filed Feb. 17, 1972, Ser. No. 227,187
Int. Cl. E02f *3/75*
U.S. Cl. 214—138 R **1 Claim**

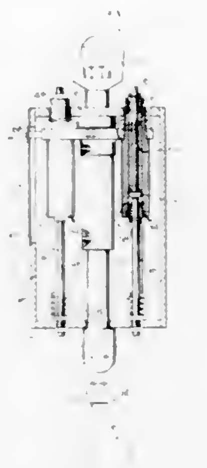


A bucket suspension system for an excavator in the form of a six-bar mechanism consisting of two combined four-bar mechanisms whose common links are the boom and the arm. One of the four bar mechanisms is a parallelogram; the other four-bar mechanism, besides the boom and arm, comprises as one of the links a power cylinder which is hingedly connected to the turntable and the arm thus making the turntable a stationary link of this four-bar mechanism. Such suspension eliminates changing of the cutting angle during the working travel of the bucket.

3,792,787
METHOD OF LIFTING A HEAVY COMPONENT FOR SENSITIVE ENGAGEMENT WITH ANOTHER

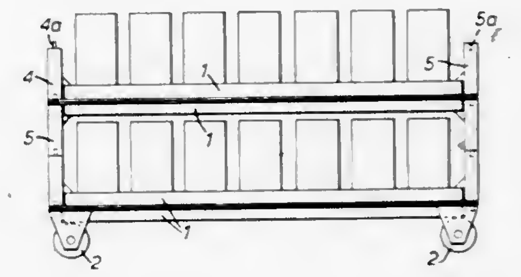
William T. Maloney, Cohoes, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Continuation-in-part of Ser. No. 110,498, Jan. 28, 1971, abandoned. This application June 19, 1973, Ser. No. 371,428
Int. Cl. B66c *1/34*
U.S. Cl. 214—152 **1 Claim**

The method of lifting a heavy first component for sensitive engagement with a second component wherein a spring-loaded device is engaged between a mechanical lifting means and the first component to neutralize the weight thereof when lifted, the reduced weight of the lifted component is moved manually into engagement with the second component and thereafter, any interference during completion of the engagement is manually sensed and corrected by manual adjustment of the vertical position of the first component relative to the mechanical lifting means.



3,792,788
LOADING AND UNLOADING OF BRICKS AND OTHER ARTICLES ONTO, AND FROM, PALLETS

Franz Bucker, and Dieter Keck, both of Laggenbeck, Germany, assignors to C. Keller u. Co., Laggenbeck, Germany
Filed Jan. 6, 1972, Ser. No. 215,768
Claims priority, application Germany, Jan. 8, 1971, 2100820
Int. Cl. B65g *57/30, 60/00*
U.S. Cl. 214—152 **3 Claims**

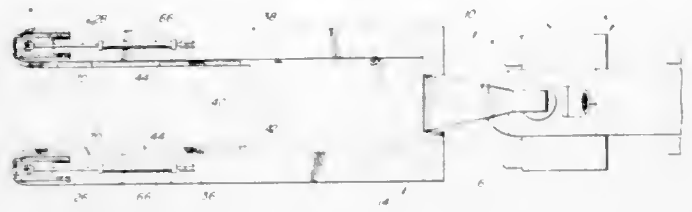


Bricks or other articles to be dried are loaded onto individual pallets which are fed to a stacking station. The stacked pallets are fed through a drier to an unstacking station, the individual pallets withdrawn from the unstacking station being fed to an article unloading station and then to an article loading station to be loaded with further articles to be dried.

3,792,789
LOAD TRANSPORT APPARATUS

Carl W. Oehler, 2309 S.E. 11th St., Ocala, Fla.
Filed Oct. 20, 1971, Ser. No. 190,731
Int. Cl. B60p *1/64*
U.S. Cl. 214—390 **1 Claim**

A load transport apparatus including a powered vehicle in combination with a trailer having connection means provided thereon at its forward end to engage with the powered vehicle. The trailer includes an elongate frame of low height and including a pair of side members and means securing said side members together only at the forward portion of the frame so that an opening is provided at the center rear portion of the frame and load support means are present on the frame members. A wheel means is pivotally carried by each of the side members at the rear end thereof and means are present for moving the wheel members from a low to a high operating position whereby the trailer can be moved under a load received between the side members and the wheels be moved to a high operating position to lift the load and ready the trailer for transport action.

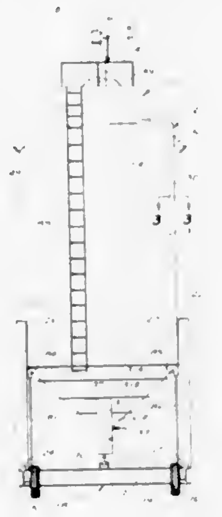


3,792,790
TRANSPORTABLE BULK-MATERIAL HANDLING APPARATUS

Louis M. Brubaker, Delphi, Ind., assignor to Alloy Grafts Co., Delphi, Ind.

Filed Mar. 8, 1971, Ser. No. 122,033
Int. Cl. B60p *1/04*

U.S. Cl. 214—501 **6 Claims**



Apparatus, transportable from one location to another, for handling bulk materials of granular or pulverulent consistency such as corn, and other grains, dry bulk chemicals, and the like. The apparatus includes a wheel-equipped carriage adapted to be towed from one location to another, and it further includes a large longitudinally-extending bin pivotally supported by the carriage for angular displacements between a generally vertical position of use and a generally horizontal position for transport. A tubular elevator shaft extends longitudinally through the bin and is equipped with a bucket conveyor adapted to carry material upwardly from the lower end to the upper end of the bin. The bin is essentially devoid of independent frame structure, and the bin and elevator shaft extending therethrough mutually reinforce and rigidify each other. The center of gravity of the bin is so related to the pivotal axis therefor that relatively constant-moment loads are operative on the bin irrespective of the position thereof tending to rotate it toward the horizontal position thereof.

3,792,791
SPEED RESPONSIVE GOVERNOR OPERATED SYSTEM FOR PUMP CONTROL

Charles L. Fleming, Brookfield, and Milton E. Wege, Colgate, both of Wis., assignors to Koehring Company, Milwaukee, Wis.

Filed Nov. 17, 1971, Ser. No. 199,625
Int. Cl. E02f *3/86*

U.S. Cl. 214—762 **13 Claims**

A mechanical governor is connected by a flexible shaft to the main engine for a mobile construction machine for sensing the speed of such engine. The governor is connected by a linkage to the control arm of a modulating air valve positioned in the air control circuit for the hydraulic dig pump between the pump and the operator's manual control in the cab of the machine. Spring-loaded means on the governor can be manually adjusted to alter a set-point at which the governor influences the modulating air valve.

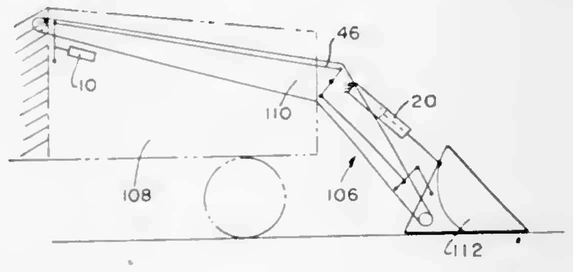
As the hydraulic horsepower requirements increase during the work cycle of the machine, the main engine will tend to slow down. The governor, through the flexible shaft, senses this change in engine speed, or revolutions per minute, and moves the control lever on the modulating air valve to decrease the air pressure supplied to the hydraulic dig pump control. The reduction in air pressure controls the destroking of the hydraulic pump and reduces the hydraulic horsepower output to a level that can be satisfied by the output of the main engine. Accordingly, the speed responsive governor will eliminate engine stall-out under peak load conditions, and thus allow the operator to maintain full system hydraulic pressure at all times with attendant increases in the productivity of the machine and in the ease of controlling same.

3,792,792
HYDRAULIC SELF-LEVELING DEVICE FOR A LOADER BUCKET

Richard J. Bromberek, Lockport; Robert J. Oliver, Westmont; Rudolph E. Yeh, Elmhurst, and Gale A. Holloway, Joliet, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed May 2, 1972, Ser. No. 249,604
Int. Cl. E02f *3/86*

U.S. Cl. 214—763 **9 Claims**



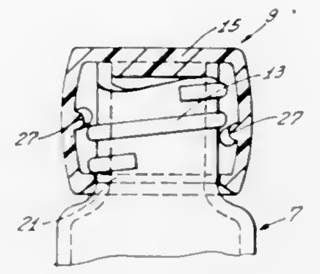
A mechanically actuated single valve which has a sequence of opening and closing port connections controlled by a timed spool. The timing of the spool and arrangement of the hydraulic circuitry is such that high pressure fluid can be delivered to both sides of a hydraulic cylinder, with no movement thereof because of the balance of forces on the cylinder.

3,792,793
SAFETY CLOSURE

Alan C. Rose, 5030 Calvin Ave., Tarzana, Calif.

Filed Aug. 9, 1972, Ser. No. 279,279
Int. Cl. A61j *1/00*

U.S. Cl. 215—9 **8 Claims**



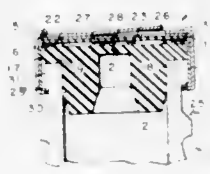
A safety closure or top for screw-type containers is provided with one or more beads, or inwardly extending ridges, to engage the bottom of the threads on the bottle, and, in certain cases to seat below a bead, or outwardly extending ridge on the bottle. To remove the top, flexible sidewalls of the top are pressed inwardly and normally disengaged bumps or partial threads on the inner side walls of the top are engaged with the threads of the bottle and the top is turned off, with the engaged threads providing the force to overcome the restraint of the bead or beads.

3,792,794
CLOSURE FOR CONTAINERS

Robert K. Cutter, Berkeley, and Roger A. Saut, San Francisco, both of Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.

Filed Oct. 4, 1971, Ser. No. 186,061
Int. Cl. B65d *51/00*

U.S. Cl. 215—247 **13 Claims**



The closure for containers includes a resilient stopper combined with an uninterrupted resilient enclosure member which encloses a piercing area thereon and is positioned between the top surface of the stopper and an overlying resilient flat disc. A rigid plate in turn overlies the flat disc, and the stopper may be retained on the neck of a container by a stopper retainer or ring which overlies the top of the stopper outboard of the enclosure member. An outer sealing ring or tear-off cap secures the closure components together and forces the enclosure member into either the resilient flat disc, the resilient stopper, or both.

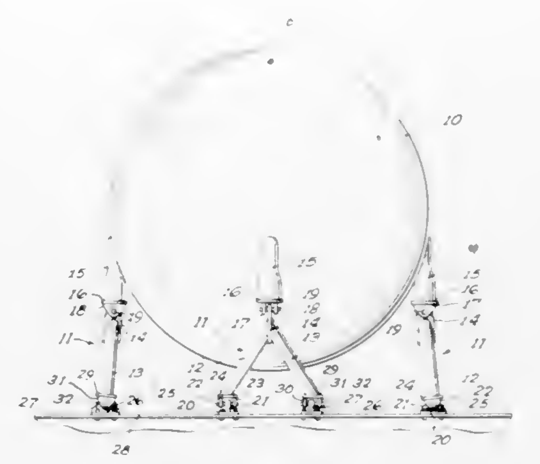
3,792,795
VESSEL OR TANK WITH SUPPORTING SYSTEM

Orwill Granger Sikora, Chicago Heights; David Wayne Culver, Oak Lawn, and Willis James Kircik, Hinsdale, all of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 140,121, May 4, 1971. This application Mar. 8, 1972, Ser. No. 232,679
Int. Cl. B65d *25/24*

U.S. Cl. 220—18 **15 Claims**

A vessel supported by a plurality of rigid members, each of said rigid members being supported at the bottom on a base by at least two pivots, and each of said rigid members being pivotally connected at the top to the vessel at spaced apart locations such as below or about the periphery thereof. The rigid members permit expansion and contraction of the vessel, such as during post-weld heat treatment, internal pressure testing of the vessel, or when the vessel is subjected to a wide temperature cycle during use such as for storage of a cryogenic liquid on land or in a barge or ship.

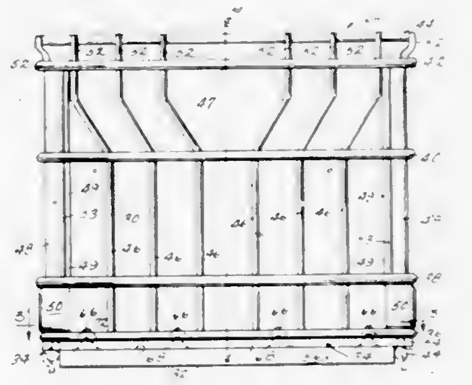


3,792,796
CARRYING CASE

William W. Woodruff, Memphis, and Vance E. Rhinehart, Apison, both of Tenn., assignors to Cumberland Corporation, Chattanooga, Tenn.

Continuation of Ser. No. 661,254, Aug. 17, 1967, abandoned. This application Mar. 3, 1970, Ser. No. 16,014
Int. Cl. B65d *7/20*

U.S. Cl. 220—19 **31 Claims**



The lightweight carrying case comprises wire side walls, a molded plastic floor having an integral depending stacking ring and a wire retainer which joins the plastic floor to the side walls of the case. The wire retainer of one embodiment of the invention is rectangular in form comprising intermediate portions, which engage the lower surface of the floor, and offset portions or loops which pass through slots adjacent the outer edges of the plastic floor. The offset portions are welded or secured in some other equivalent manner to the side wall, thereby forming a reliable connection between the floor and the side walls. In other embodiments, vertical elements of the side walls are secured directly to the plastic floor or are welded to wire members retained in the plastic floor.

3,792,797

COVER-CLOSURE FOR CONTAINERS WITH A RELATIVELY LARGE OPENING

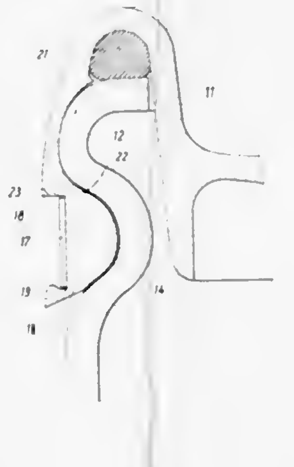
Wilfried Mrusek, Bellheim, and Horst Rosewicz, Ludwigshafen, Rhine, both of Germany, assignors to Elbatainer Kunststoff- und Uerpaekungs-Gesellschaft mbH. & Co., Ettlingen, Germany

Filed Jan. 28, 1972, Ser. No. 221,635

Claims priority, application Germany, Jan. 29, 1971, 2104193

Int. Cl. B65d *43/10*

U.S. Cl. 220—60 R **2 Claims**



A cover-closure for containers having a relatively large opening, in particular for barrels, cans or the like, produced of synthetic material, which comprises a container having on the outside at its edge an annular rim formed of the container wall and radially projecting locking cams. A cover has an edge disposed downwardly angularly and outwardly surrounding the annular rim in the securing position. The segment is divided at least partly into segments equipped with projections extending outwardly from the lower end section, by means of vertical cutouts. The segments, in case the cover is mounted, is capable of being tensioned against the container edge below the annular rim with a tensioning ring disposed on the outside about the segments and capable of being locked below the locking cams. The container has at least three of the locking cams formed of the annular rim and is along the periphery symmetrically disposed and formed of the annular rim. In the container-wall sections are disposed between the locking cams below the locking cams at least one deepening provided adjusted as to shape to the cover edge segments.

3,792,798

COMBINATION LIQUID CONTAINER AND DRINKING STRAW

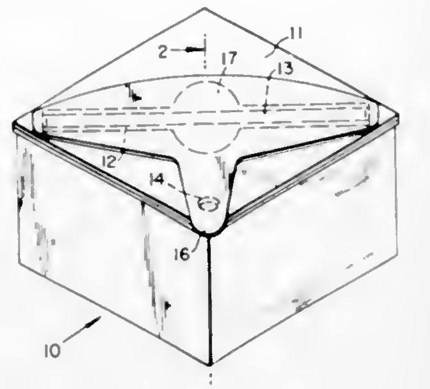
Henry M. Chang, Bronx, N.Y., assignor to First Dynamics, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 815,735, April 14, 1969, Pat. No. 3,623,632. This application Mar. 2, 1970, Ser. No. 15,413

Int. Cl. A47g *19/22*

U.S. Cl. 220—90.2 **4 Claims**

A liquid container has a recess formed by a depression in the top wall thereof of sufficient depth to have a drinking straw nest therein while being insulated from the container contents. The said wall also has an accessible opening or hole therein for insertion of the straw into the container. A single



tear strip adhered to the outer surface of said wall covers both the recess and said opening.

3,792,799

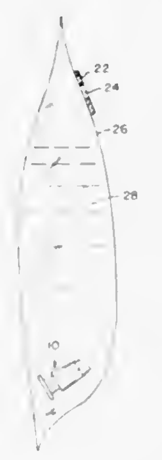
METHOD AND APPARATUS FOR OPENING PLASTIC CONTAINERS

Kenneth M. Henfrey, Woking, England, assignor to Sybron Corporation, Rochester, N.Y.

Filed Oct. 21, 1971, Ser. No. 191,419

Int. Cl. B67b *7/26*

U.S. Cl. 222—1 **4 Claims**



Disclosed is a method and apparatus for aseptically opening sealed containers such as plastic bags or the like containing a sterile liquid wherein a punch member for piercing the container is placed within the container and sterilized with its contents. The punch, which is thrust through a die member on the outside of the container to pierce the container wall, thereafter acts as the pouring spout.

3,792,800

LIQUID DISPENSER

Nicholas G. Capra, 467 Dellavan Ave., Newark, N.J., and Vincent Toth, 120 Midland Ave., Stanhope, N.J.

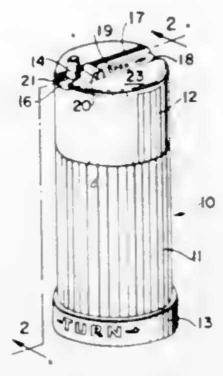
Filed July 6, 1972, Ser. No. 269,452

Int. Cl. B67d *5/32*

U.S. Cl. 222—43 **33 Claims**

A liquid dispenser comprising a container having relative rotatable parts, and within the container a cylinder and a piston movable relative to each other and forming a chamber. The cylinder or piston being moved by the relatively rotatable

part of the container, and when so moved, filling the chamber with a fluid contained in the container. The fluid is placed



under pressure in the chamber and is dispensed from that chamber upon actuation of a valve. There is also a means on the container for locking the valve in inoperative position.

3,792,801

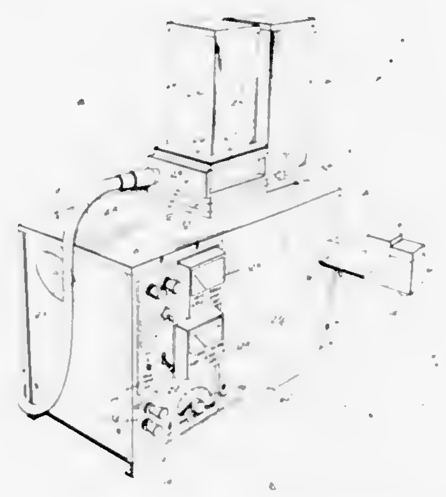
THERMOPLASTIC APPLICATOR WITH SELF-CLEANING SUPPLY RESERVOIR

Robert G. Baker, Avon; Eric T. Nord, Oberlin, and Alan B. Reighard, Bay Village, all of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed Oct. 29, 1971, Ser. No. 193,621

Int. Cl. B05c *9/02*

U.S. Cl. 222—146 HE **21 Claims**



An applicator for melting thermoplastic material and supplying the molten or liquid material under pressure and at a controlled temperature to an applicator head. The material is melted by a heated grid through which it passes to a storage reservoir. From the reservoir it is pumped to a gun type applicator head. The pump is a single piston double-acting pump that is driven by an air motor. The liquid reservoir, the pump, the applicator gun, and the hose connecting the gun to the pump are all heated and maintained at an even temperature so that there are neither hot spots nor cold spots in the system. The applicator incorporates a self-cleaning mechanism for cleaning the grid and the tank by heating the degraded carbonaceous hot melt material to a temperature at which it is decomposed and converted to a powdered ash that is easily removed.

3,792,802

AEROSOL-CAN DISPENSING CAP

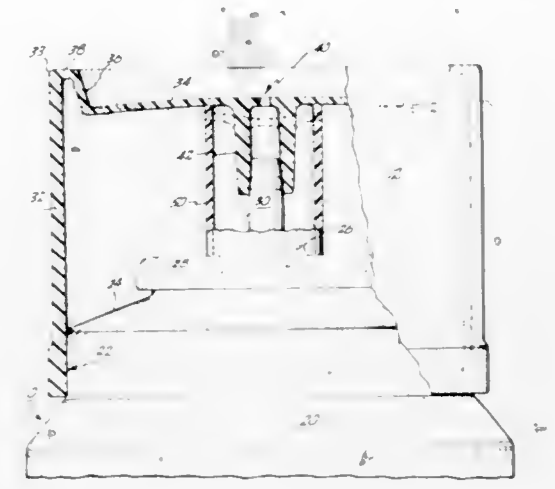
Kenneth W. Gores, 1026 - 112th N.E., Bellevue, Wash.

Filed Sept. 11, 1972, Ser. No. 287,778

Int. Cl. B65d *83/14*

U.S. Cl. 222—402.13 **5 Claims**

A dispensing cap for use on a pressurized aerosol-type can is characterized by a circular, pressure-receptive diaphragm flexibly spanning the upper reaches of a wall means surrounding the discharge part of the can. Liquid conduit means between an orifice centered in the diaphragm transfer pressure applied to the diaphragm and an orificed depressible



valve actuator element in the discharge part. Light manual application of a compress or the like to the diaphragm results in the emission of a portion of the pressurized contents of the can and wetting of the applied article.

3,792,803

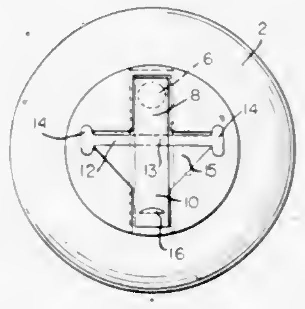
SELF-RECLOSING CAP FOR CONTAINERS

Gerald Kessler, 388 Cranberry Rd., Beardman, Ohio

Filed Nov. 20, 1972, Ser. No. 307,780

Int. Cl. G01f *11/00*

U.S. Cl. 222—511 **2 Claims**



A self-reclosing cap, preferably of plastic, is described which has a pouring aperture providing access to the contents of a bottle or other container with which the cap is used, and a sliding cover for the aperture which cover is normally closed by elastic cord and can be slid back by the user against the tension of the elastic cord to uncover the aperture.

3,792,804

GARMENT HANGER

Nicholas Ponzo, 30-W-414 Roosevelt Rd., West Chicago, Ill.

Filed June 19, 1972, Ser. No. 263,939

Int. Cl. A47j *51/142*

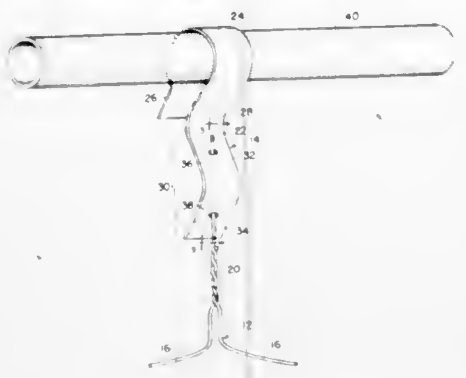
U.S. Cl. 223—85 **1 Claim**

A two-piece garment hanger including a rod-supported suspension hook part and a garment-supporting body part at-

tached thereto. In a preferred form, the hook part releasably

plants, strips of canvas secured to the sheet to reinforce it, and

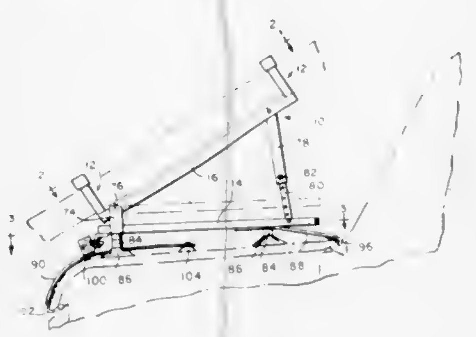
and repeatedly opened, simply and easily, by lifting with gen-tached thereto. In a preferred form, the hook part releasably and frictionally grips the body part. In another form, the body part is captured by the hook part. In a third form, the body part is freely and removably suspended from the hook part.



3,792,805

SKI RACK FOR ATTACHMENT TO THE TRUNK COVER OF A VEHICLE

Kenneth W. Binding, Woburn, and Stanley H. Cunningham, Everett, both of Mass., assignors to Beatrice Foods Co., Chicago, Ill.
Filed June 11, 1971, Ser. No. 152,164
Int. Cl. B60r *9/04*
U.S. Cl. 224—29 R **2 Claims**



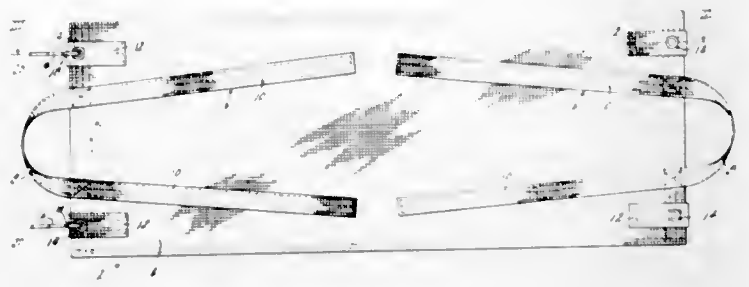
A ski rack comprising a rigid frame adapted to be mounted on the trunk cover of a vehicle, provided at one end with hooks for engagement with the forward end of the trunk cover and at the other end with a hook for engagement with the rear end of the trunk cover, said latter hook being adjustably supported and a lock for securing the latter hook in a position to prevent removal of the frame from the trunk cover. A second rigid frame is pivotally connected to the first frame for angular disposition relative thereto to enable disposing the second frame in a position sloping upwardly and forwardly and there are adjustable telescopically engaged parts connected to the frames for supporting the second frame at a predetermined angular positon to the first frame. Ski supporting structures are mounted on the forward and rear ends of the second frame in longitudinally spaced relation for securing and holding pairs of skis, each comprising receptacles for holding pairs of skis on edge. Locking bars are pivotally mounted for disposition across the upper ends of the receptacles to hold the skis therein, latches are provided for releasably holding the locking bars in clamping position, and locks are provided for preventing disengagement of the latches to prevent unauthorized removal of the skis.

3,792,806

CARRIER FOR TOBACCO PLANTS

Luke Layton, Mall Towers, Apt. 810, Atchison, Kans.
Filed Sept. 11, 1972, Ser. No. 287,788
Int. Cl. B65d *63/18*
U.S. Cl. 224—49 **1 Claim**

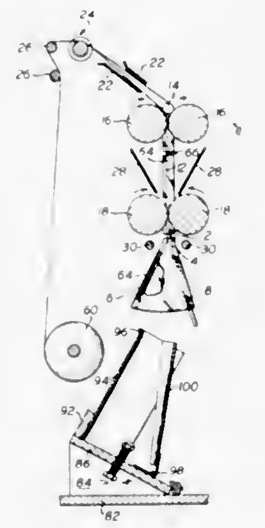
A carrier for tobacco plants consisting of a rectangular sheet of canvas adapted to be wrapped about a bundle of plants, strips of canvas secured to the sheet to reinforce it, and being extended in loops at the adjoining edges thereof to form carrying handles, and hooks adapted to connect the adjoining edges of the sheet releasably together.



3,792,807

BAND DISPENSING APPARATUS

Peter D. Mare, 23 Fox Hill, Upper Saddle River, N.J., and Albert L. Ross, 11 Bonaire Dr., Dix Hills, N.Y.
Continuation-in-part of Ser. No. 245,858, April 20, 1972, abandoned. This application July 25, 1972, Ser. No. 274,929
Int. Cl. B65h *35/10;* **B26f** *3/02*
U.S. Cl. 225—100 **8 Claims**

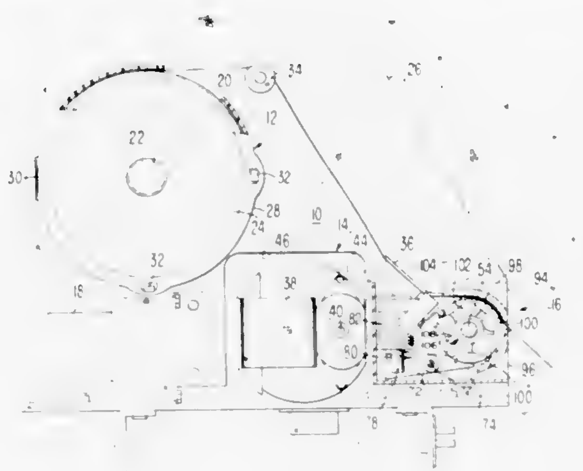


Tubular band members such as plastic band labels are individually dispensed from a continuous supply of bands severably attached to one another in strip form. The dispensing apparatus includes two series of horizontal contact rolls vertically spaced apart and a band separator suspended in the nip of the first pair of rolls and extending downward between both pairs of rolls and terminating in a spreader which is suspended below the second pair of rolls. The first pair of rolls are driven in a predetermined cycle relative to the height of the tubular band or at a predetermined dispensing speed and the second pair of rolls is driven and is adapted to sever individual bands from the strip and advance the severed label downward over the spreader thereby dispensing same downward in a substantially open condition.

3,792,808

STAMP DISPENSER

Floyd S. Neff, Los Altos; Harry Galin, Mountain View, and John B. Riddle, Los Altos Hills, all of Calif., assignors to Micro-Magnetic Industries, Inc., Palo Alto, Calif.
Filed Jan. 5, 1973, Ser. No. 321,357
Int. Cl. B65h *17/44*
U.S. Cl. 226—145 **6 Claims**

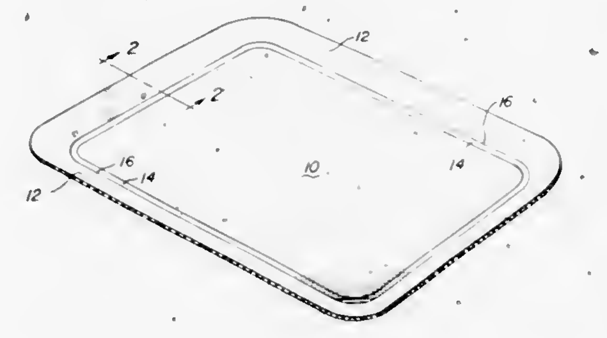


A stamp dispenser having a wrap-spring clutch for selectively coupling a motor to a stamp pay-out mechanism is provided with a solenoid actuator for pivoting a control member for operating the clutch. Escapement means are provided so that only one stamp is dispensed per actuation of the solenoid.

3,792,809

DISPOSABLE TRAY

David Schneider, 10 Peachtree Rd., Lexington, Mass., and George Shumrak, 17 Fox Hill Dr., Natick, Mass.
Filed Oct. 29, 1971, Ser. No. 193,620
Int. Cl. B65d *1/34, 1/44*
U.S. Cl. 229—2.5 **5 Claims**



A light weight serving tray of inexpensive construction is suited particularly for disposable use. The tray is fabricated from a single sheet of material such as corrugated cardboard. Selected regions of the tray are scored and compressably deformed in a manner which insures that the peripheral margin of the tray will assume and maintain its upstanding, raillike configuration.

3,792,810

EASY CLOSURE CARTON

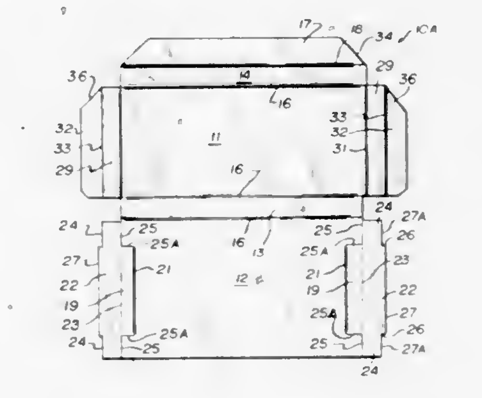
William E. Tingley, Westport, Conn., and Joseph Addiego, Bayside, N.Y., assignors to Nabisco, Inc., New York, N.Y.
Filed Mar. 15, 1972, Ser. No. 234,925
Int. Cl. B65d *5/10*
U.S. Cl. 229—39 R **5 Claims**

A dual snap action, locking carton for cookies, crackers, cereals or other contents which carton may be automatically and repeatedly opened, simply and easily, by lifting with gentle upward pressure a tab or corner of a closure flap over a dual action snap closure formed by carton flaps and webs, and which may be repeatedly closed and positively locked, if desired, by simply applying gentle downward pressure to one or both of the closure flaps.

3,792,811

CUSHIONED SHIPPING FOLDER

John L. Carpenter, and Charles R. Ostler, both of Anderson, Ind., assignors to Container Corporation, Chicago, Ill.
Filed Mar. 20, 1972, Ser. No. 236,434
Int. Cl. B65d *5/06*
U.S. Cl. 229—40 **1 Claim**



A cushioned shipping folder for books or the like is characterized by a pair of end cells of rectangular configuration with a reinforcing member extending diagonally within the cell to cause the cell to be resistant to crushing or other deformation. The reinforcing member is so configured that the distal edges thereof together with the distal edge of a main panel of the folder are caused to be held snugly in a line of fold of the end cell.

3,792,812

THERMOSTATIC MIXING COCK

Alfons Knapp, Bleicherstrasse 3, Biberach/Riss, Germany
Filed Feb. 6, 1973, Ser. No. 330,037
Claims priority, application Italy, Feb. 29, 1972, 67630/72
Int. Cl. G05d *23/00*
U.S. Cl. 236—12 R **11 Claims**

A thermostatic mixing cock, wherein the passages for the hot and cold water within the body of the cock are mutually spaced in axial direction and, in the mounted cock, they are separated the one another by a tubular ring provided with a sealing gasket seated between said passages, the tubular ring is kept in position by a detachable body portion, and several

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the container comprising spraying means communicating with

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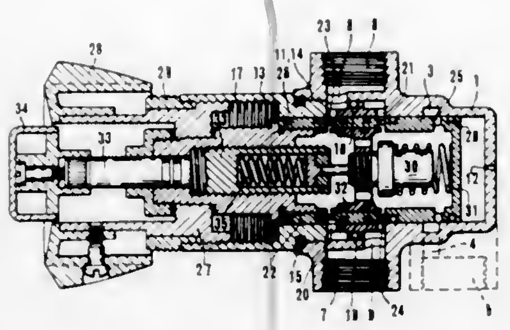
a pair of horizontal pipes disposed within one another, having

the main thread winding. The devices embody thread deflect-radial passages serve for allowing the hot and cold water respectively to pass through the tubular ring, to an inner cavity wherein a control member is axially movable under action of a handle and contains a thermostatic control device.



3,792,813

THERMOSTATIC VALVE FRAME STRUCTURE

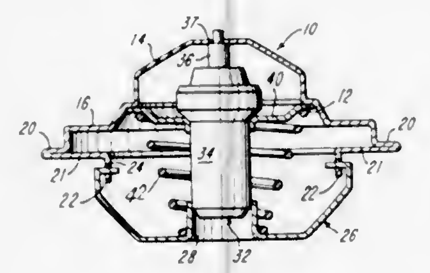
Roland Saur, and Wilhelm Schwarz, both of Stuttgart, Germany, assignors to Firma-Behr-Thomson Dehnstroffregler GmbH, Stuttgart, Germany

Filed Feb. 22, 1972, Ser. No. 227,819

Claims priority, application Germany, Feb. 26, 1971, 2109326

Int. Cl. F01p *7/16*

U.S. Cl. 236—100 **15 Claims**



Valve frame structure which is particularly adapted to be a part of thermally responsive valve apparatus. The frame structure includes a sheet metal member which can be produced by a stamping, punching, or drawing operation, or the like. The sheet metal member has a folded portion for providing rigidity thereto and, in some modifications, the folded portion is used for attachment to another element or elements.

3,792,814

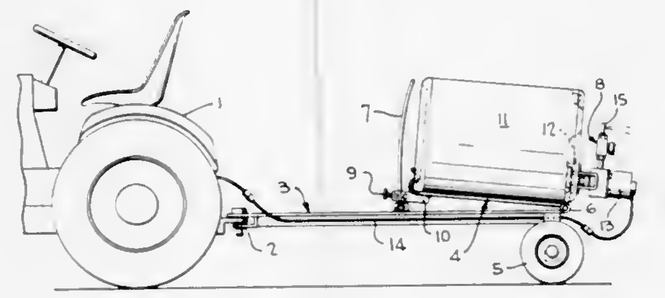
PORTABLE LIQUID FERTILIZER SPRAYING APPARATUS

Edward A. Platz, Opossum Rd., Bellemead, N.J.

Filed Mar. 24, 1972, Ser. No. 237,826

Int. Cl. B05b *9/00, 15/04*

U.S. Cl. 239—149 **14 Claims**



Spraying apparatus for use with a shipping container having an outlet for dispensing a material to be sprayed stored within the container comprising spraying means communicating with the outlet of the container, a support frame including a pair of wheels, the frame having a fulcrum point, a container-engaging means attached to the frame at the fulcrum point, spray stabilizing means attached to the container-engaging means and engaging the spray means and angle adjustment means attached to the container-engaging means and the frame to adjust the container-engaging means to a predetermined angle relative to the frame, whereby the height of the spray means above the ground is adjusted in order to vary the concentration of the spray.

3,792,815

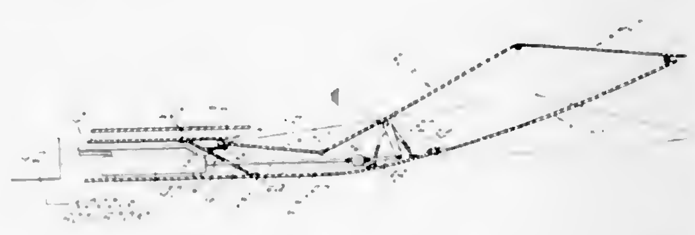
BALANCED FLAP CONVERGING/DIVERGING NOZZLE

Craig E. Swavely, and Richard E. Teagle, both of North Palm Beach, Fla., assignors to United Aircraft Corporation, East Hartford, Conn.

Continuation of Ser. No. 209,665, Dec. 20, 1971, abandoned. This application Nov. 24, 1972, Ser. No. 309,567

Int. Cl. B64c *15/08*

U.S. Cl. 239—265.39 **11 Claims**



A nozzle having four sets of flaps is formed on the exhaust end of a turbojet engine. One set of main flaps is pivotally located downstream of an exhaust opening with a second set of balance flaps pivotally connected between said main flaps and the rear end of the engine. A third set of diverging flaps are pivotally mounted to the main flaps and extend downstream thereof with the downstream end of said diverging flaps being pivotally connected at their rearward end to a fourth set of external flaps which are pivotally mounted at their forward end to the outer housing of the engine by a lost-motion connection. The nozzle actuating system is connected to a plurality of levers on the main flaps by a unison ring which pivots the main flaps about their pivot means to obtain the desired nozzle opening. All of the flaps move in unison with the main flaps.

3,792,816

GAS DISTRIBUTORS FOR FLUIDIZED BEDS

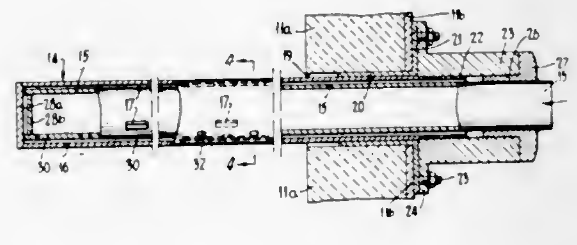
Bruce Ronald Evans, North Lambton, Australia, assignor to The Broken Hill Proprietary Company Limited, Melbourne, Victoria, Australia

Filed Nov. 8, 1971, Ser. No. 196,578

Claims priority, application Australia, Nov. 10, 1970, 3152/70

Int. Cl. B05b *1/14*

U.S. Cl. 239—553 **13 Claims**



A fluidized bed gas distributor is disclosed, wherein the gas distributor allows the fluidized bed to operate with intermittant fluidization, with substantial elimination of natural backflow of fluidized particles. The gas distributor comprises a pair of horizontal pipes disposed within one another, having an annular space thereinbetween. Holes are located in the inner pipe and the outer pipe for the passage of gas therethrough. The holes in the outer pipe are located in the lowermost one-third of the circumference of the pipe and are staggered in a circumferential and/or longitudinal direction relative to the holes in the inner pipe.

3,792,817

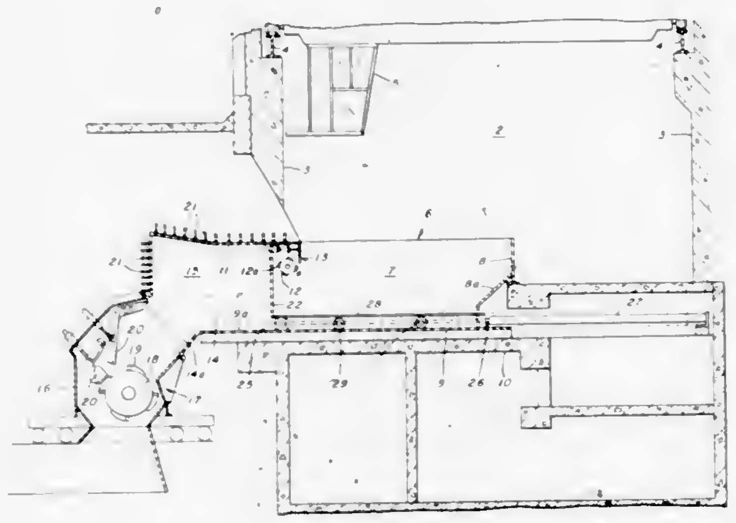
METHOD OF AND APPARATUS FOR PREPARATION OF WASTE MATERIAL FOR DISPOSAL

Bertram B. Reilly, 17 Briar Cliff Rd., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 82,908, Oct. 22, 1970, Pat. No. 3,680,719. This application May 5, 1972, Ser. No. 250,665

Int. Cl. B02c *13/09*

U.S. Cl. 241—30 **11 Claims**



A hydraulic ram feeds rubbish or other material to be fragmented to a disintegrator through an enclosed passageway. A constantly-operating hydraulic pump generates the fluid pressure to drive the ram. A sensing device monitors the current demands to the motor for driving the disintegrator and the signal from the sensing device through a transducer stops the travel of the ram and hence the feeding of material to the disintegrator when current demands of the motor reach a predetermined value and resumes the feed when the current demands decrease to normal while the output of the continuously-operating pump is bypassed through pressure relief valves to maintain a continuous pressure in the system.

3,792,818

THREAD RESERVE-FORMING DEVICES

Karl Bauer, Hohenweg; Peter Illg, Remscheid, and Siegfried Putsch, Wuppertal-Cronenberg, all of Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

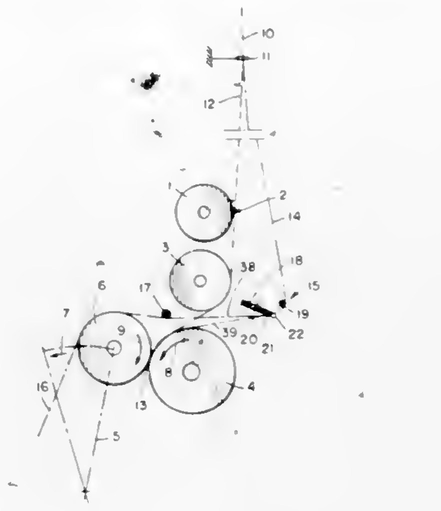
Filed Aug. 27, 1971, Ser. No. 175,609

Claims priority, application Germany, Aug. 28, 1970, 2042674

Int. Cl. B65h *54/02*

U.S. Cl. 242—18 PW **16 Claims**

Thread reserve-forming devices adapted to provide automatically on a winding tube a thread reserve winding next to the main thread winding. The devices embody thread deflecting rods and pivotable, thread-restraining members to temporarily hold the thread for thread reserve formation at the beginning of the winding operation.



3,792,819

HIGH-SPEED CROSS-WINDING DEVICE FOR WINDINGS OF DIFFERENT LENGTH

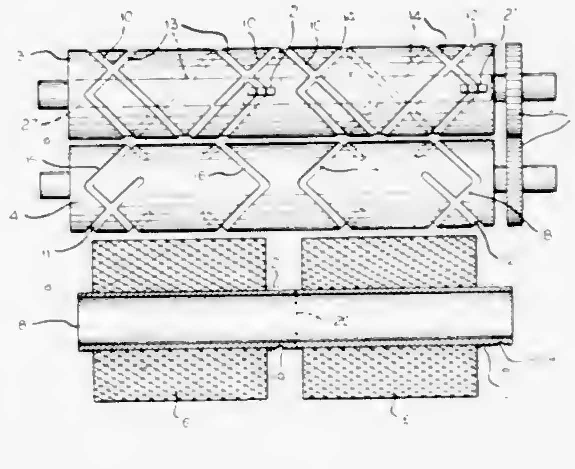
Heinz Schippers, Remscheid, Germany, assignor to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Filed Nov. 10, 1971, Ser. No. 197,319

Claims priority, application Germany, Nov. 14, 1970, 2056146

Int. Cl. B65h *54/30*

U.S. Cl. 242—43 **14 Claims**



High speed cross-winding devices embodying two thread-guiding traverse devices, one for the mid-range of the traverse stroke and the other for the stroke reversal zones, and angularly offset or changeable traverse means on each device for selectively producing one longer winding or two or more shorter windings on a given winding tube or bobbin.

3,792,820

WEB REWINDER

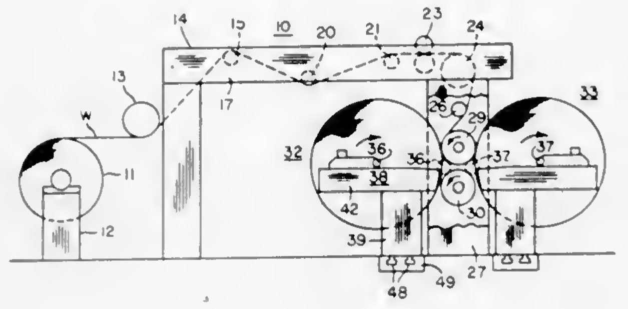
Robert Grundy Lucas, Janesville, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Mar. 1, 1972, Ser. No. 230,785

Int. Cl. B65h *17/08, 17/02*

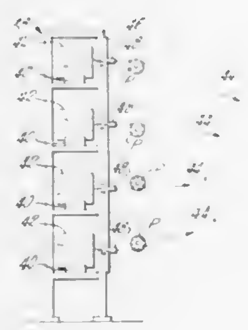
U.S. Cl. 242—66 **17 Claims**

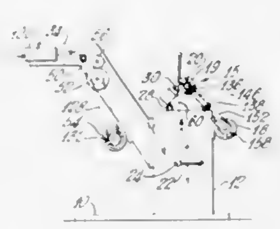
A vertical two drum winder for rewinding webs, said winder including a plurality of winding stations. Each winding station includes a pair of support structures in spaced relation. A movable carriage is slidably supported in each support structure and a chuck structure is disposed on the inboard side of the carriage to support the core of the web. The chuck structure is cantilevered from the carriage to substantially reduce the bending forces on the web core. A friction dampening structure is engageable with each support structure to minimize vibration. Another feature of the winder is that the carriage is movable in a vertical direction in the two drum area to engage the core with both the drums for starting and furthermore the carriage moves the core out of contact with the bottom drum as the diameter of the web on the core increases.



3,792,821
APPARATUS FOR COMBINING LINEAR BODIES INTO A COMPOSITE PRODUCT

Craig R. Fallon, Perrysburg, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Continuation of Ser. No. 862,234, Sept. 30, 1969, abandoned.
This application Dec. 1, 1971, Ser. No. 203,714
Int. Cl. B65h *63/02, 54/02*
U.S. Cl. 242—42 **7 Claims**



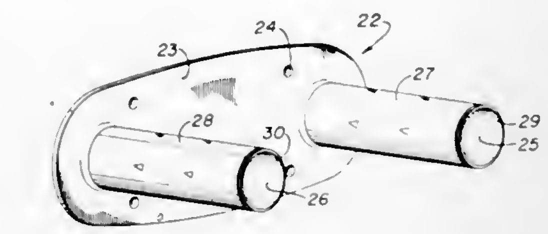


Method and apparatus for packaging or combining composite roving from a plurality of individual rovings including a rotatable winding collet, combining a plurality of the individual rovings as supplied from a source thereof into the composite roving, monitoring motion of each individual roving between the supply source and the combining means and supplying a motion signal for each roving in response to motion thereof, and control circuitry responsive to the motion signals for controlling the supplying and counting of the individual rovings for the composite roving as it is wound onto the collet.

3,792,822
TISSUE ROLL HOLDER

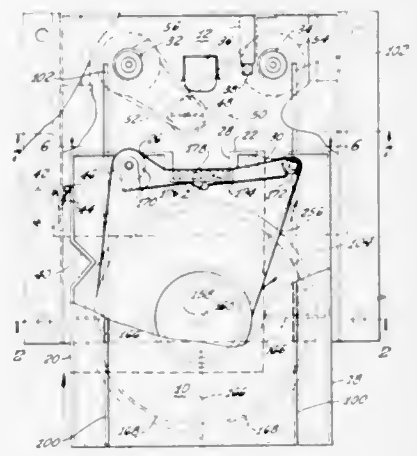
Merlyn E. Underhill, R.R. 1, Rockton, Ill.
Filed Aug. 21, 1972, Ser. No. 282,067
Int. Cl. B65h *19/04*
U.S. Cl. 242—55.3 **3 Claims**

A tissue roll holder includes a support member adapted for fixed mounting to a wall, and a sleeve rotatably and permanently mounted thereon, the sleeve being provided with a plurality of sharp prongs for penetration of and locking engagement with the tubular core of a roll of tissue placed thereon to prevent removal of the roll until all of the tissue has been unwound therefrom.



3,792,823
TAPE CARTRIDGE AND PLAYBACK UNIT

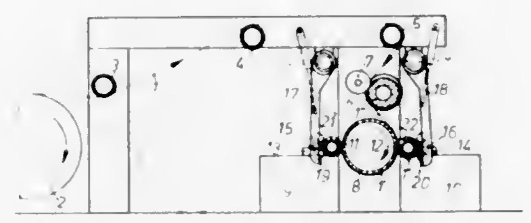
Richard A. Williams, 7130 Fulton Ave., North Hollywood, Calif.
Filed Sept. 20, 1967, Ser. No. 669,015
Int. Cl. B65h *17/48;* **G11b** *15/16*
U.S. Cl. 242—55.19 A **9 Claims**



This invention relates to a magnetic tape cartridge system including a playback unit having dual capstans and a magnetic tape cartridge having openings positioned to receive the dual capstans during the replay of the magnetic tape cartridge by the playback unit. The dual capstans may be rotated in either of one of two opposite directions. The direction of rotation is controlled by the insertion of the magnetic tape cartridge into the playback unit and the direction of rotation is in accordance with the orientation of the magnetic tape cartridge. When the magnetic tape cartridge is inserted in the first orientation, the capstans are rotated in the first direction to replay one half the information on the tape. When the cartridge is turned upside down to be in the second orientation the capstans are rotated in the second direction to replay the remaining information on the tape. The playback unit includes means for sensing the orientation of the tape cartridge in order to properly determine which direction to rotate the capstans. The invention also includes the use of a spring-loaded pinch roller and idler roller mounted at the opposite ends of a single leaf spring so as to absorb shock and vibration and reduce wow and flutter. In addition, the invention includes positioning means on the cartridge which cooperate with corresponding means on the playback unit so as to enable the playback unit to replay cartridges of different sizes.

3,792,824
ROLL WINDING MACHINE

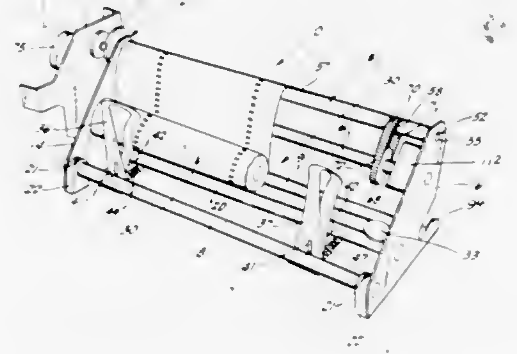
Rolf Meyer, and Herbert Schonmeier, both of Dusseldorf, Germany, assignors to Jagenberg-Werke AG, Dusseldorf, Germany
Filed Dec. 2, 1971, Ser. No. 204,040
Claims priority, application Germany, Dec. 10, 1970, P 20 60 758.3
Int. Cl. B65h *17/08*
U.S. Cl. 242—65 **5 Claims**



An apparatus for winding paper or the like onto two shafts driven by a rotating cylinder which they contact at diametrically opposite locations. The shafts are urged at their ends toward and into contact with the cylinder. Intermediate the ends of each shaft, a pair of rollers rotatably mounted on a frame articulated to a pivot arm urge said shaft toward the cylinder to make certain of uniform contact along the length of the shaft so as to prevent bowing and wrinkling. The pivotal mounting of the arm permits displacement as the package builds up. After the package is large enough so that the paper reinforces the shaft and itself ensures uniform contact without bowing, the pivot arm is moved to inoperative position where the rollers no longer act on the shaft.

3,792,825
CHART DRIVE SYSTEM

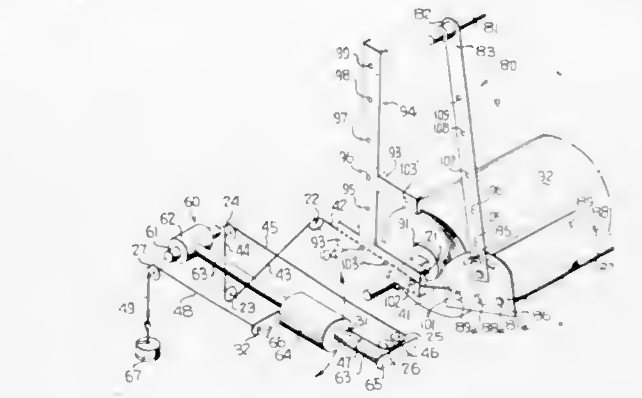
Richard S. Kampf, Costa Mesa, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.
Filed Jan. 17, 1972, Ser. No. 218,397
Int. Cl. B65h *17/02;* **G01d** *15/29*
U.S. Cl. 242—67.3 R **4 Claims**



A chart drive system adapted for use with a multi-channel recorder. A spring retainer array is provided for holding and dispensing a chart from a chart supply roll. The chart is trained from the supply roll over a two-speed drive roll provided with multiple spaced-apart drive belts, including a center control belt having teeth thereon adapted to engage perforations in the chart. A writing platen is positioned beneath the chart downstream of the drive roll and pivotably attached to the drive roll. A take-up roll is positioned inwardly of the writing platen, adapted to be driven by a motor through a slip clutch so that the take-up roll tension balances back tension on the chart with respect to the supply roll. Paper guides are provided beneath the chart at the ends of the drive roll.

3,792,826
TORQUE CONTROL DEVICE FOR A POTENTIAL-ENERGY TORQUE-GENERATING MECHANISM

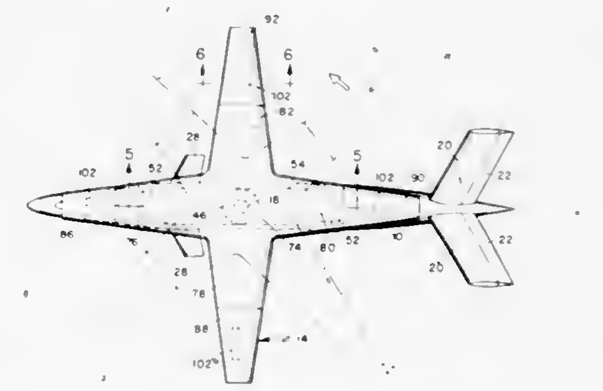
Donald Dane Zebley, Greenville, S.C., assignor to United Merchants and Manufactures, Inc., New York, N.Y.
Filed Apr. 22, 1971, Ser. No. 136,505
Int. Cl. B65h *25/04, 25/22*
U.S. Cl. 242—75.5 **27 Claims**



A device for accurately and sensitively positioning a leverage weight on the lever arm of a torque-generating mechanism of potential-energy type in accordance with radius changes of a roll being wound or unwound. Cable-and-sheave power and return assemblies are attached to a distance measuring means which senses the periphery of the roll and to either end of the leverage weight whereby the torque exerted by the mechanism is selectively controlled. A ratio-change means is also provided so that tension on a fabric being wound or a warp being unwound can be selectively varied in response to changes in radius of the take-up roll or warp beam, respectively.

3,792,827
VTOL AIRCRAFT WITH CRUCIFORM ROTOR WING

Peter F. Girard, La Mesa, Calif., assignor to Teledyne Ryan Aeronautical, a division of Teledyne Industries, Inc., San Diego, Calif.
Filed Nov. 10, 1972, Ser. No. 305,261
Int. Cl. B64c *27/22*
U.S. Cl. 244—7 A **5 Claims**



An aircraft having a combined rotary and fixed wing providing aerodynamic support in vertical take-off and landing and in high speed cruising flight. The wing is cruciform in configuration, with four similar arms extending radially from a center body, the outer portions of the arms being pivotal and controllable in the manner of helicopter rotor blades in the rotating mode of the wing. In fixed wing mode the wing is locked with two arms longitudinal to the aircraft and the other two extending laterally, one or both of the lateral arm portions being used for roll control in forward flight. The wing arms may have air brakes to slow rotation and stop the wing in proper alignment. A common turbojet power source provides propulsion for wing rotation and cruising flight.

3,792,828

AIRCRAFT

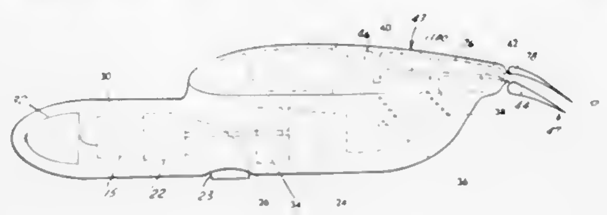
Addison Charles Maguire, Alvaston, England, assignor to The Secretary of State for Defence, London, England

Filed Nov. 30, 1971, Ser. No. 203,300

Claims priority, application Great Britain, Dec. 19, 1970, 60417/70

Int. Cl. B64c *3/50*

U.S. Cl. 244—42 CC **5 Claims**



An aircraft wing main spar is utilized for the carrying of flap blowing and lift augmenting air to the trailing edge of the wing. The main spar trailing edge is formed into an elongate nozzle which directs the air over and between said flaps.

3,792,829

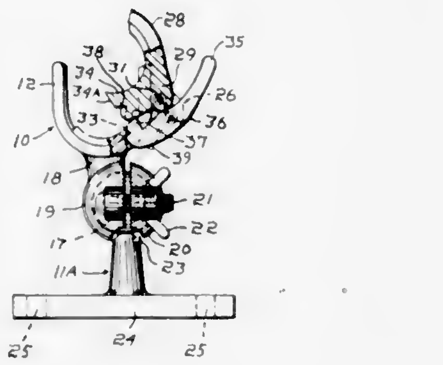
FISHING ROD HOLDER

Lee R. Fickett, Webster Rd., Lewiston, Maine

Filed Oct. 26, 1971, Ser. No. 192,189

Int. Cl. A01k *97/10*

U.S. Cl. 248—42 **6 Claims**



Fishing rod holders are disclosed with each having a retainer hingedly connected to one side of its receiver and provided with an arm exposed to be engaged and depressed by the rod as it is being seated therein thus to swing the retainer from the open position into its closed position. A latch is pivotally connected to the receiver and it and the retainer include shoulders engageable to prevent movement of the retainer in a rod-releasing direction. The latch is spring biased into its retainer locking position and becomes operative whenever the retainer is closed.

3,792,830

CONCRETE BEAM FORMS

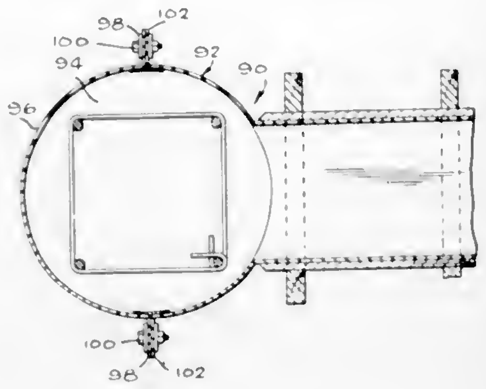
Stephen S. Dashew, Los Angeles, and Arnold Wills, Lakeview Terrace, both of Calif., assignors to La Mesa Industries, Inc., Compton, Calif.

Division of Ser. No. 30,872, April 22, 1972, Pat. No. 3,735,953. This application July 21, 1972, Ser. No. 273,737

Int. Cl. E04g *11/42*

U.S. Cl. 249—28 **1 Claim**

Apparatus for forming concrete beams integrally with concrete floors comprising an elongated beam form with bottom and side walls and with flanges extending outwardly from the top of the side walls. A pair of rods projected upwardly through holes in opposite flanges, are tied by a steel strap to prevent spreading of the side walls when concrete is poured into the form. After the concrete sets, the rods are pulled out, the form stripped, and the strap left in place. The elongated beam forms have end portions, where the lower walls are stepped down and the side walls stepped outwardly, and a pair of aligned beam forms is joined by an adjustment form section which lies within the stepped end portions of the beam forms.



3,792,831

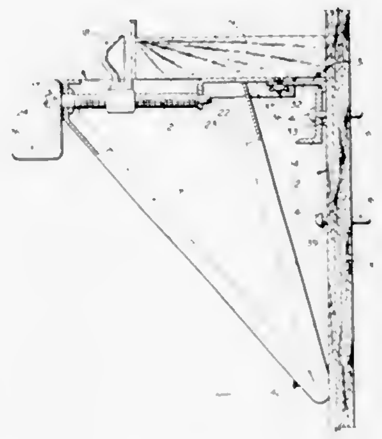
SCAFFOLD-WALER BRACKET

Myron B. Verhey, 7851 Irving St., Westminster, Colo.

Filed May 4, 1972, Ser. No. 250,308

Int. Cl. E04g *17/14*

U.S. Cl. 249—219 W **5 Claims**



A bracket for use with concrete forming systems to support work scaffolding or form aligning and strengthening walers. A support frame having a lower end for contact with form elements extends upwardly and outwardly to provide clearance for form reinforcing bars and to provide support for a movable clamping element. An attachment is provided for engaging the reinforcing bars, form tie elements or a first waler of the form system to hold the support frame as adjustment of the clamping element moves the scaffold staging pieces horizontally into secure engagement with the forms thereby additionally providing a reinforcing and aligning waler. A screw may be used for powering movement of the clamping element.

3,792,832

APPARATUS FOR FABRICATING UNITS OF MOLDABLE BUILDING MATERIAL

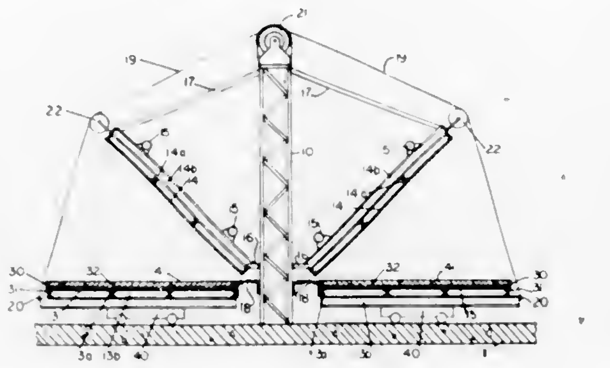
Shelley W. Shelley, 55-B Pine Grove, Condominium, Isla Verde, P.R.

Division of Ser. No. 101,306, Dec. 24, 1970, Pat. No. 3,743,235. This application June 4, 1973, Ser. No. 366,320

Int. Cl. B28b *7/08*

U.S. Cl. 249—121 **12 Claims**

Precast units of a moldable building material, such as concrete, are prepared by pouring the material into molds of the desired geometric configuration which are disposed at an angle greater than zero degrees but less than 90° from the horizontal. The precast units may be reinforced and insulated. Pouring of the building material into molds disposed at an angle between the horizontal and vertical position results in finished precast units of building material which are of substantially uniform composition and properties and which do not require hand or machine surface finishing. The molds are typically disposed at an angle of 20° to 70° above the horizontal and preferably at an angle of 30° to 60° above the horizontal. This angle is measured between the horizontal and a suitable dimension of the mold, such as, for example, the axis of a cylindrical mold or the plane of a panel mold.



3,792,833

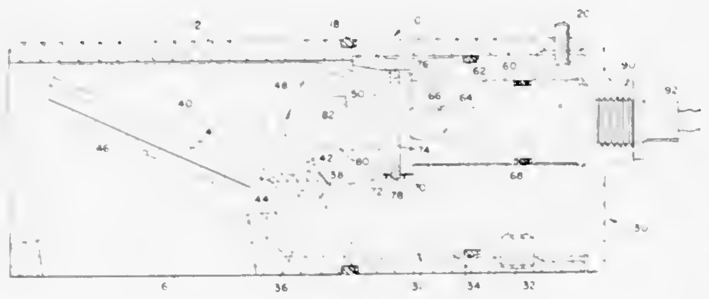
BOOST TERMINATION VALVE

Alexander D. Rosin, Pontiac, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 14, 1972, Ser. No. 280,285

Int. Cl. F16k *1/20, 31/163*

U.S. Cl. 251—11 **4 Claims**



A boost termination valve for use in the oxidizer line of a hypergolic rocket motor comprising a flapper valve normally latched in open position to permit flow of oxidizer therethrough, and a pyrotechnic device for releasing the latch and urging the flapper toward its closed position to terminate the flow of oxidizer to the engine.

3,792,834

PACKING SEALS

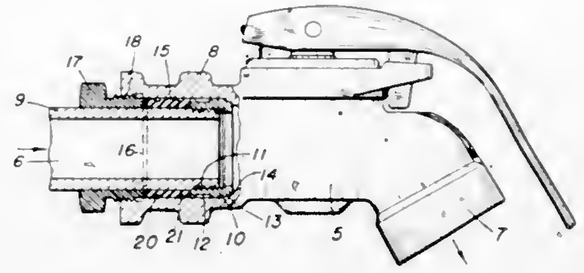
Henry R. Billeter, Deerfield, Ill., assignor to Sloan Valve Company, Franklin Park, Ill.

Continuation-in-part of Ser. No. 106,991, Jan. 18, 1971, abandoned. This application Jan. 22, 1973, Ser. No. 325,751

Int. Cl. F16l *29/00*

U.S. Cl. 251—148 **4 Claims**

An annular flexible leak-proof packing seal for use in the connection between the air brake pipe on a railway car and the angle cock. The packing sleeve has two grooves around it which are compressed when the sleeve is in place, and on low temperatures the packing sleeve effects a configuration to provide the leak-proof seal regardless of its shrinkage.



3,792,835

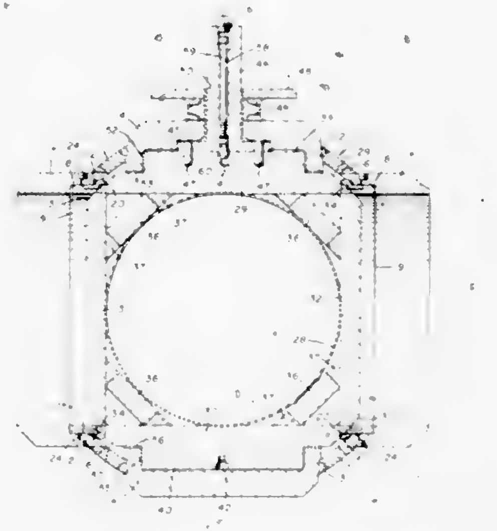
TRUNNION TYPE ROTARY VALVE OF WELDED TUBE AND PLATE CONSTRUCTION

Homer J. Shafer, 2300 Park Ave. West, Mansfield, Ohio

Filed June 8, 1972, Ser. No. 260,898

Int. Cl. F16k *5/02*

U.S. Cl. 251—309 **6 Claims**



A rotary ball valve element for a valve housing with interior spherical seating surfaces and trunnion bearings. The valve element has a central preformed flow tube with diametrically opposed sealing plates and trunnion plates rectangularly arranged around the tube in tangential abutment therewith and welded together at the corners. Reinforcing plates extend lengthwise of the exterior of the tube and angularly across the corners of the sealing plates and trunnion plates and are welded to the inner surfaces thereof. The exterior surfaces of the plate edges are spherical to conform to the interior seating surfaces of the housing. The trunnions comprise bosses integral with the trunnion plates and having a relatively small axial thickness and a relatively large diameter.

3,792,836

SIMPLIFIED WELL RIG

Emil A. Bender, 6625 Kane Way, Bakersfield, Calif.

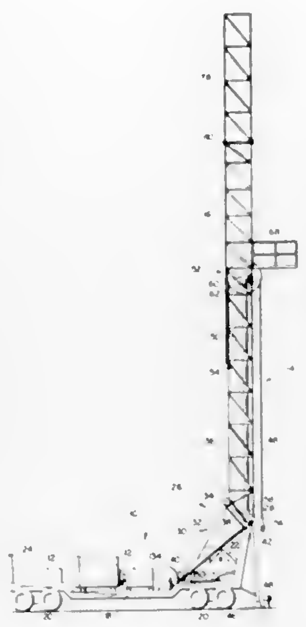
Filed Mar. 6, 1972, Ser. No. 231,993

Int. Cl. B66c *23/60*

U.S. Cl. 254—139 **49 Claims**

A multipurpose oil well rig of simple construction with hydraulically actuable working components. The rig lift system has three hydraulically driven piston rods or rams, one or more of which may be actuated to provide a range of lift capacity from high speed/low power to low speed/high power.

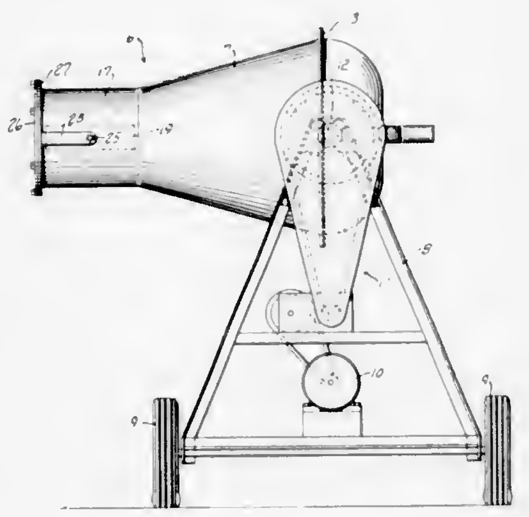
The rig may be portably mounted on a transport vehicle. All conventional mechanisms of an oil well rig are eliminated.



That is, the rig does not have drawworks, drums, brakes, sprockets and associated lift chains, clutches, a transmission, line spoolers, weight indicators, or travelling blocks.

3,792,837
METHOD AND APPARATUS FOR DRY MIXING

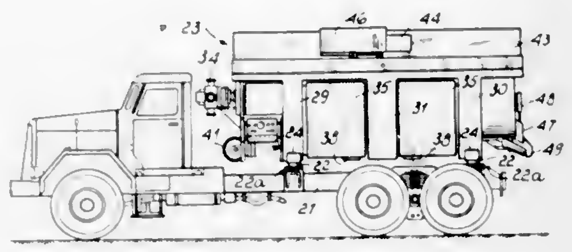
Frank B. Krull, c/o The Krull Company, Highway M-35 Ingallston, P.O. Box 55, Menominee, Mich.
Filed Nov. 29, 1972, Ser. No. 310,409
Int. Cl. B66d *1/76*
U.S. Cl. 259—148 **9 Claims**



A method and apparatus for mixing fine powdered material with other dry material, without creating an objectionable dusty environment, which consists in placing the dry powdered material in a pan, carefully inserting the filled pan into the mouth of a rotatable mixing drum by sliding a pair of coaxial lugs that project from opposite sides of the pan along parallel tracks fixed to the walls of the drum and then by means of pointed screws passing through opposite walls of the drum to engage in sockets in the lugs, pivotally connect the pan to the drum so that during rotation of the drum after its mouth has been tightly closed, the pan swings around the axis of its pivotal connection with the drum and spills the fine powdered material onto the other material in the drum.

3,792,838
CONTAINER-AGITATOR

Giuseppe Jacopini; Albino Bonelli, and Roberto Tonini, all of Braccagni, Italy
Filed Apr. 20, 1972, Ser. No. 246,447
Claims priority, application Italy, June 4, 1971, 25447/71; Aug. 31, 1971, 28059/71
Int. Cl. B28c *5/14*; **B60s** *9/12*
U.S. Cl. 259—161 **5 Claims**



Container-agitator for transporting and mixing concrete slurry, consisting of a semicylindrical tank with horizontal axis. It has facilities for placing it on the chassis-cab of a truck as a standard container and for resting on the ground, and mechanisms for its loading on the truck or releasing on the ground, as well as for mixing the concrete contained therein.

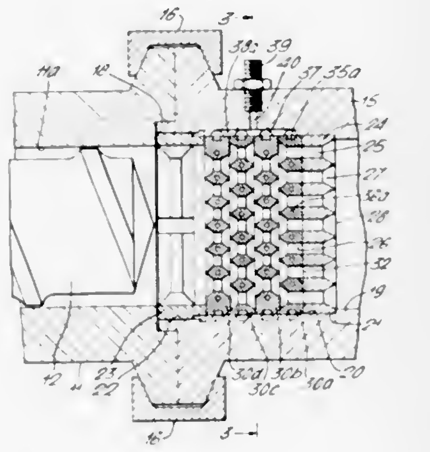
The legs on which it rests on the ground, allow the raising and releasing of the container from the truck, can be elongated and fixed at different heights and retracted for transportation, being driven by internal hydraulic means.

The mixing of the slurry is provided by a rotatable shaft connected along the tank axis, having radial arms and shoes.

For driving all mechanisms an internal combustion engine supplies the necessary power.

3,792,839
DEVICE FOR THE INJECTION OF FLUID FOAMING AGENTS INTO PLASTICIZED POLYMERIC MATERIAL

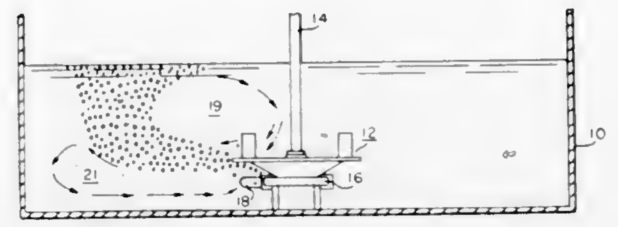
Lester Gidge, Nashua, N.H., assignor to Polysar Limited, Sarnia, Ontario, Canada
Filed Aug. 23, 1971, Ser. No. 174,117
Int. Cl. A21c *7/00*
U.S. Cl. 259—193 **3 Claims**



A device for introducing a fluid foaming agent into a plasticized polymeric material comprising, a conduit and a fluid permeable labyrinthian element interposed in the conduit for the passage of the plasticized polymeric material therethrough under pressure. Means for supplying fluid foaming agent to the fluid permeable element at a pressure greater than the pressure of the plasticized polymeric material so that the fluid foaming agent will flow through the element and into the plasticized polymeric material in a finely dispersed state.

3,792,840
SUBMERGED TURBINE AERATOR

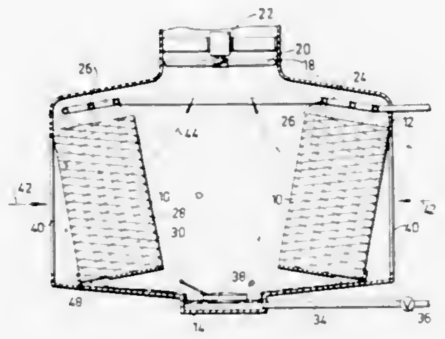
Francis J. Sisk, Pittsburgh, Pa., and Chesley F. Garland, Tucson, Ariz., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 15, 1971, Ser. No. 153,336
Int. Cl. B01f *03/04*
U.S. Cl. 261—93 **1 Claim**



A submerged aerator rotor for use with sparged air for water and waste treatment systems. The air is supplied evenly distributed azimuthally to the bottom of a circular shroud which is rotated by a vertical shaft from the surface of a treatment tank. The upper surface of the shroud is vaned with a clearance between the vane tip and the shroud edge.

3,792,841
LIQUID AND GAS CONTACT APPARATUS

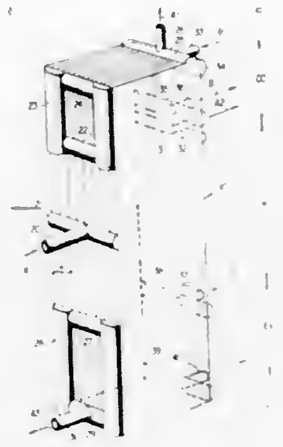
Carl Georg Munters, Industrivagen 2, Sollentuna, Sweden
Continuation of Ser. No. 813,383, Feb. 28, 1969, abandoned, Continuation-in-part of Ser. No. 380,357, July 6, 1964, abandoned. This application Mar. 6, 1972, Ser. No. 231,947
Claims priority, application Sweden, July 4, 1963, 7455/63
Int. Cl. B01f *3/04*
U.S. Cl. 261—112 **6 Claims**



A contact apparatus for liquid and gas, primarily used in air conditioning systems, which includes a contact body composed of first and second sets of corrugated sheets arranged with the sheets of the first set disposed alternately with the sheets of the second set. The corrugations of the sheets provide channels for passageways which penetrate the contact body from edge to edge, with both horizontal and vertical components of direction. A liquid distributing means is disposed over the top edge of the contact body. The channels thus formed are simultaneously passed by a flow of the gas in one direction and by the liquid in either counterflow or crossflow directions. The corrugations of the first set of sheets cross the corrugations of the second set of sheets, at an acute angle in the range of from 20° to 80°. The corrugations of the first set of sheets have a greater inclination to the horizontal plane of the contact apparatus than the corrugations of the second set of sheets; and the corrugations in the first set of sheets are inclined upwardly in the direction of the gas flow; the bisector of the angle of the corrugations of the respective sheets inclining downwardly opposite to the direction of gas flow with respect to the horizontal plane of the contact body; whereby to counteract an undesirable lateral displacement of the liquid stream caused by the gas flow, and causes the liquid to be distributed uniformly and causes evenly over the sheets.

3,792,842
RECTIFYING TOWER

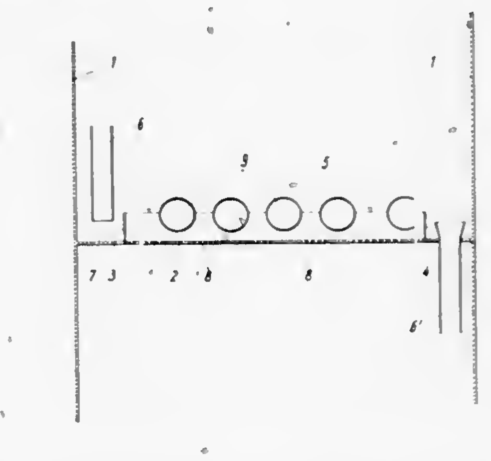
Yukio Nakako, Nishinomiya; Toshio Kanazawa; Akira Toyama, both of Kobe, and Sumio Kiyokama, Akashi, all of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan
Filed May 10, 1972, Ser. No. 251,978
Int. Cl. B01f *3/04*
U.S. Cl. 261—148 **15 Claims**



A rectifying tower having a laminate of rectifying elements filled with waved fins between vertical main partition plates in which each rectifying element has an auxiliary partition plate having a smaller area than that of the main partition plate which is partially disposed vertically between two opposite main partition plates in respective rectifying elements, a gas-liquid contacting chamber in the space formed between portions of two opposite main partition plates not having an auxiliary partition plate therebetween, a distribution chamber in the space formed between the auxiliary partition plate and one of the two main partition plates, and a heat transfer chamber in the space formed between the auxiliary partition plate and the other of the two main partition plates, having passage sealed from the gas-liquid contacting chamber and the distribution chamber. Thus, preferably rectifying operation of a wetted wall type tower is always conducted regardless of the amount of raw fluid involved.

3,792,843
PERFORATED-TRAY COLUMN

Hermann Stage, Emdener Strasse 10, Cologne, Germany
Filed Dec. 27, 1971, Ser. No. 212,277
Claims priority, application Germany, Dec. 28, 1971, 2063937
Int. Cl. B01f *3/04*
U.S. Cl. 261—148 **3 Claims**



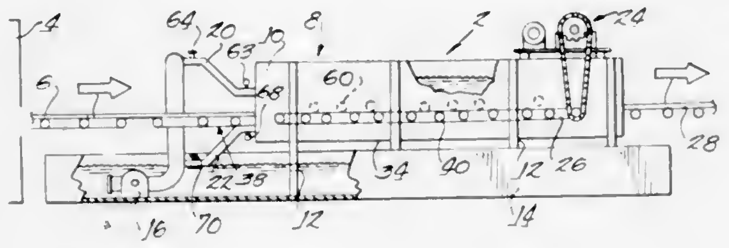
A plurality of trays are vertically superimposed and across the trays extend heat-exchange pipes each of which covers a portion of the respective tray surface. The trays are provided with perforations and the combined cross-sectional area of

3,792,847

wardly and discharge it adjacent the surface of the lighter perforations in the surface portions of the respective trays which are covered by the heat-exchange pipes is smaller than the combined cross-sectional area of perforations in the remaining portions, and may be as small as zero.

3,792,844
QUENCHING METHOD AND APPARATUS

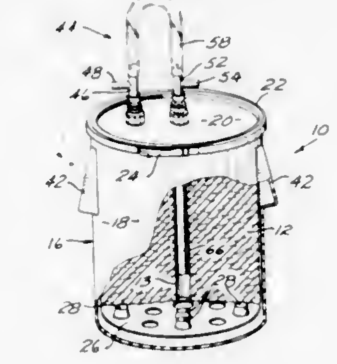
George A. Berry, III, RR No. 1, Box 925, Burr Rd., St. Charles, Ill.; Bruce B. Guillan, 1410 Lake Ave.; Henry A. Lang, 823 Buckingham Ct., both of Crystal Lake, Ill., and Karl H. Brieschke, 9 Roosevelt St., L.I.T.H., Algonquin, Ill.
Division of Ser. No. 879,272, Nov. 24, 1969, abandoned. This application May 31, 1972, Ser. No. 258,306
Int. Cl. C21d *1/64*
U.S. Cl. 266—6 S **11 Claims**



A continuous "furnace in-line" method of quenching steel articles wherein they are carried through a confined body of quenching fluid, such as water, and restrained during the movement therethrough to prevent warping, distortion and bending. Individual segments or portions of the metal articles are successively subjected to the quenching medium and it is possible, through the use of a quench fixture having a powered-roller bed, with an inlet having flapper-like elements normally closed to confine the quenching fluid, to introduce successive portions of the metal article into the quenching fluid in the completely submerged state. Fluid supply pipes running longitudinally of the axis of the quench fixture, positioned above and below the metal article being carried therethrough, provide means whereby the body of quenching fluid is maintained in an agitated state. Pressure differentials of the quenching medium emanating from the upper and lower conduits also provide means of controlling quench characteristics of the metal articles being treated.

3,792,845
SILVER RECOVERY UNIT

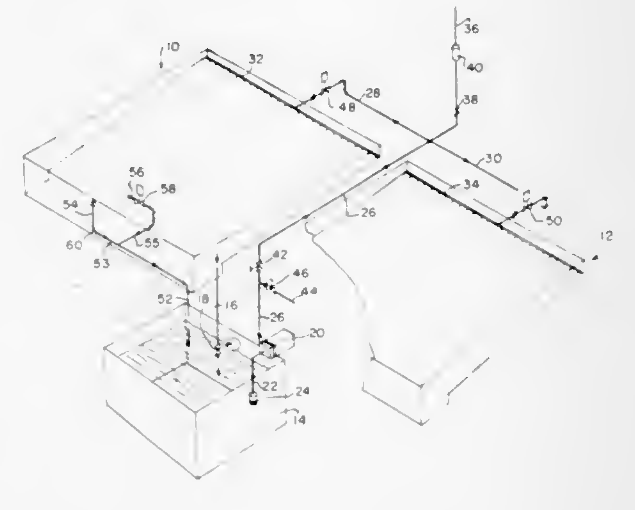
Kay R. Larson, 1550 Columbia Ave., Pomona, Calif.; John Drew, 541-40th St., Richmond, Calif., and Howard Ott, 124 Old Mill Rd., Great Neck, N.Y.
Filed Dec. 11, 1972, Ser. No. 313,682
Int. Cl. C22b *11/04*
U.S. Cl. 266—22 **13 Claims**



An improved unit for the recovery of silver from spent photograhic processing solutions by a metallic replacement technique. The unit is designed to pass silver-bearing photographic processing solution through a roll of steel wool, and includes a high-density polyethylene cartridge to hold the steel wool, fitted with suitable plumbing for passing the solution through the roll in the cartridge. The polyethylene cartridge is essentially a drum with a generally flat lid, and includes a rim clamp for locking the lid tightly on the drum. The rim clamp fits around the top of the drum and has a lever lock operable from one side of the drum. The plumbing attached to a drum includes fittings for routing the solution into and out of the drum through a pair of openings in the cartridge lid. When the unit is in operation, feed solution passes into the top of the cartridge, contacts the steel wool roll in the cartridge drum, and then passes out of the drum for recycle use or discard to a sewer. The unit operates efficiently until the steel wool in the cartridge is exhausted, at which point it becomes necessary to replace the cartridge. This requires removal of the cartridge lid, but the removal can be easily accomplished without disconnecting the plumbing from the lid since the lever lock is operable from the side of the drum to permit loosening of the clamp for easy movement of the lid with the plumbing attached.

3,792,846
SELF-CLEANING WATER COOLED BURNING TABLE

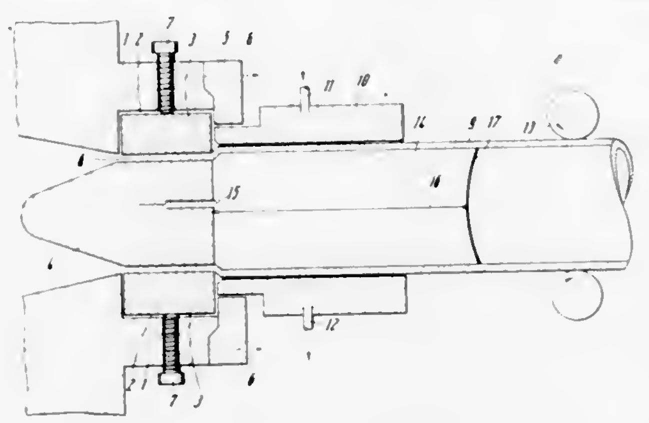
Paul J. Geffert, Mundelein, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed July 17, 1972, Ser. No. 272,263
Int. Cl. B23k *7/10*
U.S. Cl. 266—23 F **10 Claims**



A burning table having a pan with a sloping bottom terminating in a clean-out trough. The water level in the table is controlled by over-flow pipes, one of which is valved to permit lowering the water level below the grating which catches the torch cut parts and the other of which controls the maximum water level necessary for burning but which is manually removable to permit complete draining of the pan and clean-out trough. A spray header extends along the pan opposite the clean-out trough and sprays water at high pressure through nozzles to wash debris resulting from the burning operation into the clean-out trough upon closing the valved over-flow pipe for filling the pan to the maxium water level necessary for burning. Bars for supporting the plate to be cut are mounted to minimize warpage and damage from the flame and to be readily replaceable.

3,792,847
PROCESS FOR PREPARING CLOSED HOLLOW PLASTICS SECTION MEMBERS

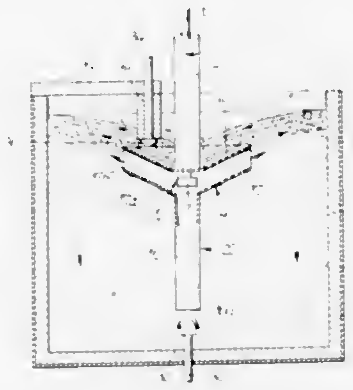
Hans Amoser, Johannisberg, Germany, assignor to Braas & Co. GmbH, Frankfurt am Main, Germany
Filed Oct. 4, 1971, Ser. No. 186,170
Claims priority, application Germany, Oct. 3, 1970, 2048759
Int. Cl. B29c *27/20;* **B29d** *23/04*
U.S. Cl. 264—26 **7 Claims**



The invention relates to a process for producing closed hollow section members of plastics, more particularly, hard plastics, such as PVC, i.e. polyvinyl chloride. The memory characteristics of a plastic member are employed to center said member upon a forming electrode of a high frequency electrical heating and forming appliance by a first heating step followed by a second heating to the forming temperature for said member and forming said member into a desired article.

3,792,848
DEVICE FOR IMPROVING REACTIONS BETWEEN TWO COMPONENTS OF A METALLURGICAL MELT

Jan-Erik Ostberg, Torps Sateri, Bettna, Sweden
Division of Ser. No. 107,458, Feb. 9, 1968, Pat. No. 3,573,895. This application Oct. 8, 1970, Ser. No. 79,136
Claims priority, application Sweden, Feb. 9, 1967, 1800/67
Int. Cl. C21c *7/00*
U.S. Cl. 266—34 A **6 Claims**

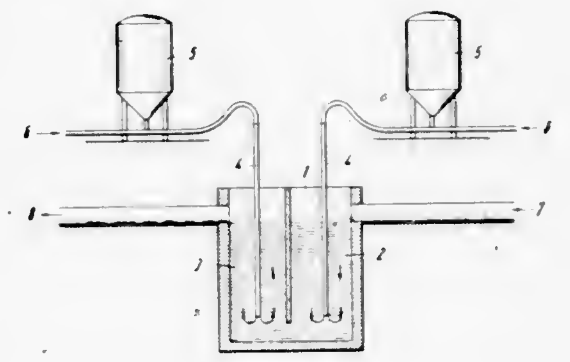


A method of improving the reaction between two components of different specific gravity or for homogenizing mixtures of components of different specific weight at least one of which is a fluid such as between a metallurgical melt and a slag layer, comprises producing a flow in the reaction zone between the two liquids of different specific gravities or specific weight and simultaneously introducing gaseous medium into the area of the reaction zone between the surfaces of the two layers. For this purpose, an inert gas may be used or a gas such as oxygen or hydrogen which will react with at least one phase or component of the mixture. It is also desirable in some instances to introduce a gas having a desulfurizing effect.

An apparatus for carrying out the method including a rotating pump element disposed to draw the heavier liquid upwardly and discharge it adjacent the surface of the lighter liquid and which includes means for discharging a gas in the vicinity of the surface of the lighter liquid or upwardly and through the pump.

3,792,849
APPARATUS FOR DESULPHURIZING PIG IRON

Hans Kosmider, Bremen-Lesum, and Dieter Danckert, Meyenburg, both of Germany, assignors to Klockner-Werke AG, Duisburg, Germany
Division of Ser. No. 115,296, Feb. 16, 1971, Pat. No. 3,715,202. This application Nov. 13, 1972, Ser. No. 305,831
Claims priority, application Germany, Mar. 6, 1970, 2010585
Int. Cl. C21c *7/02*
U.S. Cl. 266—34 T **5 Claims**

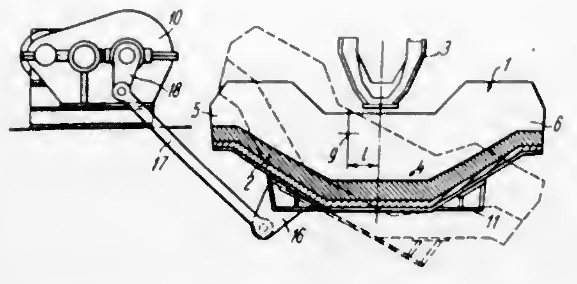


Apparatus for desulphurizing pig iron wherewith a pig iron stream is allowed, in a continuous flow, first to fall as it is tapped from a cooperant blast furnace with means for allowing the feeding of an ascending desulphurizer into the falling pig iron stream and then to ascend with means for allowing the feeding of an ascending desulphurizer into the ascending pig iron stream.

3,792,850
DEVICE FOR MELT TAPPING FROM METALLURGICAL UNIT

Nikolai Mikhailovich Krjukov, prospekt Lenina, 45, kv. 23, Magnitogorsk Chelyabinskoi oblasti; Lazar Yakovlevich Shparber, ulitsa Malysheva, 87, kv. 34, Sverdlovsk; Anatoly Fedorovich Egorov, ulitsa Pravdy, 28/1, kv. 26, Magnitogorsk Chelyabinskoi oblasti; Jury Petrovich Denisov, ulitsa Kalinina, 25, kv. 40, Magnitogorsk Chelyabinskoi oblasti; Alexi Stepanovich Bakshinov, ulitsa K. Marxa, 148, kv. 1, Magnitogorsk Chelyabinskoi oblasti; Alexei Leontievich Shatlin, ulitsa Gorkogo, 18, kv. 24, Magnitogorsk Chelyabinskoi oblasti; Vladimir Safonovich Kiyashko, ulitsa Stroitelei, 27a, kv. 7, Magnitogorsk Chelyabinskoi oblasti; Vitaly Nikolorvich Krylov, ulitsa Oktyabrskaya, 14, kv. 99, Magnitogorsk Chelyabinskoi oblasti; Boris Alexandrovich Marsuversky, ulitsa Zhdanova, 15/1, kv. 13, Magnitogorsk Chelyabinskoi oblasti; Rafik Khisamovich Saifutdinov, ulitsa Stroitelei, 43/1, kv. 19, Magnitogorsk Chelyabinskoi oblasti, and Vladimir Ivanovich Vier, ulitsa K. Marxa, 63/1, kv. 68, Magnitogorsk Chelyabinskoi oblasti, all of U.S.S.R.
Continuation of Ser. No. 163,753, July 19, 1971, abandoned. This application Jan. 18, 1973, Ser. No. 332,701
Int. Cl. C21b *7/14*
U.S. Cl. 266—38 **3 Claims**

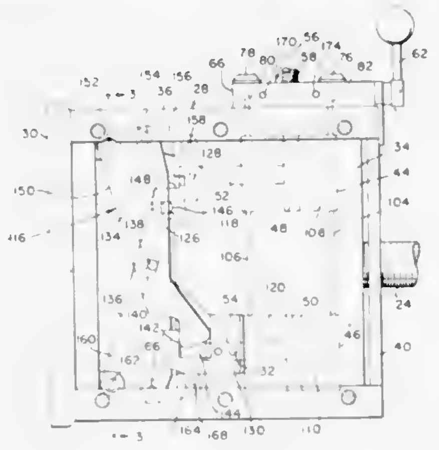
A device for tapping the melt from a spout of a metallurgical unit into ladles through an open channel runner which can be tilted about a pivot axis; the runner pivot axis is shifted in relation to its lateral axis of symmetry and an axis of the spout in the direction of a pouring lip of the runner by a distance providing for sufficiently easy tilting of the runner during drainage. The runner is placed immediately below the metallurgical unit spout. The device has a drive to tilt the runner about the pivot axis and the runner may be housed in a cradle made in the form of a frame with trunnions arranged on said pivot axis of the runner and coupled to the said drive.



3,792,851

AUTOMATIC VISE JAW

Paul S. Newswanger, 1401 Vermont Ave., Lancaster, Pa.
Filed Apr. 7, 1972, Ser. No. 242,181
Int. Cl. B23q *3/08*
U.S. Cl. 269—32 **6 Claims**



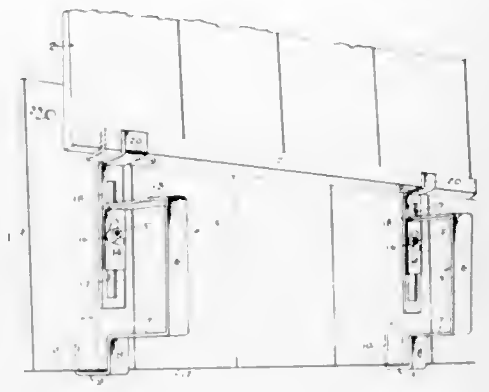
An automatic vise jaw wherein the movable jaw is urged toward a fixed vise jaw by means of a crank operated screw. The movable jaw includes a housing which terminates forwardly at the movable jaw pressure plate and a cylinder block which is in slideable contact with the housing. The crank operated screw affixes to the cylinder block to maintain the block in a stationary preset position during operation of the device. A pair of air cylinders are provided in the cylinder block which function pistons forwardly and rearwardly in response to applied air pressure. Interconnecting linkage pivotally connects between the cylinder block and the main housing and functions to slide the main housing relative to the cylinder block upon application of air pressure to the cylinders. By employing suitable leverage, the linkage serves to substantially increase the pressure available at the movable jaw over that applied at the air cylinders and to rapidly apply the increased pressure at the pressure plate for work holding purposes.

3,792,852

STRAIGHT-EDGE FOR APPLYING WOOD SHINGLES AND SHAKES ON VERTICAL SURFACES

Donald K. Reniker, 1830 Childs Ave. N. E., Salem, Oreg.
Filed Mar. 8, 1972, Ser. No. 232,802
Int. Cl. B23g *3/02;* **E04g** *3/08*
U.S. Cl. 269—95 **1 Claim**

A device for use as an automatic guide in laying shingles, shakes, clapboard and the like in parallel rows on the surfaces of various types of housings, buildings and other structures. The device provides means in the form of a shingle guide for laying a large number of courses of shingles without any change other than the shifting of a conveniently movable guide bar. The guide bar is supported upon vertically adjustable hand grips whereby said supporting bar may be raised or lowered relative to a course of shingles previously set, and which when so set will automatically provide an accurate guide for the next superjacent course.



3,792,853

TOGGLE CLAMP WITH DETENT OPEN GUIDED ARM

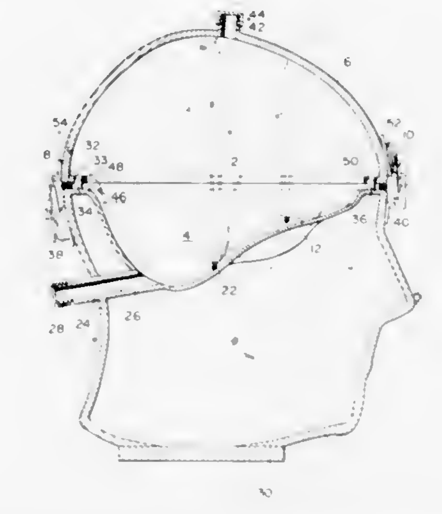
Leland F. Blatt, 821 Lakeshore Dr., Grosse Pointe Shores, Mich.
Continuation-in-part of Ser. No. 292,877, Sept. 28, 1972. This application Jan. 26, 1973, Ser. No. 326,899
Int. Cl. B25b *5/12*
U.S. Cl. 269—228 **7 Claims**

A toggle clamp comprises a pivot base mountable upon a support with a pair of side plates adjustably mounted upon said pivot base in a pre-selected angular position and guidably receiving therebetween a pivot arm pivotally mounted upon said plates and terminating in a work piece engaging clamp arm. A U-shaped handle link with a laterally extending handle is pivotally mounted over and upon the guide plates and pivotally mounts interiorly a pair of arm links at their one ends, with the other ends of said arm links pivotally connected to the handle link. A yieldable latch is positioned between the arm links and pivotally connected thereto and adapted to interlock with a latch plate spanning said guide plates when the handle has been moved to a release position. A latch release rod with handle is connected to said latch for disengaging from the latch plate permitting return movement of the handle to work piece securing position.

3,792,854

BRAIN BIOLOGICAL SPECIMEN POST MORTEM INSPECTION AND PRESERVING VESSEL

Cesar Aurelio Romero-Sierra, Bath, Ontario; Lionel Caron, Hull, Quebec, and Gerard Beaudry, Gatineau, Quebec, all of Canada, assignors to Canadian Patents and Development Limited, Ottawa Province of Ontario, Canada
Filed May 18, 1972, Ser. No. 254,359
Int. Cl. G09b *23/28;* **B25b** *11/00*
U.S. Cl. 269—328 **2 Claims**

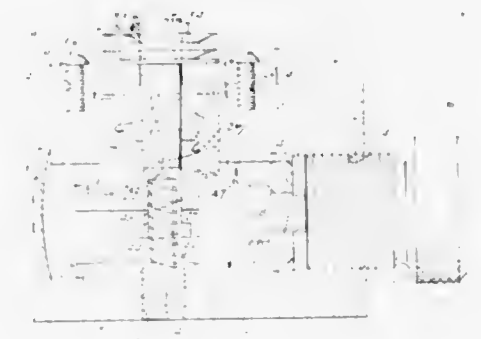


A brain biological specimen post mortem inspection and preserving vessel, a transparent container shaped to cradle the brain and provided with an open top forming an examination opening, for example, for dissection, a lid sealing the open top, and clasps for clamping the lid to the container: The brain is preferably mounted on sleeves on pins on a removable insert in the container, and the lid and container preferably each provided with a capped preserving fluid inlet and drain respectively.

3,792,855

WORKPIECE SUPPORT APPARATUS

Dale J. Bondie, Fowlerville, Mich., assignor to Ex-Cell-O Corporation, Detroit, Mich.
Filed Aug. 30, 1972, Ser. No. 284,811
Int. Cl. B23q *3/02*
U.S. Cl. 269—310 **4 Claims**

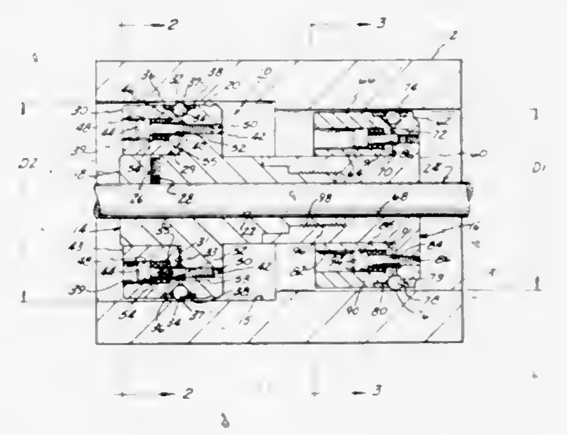


A workpiece support apparatus for mounting in position adjacent a workpiece to provide positive back-up support and prevent deflection of the workpiece during a machining operation thereon. The workpiece support apparatus includes a housing having a first bore formed therein and a second bore formed perpendicularly to said first bore and communicating therewith. A workpiece support pin is adjustably mounted in the second bore and it has one end extended outwardly of the housing for operative engagement with a workpiece. A collet member and a collet operating bushing are operatively mounted in the second bore around the support pin for releasably locking the pin in an adjusted position. A manually operable wedge is movably mounted in the first bore, and it is adapted to operatively engage the collet operating bushing for moving the collet member from an inoperative position to a support pin locking position.

3,792,856

ARBOR FOR SECURING A WORKPIECE

Manuel R. Hernandez, Westland, Mich., assignor to Etronic Corporation, Detroit, Mich.
Filed Oct. 12, 1971, Ser. No. 188,231
Int. Cl. B23q *3/14;* **B23b** *31/40*
U.S. Cl. 269—48.1 **5 Claims**



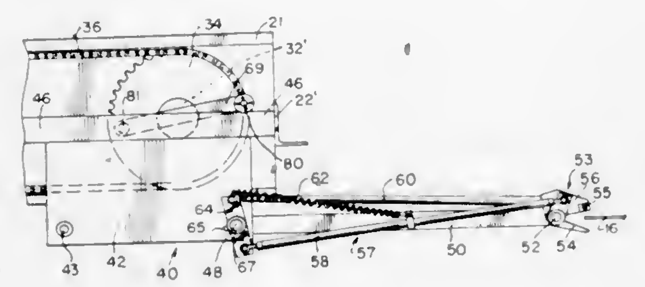
A male arbor having axially spaced annular sections of different diameters and adapted to retain a female workpiece having a multi-diameter internal bore. Each of the annular sections includes a hub member, with the hub members coupled to each other. Annular members are carried by each of the hub members, with one of the annular members of each pair slidably mounted. Opposing tapered wedging surfaces define grooves for receiving balls which normally project radially from the grooves to grip the workpiece and which are retracted into the grooves upon axial separation of the annular members so that the workpiece can be removed from the arbor. Each annular section includes one of the annular members provided with a plurality of circumferentially spaced and longitudinally disposed bores extending therethrough and including a decreased diameter portion in axial alignment with a plurality of circumferentially spaced and longitudinally disposed threaded bores in the adjacent annular member. A plurality of threaded fastening members slidably extend through the bores in one annular member to be received by the bores of the adjacent annular member. The shank portion of each fastening member is of such a length as to permit axial movement of each movable annular member relative to the adjacent annular member. A plurality of springs carried by each of the shank portions of each fastening member exert a biasing force against its associated movable annular member to bias the same toward its adjacent annular member. The biasing force of the springs and thus the force projecting the balls radially from their associated grooves may be selectively varied.

3,792,857

TAKEOFF APPARATUS

Henry J. Bubley, Deerfield, and Claude H. Oltra, Chicago, both of Ill., assignors to American Screen Printing Equipment Company, Chicago, Ill.
Filed Aug. 22, 1972, Ser. No. 282,709
Int. Cl. B65h *29/10*
U.S. Cl. 271—85 **7 Claims**

A takeoff apparatus adapted to remove materials from a first location and transfer them to a second location having a frame, a drive means mounted on the frame, a gripper assembly mounted on the frame and connected to the drive means by an arm in such a manner that it is caused to travel reciprocally along the frame between the first and second location and to dwell adjacent the first location a sufficient amount of time to allow fingers on the gripper assembly to properly grip the material to be transferred. A gripper assembly having a pair of spaced parallel shafts, one of the shafts supporting gripper fingers connected by linking means to the other shaft, the linking means being mounted on the second shaft by means allowing a slight amount of play of each gripper finger with respect to the other gripper fingers to assure that all fingers close tightly on the material.



3,792,858

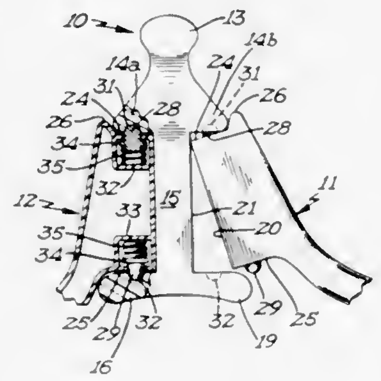
SECTIONAL GAME DEVICE

Norton M. Cross, Jr., 2347 Golfview Court, White Bear Lake, Minn., and Melvin L. Sward, St. Paul, Minn., assignors to Norton M. Cross, Jr., d/b/a Source Properties, Stillwater, Minn., by said Sward

Filed July 1, 1971, Ser. No. 158,698

Int. Cl. A63f *9/00*

U.S. Cl. 273—1 R **9 Claims**



A sectional game device having a central portion and a plurality of relatively long arms releasably secured to the central portion. The arms have abutment surfaces which engage abutment surfaces on the central portion. The arms are held against rotation about any axis tangential to the abutment surfaces by releasable fasteners which may be of the ball and socket type or may be spring biased detents. Each player grips one of the arms and tries to manipulate the device in such a way that the central portion is retained on the arm held by him and the arm or arms held by the other player or players become detached from the central portion. In one form of the game, the device is formed to resemble a wishbone having two arms. The device may take other forms, such as that of an octopus, where it is desirable that the device be played simultaneously by more than two players.

3,792,859

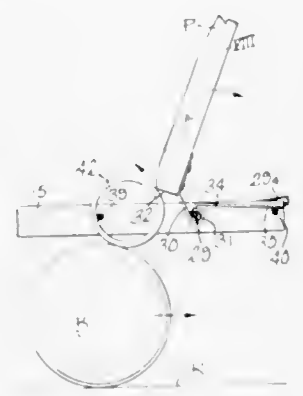
SURFACE PROJECTILE TARGET MEMBER AND SIMULATED TARGET PIVOTED THEREBY

Frank Gybowski, and Estelle M. Gybowski, both of 34 Edgewood Way, New Haven, Conn.

Filed Sept. 15, 1972, Ser. No. 289,432

Int. Cl. A63b *63/04;* **A63d** *3/00*

U.S. Cl. 273—41 **9 Claims**



A game in which a rolling ball upon striking at least one revolvable cylinder which is loosely mounted on a horizontal rod imparts energy thereto to produce revolution of the cylinder which will strike the bottom of a pivotally mounted, rearwardly positioned target or indicator.

3,792,860

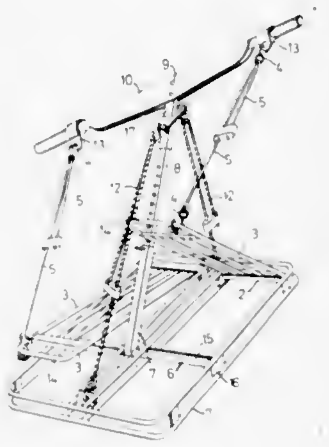
PIVOTAL PLATFORM TRAINING APPARATUS WITH SELECTIVELY CONNECTIBLE COMPONENTS

Arnold Selnes, Huitfeldtsgt, 28, Oslo 2, Norway

Filed Oct. 17, 1972, Ser. No. 272,907

Int. Cl. A63b *21/00*

U.S. Cl. 272—58 **9 Claims**



A training apparatus comprising a framework, two platforms, one end of each platform being pivotally connected to the framework, the platforms being substantially parallel to one another and being pivoted at adjacent ends, a supporting member, adjustable in length, being located between the substantially parallel platforms and being pivotally connected at one end to the framework, a crossbar being detachably fitted at the other end of the supporting member and one or more force-transmitting or tractive means for retaining the supporting member in different desired angular positions and/or movably interconnecting the two platforms and/or connecting through the crossbar to a displaceable device, when the training apparatus is in use.

3,792,861

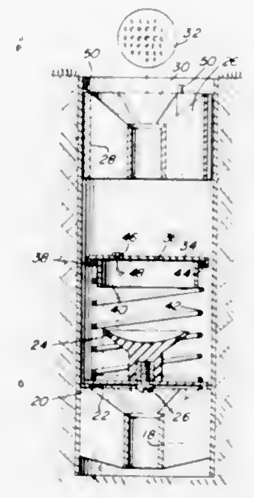
BALL PROJECTING GOLF CUP

Lewis B. Coleman, 4444 Park Blvd., San Diego, Calif.

Filed Mar. 19, 1973, Ser. No. 342,446

Int. Cl. A63b *57/00*

U.S. Cl. 273—34 A **6 Claims**



A golf cup comprising a hollow body open at its top to be set into the ground and including a ball supporting and ejecting member mounted therein for vertical shifting below an upper limit position and having a compression spring acting thereon yieldingly biasing the ball ejecting member toward its upper limit position. An upwardly facing suction cup is mounted within a lower portion of the body and is engageable by a downwardly facing surface portion of the ball ejecting member as it is forced downwardly to a lower position below the upper limit position thereof and the downwardly facing surface has a small diameter vent passage opening therethrough in the area thereof engageable by the suction cup. Upon initial downward movement of the ball supporting and ejecting member after a golf ball drops in the open upper end of the body and engagement of the downwardly facing surface of the ball ejecting member with the suction cup, the suction cup is operative to retain the ball ejecting member in the lower position thereof for a short period of time until sufficient air is vented through the vent passage between the downwardly facing surface of the ball ejecting member and the suction cup to allow the upwardly biasing action of the compression spring to overcome the retention force of the suction cup and thereby project the ball ejecting member and the ball supported thereby upwardly in a rapid manner to the upper limit position of the ball ejecting member, whereby the upwardly momentum of the ball supported from the ejecting member will be sufficient to carry the ball upwardly and out of the open top of the cup to be caught by a golfer.

3,792,862

DOUBLE BARREL ROBOT SHOOTER FOR A PIN GAME

Lester R. Livick, 15106 Beatty St., San Leandro, Calif.

Filed Mar. 15, 1973, Ser. No. 341,690

Int. Cl. A63d *3/02*

U.S. Cl. 273—38 **2 Claims**

A double barrel robot shooter for a pin game in which the shooter has two downwardly inclined tubular marble guides placed at one end of a runway and the knock-over pins are arranged on a target area positioned at the other end of the runway. The shooter may be swung about a vertical axis so as to direct the pair of marbles toward the desired pins in an endeavor to knock them over. The target area of the runway is enclosed on three sides by a guard to prevent the marbles from running off from the runway. The guard has angled portions constituting surfaces against which "bank shots" may be made with the marbles. The shooter may be moved laterally in either direction from its central position into a new shooting position.

3,792,863

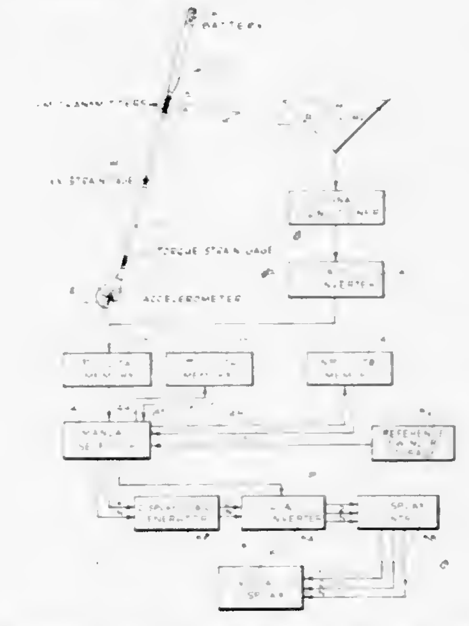
SWING MEASUREMENT SYSTEM AND METHOD EMPLOYING SIMULTANEOUS MULTI-SWING DISPLAY

James W. Evans, 3557 Sandburg Rd., Jacksonville, Fla., assignor to Athletic Swing Measurement Inc., Clearwater, Fla.

Filed May 30, 1972, Ser. No. 258,018

Int. Cl. A63b *69/36*

U.S. Cl. 273—186 A **14 Claims**



A system and method for measuring at least one element of motion of the swing of an athletic implement, in which electrical signals from torque, strain and flex gauges in the implement representative of successive swings are sequentially stored and then at least two signals of successive swings of one of torque, strain or flex are simultaneously displayed, as magnitude versus time, for comparison.

3,792,864

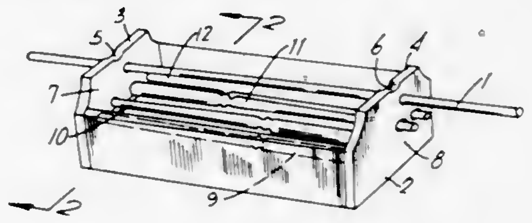
STICK THROWING APPARATUS AND TARGET

Henry J. Kelly, Buffalo, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Mar. 12, 1973, Ser. No. 340,246

Int. Cl. A63b *71/02*

U.S. Cl. 273—95 R **4 Claims**



Throw stick game apparatus comprises a crossbar. A crossbar rest unit supports the crossbar substantially horizontally at a predetermined distance above the ground. A plurality of sticks are adapted to be thrown at the crossbar in an effort to knock it off the crossbar rest unit. A plurality of bores are provided in the side walls through which the sticks are inserted when not in use.

3,792,865

SIMULATED MOUNTAIN CLIMBING BOARD GAME APPARATUS

John Credico, Jr., and Delphine Credico, both of 1556 Knuth Ave., Euclid, Ohio

Filed Apr. 14, 1972, Ser. No. 244,044

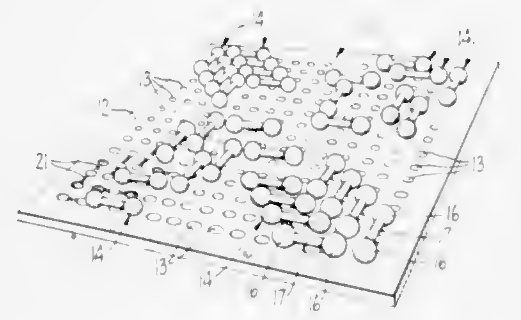
Int. Cl. A63f *3/00*

U.S. Cl. 273—131 B **7 Claims**

A game including a simulated mountain preferably formed of sectional parts to enable it to be easily packaged and shipped. The simulated mountain has a plurality of stations, some of which may be arranged on one side and others on the opposite side of the simulated mountain. The game also includes a plurality of discs pushable over pathways leading upwardly from the bottom of the simulated mountain and from station to station by a finger or thumb of the player as signified by chance means including two decks of cards which form part of the game. The first chance means includes a deck of five starting cards, each displaying a certain finger or a thumb for pushing a disc up to the first station. The second chance means is designated a Change of Finger Deck, each card of which displays two fingers or thumb on the change of finger card that has not been used in approaching the first station. At each station, he must substitute a finger of thumb not used in the approach to that station until the top of the simulated mountain is reached.

3,792,866
BOARD GAME APPARATUS

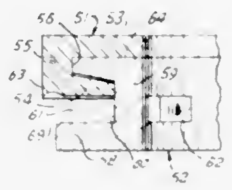
Allen F. Dreyer, Richmond; Harold R. Dreyer, El Cerrito, and Ralph H. Dreyer, Berkeley, all of Calif., assignors to Universal Research Company, Berkeley, Calif.
Filed July 24, 1972, Ser. No. 274,569
Int. Cl. A63f *3/00*
U.S. Cl. 273—131 AB **27 Claims**



A game apparatus includes a game board providing a substantially flat playing surface having a plurality of recesses equidistantly spaced along intersecting rows, and a plurality of dumbbell-shaped playing pieces having spherical ends adapted to be removably received in the recesses as the playing piece is moved along a row. The playing pieces have spherical ends joined by a narrower intermediate portion and are elongated sufficiently for the intermediate portion to overlie a recess when the spherical ends occupy recesses adjacent thereto. The playing pieces are separated into classes for ready identification by the players by visual indicia thereon, such as color coding or appropriate symbols. The recesses are also provided with color coding or suitable symbols, to identify the possible paths along which a particular playing piece may be moved. Alternate recesses along any row have similar indicia designating different classes of recesses interpositioned so that a playing piece will occupy only recesses of the same class during all of its moves.

3,792,867
PISTON RING CONSTRUCTION

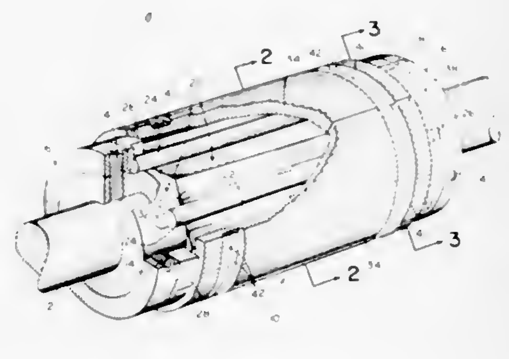
Alfred Bergeron, 1288 Bagley, Lot 6, Dallas, Tex.
Continuation-in-part of Ser. No. 66,992, Aug. 26, 1970, abandoned. This application Sept. 27, 1971, Ser. No. 184,025
Int. Cl. F16j *9/16*
U.S. Cl. 277—193 **10 Claims**



A two-part compression ring assembly which consists of interlocking channel shaped ring members wherein one interlock flange of each member is received in the groove of the other. The interlock flanges have confronting annular faces beveled at an angle of about 10° and provided with a clearance space of about 0.002 inch. A three-part compression ring assembly includes an expansion ring of L shaped cross section having radial spring fingers for urging the remainder of the assembly toward one piston groove wall and having a slotted cylindrical flange for radial flexibility. A key for preventing relative rotation of the interlocking ring members is provided on one ring member visible from the exterior periphery of the ring to be received in appropriate notches at the ends of the mating ring.

3,792,868
CHUCK

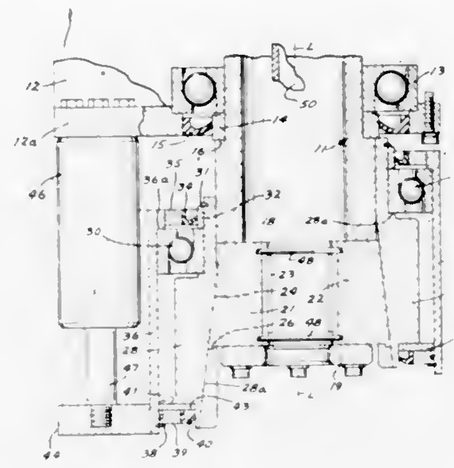
Richard Edward Flagg, 682 Winter St., East Bridgewater, Mass.
Filed Apr. 3, 1972, Ser. No. 240,435
Int. Cl. B65h *75/02;* **B23b** *31/40*
U.S. Cl. 279—2 **2 Claims**



A chuck for internally gripping a hollow member comprising an interior member having a longitudinal axis and including a plurality of generally planar exterior surfaces each parallel to the axis; a plurality of rollers, each roller parallel to and in contact with one of those surfaces; a plurality of jaw members, each having an arcuate interior surface in contact with at least one of the rollers; and means for resiliently maintaining the jaw members in contact with the rollers.

3,792,869
HYDRAULIC CHUCK

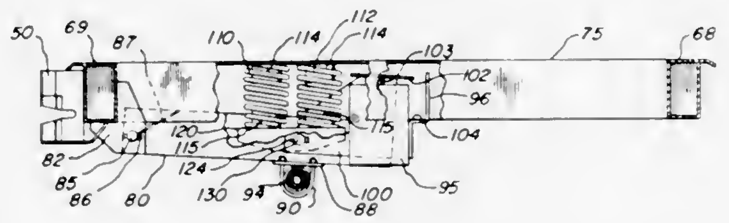
Leonard A. Braun, St. Paul, Minn., assignor to Longyear Company, Minneapolis, Minn.
Filed Nov. 13, 1972, Ser. No. 306,015
Int. Cl. B23b *31/40*
U.S. Cl. 279—4 **10 Claims**



Chuck apparatus mounted on a drive gear housing and a tubular drive spindle extended downwardly through the drive gear housing that includes a plurality of chuck jaws radially slidably extended through slots in the spindle, an annular retainer ring bolted to the spindle to aid in mounting the jaws, an annular jaw actuator mounted on the spindle for axial movement relative thereto, a chuck housing supporting the actuator for rotary movement relative thereto and moving the actuator upwardly, bearings for transmitting a downward force from the chuck housing to the actuator, piston cylinder combinations dependingly mounted on the drive gear housing and in turn mounting the chuck housing, said combinations being operable for moving the chuck housing axially relative the spindle, and springs for resiliently urging the jaws radially outwardly.

3,792,870
CENTER AXLE SUSPENSION SYSTEM FOR TRAILERS

Glenn G. Kanengieter, Blooming Prairie, Minn., assignor to Owatonna Manufacturing Co., Inc., Owatonna, Minn.
Filed Aug. 31, 1972, Ser. No. 285,532
Int. Cl. B60p *1/04*
U.S. Cl. 280—81 R **6 Claims**



A center axle suspension system for trailers in which the trailer chassis has conventional side wheels for supporting the same and a pair of center wheels positioned ahead of the side wheels and mounted on a pivoted lever to permit pivotal upward and downward movement of the center wheels relative to the fixed side wheels for increased stability and smoother ride of the trailer.

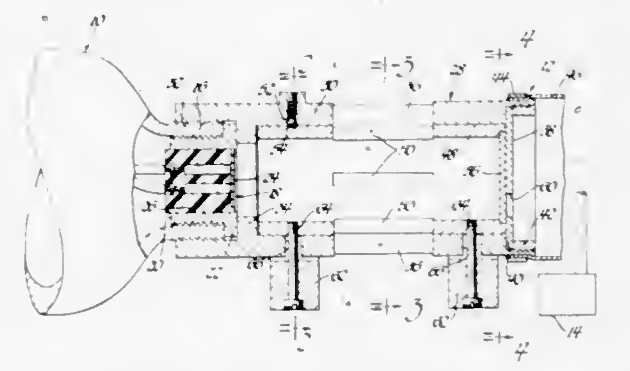
3,792,871
LINKAGE COMPONENT FOR VEHICLE SUSPENSION

Wallace G. Chalmers, The Penthouse, 310 Victoria Ave., Westmount, Montreal 215, Quebec, Canada
Filed June 6, 1972, Ser. No. 260,223
Claims priority, application Great Britain, June 7, 1971, 19185/71
Int. Cl. B60g *5/04*
U.S. Cl. 280—104.5 A **14 Claims**

A linkage component, particularly, of the wishbone type, for guiding a sprung part of a vehicle suspension system in linear movement relative to an unsprung chassis part. The component has a rigid frame, preferably triangulated, containing three bearing elements, two of which are co-axial bearing pads preferably in the form of oppositely disposed end caps which fit into corresponding sockets in the chassis part, allowing rotation of the component about the axis joining the end caps. The frame supports a third bearing element displaced from this axis and which partially locates the unsprung part of the suspension system. The linkage component in accordance with the invention is easy to install, and has a particularly advantageous bearing pad arrangement in which the bearing pads are easy to replace, and have a long life by reason of a large bearing area. The component in accordance with the invention may be used in association with torque rods for locating the rear axle of a load-carrying vehicle such as a truck or trailer. The specification particularly describes the uses of the component in tandem axle suspension systems, and also describes a novel configuration particularly for a trailer suspension system.

3,792,872
OCCUPANT RESTRAINT SYSTEM

Trevor O. Jones, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Apr. 25, 1972, Ser. No. 247,329
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **8 Claims**



An occupant restraint system for a vehicle includes a source of pressure fluid having an outlet sealed by a rupturable diaphragm. Upon receipt of an electrical signal from a sensor actuated by impact conditions experienced by the vehicle, detonators rupture the diaphragm to release the pressure fluid. A manifold assembly communicates the outlet of the pressure vessel with an inflatable occupant restraint cushion. Included in the manifold assembly is a valve arrangement which has a first orifice controlling venting of the sealed outlet of the pressure vessel to atmosphere and a second variable area orifice controlling communication of the outlet to the cushion. The valve arrangement includes an outer tubular member having a circumferential series of radial openings and a generally circular opening in a radial end wall thereof. An inner tubular member is rotatable within the first member and includes a circumferentially spaced series of radial openings which may be aligned and misaligned with the radial openings of the outer member to provide the first orifice. A radial end wall of the inner member is juxtaposed to the end wall of the outer member and includes a generally teardrop shaped opening which may be adjustably aligned with the wall opening of the first member to provide the variable area orifice. A releasable detent normally locates the inner member within the outer member with the radial openings aligned and the circular and teardrop openings misaligned. Thus, the outlet of the source is normally vented to atmosphere and blocked from communicating with the cushion. Pendulous weights are secured to the inner member. Upon receipt of an acceleration pulse of predetermined minimum amplitude and time, the weights rotate the inner member within the outer member to misalign the radial openings and close the first orifice. The teardrop shaped opening is partially aligned with the circular opening to provide a minimum area second orifice. The area of this orifice, up to a maximum area equal to that of the circular opening, is determined by the degree of alignment of the teardrop and circular openings which is controlled by the strength of the pulse up to a predetermined maximum. The first and second orifices can also be used in an occupant restraint system independently of the other.

3,792,873

PASSIVE RESTRAINT SYSTEM FOR VEHICLE OCCUPANTS

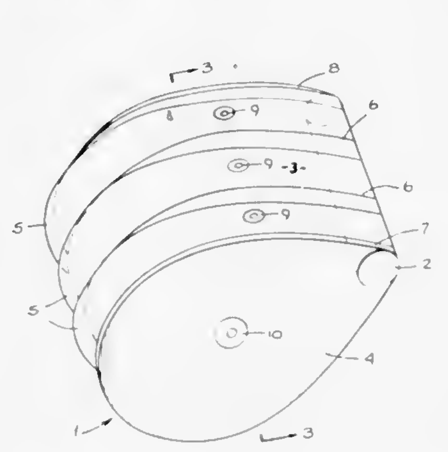
Gerhard Paul Buchner, Richterich by Aachen, and Hubertus Paulus Thomaschewski, Aachen, both of Germany, assignors to Uniroyal A.G., Aachen, Germany

Filed Jan. 17, 1972, Ser. No. 218,184

Claims priority, application Germany, Feb. 5, 1971, 2105428

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **8 Claims**



Safety apparatus for protecting an occupant of a vehicle during an accident comprising a confinement, or so-called "air bag", inflatable from a collapsed condition to an expanded condition in which it is adapted to restrain movement of the occupant relative to the vehicle during an accident, and means for effecting expansion of the confinement to the expanded condition by introducing a gas under pressure, typically compressed air or gas generated pyrotechnically, from an outside source into the confinement. The wall of the confinement is made of uninterruptedly woven fabric in tubular form which constitutes a member which completely encircles the inflating gas. The encircling wall of the confinement can be made from a circular woven tubular fabric member woven on a circular loom or from a double woven fabric made on a loom in the well-known manner by carrying out the weaving process in such a way that adjacent portions of fabric are interwoven together.

3,792,874

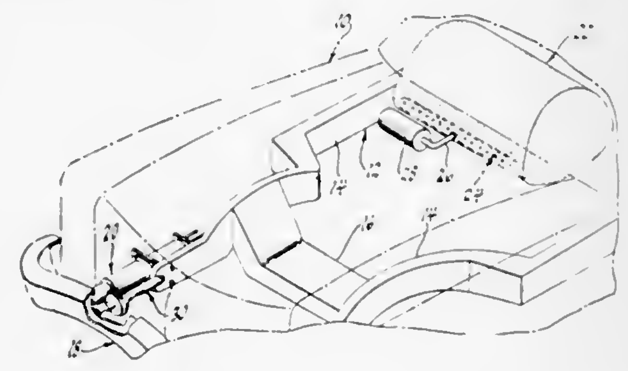
OCCUPANT RESTRAINT SYSTEM

John A. Ayres; Philip R. Peterson, both of Flint, and John R. Ziegler, Flushing, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 11, 1972, Ser. No. 225,536

Int. Cl. B60r *21/10*

U.S. Cl. 280—150 AB **4 Claims**



A vehicle includes an energy absorbing bumper system having an impact bar supported by a spaced pair of like energy absorbing struts. The struts absorb the energy of impact forces applied to the impact bar up to a predetermined limit. An electromagnetic impact transducer includes a pair of telescopically related cylindrical members, one having one end connected to the frame of the vehicle and the other having one end connected to the impact bar. The one member includes cylindrical housing adjacent the other end receiving an induction coil and plastic bobbin assembly which is axially aligned with the other member. The plastic bobbin includes an integral inner radial rib which locates a permanent magnet within the bobbin a predetermined distance or dead zone from the other end of the other telescopic member. A coil compression spring seats between the magnet and the one end of the one member to hold the magnet in engagement with the rib. When the impact forces applied to the impact bar exceed the energy absorption limit of the struts, the other member moves through the dead zone and into engagement with the magnet to displace the magnet out of the coil and bobbin assembly against the seating spring and thereby induce a voltage in the coil which is proportional to the velocity of the magnet and its initial position. The output voltage of the coil triggers an electronic latch which initiates inflation of an inflatable occupant restraint cushion. The cushion is mounted within the passenger compartment and communicated with a pressure fluid source when a diaphragm is ruptured by electrically fired detonators. The predetermined distance or dead zones provides that no actuation of the transducer will occur unless the impact bar has moved a predetermined distance relative to the frame of the vehicle to permit low level impacts of the vehicle with an obstacle without inflation of the cushion.

3,792,875

BICYCLE TRAILER

Jack R. Paden, 527 Mesilla N.E., Albuquerque, N. Mex.

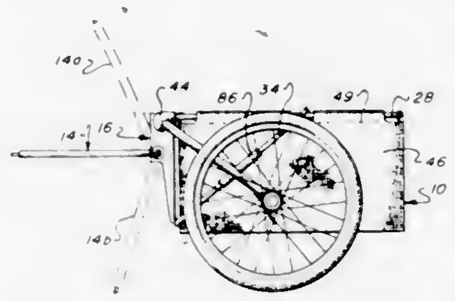
Filed Nov. 27, 1972, Ser. No. 309,622

Int. Cl. B62k *27/06*

U.S. Cl. 280—204 **13 Claims**

A collapsible two-wheeled package carrying trailer which employs independent torsion bar suspension with respect to

each wheel and which is adapted to be coupled with a propelling vehicle or operated as a handcart. A pair of supporting arms on either side of the trailer extend upward and forward from the separated axles of the two wheels and are joined at their forward ends by a torsion bar disposed transversely in front of a carrying frame from which a flexible receptacle is dependently supported. The torsion bar passes through the upper end of a control housing extending vertically downward therefrom in front of the receptacle equidistant between the wheels. In operation, the midpoint of the torsion bar is fixed in relation to this housing so that it is prevented from rotating with respect to its longitudinal axis. The carrying frame is cantilevered with respect to the lower end of the control housing and forwardly connected in pivotal relation to a cylindrical torsion bar housing encasing the torsion bar. Vertical loading of the receptacle is transmitted laterally through the torsion bar housing, causing the support arms to swing downwards. This in turn distorts the two ends of the torsion bar about its fixed midpoint, thereby generating separate restoring forces. A pulling tongue pivotally mounted to the control housing is configured to minimize transmittal of vibration rearward to the trailer. Quick release universal coupling means are provided for attachment of the tongue to the propelling vehicle to permit maximum lateral and vertical misalignment with the trailer.



3,792,876

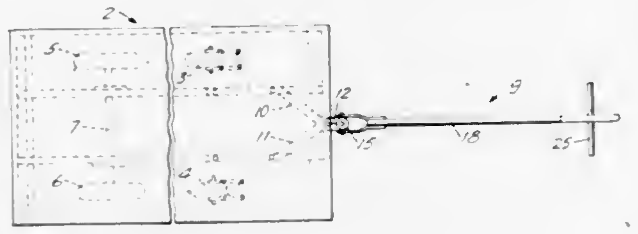
VISIBLE HITCH ASSEMBLY FOR ALL PURPOSE WAGON HAVING FREELY MOVING CASTERS AS FRONT WHEELS

Richard G. Norman, 1456 S.E. 8th Ave., Rochester, Minn.

Filed Aug. 18, 1972, Ser. No. 281,619

Int. Cl. B60d *1/14*

U.S. Cl. 280—415 A **1 Claim**



A hitch for a wagon having freely movable casters as front wheels; said hitch comprising an assembly for attachment to the chassis of a wagon and a handle assembly for attachment to said chassis assembly; the handle assembly being attached to the chassis assembly so as to be freely movable upwardly and downwardly, and from side to side, the said arrangement providing means whereby pulling force can be applied obliquely or straightforwardly to the front end of the wagon, and distributed more evenly over the front end of the wagon, the casters forming the front wheels, turning freely under such pulling force to inhibit imbalance or overturning of the wagon.

3,792,877

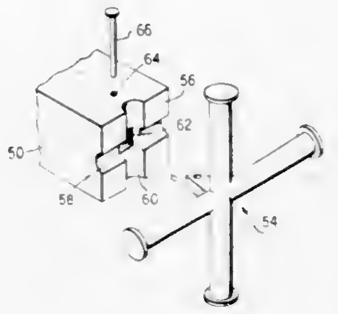
MULTIPLE IMPLEMENT COUPLING STRUCTURE

William E. Martin, c/o Martin Co., P.O. Box 187, Kewanee, Ill.

Filed June 23, 1972, Ser. No. 265,463

Int. Cl. B60d *1/10*

U.S. Cl. 280—415 A **4 Claims**



Power operated latches are associated with each of a plurality of traction vehicle coupling axes for securing multiple implements and traction vehicles in various of horizontal articulating, vertical articulating and rigid, non-articulating coupling modes.

3,792,878

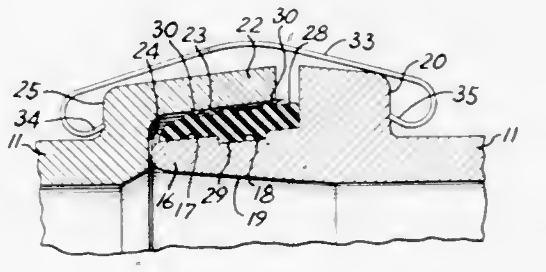
CONDUIT SECTIONS

Jerry H. Freeman, Mount Prospect, Ill., assignor to Phone-Ducs, Inc., Chicago, Ill.

Filed Sept. 27, 1971, Ser. No. 183,884

Int. Cl. F16l *39/00*

U.S. Cl. 285—137 R **10 Claims**



Conduit sections are connected and sealed together and buried beneath the earth's surface to provide a sealed underground conduit for housing cables or the like therein. The conduit sections are of molded high impact plastic, the sealed joints between the conduit sections include tapered male and female portions on the ends of the sections and annular resilient gaskets therebetween, and the sections are secured together by spring clips.

3,792,879

TAPPING SLEEVE

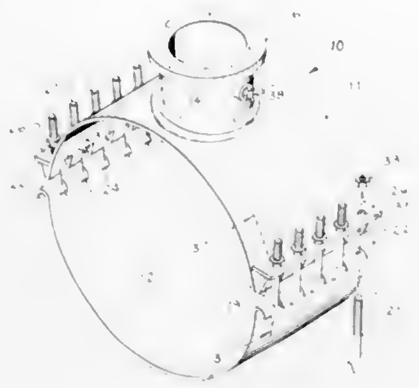
Paul G. Dunmire, Oakland, and Jack C. Standish, Fremont, both of Calif., assignors to Johns-Manville Corporation, Arapahoe County, Colo.

Filed Jan. 11, 1973, Ser. No. 322,741

Int. Cl. F16l *41/06*

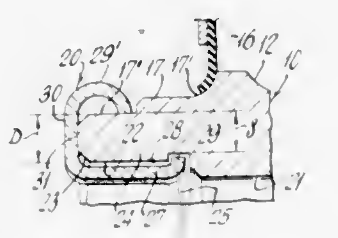
U.S. Cl. 285—197 **6 Claims**

Tapping sleeve for connecting a lateral or branch line to a pipe. The sleeve has a radially extending outlet and a plurality of semi-flexible bands which extend circumferentially around the pipe. Adjacent ends of the bands are drawn together by bolts to clamp the sleeve to the pipe and hold the outlet in alignment with an opening in the side of the pipe.



3,792,880
LOCKING DEVICE FOR A BEARING OR THE LIKE

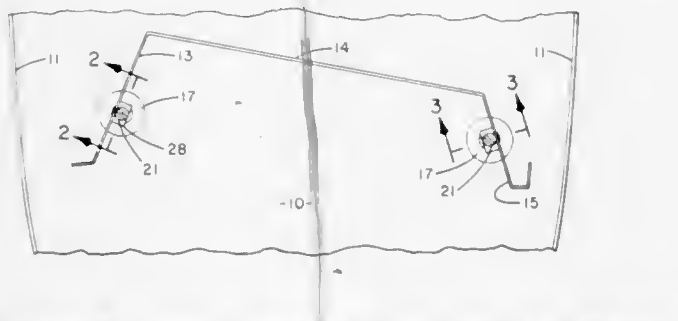
Howell L. Potter, New Britain, Conn., assignor to Textron Inc., Providence, R.I.
Filed Nov. 1, 1971, Ser. No. 194,676
Int. Cl. F16d *15/00*
U.S. Cl. 403–352 **4 Claims**



The invention contemplates a clip means having relatively free but unit-handling assembled relation to the bearing ring or the like which it is to secure, in the ultimately fitted, installed condition of the ring. An axial tongue of the clip is held in an excentric arcuate relief in the cylindrical ring surface to be mounted. The end of said axial tongue is hooked and held in a groove located within the relief area. The assembled and installed position of the ring is secured by angularly displacing the clip, and therefore the tongue, toward one of the circumferential limits of the relief.

3,792,881
SHEET METAL COMPRESSOR ENCLOSURE

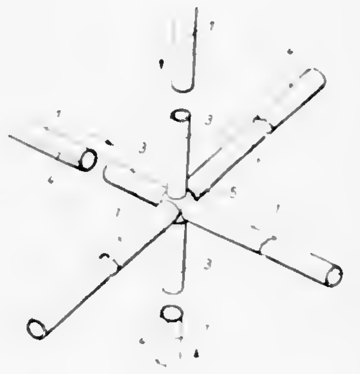
Peter L. Cann, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed June 29, 1972, Ser. No. 267,335
Int. Cl. F16b *5/02*
U.S. Cl. 52–758D **3 Claims**



A member of sheet material is formed with an upstanding protuberance of truncated form. A second member of sheet material is formed with a pair of incisions converging inwardly from one edge of the member. The area between the incisions is bent laterally from the plane of the second member forming a notch therein which is dimensioned comparable to the protuberance in the first member and with the tab overlying the top of the protuberance. The tab is attached to the protuberance by a fastener such as a screw or pop rivet.

3,792,882
DEVICE FOR CONSTRUCTING LIGHT TUBULAR STRUCTURES

Jacques-Henry Varichon, Paris, France, assignor to Pierre Robert Paul Fredon, Paris, France, a part interest
Continuation-in-part of Ser. No. 73,078, Sept. 17, 1970, abandoned. This application Mar. 16, 1972, Ser. No. 235,389
Claims priority, application France, Sept. 17, 1969, 6931541
Int. Cl. F16b *7/00*
U.S. Cl. 403–171 **7 Claims**

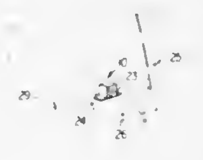


This invention concerns a construction device relating to light scaffold units, intended for display units in the furnishing and decorating field.

The construction device comprises a plurality of tubes extending in different directions and a plurality of complex junction units for connecting said tubes together at points in the assembly, each of said tubes being made of sheet or band roll of metal curved into tubular configuration with a longitudinal slot extending the entire length thereof and each of said complex junction units comprising a spherical hub part and a plurality of cylindrical stubs brazed or welded radially to the spherical hub part, said stubs being adapted for a coaxial telescoping fit with the tubes connected at the junction and having a cross-section slightly greater than the normal internal cross-section of the tubes so that they fit within the tubes with a resilient deformation of the tubes.

3,792,883
VEHICLE LOCK PROTECTOR

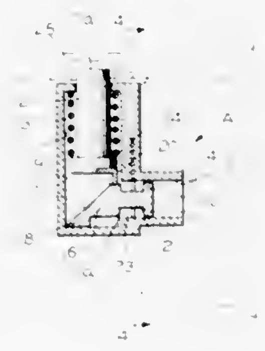
Puro De Jesus Juarbe, P.O. Box 582, Riverdale, Md.
Filed Apr. 13, 1972, Ser. No. 243,657
Int. Cl. E05b *1/04;* **E05c** *21/00*
U.S. Cl. 292—1 **3 Claims**



A motor vehicle lock protector device enclosing the push button associated with a vehicle door lock in such manner as to prevent tampering therewith to provide security against vehicle theft and manipulation by children riding in the vehicle. The device is mounted on the vehicle door frame and positioned over the push button. The device may define an opening on the side facing the interior of the vehicle to provide access to the push button from the interior of the vehicle, or a door may be used to close the opening to provide the child safety feature. A latch requiring strength normally inherent in adults but not in children may be used to maintain the door of the protector device in secured closed position to further enhance the child safety feature. The latch is located so as to be more accessible to the driver relative to passengers such as children that may be riding within the vehicle.

3,792,884
LOCKING DEVICE

Zenji Tutikawa, 682-4 Hiranonagare-cho Higashisumiyoshi-ku, Osaka, Japan
Continuation-in-part of Ser. No. 106,718, Jan. 15, 1971. This application Oct. 4, 1971, Ser. No. 186,216
Int. Cl. E05c *1/04, 9/04*
U.S. Cl. 292—37 **6 Claims**



A locking device for locking a drawer of a table, a door in furniture, or the like. A housing is provided which has a longitudinal hole and a transverse bore connected with the lower portion of the longitudinal hole. A male member is slidably inserted in the longitudinal hole with a spring inwardly biasing the male member. The hole can extend on the other side of the bore and a second male member and spring can be provided therein. A sliding member is slidably housed in the transverse bore and is engaged with said male member or members in a manner such that when the sliding member is pushed in the outer portion of the male member or members are caused to project from the opening of the longitudinal hole against the pressure of the spring or springs in an engaged position, and when the sliding member is withdrawn the male member or members are automatically moved in a disengaged position by the pressure of the spring. A key is provided for pushing and withdrawing the sliding member.

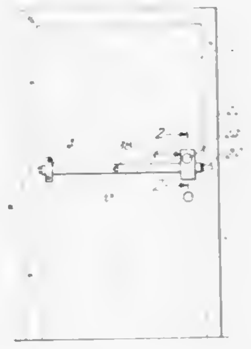
3,792,885
DOUBLE BAR LOCK

Nicholas Giardina, 121 Wallace Ave., Mount Vernon, N.Y.; Melvyn A. Gervis, 295 Franklin St., Haworth, N.J.; Eugene Taras Wozny, 46 Van Orden Rd., Harrington Park, N.J., and Richard D. Babock, 216 Fillmore St., Massapequa, N.Y.
Filed Aug. 6, 1971, Ser. No. 169,685
Int. Cl. E05c *9/04*
U.S. Cl. 292—39 **24 Claims**

A double bolt police lock of the type having oppositely extending locking bars is provided which has an improved appearance, increased versatility and a more effective locking mechanism. The lock generally comprises a lightweight elongated housing within which a pair of locking bars are slidably mounted for movement between an extended locking position and a retracted unlocking position.

In a first embodiment of the invention the locking bars are operatively drivingly connected for displacement in opposite directions by means of a rack and pinion mechanism disposed centrally within the housing. The locking mechanism is disposed in a lock casing near one end of the bar housing and comprises an improved latching device active on one of the locking bars and effective to deadlock that bar in one of its two operative positions.

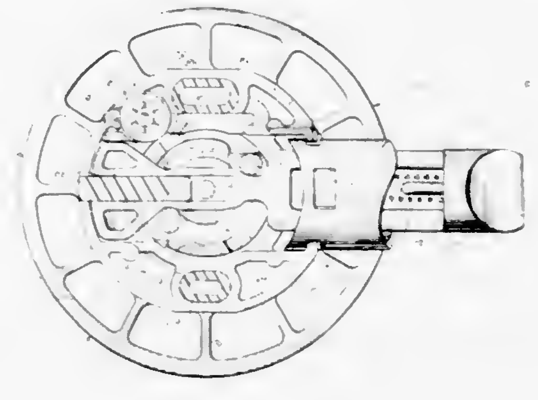
A second embodiment provides an adjustable length feature wherein a substantial length of one of the locking bars is replaced by a connecting rod arrangement to provide an operative driving connection between that bar and a driving pinion at the opposite end of the housing. That connecting rod arrangement is adjustable in length and/or removable from the housing whereby the housing and rod may be cut to size.



A third embodiment of the invention provides a locking mechanism which is adjustably positionable along a substantial length of the housing. That locking mechanism utilizes a rack formed on the underside of one of the locking bars adapted to operatively drivingly engage with an adjustably positionable pinion. The pinion is in turn controlled by a knob at the inside of the premises and a lock cylinder extending through the door at the desired position.

3,792,886
TWO WAY DOOR LATCH

Joe B. Ramsey, Walnut, Calif., assignor to Acme General Corporation, Monrovia, Calif.
Filed June 9, 1972, Ser. No. 261,516
Claims priority, application Mexico, June 2, 1972, 135,924
Int. Cl. E05c *1/12*
U.S. Cl. 292—164.21 **4 Claims**



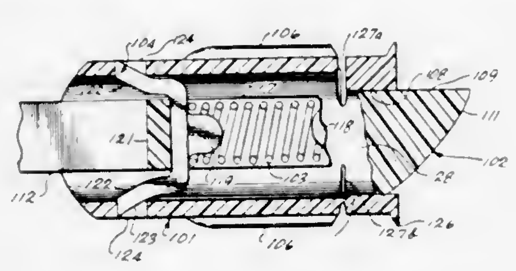
A door latch, the knobs of which may be turned either clockwise or counterclockwise for operating the latch bolt is described. One of the knobs engages the corresponding escutcheon when the knob is pushed towards the door to prevent rotation and provide a privacy lock. A pair of pins extend between the knobs and engage ramps on the inside end of latch bolt for retracting it. The latch bolt is split so that the ramp portions may collapse towards each other for insertion through a hole in the edge of the door. Interlocking support posts on the two escutcheons prevent the latch bolt from collapsing during use. A "kickoff" mechanism operated by the

coupled to a conventional bumper of a motor vehicle for hold- dards Association now American National Standards In-latch bolt prevents inadvertent locking and also provides resilient release to prevent damage in case the door is locked while the locking knob is held in. The door latch is made of injection molded plastic and the two escutcheons are held together by a single axial screw.

3,792,887
LATCH BOLT ASSEMBLY

Joe B. Ramsey, Walnut, Calif., assignor to Acme General Corporation, Monrovia, Calif.

Filed June 9, 1972, Ser. No. 261,517
Int. Cl. E05b *9/02*; **E05c** *1/08*
U.S. Cl. 292—169.21 **14 Claims**

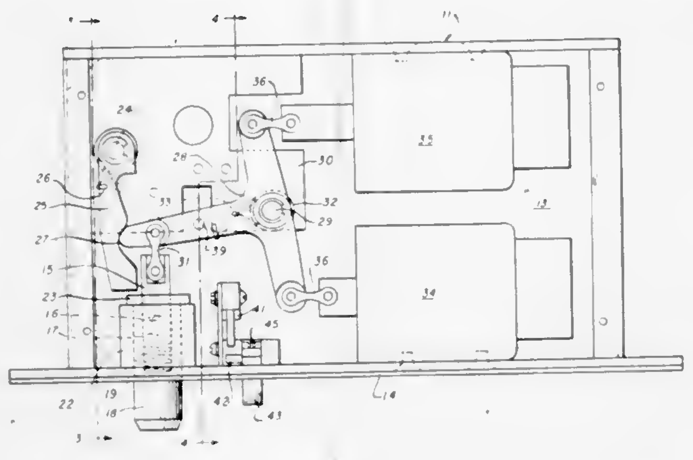


A cylindrical latch bolt assembly insertable in a door edge for cooperation with a door latch operating assembly is described. The housing for the latch bolt has a pair of slits on the sides adjacent the door faces so that the outer end of the housing can tilt relative to the inner end and the exposed face can conform to the edge of a beveled door. An elastic U-shaped spring retainer permits easy assembly of the latch bolt into the housing.

3,792,888
ELECTRIC LOCK

Raymond V. Kambic, Joliet, Ill., assignor to Folger Adam Company, Joliet, Ill.

Filed Jan. 26, 1973, Ser. No. 327,068
Int. Cl. E05c *1/12*
U.S. Cl. 292—173 **8 Claims**



An electric lock having two-part bolt with interposed bolt spring and pin and slot connections, a bell crank pivotally connected to bolt, solenoid means for swinging bell crank, a spring for swinging bell crank in one direction when power to solenoid means is shut off, a dead lock lever movable from active to inactive position by the bell crank as latter moves bolt to retracted position, and spring means automatically operable to move dead lock lever to active position into the path of retracting movement of the bolt, when bolt is in extended position, to prevent movement of bolt to retracted position by means other than bell crank, the bolt spring protecting the bell crank and solenoid means against damage by exterior forces applied to the bolt.

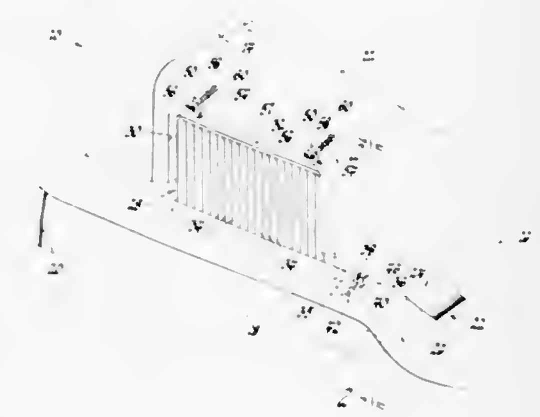
ERRATUM

For Class 292—256.61 see:
Patent No. 3,792,893

3,792,889
SHIFTABLE BUMPER SEQUENTIALLY MOVING VEHICLE GRILLE

Thomas W. Fuener; Thomas F. Girvin, both of Lansing; Robert D. Tower, Grand Ledge, and Charles J. Zarka, St. Johns, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 21, 1972, Ser. No. 290,979
Int. Cl. B60r *19/02*; **B61f** *19/04*; **B62d** *27/04*
U.S. Cl. 293—63 **8 Claims**

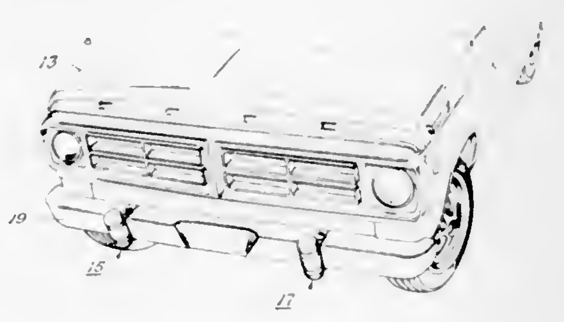


A vehicle includes a front grille mounted for longitudinal movement relative to the vehicle by pivotally securing a lower edge portion of the grille to the vehicle body or frame about a transverse vehicle axis located rearward of an energy absorbing bumper. The upper edge portion of the grille includes a pair of apertured flanges which respectively receive a pair of vehicle body mounted bolts to guide the grille during pivotal movement thereof about its lower edge portion. A pair of helical springs respectively encircle the bolts and seat against the flanges to bias the grille to a forward position where the grille is located just rearward of the bumper. When the bumper moves rearwardly to absorb energy upon impact with an obstacle, it sequentially engages the grille and pivots the grille rearwardly. The bolts guide the upper edge of the grille as it moves rearwardly and the springs are compressed by this movement. Upon subsequent forward movement of the bumper for reuse, the spring bias likewise moves the grille forward for reuse.

3,792,890
PNEUMATIC BUMPER GUARD ATTACHMENT

Leo A. R. Corretti, 2121 Warner Rd., Forth Worth, Tex.

Filed Feb. 2, 1972, Ser. No. 222,850
Int. Cl. B60r *19/10*; **B61f** *19/04*; **F16f** *9/04*
U.S. Cl. 293—65 **2 Claims**

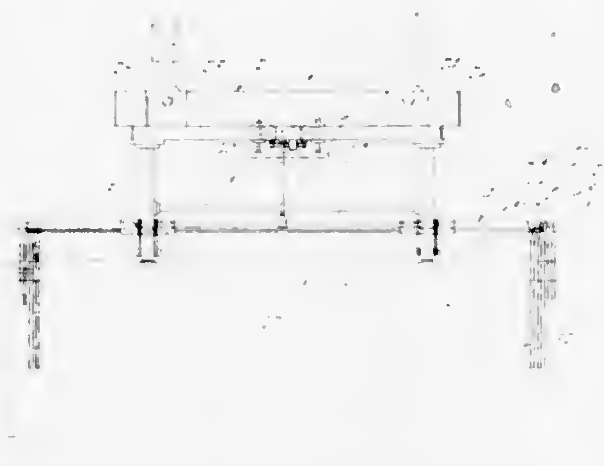


The specification discloses a pneumatic bumper guard comprising a frame and holding means adapted to be releasably coupled to a conventional bumper of a motor vehicle for holding an inflatable guard in front of the normal impact receiving surface of the bumper for absorbing the force imparted upon the occurrence of a collision between the motor vehicle and another object. Both the frame and inflatable guard may be readily replaced if damaged in the event of a collision.

3,792,891
PICKUP UNIT FOR CATHODE PLATES OR THE LIKE

Cass S. Kasper, Grosse Pointe, and Vernon Rott, Mount Clemens, both of Mich., assignors to Inter-Lakes Engineering Company, Mt. Clemens, Mich.

Filed Apr. 21, 1972, Ser. No. 246,341
Int. Cl. B66c *1/16*
U.S. Cl. 294—67 R **11 Claims**

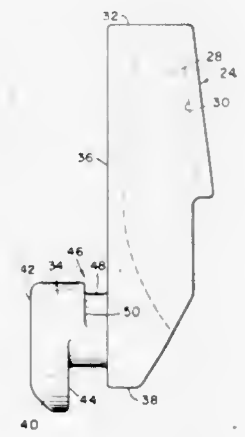


A unit for lifting groups of workpieces such as cathode plates on suspension bars and transferring them to another location. The unit comprises a rectangular frame with legs straddling the assembled plates. Gates on opposite sides of the frame are swung inwardly to align the suspension bars and the unit is then lifted by a crane, lift bars on the gates carrying the plates upwardly. The unit and its load are moved to another location such as a multi-tiered rack and the plates and suspension bars lowered onto the rack. An actuator carried by the unit engages the bars on the rack as the unit descends to swing open the side gates, and the unit may be returned to the assembly station.

3,792,892
CARGO CONTAINER LIFTING HOOK

Charles J. Shields, Oakland, Calif., assignor to States Steamship Company, San Francisco, Calif.

Filed Oct. 6, 1971, Ser. No. 186,880
Int. Cl. B66c *1/66*
U.S. Cl. 294—82 R **9 Claims**

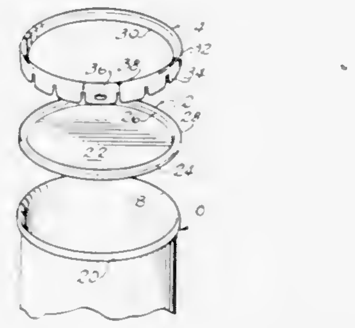


An ocean cargo container lifting hook for alternative use with cargo containers having standard ASA (American Standards Association now American National Standards Institute) or ISO (International Standards Organization) corner fittings. The hook includes a shaft for engaging an opening in either one of the two standard fittings and means for automatically and positively retaining the shaft, and therewith the hook, to the fitting when container weight is suspended from the hook.

3,792,893
REMOVABLE CONTAINER COVER AND RETAINER

Eugene R. Grotnes, c/o Atlanta Grotnes Machine Co., 300 Selig Dr., Atlanta, Ga.

Filed Mar. 27, 1972, Ser. No. 238,408
Int. Cl. B65d *45/30, 45/32*
U.S. Cl. 292—256.61 **6 Claims**



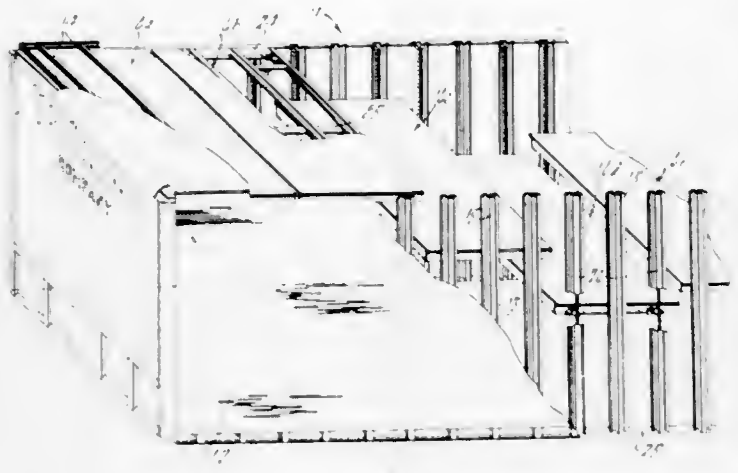
An easily removed retainer ring for cylindrical container of the sort used to contain paints, chemicals, and other substances has a cylindrical opening with an upper edge. The container may be a plastic bucket or a metal can. The cover is a solid plastic or metal disc with an annular ring attached to the periphery thereof providing an annular cavity which fits over the edge of the container and downwardly beyond the outside of the edge. The retainer ring is an open ring also with an annular cavity formed by a solid band on the inside and an interrupted band on the outside which provides a plurality of the usual flaps or lips but the ring has a weaker point where the ends are welded or otherwise attached thereby providing a quick breakaway for the removal of the ring. A conventional closing tool bends the tabs around the outside of the cover and upwardly against the side of the can. The retainer ring is removed simply by inserting a screwdriver in the tab near the weaker junction and rotating the screwdriver. The weaker junction could be made by scoring a solid band rather than a weld.

3,792,894
SELF-STORING VEHICLE DECK

Rae E. Vande Water; Owen W. Sherwin, and Charles F. Crissy, all of Jackson, Mich., assignors to Aeroquip Corporation, Jackson, Mich.

Filed May 17, 1972, Ser. No. 254,035
Int. Cl. B60p *1/36*
U.S. Cl. 296—24 R **18 Claims**

A truck body has a plurality of vertically movable deck units or sections which may be stored beneath the roof and independently lowered to a variety of positions above the main deck. Each deck unit is supported by four vertical threaded rods disposed within guide tracks which may be the internal posts at the vehicle sides. The deck unit is adjusted by simultaneously driving four nuts on the rods through chains and sprockets. All parts of the driving mechanism are permanently

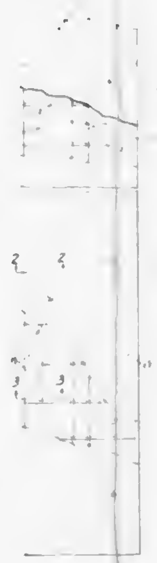


attached to the deck unit at all times, and the unit is held in its adjusted position by an automatic locking mechanism carried by the unit.

3,792,895

BALANCED AND INTEGRATED CHASSIS AND FLOOR SYSTEM FOR MOBILE HOME AND MODULAR UNITS

Orville B. Paulson, 838 E. Sierra Madre, Glendora, Calif.
Filed Sept. 28, 1972, Ser. No. 293,153
Int. Cl. B62d *21/02*
U.S. Cl. 296—28 R **8 Claims**



An integrated chassis and floor system for mobile homes and the like utilizes a pair of widely spaced, elongate flanged frame beams constituting the exterior sides of the chassis as well as a floor system integrated therewith. The heavier frame beams are transversely interconnected by a multiplicity of spacing and reinforcing sections having vertically disposed intermediate webs and upper and lower angular flanges, said lower flanges serving as supports for a lower horizontal floor partition "skin" medium. A stratum of strong plastic material such as urethane is laid up against and above said "skin" and extends into the longitudinal frame beams, integrating said transverse sections and sealing the lower floor section of said system with said longitudinal beams. Upper horizontal flooring sections (one or two layers of flooring) are supported upon and interconnected with the upper angle flanges of said transverse sections and serve to further integrate the entire flooring and chassis system. The said transverse sections have at least one set of substantially aligned, large apertures formed therethrough for intercommunicating plenums formed in said flooring system and for also, with freedom of sloping from the horizontal, accommodating conduits for drain and plumbing. Preferably media are provided by for example, smaller holes at the sides of said apertures to accommodate and fasten strap or hanger members for supporting such ducts. One or more sets of longitudinally extending sections, constructed of the same kind of material as the transverse reinforcing sections, are medially disposed within the floor system traversing said first reinforcing sections and having the multi-functions of further reinforcing the entire floor and chassis system and further dividing the transverse plenums between the upper and lower flooring sections to define intake and return ducts or the like for air conditioning and heating.

ERRATA

For Classes 296—23 MC and 296—84 C see:
Patents Nos. 3,792,900 and 3,792,901

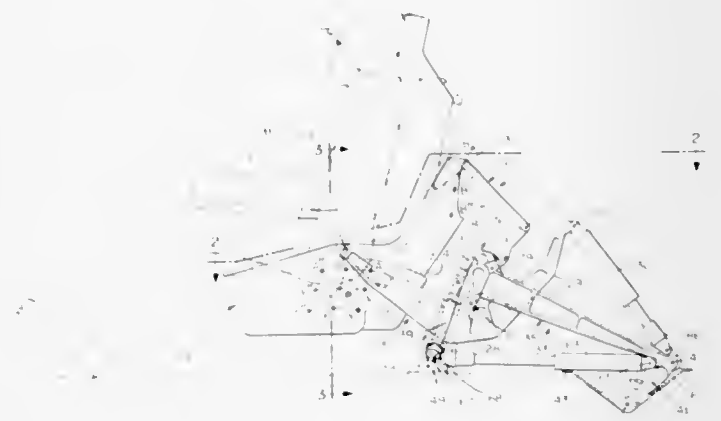
ERRATA

For Classes 297—35 and 297—330 see:
Patents Nos. 3,792,904 and 3,792,905

3,792,896

CRASH ATTENUATION APPARATUS FOR A SEAT IN A VEHICLE

Walter S. Eggert, Jr., assignor The Budd Co., Philadelphia, Pa.
Filed Sept. 20, 1971, Ser. No. 181,900
Int. Cl. B60r *21/10*
U.S. Cl. 297—216 **3 Claims**



Deceleration apparatus for a seat in a vehicle mounted for rocking movement in a truss. Linkages associated with the truss operate to constrain the seat to movement along substantially independent orthogonal axes. Energy absorbing devices connected to the vehicle, the rocker yoke, and truss linkages decelerate movement of the seat and its occupant along the independent axes in the event of a crash of the vehicle.

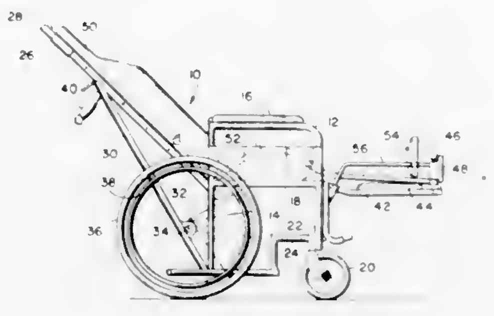
3,792,897

WHEEL CHAIR ASSEMBLY AND BODY-SUPPORTING INSERT THEREFOR

Lola Alson, 8 Skipper Dr., West Islip, N.Y.
Filed Oct. 8, 1971, Ser. No. 187,736
Int. Cl. A47c *7/36*
U.S. Cl. 297—219 **5 Claims**

A removeable body support insert for a wheel chair frame, having a head and back portion including side restraints, a buttock, knee and leg portion and an optional adjustable foot portion, the latter of which is a separate piece. A separate bolster may optionally be inserted beneath the knee-supporting portion. The insert is padded with a resilient foam material

and covered with an easily cleanable but comfortable fabric such as leather-simulating plastic. The invention provides improved comfort and support for the patient, obviates dangers

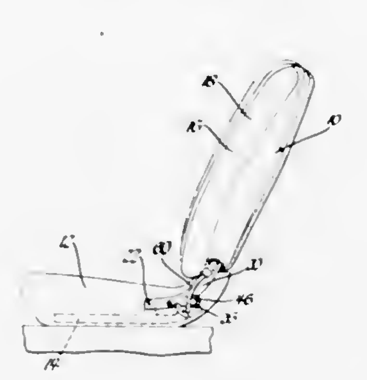


inherent in prior art designs, is easily maintained, and is adapted for use either as original equipment or as a replacement for body support portions of existing wheel chairs.

3,792,898

MULTI-POSITION SEAT BACK ADJUSTER AND LATCH

Brook A. Lindbert, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 18, 1972, Ser. No. 298,627
Int. Cl. B60n *1/06*
U.S. Cl. 297—355 **3 Claims**



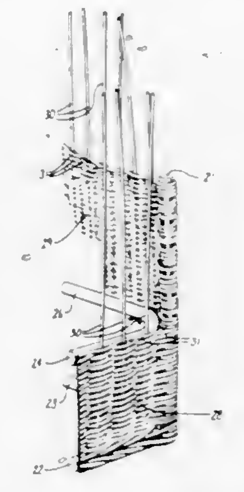
A conventional vehicle seat includes a seat back having laterally spaced support arms pivoted to the seat frame for pivotable movement of the seat back. A spring biased latch lever is pivotally attached to the outboard support arm and engages a pin on the seat frame to lock the seat back. An adjuster cam has a plurality of discrete cam surfaces and is pivotally mounted on the seat frame for rotary movement to a position wherein a selected one of the cam surfaces engages the underside of the support arm to define the angular use position of the seat back relative the frame. An unlatching cam is attached to the adjuster cam for rotation therewith and has a pair of lobes located circumferentially past the plurality of the cam surfaces of the adjuster cam so as to be engageable with and disengage the latch lever from the pin on the seat frame upon rotation of the cams in either direction past the engagement of the discrete cam surfaces with the support arm to permit movement of the seat back to a forward easy-enter position.

3,792,899

WOVEN AND BRAIDED FURNITURE

Peter A. Rocchia, and Robert M. Steffy, both of San Francisco, Calif., assignors to The Wicker Works, San Francisco, Calif.
Filed Dec. 29, 1972, Ser. No. 319,553
Int. Cl. A47c *5/00*
U.S. Cl. 297—445 **5 Claims**

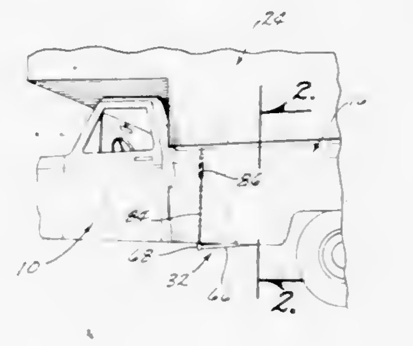
A portion of a woven piece of furniture is provided with a braided periphery integral with the warp of the weave and transverse thereto. The warp strands extend beyond the weave and are braided so that each strand changes directions at least twice to form a generally S-shaped curve and the strands are periodically severed at this time. One or more support strands alone or in a pair are incorporated into the braid during the method to increase the structural strength and improve the appearance of the braid. A braid formed longitudinal to the warp strands and integral with the foregoing transverse one is formed by mounting a plurality of adjacent extending engaging strands in a frame member and braiding strands projecting from the transverse braid together with the engaging strands. A particularly suitable strand material is known in Italy by the name "secca". A variety of attractive braids are formed in the above general manner.



3,792,900

TIE-DOWN APPARATUS FOR A VEHICLE MOUNTED CAMPER

Clayton G. Bugh, 1122 W. Willow, Cherokee, Iowa
Filed Aug. 10, 1972, Ser. No. 279,547
Int. Cl. B60p *3/32*
U.S. Cl. 296—23 MC **8 Claims**



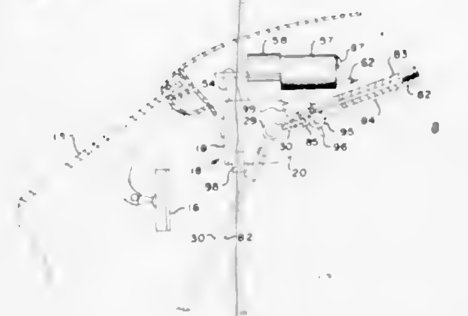
A tie-down apparatus for a truck-mounted camper is disclosed herein. The truck frame comprises first and second longitudinally extending frame members with a bed operatively secured thereto. The camper means is mounted on the bed means with the apparatus of this invention maintaining the camper means in the bed. A first bracket is secured to the first frame member and extends outwardly therefrom with a second bracket being secured to the second frame member and extending outwardly therefrom. A flexible connection means connects opposite sides of the camper to the outer ends of the brackets. Each of the brackets comprises a support plate detachably secured to the frame member by top and bottom clamps. An elongated arm is pivotally secured at its inner end to the lower end of the support plate and extends outwardly therefrom with a second elongated arm being adjustably secured to the upper end of the support plate and extending outwardly and downwardly therefrom. The outer end of the second arm is secured to the first arm intermediate the length thereof. The flexible connection means is secured to the outer end of the first arm.

3,792,901
PROTECTIVE SHIELD FOR MOTOR VEHICLE OCCUPANT

James H. Wernig, 2311 Walton Blvd., Apt. No. 29, Rochester, Mich.

Filed May 17, 1971, Ser. No. 144,091
Int. Cl. B60j *1/20*

U.S. Cl. 296—84 K **8 Claims**



Shields for minimizing head injuries to front seat occupants of self-propelled vehicles as a result of being thrown against the windshield of the vehicle by a collision which are automatically moved from a stored position to a position between the occupants and the windshield in advance of solid contact between the vehicle and the other object.

The shields normally serve as the sunshades of the vehicle and are made of two panels which are normally held in overlying positions but are moved to side by side position when the shields are automatically interposed between the front seat occupants and the windshield so that they cover a greater area of the windshield and afford more protection.

The shields can, however, be moved manually in the same manner as conventional sunshades from their stored position to a position in which they serve to shade the front seat occupants' eyes from glare and back to stored position without extending the shields or disabling the mechanism which automatically operates them in the event of a collision.

In addition to the shields which serve as sunshades, there is also provided a shield to protect the front seat occupants against collision with the inside rear view mirror and the portion of the windshield below it which is positively moved from its stored to its operational position and is provided with portions which overlie the inner edges of the sunshades and thus positively moves them to their operational positions.

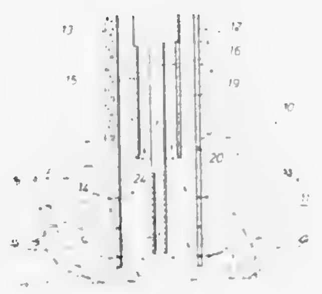
The invention also includes a mechanism for automatically recocking the shield operating mechanism and returning the shields to their stored positions after they have been moved to their operational positions.

3,792,902
METHOD OF PREVENTING PLUGGING OF SOLUTION MINING WELLS

Lawrence H. Towell, Woodland Hills, Calif., and Jere R. Brew, Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 14, 1972, Ser. No. 280,287
Int. Cl. E21b *43/28*

U.S. Cl. 299—5 **5 Claims**



Plugging of solution-mining wells by mineral precipitation due to solubility changes associated with temperature and pressure changes of the solution-mining liquid is prevented by injecting a diluent into the well production tubing, or into an area surrounding the production tubing intake.

3,792,903
URANIUM SOLUTION MINING PROCESS

Vaughan W. Rhoades, Tulsa, Okla., assignor to Dalco Oil Company and United States Steel Corporation, part interest to each

Filed Aug. 30, 1971, Ser. No. 176,230
Int. Cl. E21b *43/28*

U.S. Cl. 299—5 **8 Claims**

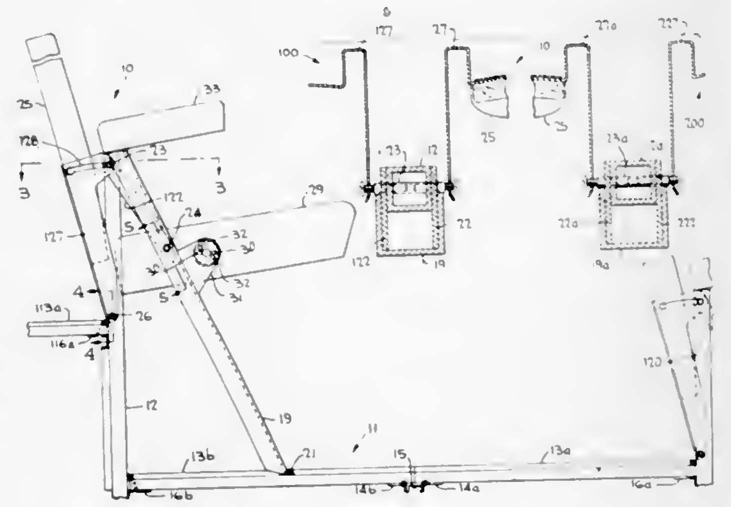
An improved process wherein uranium is solution mined through the introduction of a first treated water solution into the uranium bearing formation in order to form a buffer zone about an injection well. Subsequent to buffer zone formation, uranium leaching solution, consisting essentially of an aqueous alkaline solution, is introduced into the formation so that it readily contacts the uranium formation, leaching uranium therefrom such that it is subsequently produced at the earth's surface without the formation of scale about the injection and production wells.

3,792,904
COLLAPSIBLE CHAIR

Charles Mackintosh, 3838 Oakwood Ave., Los Angeles, Calif.

Filed May 11, 1972, Ser. No. 252,276
Int. Cl. A47c *1/12*

U.S. Cl. 297—35 **7 Claims**



A collapsible chair having interconnected forward and rearward legs with a chair back element mounted on the rearward legs and a chair seat element mounted solely on the forward legs, the legs being so interconnected as to permit the forward legs to be shifted upwardly along the rearward legs during collapse of the chair so that the seat element is shifted completely upwardly during chair collapse.

3,792,905
POWER-OPERATED CHAIR

Philip C. Johnson, Cincinnati, Ohio, assignor to Dentsply Research & Development Corp., Milford, Del.

Filed Sept. 11, 1972, Ser. No. 288,185
Int. Cl. A47c *1/02*

U.S. Cl. 297—330 **2 Claims**

A chair for medical and quasi-medical use comprising a back rest and leg rest respectively pivotally connected to the rear and front edges of a seat rest, power means connected to said back rest to move it between upright and horizontal positions, and linkage means interconnected between said back rest and leg rest to move the leg rest between vertically de-

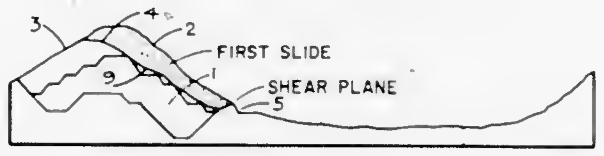
pending and horizontal positions incident to corresponding movement of said back rest between said positions thereof.

3,792,906
EXCAVATION OR EARTH REMOVAL BY LANDSLIDING SAME ON A FLUID LUBRICANT

David L. Kuck, 150 Pedro Pl., P. O. Drawer 369, Oracle, Ariz.

Filed July 24, 1972, Ser. No. 274,799
Int. Cl. E21c *37/14*

U.S. Cl. 299—13 **8 Claims**



The present invention relates to the excavation or removal of large masses of earth situated on a downslope by means of landsliding the same on a layer or cushion of gaseous lubricant which is preferably generated or produced in situ. The plane of shear is determined and thereupon the subterranean rock is fractured by conventional hydrofracturing technique to produce a plane of shear substantially along the bottom of the earth mass. After the desired plane has been formed, a substantial quantity of liquid type explosive is forced into the fracture forming the shear plane and is thereupon detonated to produce a large quantity of gas which lifts the mass and serves as a lubricant so that its speed down slope accelerates very rapidly. Provision may be made for supplementing the gaseous lubricant layer as the mass moves toward the desired area of disposal. This may be accomplished by explosive charges located down stream and which are detonated while the mass is over them.

3,792,907
PROCESS FOR REMOVING ASPHALT TOPPING FROM PAVEMENT SUBSTRATE

Philip J. Anderson, Deerfield, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Filed Apr. 10, 1972, Ser. No. 242,798
Int. Cl. E21c *37/06*

U.S. Cl. 299—17 **7 Claims**

The invention relates to a method of hydraulically separating asphalt topping from pavement substrate, as opposed to mechanically tearing the bond between the two layers of material. This method results in significantly less damage to the pavement substrate, and is accomplished with the use of a high velocity water jet. The method is unlike erosion of a surface by water in that once an initial erosion cut is made, the asphalt topping and the pavement substrate is separated by debonding.

3,792,908
FLUID PRESSURE CONTROL VALVE

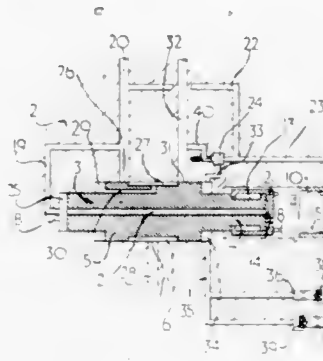
Alan Ronald Brewster; Samuel Eric Harvey, and Frank Radcliffe Mortimer, all of Coventry, England, assignors to Dunlop Holdings Limited, London, England

Filed Sept. 22, 1971, Ser. No. 182,787

Claims priority, application Great Britain, Sept. 26, 1970, 45943/70

Int. Cl. B60t *8/02*

U.S. Cl. 303—21 F **9 Claims**



A fluid pressure control valve for maintaining the fluid pressure supplied to an associated fluid pressure operated device at or as near a selected value as the operating conditions of the associated fluid pressure operated device indicate to be appropriate. The valve comprises a housing incorporating a spindle axially displaceable in a spindle chamber against spring means by the selected pressure, the spring means being arranged to act between the spindle and a movable abutment. The arrangement of the spindle is such that at any given moment the level of fluid pressure supplied to the associated device by the valve is proportional to the spring force exerted on the spindle by the spring means at that moment, this spring force being normally proportional to the selected pressure thus ensuring that the selected pressure is supplied to the associated device. The spring force is also variable in response to movement of the movable abutment, resulting from a change in the operating conditions of the associated device necessitating a change in the pressure applied to the fluid pressure operated device, under the control of valve means, of which the following is a specification.

3,792,909
ANTI-SKID BRAKING SYSTEM

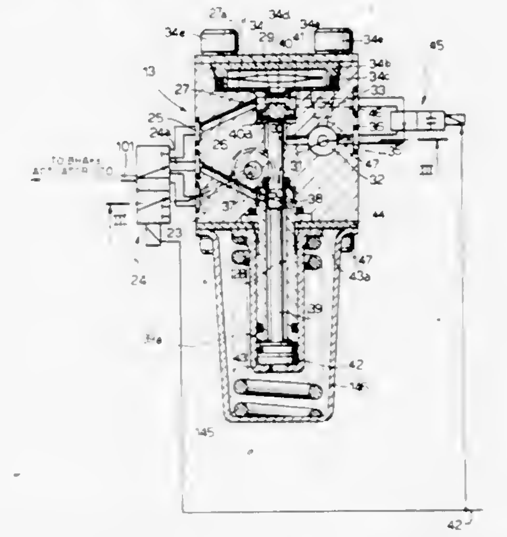
Marco Peruglia, and Giancarlo Michellone, both of Cambiano, Turin, Italy, assignors to Fiat Societa per Azioni, Turin, Italy

Filed June 12, 1972, Ser. No. 261,759

Claims priority, application Italy, June 14, 1971, 69018/71

Int. Cl. B60t *15/04*

U.S. Cl. 303—21 F **4 Claims**



An hydraulic distributor for an anti-skid braking system which can be connected into existing braking systems is dis-

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closed. The distributor comprises a body having an input ori-

3,792,912
BEARING WITH COMBINED SLINGER-SEAL

3,792,914
APPARATUS FOR THE PRODUCTION OF A WIDE-

3,792,916
ANTI-LASER OPTICAL FILTER ASSEMBLY

closed. The distributor comprises a body having an input orifice for connection to the master cylinder of the braking system, and outlet orifice for connection to the brake actuators of the system, a discharge orifice for connection to the reservoir of the system and an electrical control input for connection to output of an electronic anti-skid control device which provides an electrical signal when the wheels of the vehicle are in danger of skidding. The distributor includes a solenoid operated valve which normally connects the input orifice to the output orifice but which connects the output orifice to the discharge orifice when a signal through the anti-skid control arrangement is received. The distributor has two modes of operation depending on the braking pressure at the time the anti-skid control device operates, which in turn indicates whether the vehicle is on dry ground or on wet or slipping ground so that satisfactory anti-skid action is obtained in both cases.

3,792,910

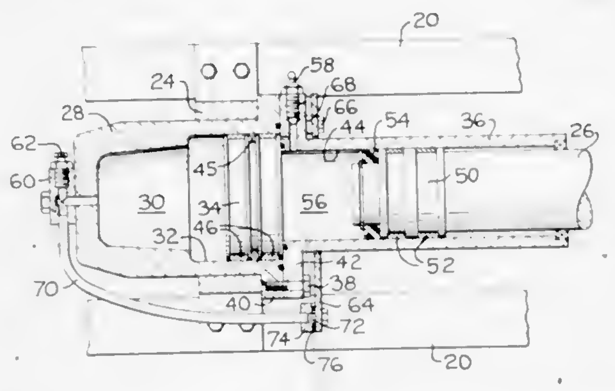
RECOIL MECHANISM WITH GAS RECOIL SPRING AND A HYDRAULIC TRACK ADJUSTER

Ted J. Kaufman, Aurora, Ill., and John W. Mortimer, Greenville, S.C., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 7, 1971, Ser. No. 150,643

Int. Cl. B62d *55/30*

U.S. Cl. 305—10 **2 Claims**



A recoil and adjuster mechanism comprises a gas recoil spring and a hydraulic adjuster link operatively connected to an idler wheel.

3,792,911

RADIAL ROLLING BEARING

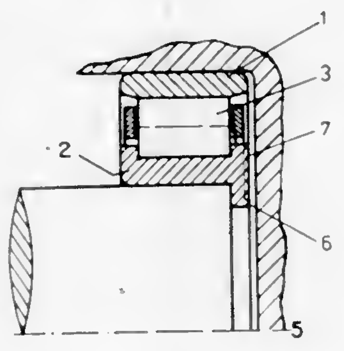
Wolfgang Huber, Schweinfurt, and Anton Marx, Sulzthal, both of Germany, assignors to SKF Industrial Trading and Development Company N.V., Amsterdam, Netherlands

Filed Feb. 25, 1972, Ser. No. 229,418

Claims priority, application Germany, Mar. 3, 1971, 7107931

Int. Cl. F16c *21/00*

U.S. Cl. 308—35 **6 Claims**



A radial rolling bearing in which one of the portions carrying a race surface, for example, one of the race rings is provided with a rim member having a frontal face lying in a plane at right angles to the central axis of the bearing and having formed thereon spiral grooves.

3,792,912

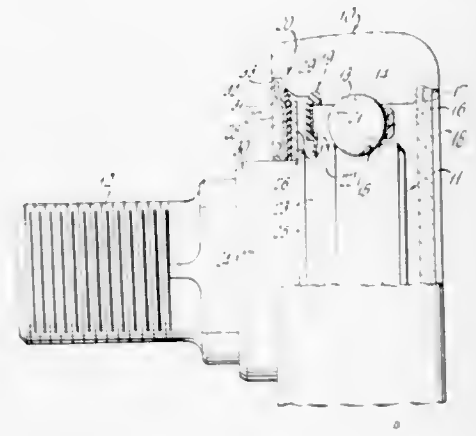
BEARING WITH COMBINED SLINGER-SEAL

Ralph S. Howe, Jr., New Britain; Thorn W. Dickinson, Berlin, and Milton G. Sandstrom, Bristol, all of Conn., assignors to Textron Inc., Providence, R.I.

Filed May 10, 1972, Ser. No. 252,325

Int. Cl. F16c *33/78*

U.S. Cl. 308—187.2 **14 Claims**



The invention contemplates application to the inner ring of a bearing to seal off an axial end of the space between inner and outer bearing rings and at the same time achieve slinger and other protective functions. Among the protective functions is the provision of means forming part of the seal support and serving to prevent inverted dislocation of the seal even in the presence of a high-pressure fluid discharge, as when hosing down the structure in which the bearing is embodied.

3,792,913

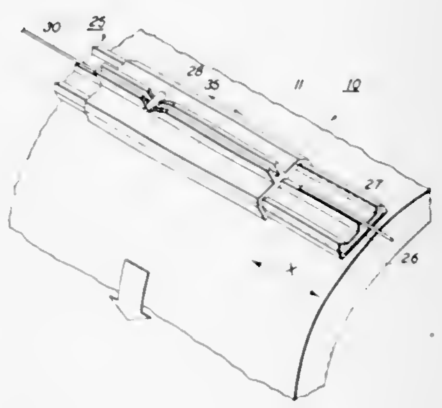
XEROGRAPHIC ERASE MECHANISM

Larry A. Simmons, Macedon, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 12, 1972, Ser. No. 252,698

Int. Cl. G03g *15/06*

U.S. Cl. 355—7 **6 Claims**



Apparatus suitable for use in an automatic xerographic reproducing device for erasing a portion of the electrostatic charge recorded upon an imaged xerographic plate prior to the plate's development in order to prevent development from occuring in at least one margin (unimaged) region thereon. Further means are provided to adjust the size of the area erased in response to the size of the copy produced.

3,792,914

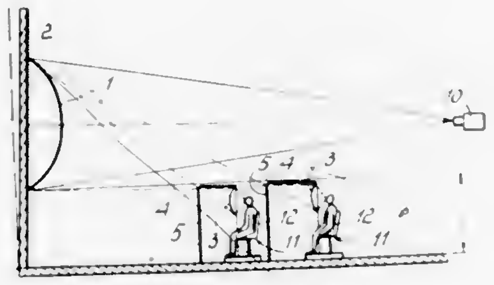
APPARATUS FOR THE PRODUCTION OF A WIDE-ANGLE IMAGE

Adrian Dan Elias, via Pinamonte da Vimercate 11, Milan, Italy

Filed Sept. 5, 1972, Ser. No. 286,528

Int. Cl. G03b *21/56*

U.S. Cl. 350—123 **1 Claim**



An apparatus for the reproduction of a wide-angle image onto a number of screens has a central opaque concave-convex screen with the convex side facing the projector for receiving a reversed image. A plurality of concave-convex semitransparent screens are disposed within the space bounded by the tangents from the peripheral edge of the central screen. Each semi-transparent screen has its convexity facing a slit provided in a wall interposed between the opaque central screen and the semitransparent screens for receiving a corrected image projected onto the opaque central screen.

3,792,915

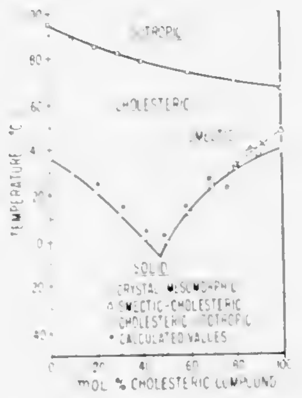
NOVEL LIQUID CRYSTAL ELECTRO-OPTIC DEVICES

Chan Soo Oh, Fullerton, Calif., and Edward Francis Pasierb, Hamilton Square, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 17, 1972, Ser. No. 298,339

Int. Cl. G07f *1/16*

U.S. Cl. 350—160 LC **8 Claims**



Liquid crystal cells containing mixtures of cholesteric optically active *p*-alkoxybenzylidene-*p*'-aminobenzonitrile compounds with nematic liquid crystal compounds form cholesteric liquid crystals which change to the nematic state upon application of an electric field. Electro-optic devices including such liquid crystals have low voltage requirements and rapid response times.

3,792,916

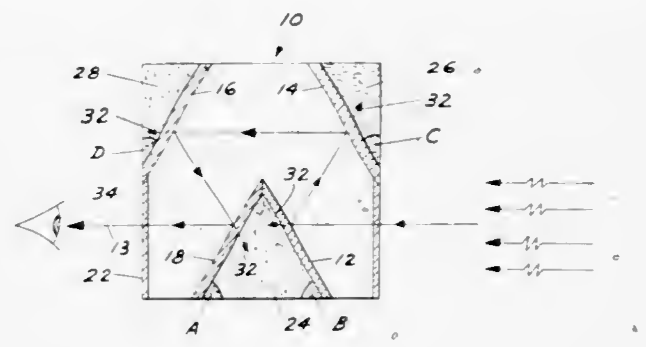
ANTI-LASER OPTICAL FILTER ASSEMBLY

Donald S. Sarna, Warren, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 25, 1969, Ser. No. 802,015

Int. Cl. G02b *5/28*

U.S. Cl. 350—163 **2 Claims**



A filter assembly for selectively removing preselected individual emission lines of laser energy from the visible spectrum comprising at least one pair of Fabry-Perot type filters which transmit laser energy emissions for dissipation in the filter assembly and reflect harmless radiation for transmission through the assembly. A plurality of these filter assemblies parallelly juxtaposed are also used to provide a filter screen for protection against laser energy emissions.

3,792,917

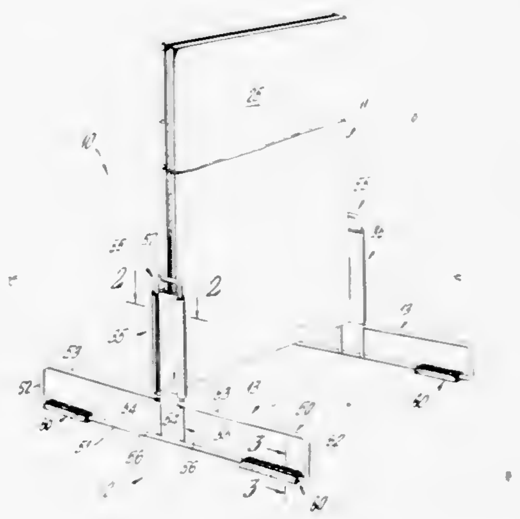
MIRROR AND STAND ASSEMBLY

Eugene Martinez, Irvington-on-Hudson, N.Y., assignor to Kamar Products, Inc., Irvington-on-Hudson, N.Y.

Filed July 12, 1972, Ser. No. 270,935

Int. Cl. G02b *5/08*

U.S. Cl. 350—288 **16 Claims**



This assembly comprises a rectangular framed article such as a glass-less mirror and a stand therefor comprising a pair of similar, symmetrical stand members having parallel bases with upstanding vertical stanchions slidably received in vertical guides attached by fasteners to opposite sides of the framed article, whereby the height of said article may be adjusted on the stand. The stand members may be pulled down and removed from the guides to disassemble the assembly for compact shipment or storage.

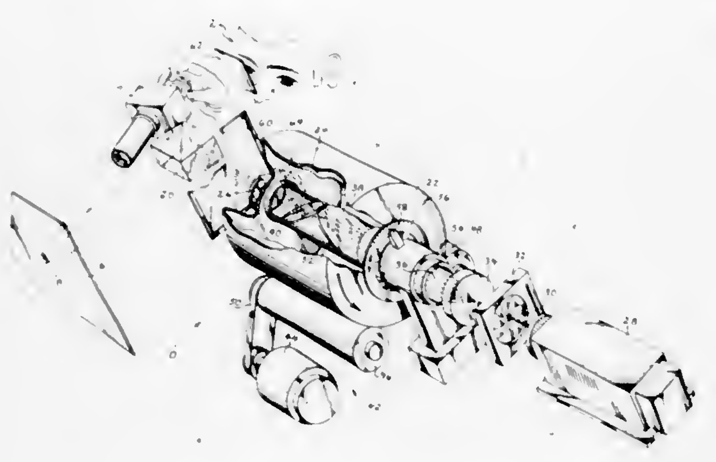
3,792,918
LASER REFRACTOR

Sidney Wittenberg, Sudbury, Mass., assignor to The Massachusetts College of Optometry, Boston, Mass.

Filed Nov. 7, 1972, Ser. No. 304,472

Int. Cl. A61b *3/02*

U.S. Cl. 351—36 **13 Claims**



A laser refractor which utilizes the diffuse reflection of laser light from the interior surface of a slowly rotating drum in order to produce an interference pattern whose apparent motion is a function of the refractive state of the eye.

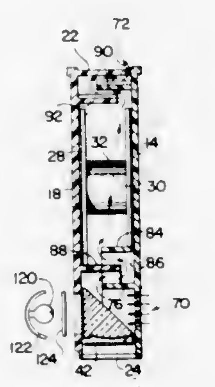
3,792,919
MOTION PICTURE FILM SYSTEM WITH MULTI-PURPOSE FILM CASSETTE

William A. Holmes, Marblehead, and John R. Sharp, Squantum, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 3, 1972, Ser. No. 214,638

Int. Cl. G03b *23/02*

U.S. Cl. 352—72 **42 Claims**



A motion picture film handling cassette and a motion picture projector or viewer with which the cassette is adapted to be used for processing and projecting a photographic film strip stored within the cassette. The cassette includes a processing station for treating the film strip with a liquid processing composition and a projection station for locating a light-reflecting element in operative relation with the film strip for projection. Provisions are made for introducing air into the cassette near the projection station such that the air flows over at least a portion of the light-reflecting element for simultaneously cooling the light-reflecting element and heating the incoming air to enhance drying of the processed film strip.

3,792,920
AUTOMATIC FILM TRANSPORT STOPPING ARRANGEMENT IN A MOTION PICTURE CAMERA

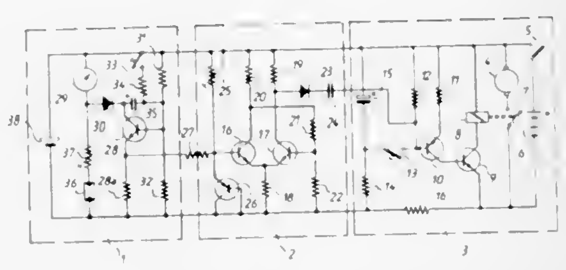
Helmut Mayr, Taufkirchen; Theodor Huber, and Richard Pelje, both of Munich, all of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Germany

Filed Sept. 25, 1972, Ser. No. 291,607

Claims priority, application Germany, Sept. 24, 1971, 2147680

Int. Cl. G03b *21/36*

U.S. Cl. 352—91 **8 Claims**



The timing circuit timing the fade in and fade out has an emitter resistor, the voltage across which, when exceeding a predetermined magnitude switches a subsequent threshold circuit means from a first to a second stable state. The change in state in turn is used to de-energize the film transport motor.

3,792,921
CAMERA WITH REMOVEABLE HANDLE

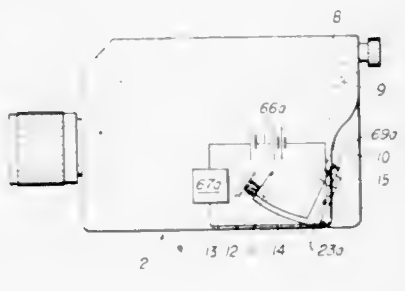
Reinhold Zwerger, Vienna, Austria, assignor to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria

Filed June 25, 1971, Ser. No. 156,890

Claims priority, application Austria, June 30, 1970, 5892/70

Int. Cl. G03b *17/56, 17/20*

U.S. Cl. 352—243 **27 Claims**



A camera housing has a top and a bottom defining vertical limits, a lens end and a rear end opposite to said lens end. A viewfinder structure is carried by said camera housing. A handle is connected to said viewfinder structure. Guide means connect said handle to said rear end of said camera housing and permit of a movement of said handle relative to said camera housing between an inoperative position and an operative position. The handle is arranged to be within said vertical limits in both said positions.

3,792,922
LAP DISSOLVE SLIDE PROJECTOR

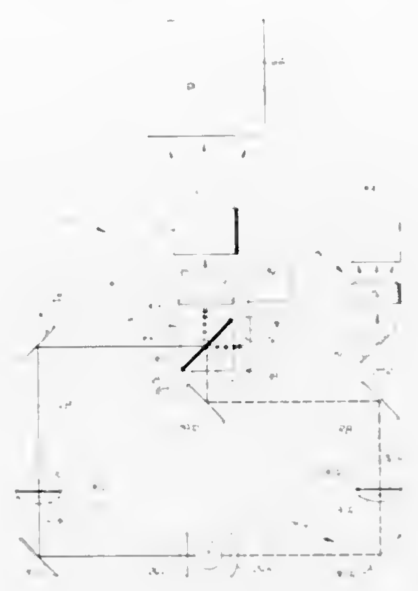
Thomas A. Fournie, 6805 Zumirez Dr., Malibu, Calif.

Filed May 14, 1973, Ser. No. 359,856

Int. Cl. G03b *23/16*

U.S. Cl. 353—83 **13 Claims**

A lap dissolve slide projector arranged to receive and hold a slide at each of two projecting stations has polarizing means including a polarizing beam splitter and is operable to selectively project the slide loaded in either one of the projecting stations while previewing the slide loaded in the other. The projector utilizes the polarizing means to control which slide image is being projected and previewed and to effect the lap dissolve transition from the image of one slide to another.



3,792,923
APPARATUS FOR RETREIVING MICROIMAGES

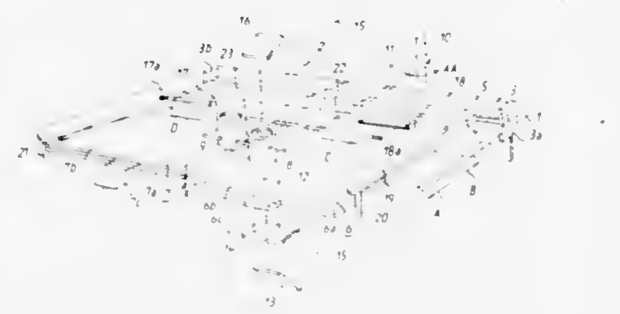
Josef Pfeifer; Kasimir Ambraschka, both of Unterhaching; Adolf Koopmann, Munich; Wilfried Hofmann, Munich; Karl-Heinz Dietrich, Munich, and Walter Rauffer, Munich, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Munchen, Germany

Continuation-in-part of Ser. No. 238,762, March 28, 1972, Pat. No. 3,718,391. This application Apr. 4, 1972, Ser. No. 240,981

Claims priority, application Germany, Apr. 6, 1971, 2116813

Int. Cl. G03b *21/11, 23/08*

U.S. Cl. 353—27 **15 Claims**



A microform reader wherein two holders for discrete microforms are movable in parallel horizontal planes below two objectives whose focal planes coincide with the planes of microforms in the respective holders. A light source furnishes a light beam which is deflected at right angles to the planes of the microforms and the objectives are mounted on a carrier which is pivotable by the holders to place the one or the other objective into register with the deflected light beam. Alternatively, a mirror which reflects the light beam can be mounted on a reciprocable carrier which can place the deflected light beam into register with one of the two objectives which are then fixedly mounted in the housing. The carrier for the objectives or for the mirror can receive motion from a slide which is reciprocable by the holders.

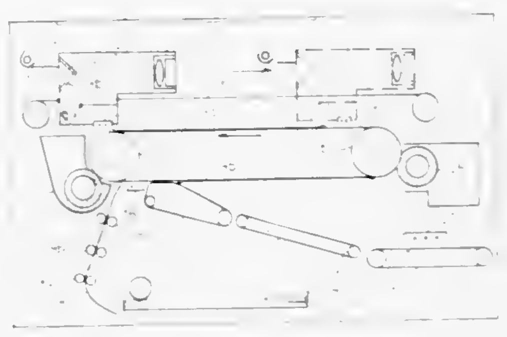
3,792,924
ELECTROPHOTOGRAPHIC COPYING SYSTEM

Yasuhisa Matsuda; Kinya Amemiya; Masao Monma; Koichi Endo, and Hiroshi Nitanda, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 13,668, Feb. 24, 1970, abandoned. This application Dec. 8, 1971, Ser. No. 205,966

Int. Cl. G03g *15/00*

U.S. Cl. 355—3 **19 Claims**



An electrophotographic copying system comprising belt-shaped conveying unit which carries a light-sensitive paper and moves it along a closed path. Above the path is fixed a receptacle on which is placed an original to be copied. Between the receptacle and the light-sensitive paper is positioned a movable unit which houses an optical system and charging means. The unit is moved to provide exposure when the light-sensitive paper remains stationary. Upon termination of the exposure, the conveying unit moves the light-sensitive paper on which a latent image is formed through a developing unit, a transfer station and a cleaner unit in sequence. A transfer paper is supplied to the transfer station to effect the transfer of image from the light-sensitive paper, and is separated therefrom by a separation unit after the transfer paper has an image transferred thereto. The separated transfer paper is passed to a fixing unit in order to fix the transferred image.

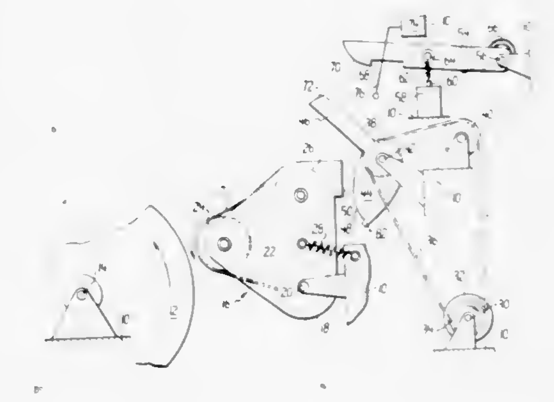
3,792,925
PRELOADING WEB CLEANER

Gordon L. Milligan, Norristown, Pa., and John A. Toto, Milford, Conn., assignors to Sperry Rand Corporation, New York

Filed Jan. 29, 1973, Ser. No. 327,404

Int. Cl. G03g *15/22*

U.S. Cl. 355—15 **10 Claims**



A xerographic copy machine is provided with an elongated web for wiping toner particles from the surface of a rotating xerographic drum. The web is supported by supply and take-up rolls carried on a pivotally mounted bracket. The bracket is spring biased to hold the web out of contact with the drum surface when the machine is idle. When the machine is turned on a electro-mechanical clutch is energized to rotate a latching mechanism including a cam and arm. The cam pivots the bracket to bring the web into wiping contact with the drum surface. The arm is rotated until it reaches a latching position where it operates a switch to de-energize the electro-mechanical clutch. A soienoid actuated latch holds the arm and cam in the rotated position until the machine power is turned off, at which time the latch releases the arm so that the arm and cam return to their initial position.

3,792,926

PHOTOCOPYING DEVICE

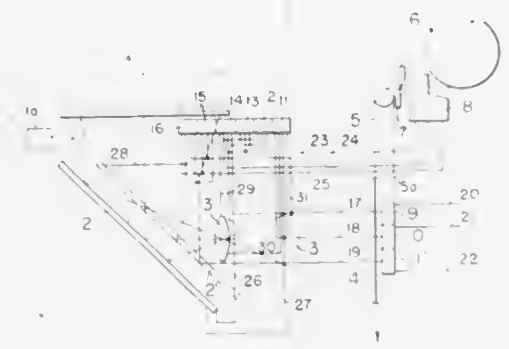
Wilhelm Josef Knechtel, Rodheim, and Detlef Schaffer, Wetzlar, both of Germany, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 54,324, July 13, 1970, abandoned. This application Oct. 30, 1972, Ser. No. 301,929

Claims priority, application Germany, July 16, 1969, 1936169

Int. Cl. G03b *29/00*

U.S. Cl. 355—29 **2 Claims**



In photocopying apparatus of the type in which originals of various sizes may be copied into sizes of preselected formats by the use of an objective lens and a mirror, both suitably movable for the purpose of image formation, paper is supplied from a supply roll, a measuring and controlling device cuts the supplied paper into a desired length, a table supports an original in a predetermined position, and switches provided along the path of the paper control the speed of the paper and a source of light at the same time. A row of push buttons is provided, each push button corresponding to predetermined sizes of original and of copy, being and effective to position the objective lens and, if required, the mirror, to operate one of the switches in accordance with a desired size of copy, and to control the length of the paper to be cut. The push buttons indicate the proper positioning of the original on the original supporting table, whereby originals of various sizes can be copied with desired magnifications and with high speed and great ease.

3,792,927

SCANNING MEANS HAVING DEAD-TIME COMPENSATION FOR INTERRUPTED SCANNING PERIODS

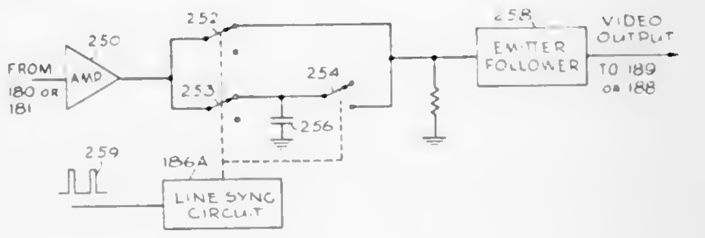
Sidney Bertram, Los Angeles, Calif., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

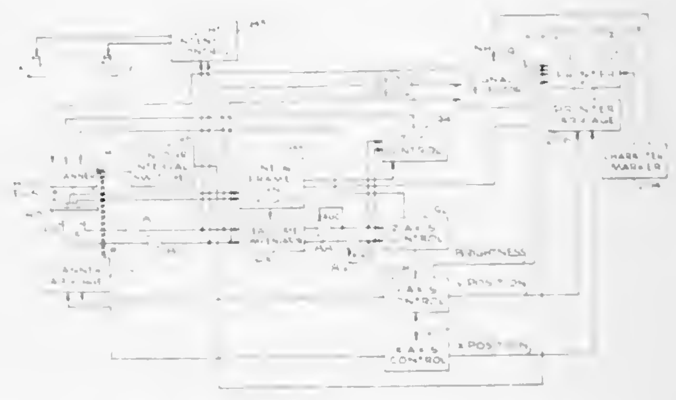
Continuation of Ser. No. 830,075, June 3, 1969, abandoned, which is a division of Ser. No. 661,466, Aug. 17, 1967, Pat. No. 3,473,875, Continuation of Ser. No. 199,797, June 4, 1962, abandoned. This application May 5, 1971, Ser. No. 140,603. The portion of the term of this patent subsequent to Oct. 21, 1986, has been disclaimed.

Int. Cl. G01c *11/12*

U.S. Cl. 356—2 **6 Claims**

An automatic stereomapping system for deriving topographical information from a stereoscopic image produced by the superposed projections of two photographs of the same terrain taken from slightly different angles. A scanner including a Nipkow disc controllable in X, Y, and Z coordinates provides line scanning for deriving video information on an incremental basis over the extent of the stereo image. Dead-time compensation means are employed to replace the unwanted transient video signals occuring between scan lines with signals more closely approximating the video signals obtained during normal line scanning. The resulting compensated video signals are then applied to a correlator for deriving error signals which are used to automatically control the elevation and tilt of the scanner in accordance with the elevation and slope of the stereo image. A photographic printer is coupled to the scanner for automatically producing on respective cathode ray tubes an orthographic reproduction and an altitude profile chart of the stereoscopic image.





3,792,928

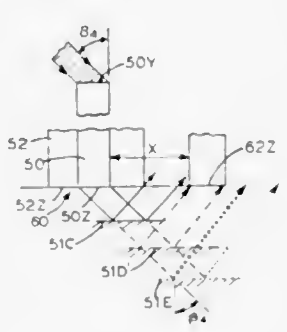
FIBER OPTICS DISTANCE CONVERTING TECHNIQUE

Jean - Loup Poilleux, Vanves, France, assignor to Compteure-Schlumberger, Montrouge, France

Filed Feb. 28, 1972, Ser. No. 230,011

Int. Cl. G01c *3/08*

U.S. Cl. 356—4 **21 Claims**



According to an illustrative embodiment of the invention, a technique is described for producing signals varying as a function of the distance of a surface relative to a reference face, comprising transmitting a beam of coherent light to an admitting end of a fiber optic bundle to transmit light to a reflecting surface opposite an emitting end of the bundle. A fiber optic receiver bundle having at least one receiving end for picking up light reflected by the surface is provided for transmitting a flux of reflected light to produce a signal related to this relative distance by a linear relationship over a certain range of variation of such distance. Such range may be varied by varying the angle of incidence of the coherent light beam on the admitting end. The receiving end may be transversely separated from the emitting end by an amount selected in accordance with a desired angle of incidence and a predetermined range. For the purpose of measuring the thickness of transparent bodies as measured by the distance between an outer and an inner face thereof opposite the emitting end, first and second respective receiving ends are provided such that light reflected by the inner face cannot be picked up by the first receiving end and vice-versa. A simple technique for determining the effects of variations of reflectivity of a light reflecting surface is also disclosed.

3,792,929

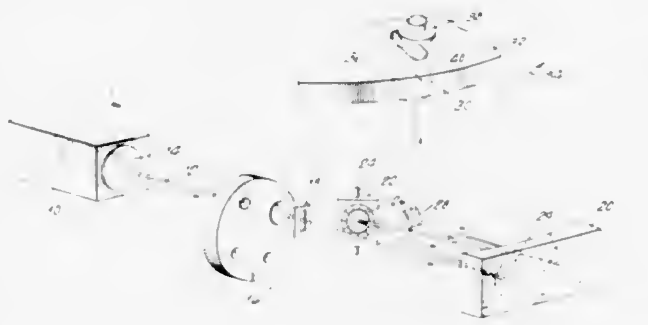
SPECTROPHOTOMETER UTILIZING FLUID LENS MEANS

Nelson L. Alpert, Stamford, Conn., assignor to Electro-Nucleonics Inc., Fairfield, N.J.

Filed May 24, 1972, Ser. No. 256,359

Int. Cl. G01n *21/24;* **G01j** *3/42*

U.S. Cl. 356—197 **11 Claims**



A means for passing radiant energy in a spectrophotometer through a sample holder without striking the walls thereof, including a field lens positioned adjacent the exit slit of the system for forming an image of the radiant energy dispersing element in the system onto a region on the far side of the sample holder. The field lens tunnels radiant energy through the sample holder without striking the walls thereof.

3,792,930

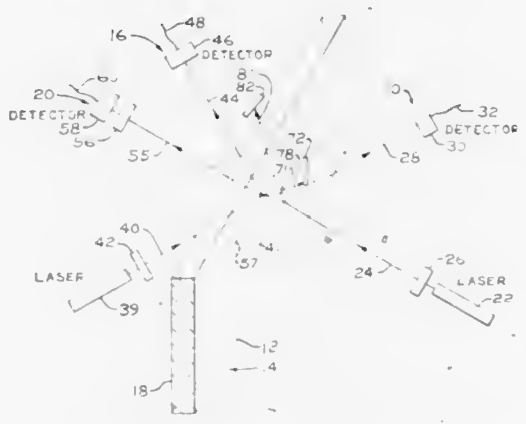
SYSTEM FOR DETERMINING THE NATURE OF OPTICAL DISTORTION IN GLASS

Robert J. Obenreder, Coraopolis, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 31, 1973, Ser. No. 365,787

Int. Cl. G01n *21/32*

U.S. Cl. 356—209 **12 Claims**



Disclosed is an optical system for determining whether optical distortion of a piece of flat glass is due to index of refraction variations or contours in major surfaces of the glass. A total optical power profile of the glass and a surface contour profile for each major surface of the piece of glass are made. The total optical power profile shows the optical distortion of the glass along a scan path due to contours in each major surface and index of refraction variations. The surface contour profile shows optical distortion of the piece of glass along the scan path due to contours in the surface of the glass. The surface contour profile for each of the surfaces are summed and the sum subtracted from the total optical power profile to determine an internal distortion profile which shows optical distortion of the glass along the scan path due to index of refraction variations.

3,792,931

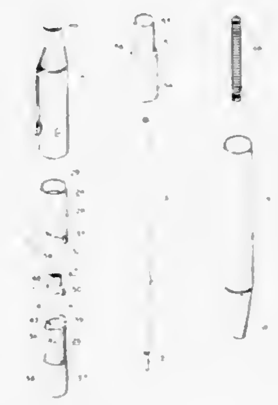
WRITING INSTRUMENT

Walter Ganz, New York, N.Y., assignor to K. C. Pen Co., Inc., Brooklyn, N.Y.

Filed Feb. 11, 1972, Ser. No. 225,573

Int. Cl. B43k *24/06*

U.S. Cl. 401—109 **9 Claims**



A retractable writing implement includes relatively rotatable upper and lower barrel sections and a writing element advancing mechanism including a first tubular member fixed in the upper barrel section and having an inclined bottom cam edge extending partially around the tubular member. A second tubular member includes an upper portion telescoping the first tubular member and having a pair of opposite vertical slots and a pair of top shoulder elements engaging a peripheral shoulder on the first tubular member inside face and a lower portion of greater diameter than the top portion and with a top peripheral shoulder abutting the first tubular member bottom face. A chuck engaging a spring retracted writing element has one follower engaging one of the slots and the cam and another follower engaging the other slot.

3,792,932

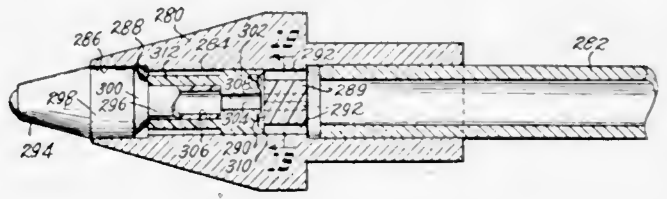
INK FEED FOR BALL POINT PENS

Ernst J. J. Henriksen, 1 Alpenstrasse, Lucerne, Switzerland

Filed May 16, 1972, Ser. No. 253,769

Int. Cl. B43k *7/10*

U.S. Cl. 401—148 **11 Claims**



The writing tip of a ball point pen is mounted to an ink reservoir by a resiliently deformable member defining part of an ink passageway from the reservoir to the writing tip and supporting the tip for axial movement of the tip relative to the reservoir. A check valve prevents flow of ink from the passageway to the reservoir and writing pressure on the tip distorts the resilient member in a manner to apply pressure to the ink trapped in the passageway. In some forms an air bubble or equivalent pressure accumulator is incorporated in the device and in some forms the check valve is normally open and is closed by initial movement of the writing tip upon applying writing pressure thereto.

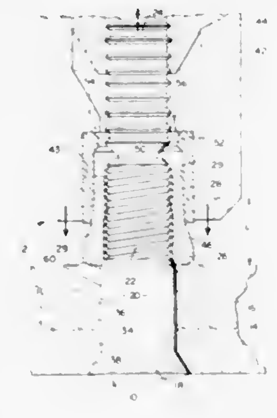
3,792,933
HIGH-STRENGTH FASTENING SYSTEM

Edgar L. Stencel, Huntington Beach, Calif., assignor to VSI Corporation, Pasadena, Calif.

Filed Dec. 20, 1971, Ser. No. 209,603

Int. Cl. F16b *7/00*

U.S. Cl. 403—19 **13 Claims**



A fastening system comprising a pin with a head and a shank, the shank fitting within mating holes of a plurality of sheets or other members to be joined together, said head being positioned adjacent one of said sheets, said shank including a grooved portion extending from the sheets opposite said head. A female member is clamped about said grooved portion of said pin to join the sheets together, the female member including a malleable ductile collar initially positioned about the grooved portion of the pin and an outer sleeve of material no more ductile than said collar and having an inner diameter less than the initial outer diameter of said collar. The sleeve is initially positioned adjacent the outer end of the collar. The outer surface of the collar and the interior surface of the sleeve may include a lubricant coating. A tool is used to apply an axial force on the sleeve to move the sleeve axially along the collar toward the sheets. The sleeve thereby swages the collar radially inwardly about the grooved portion of the pin, with the sleeve remaining in a set position retaining the collar about the pin after the tool has been removed.

3,792,934
MOTOR VEHICLES

Joseph McGowan, Preston, England, assignor to British Leyland Truck and Bus Division Limited, Leyland, Lancashire, England

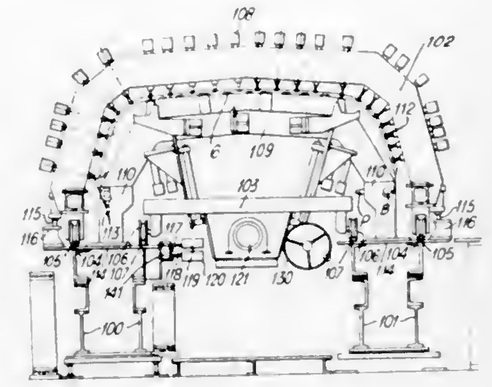
Filed Aug. 20, 1971, Ser. No. 173,614

Claims priority, application Great Britain, Aug. 21, 1970, 40295/70

Int. Cl. B23b *39/18*

U.S. Cl. 408—44 **3 Claims**

A machine for drilling apertures in sheet metal work pieces of the type adapted for fabricating buses. The sheet metal is clamped against an inverted-U framework by straps. A movable, inverted-U, outer frame carries a plurality of inwardly extending drills for drilling holes in the sheet metal. The outer frame intermittently moves parallel to the stationary framework, by automatic indexing means, so that the drills may drill at selected, predetermined points along the length of the sheet metal work pieces. An inner frame member carries driving means for translating itself and, through drive pins, also drives the outer frame member along its path. The drive pins from the inner frame member leap-froggingly engage the outer frame member with respect to spaced uprights which support the sheet metal carrying framework.



3,792,935
ROTARY-SHAFT LIQUID HANDLING MACHINE

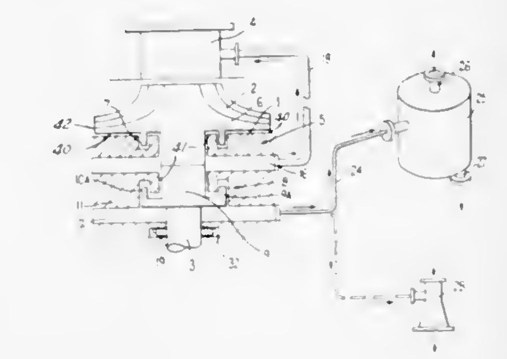
Forrest Thomson Randell, Glascow, Scotland, assignor to Weir Pumps Limited, Glasgow, Scotland

Filed Aug. 21, 1972, Ser. No. 282,051

Claims priority, application Great Britain, Aug. 26, 1971, 40030/71

Int. Cl. F01d *11/00;* **F16j** *15/40, 15/48*

U.S. Cl. 415—110 **7 Claims**



A rotary-shaft liquid handling machine, for example a centrifugal pump, includes a rotary shaft extending through an opening in a wall of the machine casing, and an annular seal is provided between the shaft and the casing wall to close the opening and has rotor and stator portions on the shaft and casing wall respectively, which portions define an annular clearance. The clearance is comprised by an intermediate chamber and inlet and outlet ducts to and from the chamber, the arrangement being such that pressurized leakage fluid flows through the inlet duct to the chamber wherein the liquid vapourises and expands to inhibit leakage flow through the inlet duct.

3,792,936
POWER TRANSMISSION

Raymond B. Pettibone, Troy, and Albin J. Niemiec, Sterling Heights, both of Mich., assignors to Sperry Rand Corporation, Troy, Mich.

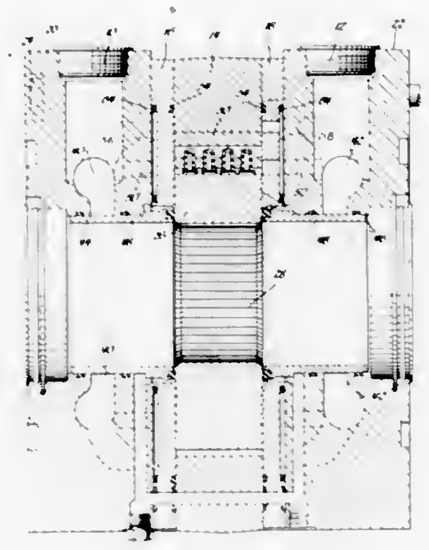
Filed Dec. 21, 1972, Ser. No. 317,437

Int. Cl. F01c *19/08*

U.S. Cl. 418—133 **5 Clalms**

A rotary sliding vane pump or motor has pressure loaded cheek plates on each side of the revolving rotor and vanes. The cam ring has alternate major and minor diameter circular

arcs connected by rising and falling ramps along which fluid displacement occurs. End covers and cheek plates of similar configuration enclose the end faces of the cam ring, rotor and vanes. The cheek plates have pressure loading cavities of circular form opposite each ramp. All of the cavities on each end are connected with a terminal in the adjacent end cover and alternate cavities are perforated to provide fluid passages into the working chambers of the device. The intermediate cavities on each cheek plate are blind. The cheek plates are so located that a perforated cavity on one end lies opposite a blind cavity on the other end of the device and the areas of the cavities are chosen to slightly overbalance the pressure forces existing at the interface between the rotor and cheek plates.



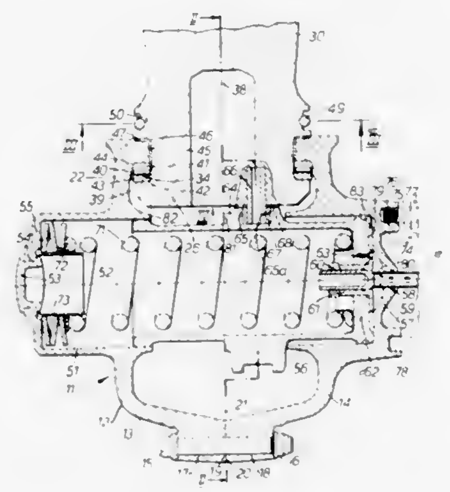
3,792,937
BLADED ROTORS

John Alfred Chilman, Stroud, England, assignor to Dowty Rotol Limited, Gloucester, England

Filed Oct. 12, 1971, Ser. No. 187,981

Int. Cl. B64c *11/38*

U.S. Cl. 416—157 **10 Claims**



A bladed rotor includes a hub defined by two casing parts having portions which, when the parts are held together by securing means, form sockets in which the blades of the rotor are mounted. A guide is provided in one of said parts and another guide is provided in the other of said parts. The guides are separated by space defining means and support a control member movable with respect thereto. Means provided in said space connect said control member to the blades and movement of that member adjusts the blades.

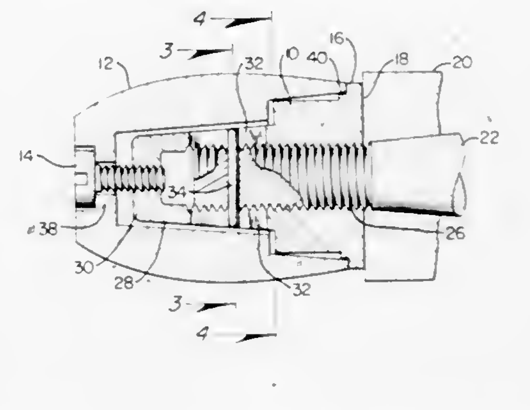
3,792,938
PROPELLER NUT AND FAIRWATER

Thomas B. Wilde, Los Angeles, Calif., assignor to Production Mold, Inc., Huntington Park, Calif.

Filed Jan. 26, 1973, Ser. No. 326,763

Int. Cl. B64h *1/12*

U.S. Cl. 416—245 **5 Claims**



Fairwater device for a boat propeller shaft characterized by a bronze nut with wrench flats thereon for securing a propeller to the shaft, a replaceable zinc member surrounding the nut, the wrench flats engaging like internal flats on the zinc member for driving same, and a single central screw engageable with a rear wall of the zinc member and a rear wall of the nut for securing the zinc member to the nut. The nut may also be provided, if desired, with a plurality of elongated angularly spaced and axially extending slots for receiving a locking pin extending through the propeller shaft. With the provision of six slots, angular positioning of the nut on the shaft may be controlled within 60° and the slots permit positioning the pin within a previously drilled diameterical hole in the shaft, regardless of its axial position therein, thus obviating the drilling of a new hole which could weaken the shaft.

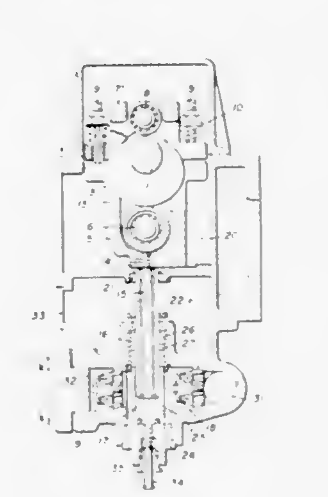
3,792,939
PULSELESS PUMP

Albert A. Zalis, Warren, Mass., assignor to Warren Pumps, Inc., Warren, Mass.

Filed Apr. 6, 1972, Ser. No. 241,555

Int. Cl. F04b *39/10*

U.S. Cl. 417—539 **5 Claims**



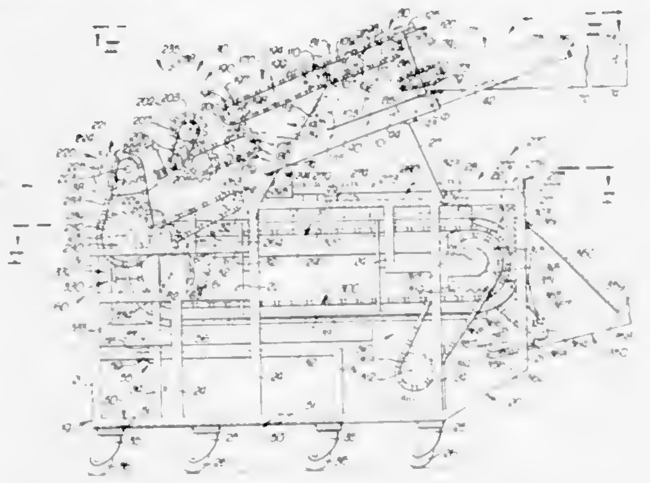
A multiple cylinder pump in which the cylinders are arranged in pairs and the plungers of each pair are moved forward alternately and are returned to their initial positions by a cam for each cylinder. Furthermore, the cylinder sealing devices are easily accessible for maintenance and can be adjusted while the pump is operating.

ERRATUM

For Class 418—133 see:
Patent No. 3,792,936

3,792,940
EASILY CLEANED BAGEL-FORMING MACHINE

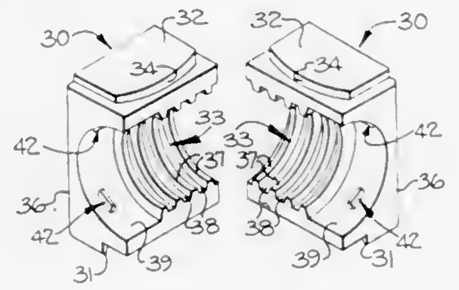
Daniel T. Thompson, Los Angeles, Calif., assignor to Thompson Bagel Machine Manufacturing Corporation, Los Angeles, Calif.
Filed Oct. 4, 1971, Ser. No. 186,205
Int. Cl. A21c *11/00*
U.S. Cl. 425—296 **3 Claims**



An easily cleaned toroid forming apparatus has an improved frame assembly with a first frame sub-assembly receiving a second frame sub-assembly to position the dough batch feeding, forming, guiding and cutoff means of the second sub-assembly to deliver dough parts to the toroid forming means of the first sub-assembly. Each of the sub-assemblies has supporting structure to which sub-structure is movably mounted for movement between a closed operable position and an open cleaning position to provide access to the individual parts of the feeding, forming, guiding, cutoff and toroid forming means. The apparatus has a circular knife on a forming roller for dividing a wide ribbon of dough into two narrow ribbons of dough conveyed by a removable divergent path double conveyor to double bank cut-off, transfer and toroid forming means.

3,792,941
MOLD BLOCKS FOR FORMING COUPLER COLLAR INTEGRAL WITH PIPE

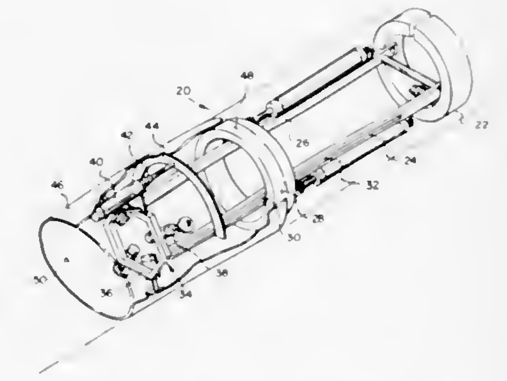
Ernest J. Maroschak, Box 878, Roseboro, N.C.
Continuation-in-part of Ser. No. 271,225, July 13, 1972. This application Feb. 20, 1973, Ser. No. 333,996
Int. Cl. B29c *17/00*
U.S. Cl. 425—326 **9 Claims**



A pair of cooperating mold blocks for forming an enlarged coupler collar on a corrugated plastic pipe being molded therein. The mold blocks have a mold surface including a corrugated portion defined by a series of alternating ribs and valleys and a non-corrugated portion defined by a relatively smooth semicylindrical wall having a diameter greater than the diameter of the valleys in the corrugated portion and adapted for forming the relatively enlarged coupler collar. The semicylindrical wall includes a plurality of arcuately spaced projections adapted for forming inwardly projecting latching members on the wall of the plastic pipe being molded thereagainst.

3,792,942
APPARATUS FOR FORMING CONTINUOUS LENGTHS OF HOLLOW CONCRETE MONOLITHIC STRUCTURES

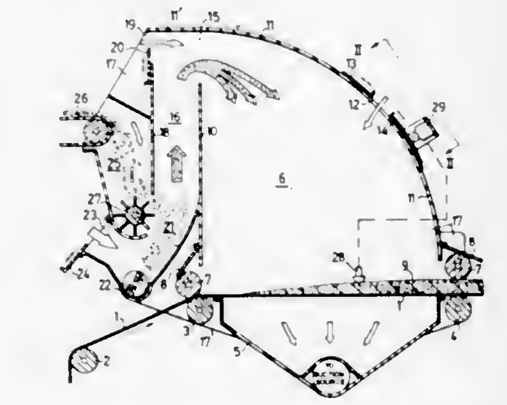
Leonard D. Cole, 41850 Acacia, Hemet, Calif.
Filed Nov. 10, 1972, Ser. No. 305,569
Int. Cl. E03f *3/06;* **E01g** *3/08*
U.S. Cl. 425—59 **5 Claims**



A self-propelled and self-aligning form disposed for the casting or forming of continuous length of hollow monolithic concrete structures such as drainage pipe, tunnels or open trenches.

3,792,943
DRY FIBER DISTRIBUTION

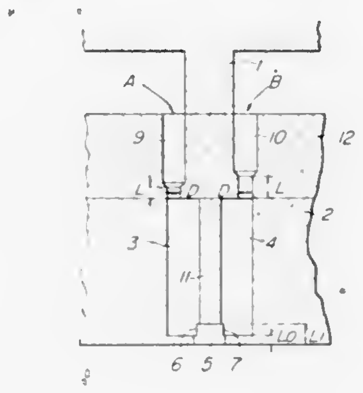
Jonas Anders Gote Helgesson, Taby, Sweden, assignor to Ingenjorsfirma B-projekt Aktiebolag, Enebyberg, Sweden
Filed Sept. 23, 1971, Ser. No. 183,120
Claims priority, application Sweden, Oct. 14, 1970, 13882/70
Int. Cl. B29c *13/00;* **B29j** *5/00*
U.S. Cl. 425—83 **13 Claims**



Fibers are suspended in a rising stream of air which is deflected into a distribution chamber having a bottom formed by a belt-like, gas-permeable screen advanced over a suction box, whereby a dry fiber web is produced on said screen. At the deflection of the fiber-carrying air stream a second stream of air is added to control the inflow of suspended fibers into the distribution chamber and to cause the fibers to follow a trajectory through said chamber. The pattern of fiber deposition on the moving screen is further controlled by admitting additional air from above through an adjustable opening in the enclosure of the distribution chamber.

3,792,944
SPINNERET FOR COMPOSITE SPINNING

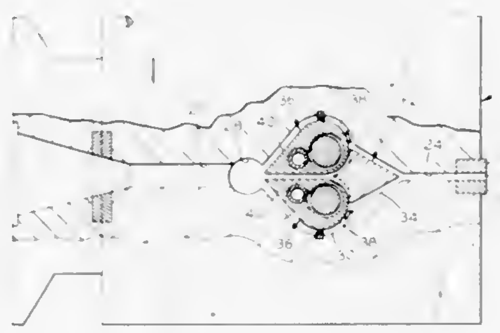
Kazuya Chimura; Takashi Kaneko; Takuma Mukai; Ryuichi Nakazono, and Kenichi Sakunaga, all of Ohtake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan
Filed June 30, 1971, Ser. No. 158,484
Claims priority, application Japan, July 20, 1970, 45-63432; Sept. 1, 1970, 45-76438
Int. Cl. B29f *3/12;* **D01d** *3/00*
U.S. Cl. 425—131 **6 Claims**



The kneeling phenomenon caused in spinning two polymers having great difference in the viscosities can be prevented by using a spinneret which comprises introduction capillaries for separately introducing the different polymers and an extrusion capillary which communicates with said introduction capillaries, said introduction capillaries and extrusion capillary being arranged in a spinneret plate in such a manner that they satisfy the following inequality, $L_0<L_1 \quad 5.7 \quad S$ (wherein S = sectional area of the extrusion capillary, L_1 = length of the extrusion capillary and L_0 = thickness of a part of spinneret plate under the bottom of introduction capillary).

3,792,945
APPARATUS FOR PRODUCING MULTICOLOR PATTERNS AND SHEET MATERIAL PRODUCED THEREBY

Robert E. Randall, Kensington, Conn., assignor to Rowland Products Incorporated, Kensington, Conn.
Filed July 21, 1972, Ser. No. 273,732
Int. Cl. B29f *3/12*
U.S. Cl. 425—132 **20 Claims**

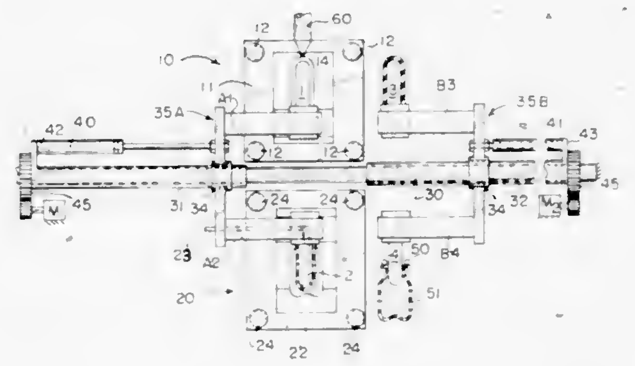


There is disclosed an extrusion assembly for fabricating synthetic plastic sheet material having differentially colored bands which utilizes an extrusion die block having a chamber of streamlined non-circular cross section in which is disposed a pair of sleeve members of non-circular stream-lined cross section. The matrix resin is supplied to the die block chamber on the opposite side of the die chamber from the extrusion orifice and the differentially colored resin is supplied to the sleeve members. Each of the sleeve members has a pair of bores therein, one of which receives the differentially colored resin and communicates with the other which in turn has discharge openings in the surface thereof adjacent the extrusion orifice. The sleeve members are spaced apart so as to provide a channel therebetween and are spaced from the walls of the die chamber so as to provide channels thereabout whereby matrix resin will flow both between and about the sleeve members. Flow diverting bars are disposed within the die chamber to cause the matrix resin to flow towards the discharge openings from the sleeve members and encapsulate the differentially colored resin issuing therefrom. Means is provided in the feed bores to equalize substantially the flow of resin from the feed bores to the other bores in the sleeve members over substantially the entire length thereof. The discharge bores have means therein operating to intermittently discharge resin through the discharge openings.

The intermittent discharge means may be independently driven and may be driven in different directions so as to provide a basketweave design, bands of color at right angles to each other and the like. Three extruders may be utilized to provide two color bands with different colors being supplied to each of the sleeve members.

3,792,946
MOLDING APPARATUS

Fred J. Zavasnik, Bolingbrook, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Dec. 16, 1971, Ser. No. 208,740
Int. Cl. B29d *23/03*
U.S. Cl. 425—242 **10 Claims**



Method and apparatus for molding plastic articles by forming a parison on a core within an injection mold, cooling the exposed surfaces of the parison by heat transfer through the core and the mold, transferring said core to a delay position and permitting the redistribution of heat throughout the parison, and subsequently transferring said core to a mold for expanding the parison to the desired configuration. The apparatus comprises two sets of cores, each actuated by rotating and reciprocating means whereby one set of cores is located at a delay station while a parison and the finished article are formed on the other set of cores, the multiple core sets permitting the maintenance of maximum production rates, and maximum orientation of the finished article.

3,792,947
MOLDING APPARATUS

Alan V. Diehl, 11144 Wystone Ave., Northridge, Calif.
Filed July 10, 1972, Ser. No. 269,967
Int. Cl. B29h *5/22*
U.S. Cl. 425—411 **11 Claims**

A hot molding apparatus wherein as the molding elements are removed from the heated molding press, the upper molding element moves along a cam surface which causes initial

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continuously receiving the bottles and sending them succes-

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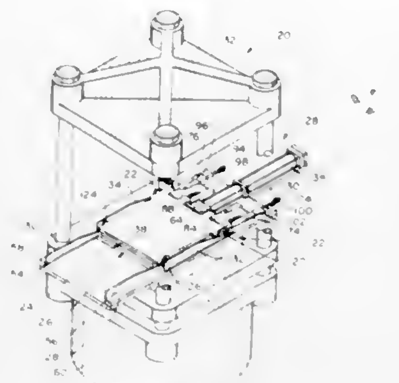
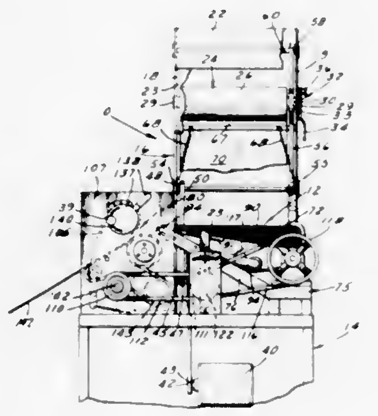
thermoplastic resin, such as polyolefin, by apparatus having of the compression zone they separate, the platens also separation of the molding elements, a linkage assembly connected between said molding elements to produce wide



separation of the molding elements adjacent the outward extremity of the movement of said molding elements.

3,792,948
AUTOMATIC DOUGH ROLLING APPARATUS

James A. Martinez, 6239 Redbird Dr., Pico River, Calif.
Filed Oct. 6, 1971, Ser. No. 187,108
Int. Cl. A21c *3/02*
U.S. Cl. 425—182 **5 Claims**

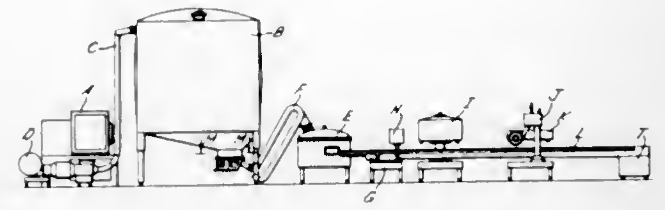


There is disclosed an apparatus for rolling bakery dough to a desired thickness, comprising an upper set of rollers, one of which is adjustable relative to the other for controlling the thickness of the dough that is passed therebetween. Positioned adjacent the lower area of the upper set of rollers is a slide plate on which the flattened dough is deposited and from which it slides downwardly and is guided to an automatic feeding device which moves horizontally and rearwardly at right angles to the slide plate, thereby automatically feeding the dough into a second set of lower rollers. These lower rollers are also adjustable to provide any thickness of dough that might be required. The power for operating the upper and lower sets of rollers, as well as the automatic feeding device, is provided by an electric motor adapted to be operably connected to the sets of rollers and feeding device by a pulley drive and a plurality of gear chain drives.

3,792,949
BOTTLING SYSTEM

Kazuo Ueda, Tokyo, Japan, assignor to Shikoku Kakooki Co., Ltd., Tokushima, Japan
Filed Mar. 2, 1972, Ser. No. 231,286
Int. Cl. B29f *1/00*
U.S. Cl. 425—242 **1 Claim**

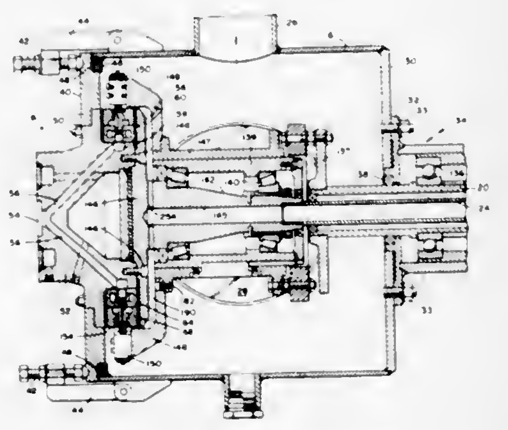
A bottling system comprising a molding machine for producing synthetic resin bottles, a bottle aligning machine for continuously receiving the bottles and sending them successively out in a row in an upright position, a bottling machine to be supplied with the bottles from the bottle aligning machine



for filling the bottles, a printing machine disposed in the path of travel of the upright bottles for printing the bottles, and a capping machine such as a heat sealer for capping the filled bottles.

3,792,950
PELLETIZING APPARATUS

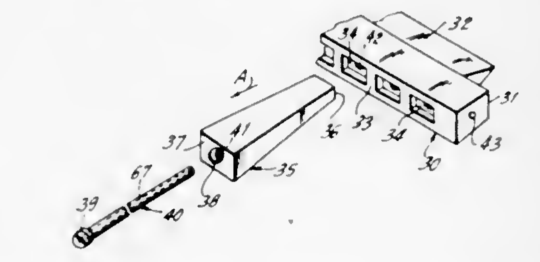
David W. Cuff, Chepachet, R.I., assignor to Cumberland Engineering Company, Inc., Attleboro, Mass.
Filed Sept. 8, 1972, Ser. No. 287,276
Int. Cl. B29f *3/08*
U.S. Cl. 425—313 **22 Claims**



Apparatus for pelletizing synthetic plastic resins, comprising an extruding die assembly having extrusion orifice sleeves pervious to liquid, a water jacket surrounding each sleeve in such manner that water will pass through the walls thereof to chill plastic being extruded therethrough while at the same time lubricating passage of the plastic therethrough. Severing means are provided at the die face for cutting the plastic into pellets as it is extruded. Optionally means are provided for collecting the pellets such as a casing that surrounds the die and the cutting means.

3,792,951
APPARATUS FOR PRODUCING EXTRUDED HOLLOW BOARD

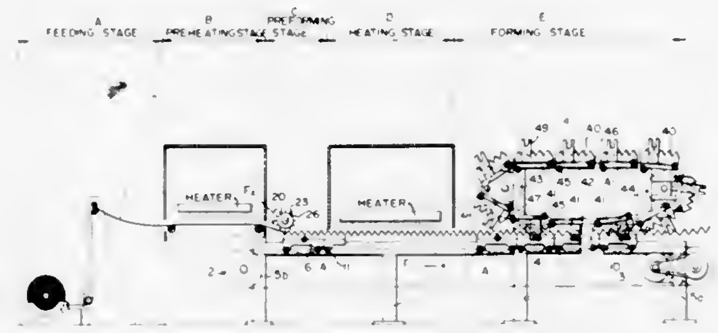
George E. Meyers, Dix Hills, N.Y., assignor to Extrudyne, Inc., Amityville, N.Y.
Filed Jan. 24, 1972, Ser. No. 220,238
Int. Cl. B29c *1/00*
U.S. Cl. 425—326 **10 Claims**



Hollow synthetic board which may be used to replace corrugated paper board is continuously extruded of relatively soft thermoplastic resin, such as polyolefin, by apparatus having replaceable mandrels disposed in the cavity of an extrusion die. These mandrels are fastened in operative position by hollow screws which are part of the passage means for maintaining the interior of the synthetic board at ambient pressure. After leaving the die the extrusion alternately passes through a plurality of cooling and sizing sections. In the latter a vacuum is applied to the outer surface of the board to prevent collapse thereof prior to hardening of the extrusion. Temperature within the cooling sections is regulated so that the upstream sections are warmer than the downstream sections.

3,792,952
SHEET FORMING DEVICE

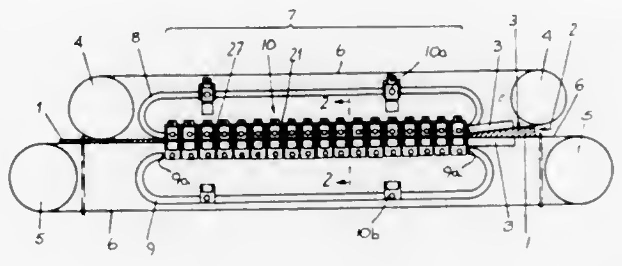
Maurice Hamon, 58, rue Capouillet, Brussels, Belgium
Filed May 9, 1972, Ser. No. 251,645
Int. Cl. B29c *17/02*
U.S. Cl. 425—343 **13 Claims**



Apparatus is provided for continuously and in accurate register forming sheet material from, for example, a roll supply thereof characterized in that sheet forming is carried out by at least first and second cooperating dies with means associated with one of the dies for driving the other in synchronous register. The apparatus may also include a third die set which is likewise driven in synchronous register.

3,792,953
MACHINE FOR COMPRESSING A TRAVELING WEB

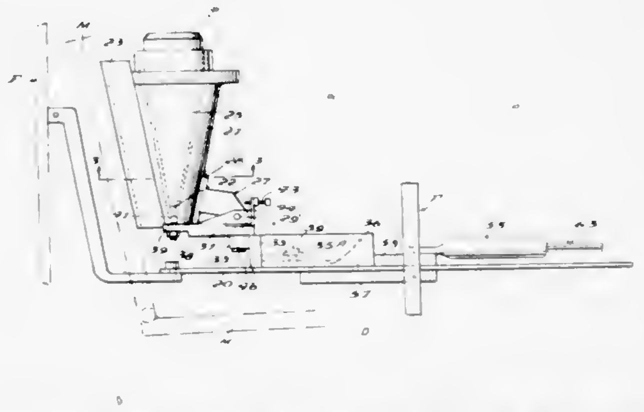
Karl-Heinz Ahrweiler, Krefeld, Germany, assignor to Edward Kusters Maschinenfabrik, Krefeld, Germany
Filed Aug. 9, 1972, Ser. No. 279,285
Claims priority, application Germany, Aug. 10, 1971, 2140105
Int. Cl. B29c *15/00*
U.S. Cl. 425—371 **8 Claims**



Endless elongated loops of metal bands have cooperating linear spans between which a traveling flat workpiece is passed for receiving compression transmitted through the bands. The compression is applied by self-contained presses having platens which span the bands and which are juxtapositioned throughout at least the compression zone, the bands and presses traveling at the traveling speed of the workpiece. On opposite side edges of the bands the presses have mounting side frames provided with means for forcing the platens together. These side frames are separable and at the back end of the compression zone they separate, the platens also separating, the separated press parts being carried back to the front end of the zone where they re-engage. Thus, the presses continuously recirculate.

3,792,954
APPARATUS FOR BAKING AND ROLLING CONFECTIONARY PRODUCTS

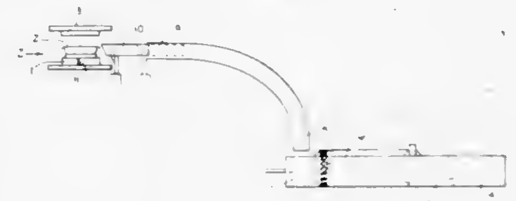
Albert A. Heyman, Baltimore, Md., assignor to Universal Machine Company, Inc., Baltimore, Md.
Filed Sept. 26, 1972, Ser. No. 292,441
Int. Cl. B29c *17/02;* **A21c** *15/02*
U.S. Cl. 425—391 **12 Claims**



Apparatus for baking and molding edible fluid pastry material and rolling it into cones of substantially uniform dimensions with a flat top to facilitate retention of frozen confections such as ice cream, sherbets, and the like and an apex portion in a manner to provide the cone with a reinforced and sealed apex portion. Such apparatus also is made with the ability to provide substantially identical uniformity of the length dimensions of the finished cones for uniformity in stacking and packing the cones.

3,792,955
ARTICLE TRANSFER APPARATUS

Emile R. Vermeulen, Gent, Belgium, assignor to Sidaplax, a societe anonyme (Naamloze Vennootschap), Gentbrugge, Belgium
Filed Jan. 27, 1972, Ser. No. 221,319
Claims priority, application Great Britain, Jan. 29, 1971, 3,509/71
Int. Cl. B29c *7/00*
U.S. Cl. 425—443 **2 Claims**



Successively formed articles are individually rapidly transferred from a mold to a collection station by a relatively compact feed means which is movable from an article receiving position adjacent the mold to an article ejecting position within the forward end of a chute feeding the collection station.

3,792,956

INSTANT CORN GRITS

Roy G. Hyldon, Crystal Lake, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Continuation-in-part of Ser. No. 2,940, Jan. 14, 1970, Pat. No. 3,664,846. This application Nov. 9, 1971, Ser. No. 197,008

Int. Cl. A23l *1/10*

U.S. Cl. 426—142 **3 Claims**

Instant corn grits are prepared by a process comprising the steps: A) admixing corn grits, critical amounts of water, and critical amounts of polysaccharide gum; B) rapidly heating the mixture to a critical temperature for a critical time period; C) immediately drying the heated mixture in the form of a thin sheet on a drum drier; and D) collecting and comminuting the cooked dried sheet.

3,792,957

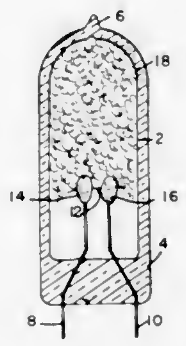
PHOTOFLASH LAMP

Andre C. Bouchard, Peabody; Dennis B. Shinn, Topsfield, both of Mass., and John W. Shaffer, Williamsport, Pa., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed June 26, 1972, Ser. No. 266,506

Int. Cl. F21k *5/02*

U.S. Cl. 431—93 **20 Claims**



A photoflash lamp in which the filamentary combustible within the lamp envelope comprises a plurality of fine strands of foil each having a uniformly coiled or crimped configuration for increasing the number and reducing the size of molten droplets produced when the foil is burning. The coiled or crimped configuration also tends to prevent roping of the strands. If coiled, the strand configuration may have a diameter of from 0.010 to 0.030 inch and a pitch of from 20 to 300 turns per inch, and if crimped, the length of each straight segment of strand may be from 0.010 to 0.060 inch and the angle of each bend in the strand may be from 60° to 165°.

3,792,958

DEVICE FOR OPERATING A COMBUSTION DEVICE, SUCH AS A SPACE HEATER

Kofink Siegfried, Zell/Neckar, Germany, assignor to J. Eberspacher, Esslingen, Neckar, Germany

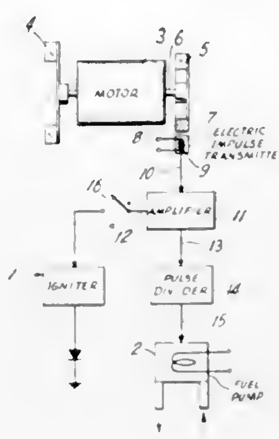
Filed Oct. 16, 1972, Ser. No. 298,007

Claims priority, application Germany, Aug. 6, 1971, P 21 39 513.1

Int. Cl. F23c *3/02*

U.S. Cl. 431—1 **5 Claims**

An apparatus for operating a combustion device, such as a space heater, comprises an electric motor operated blower for the combustion air as well as for the space heating air, and which has a rotatable blower shaft with electric impulse generator means associated therewith. The impulse generator may comprise, for example, an electrical coil which is located alongside the blower which is operated by the rotation of a magnet or magnets carried on the blower periphery. The impulse generator is connected via an amplifier to an igniter and also to an electromagnetically operated fuel pump. The pulses which are generated are used to actuate the igniter and to operate the fuel pump in the necessary time sequence.



3,792,959

METHOD AND APPARATUS FOR IGNITING A BURNER

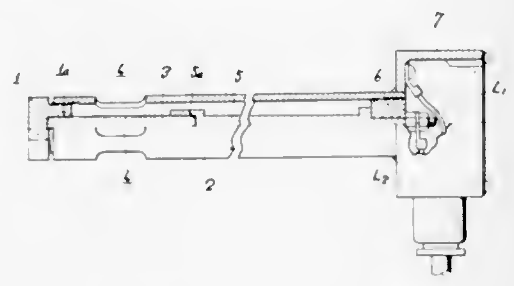
Keizo Mori, and Tutomu Toue, both of Osaka, Japan, assignors to Volcano Co., Ltd., Osaka, Japan

Filed Dec. 29, 1971, Ser. No. 213,368

Claims priority, application Japan, Aug. 12, 1971, 46/61347

Int. Cl. F23n *7/00*

U.S. Cl. 431—6 **10 Claims**



A method of igniting a burner in a short period of time. An igniting device is used which has a heating element made of carborundum provided in an outer pipe which is provided movably in the burner. An electric source initially impresses upon the heating element a voltage approximately 1.5 times its rated voltage and the electric current at the secondary side of the transformer at the time when the heating element has reached the desired temperature is detected by a current relay. At this time, taps on the transformer are switched to impress the rated voltage on the element to obtain the desired igniting temperature.

ERRATUM

For Class 431—150 see:
Patent No. 3,792,963

3,792,960

HEARTH FOR A FURNACE FOR THE THERMAL TREATMENT OF PRODUCTS SUPPORTED BY A GAS CUSHION

Leon Gion, Lourdes, France, assignor to Ceraver, Paris, France

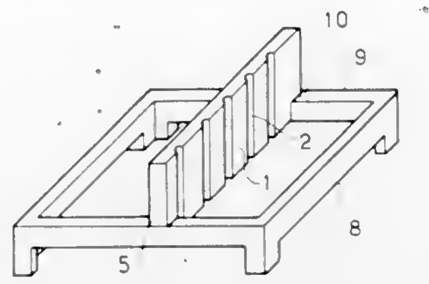
Filed Jan. 24, 1972, Ser. No. 220,031

Claims priority, application France, Jan. 22, 1971, 7102205

Int. Cl. F27d *5/00, 3/12*

U.S. Cl. 432—58 **7 Claims**

A hearth for thermal treatment of non-granular products supported by a gas cushion comprises a number of ceramic plates arranged to provide gas passages for the support gas. The ceramic plates can be planar with cylindrical grooves on one or both sides. The ceramic plates can also have a serrated configuration to form diamond shape gas passages.



3,792,961

ROTARY KILN

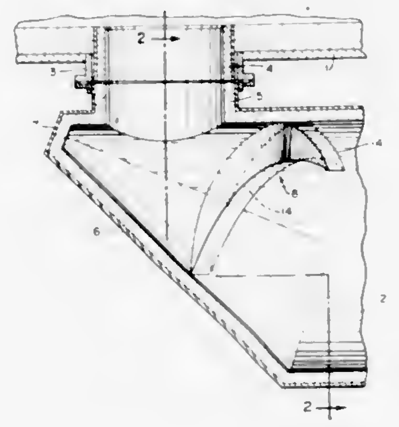
Sven E. Theil, Copenhagen-Valby, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.

Filed May 4, 1972, Ser. No. 250,367

Claims priority, application Great Britain, May 25, 1971, 17,021/71

Int. Cl. F27b *7/38*

U.S. Cl. 432—80 **14 Claims**



A rotary kiln is disclosed in which a specially constructed deflector is positioned within each cooler tube. Each deflector is adapted to assist the conveyance of kiln product from the kiln through the cooler tubes.

3,792,962

APPARATUS FOR THE MANUFACTURE OF CERAMICALLY BONDED SHAPED ARTICLES FROM GRANULATES OF INFLATABLE MINERAL MATERIAL

Karl Briem, Braunschweig, Germany, assignor to Firma Zytan Thermochemische Verfahrenstechnik GmbH & Co., K.G., Braunschweig, Germany

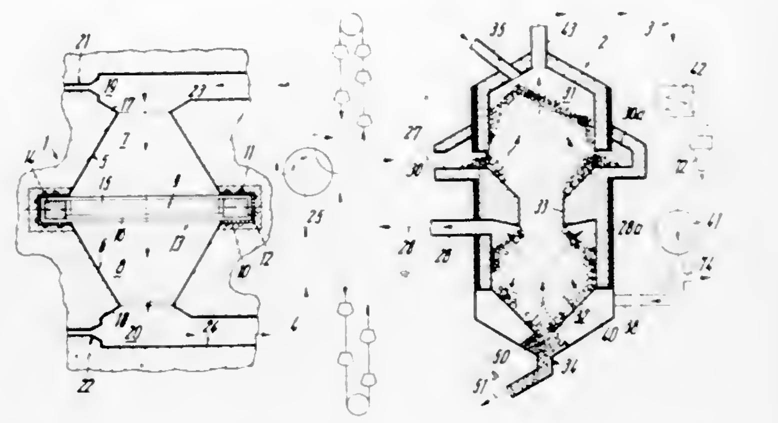
Filed Nov. 9, 1972, Ser. No. 305,150

Claims priority, application Germany, Nov. 10, 1971, P 21 55 933.1

Int. Cl. F27b *1/02, 15/00*

U.S. Cl. 432—101 **8 Claims**

An apparatus for the production of ceramically bonded shaped bodies of granulates of an inflatable mineral material, particularly clay, which comprises a combustion chamber tapering in opposite directions, with a holding device for a fire box movable through the combustion chamber and provided with a bottom grate, located in the plane of the common maximum cross-section of the chamber, and a system of conduits adjoining ends of the combustion chamber for recycled heating-and combustion-gases, in the circuit being provided at least one burner device, a circulating device and a reversing device for reversing redirection of flow of the gases through the combustion chamber. A blower maintains the required pressure in the system of conduits, and arranged directly in series, with two chambers connected via a restriction of a continuously operating regenerator operated with a circulated heat-retainer mass and the combustion chamber in the parallel circuit is connected at its ends on both sides of the restriction to the regenerator.



3,792,963

VALVE ACTION OF GAS-OPERATED CIGARETTE LIGHTER

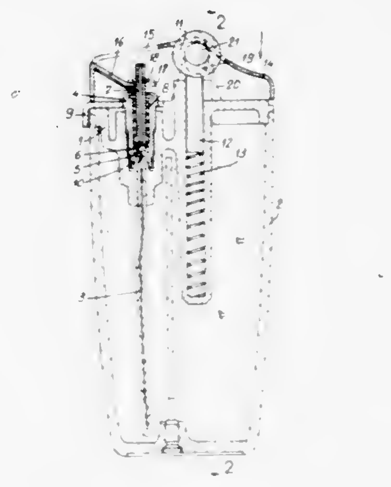
Jean Gaston Tricot, 55 rue du Val d'Osne, Saint-Maurice, France

Filed Oct. 19, 1971, Ser. No. 190,605

Claims priority, application France, Oct. 20, 1970, 70.38254

Int. Cl. F23q *25/00*

U.S. Cl. 431—150 **7 Claims**



In a cigarette-lighter of the type usually comprising a cap enclosing a valve actuating lever projecting therefrom, this lever is dispensed with and its function transferred to the cap itself, formed with an inwardly bent pressing for engagement with the valve stem, acting as a burner, the cap being pivoted to trunnion-forming bosses moulded integrally with the head of the lighter.

3,792,964

ELECTROSTATIC IMAGING SYSTEM AND APPARATUS THEREFOR

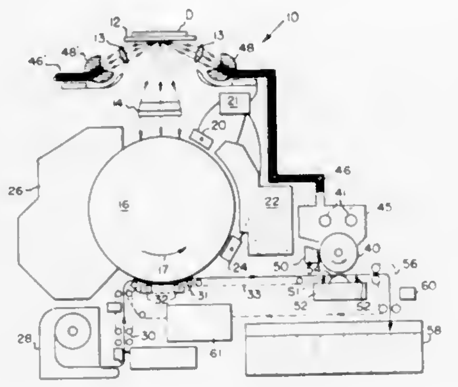
Arun K. Chatterji, 100 Kittelberger Pk., Webster, N.Y.

Filed June 5, 1972, Ser. No. 259,953

Int. Cl. F27b *9/14*

U.S. Cl. 432—59 **9 Claims**

A copying machine having means for producing a fusible toner image on a copy substrate, includes a radiant energy light source (e.g., iodine quartz lamp) mounted to direct part of its rays onto the object that is to be copied to illuminate the latter, and part onto the surface of a rotating receiver roll to heat the surface thereof approximately to the fusing temperature of the toner. The copy substrate is passed beneath the receiver roll tangentially thereof by a transport which causes the toner image to engage the heated receiver surface with a minimal amount of pressure so that the toner is fused and fixed to the substrate. Various release agents may be applied to the roll surface to enhance fixing of the image.



3,792,965

WALKING BEAM FURNACE

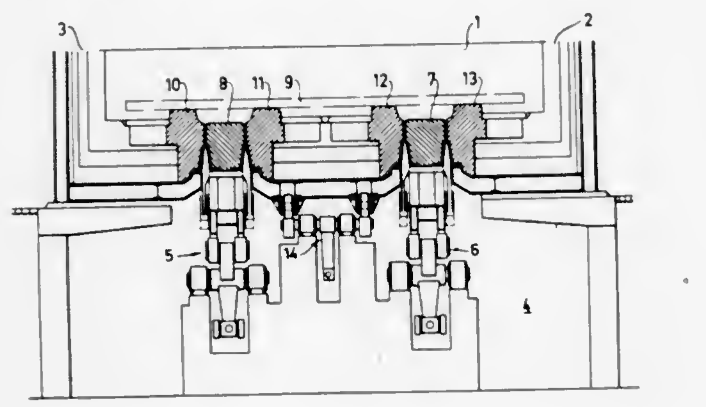
Ake Bengtsson, Huddinge, Sweden, assignor to Aktiebolaget Tabougnar, Stockholm, Sweden

Filed Nov. 29, 1971, Ser. No. 202,814

Claims priority, application Sweden, Nov. 30, 1970, 16179/70

Int. Cl. F27b *9/14*

U.S. Cl. 432—121 **2 Claims**



A furnace of the walking beam type in which the portion of the hearth located between two walking beams can be lifted above the level assumed by the walking beams during the feeding movement in order to permit the feed of the charge to be interrupted without the necessity for stopping the feeding movement of the beams.

3,792,966

HEATING SHUTTERING PANELS

Armin Kleiber, Mozarstr. 5, Karlsruhe, Germany

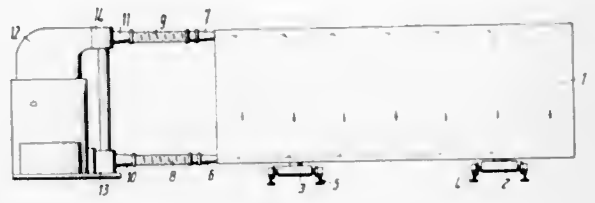
Filed Oct. 18, 1972, Ser. No. 298,590

Claims priority, application Germany, Dec. 13, 1971, P 21 61 707.2

Int. Cl. F28f *5/00*

U.S. Cl. 432—223 **4 Claims**

The specification describes a method of heating hollow shuttering panels for use in casting concrete and similar hardenable materials in which method hot air is used and is arranged to flow through the panel directly in contact with the internal surface of one or more of the sides of the panel. In a rectangular panel described by way of example the interior of the panel is divided, by partitions extending between the sides of the panel, to provide two manifolds extending along opposite edges of the panel and ducts extending between and communicating at their ends with the two manifolds. Hot air from a heating means is passed into one of the manifolds, through the ducts to the other manifold and thence back to the heating means for reheating and recirculation.



3,792,967

SEALING ARRANGEMENT FOR APPARATUS FOR CONTINUOUSLY TREATING SOLID MATERIALS

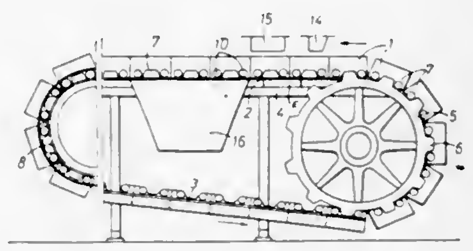
Robert A. Dartois, Moustier-sur-Sambre, Belgium, assignor to Basse Sambre, Societe Anonyme, Etudes Recherches et Entreprises, Moustier-sur-Sambre, Belgium

Filed Jan. 31, 1973, Ser. No. 328,355

Claims priority, application Belgium, Feb. 1, 1972, 113499

Int. Cl. F27b *21/02*

U.S. Cl. 432—244 **9 Claims**



An endless chain of carriages is continuously driven along top and bottom rails of a fixed frame. Solid material to be treated, is introduced into the carriages as they travel along the top rail together with a combustible substance. The carriages pass beneath burners where the combustible substance is ignited, and then the carriages pass over suction chambers where air is drawn through the carriages via a perforated bottom thereof to effect pronounced combustion of the combustible material and consequent treatment of the solid material, i.e., agglomeration of minerals. The carriages then pass onto the lower rail and the treated material is discharged. In order to provide a seal between the suction chambers and the carriages as the latter pass over the suction chambers, the carriages carry vertically slidable sealing members which fall by gravity onto fixed travel surfaces on the frame. In order to insure that the sealing members will drop onto the travel surfaces even if jammed by particles of material, electromagnets are placed beneath the travel surfaces at a location upstream of the suction chambers to attract the sealing members to lowered sealed position on the travel surfaces.

CHEMICAL

3,792,968

HALOGENATED DIAMINO DIHYDROXY ANTHRAQUINONES ON A SUBLIMATION TRANSFER MEMBER

Hans Rudolf Rickenbacher, Basel; Guenther Zwahlen, Dornach, and Juergen Markert, Basel, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Mar. 26, 1971, Ser. No. 128,513

Claims priority, application Switzerland, Apr. 1, 1970, 4788/70

Int. Cl. D06p *1/20*

U.S. Cl. 8—2.5 **4 Claims**

Process for the printing textile materials of hydrophobic, synthetic polymers, wherein the textile material is printed to the transfer printing process with chlorintated 1,5-dihydroxy-4,8-diaminoanthraquinone or a mixture of chlorinated and brominated 1,5-dihydroxy-4,8-diaminoanthraquinone and optionally with other dyestuffs and/or fluorescent whitening agents.

3,792,969

PROCESS FOR DYEING POLYACRYLONITRILE TEXTILES WITH ANTHRAQUINONE DYESTUFFS

Berthold Gertisser, Muenchenstein/Bl, Switzerland, assignor to Sandoz Ltd., Basle, Switzerland

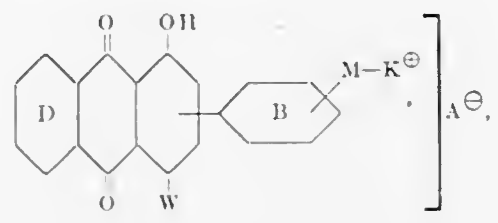
Division of Ser. No. 704,528, Feb. 12, 1968, Pat. No. 3,652,601. This application Nov. 30, 1971, Ser. No. 203,419

Claims priority, application Switzerland, Feb. 20, 1967, 489566/67; Jan. 18, 1968, 506586/68

Int. Cl. D06p *1/20, 3/72*

U.S. Cl. 8—39 **9 Claims**

Anthraquinone dyes of the formula



wherein M stands for a divalent radical, W for the nitro group or for an amino group, K^+ e.g. for an ammonium-, hydrazinium- or an amminogroup, A^- for an anion and wherein the ring B and/or D may be further substituted. They can be used for the dyeing of acrylonitrile polymers or copolymers.

3,792,970

EXHAUSTION PROCESS FOR DYEING SYNTHETIC FIBRE MATERIALS

Rutger Neeff, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

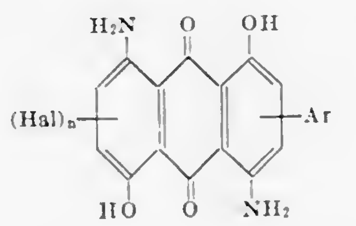
Filed Apr. 14, 1972, Ser. No. 244,235

Claims priority, application Germany, Apr. 14, 1971, 2118019

Int. Cl. D06p *1/20, 3/54*

U.S. Cl. 8—39 **11 Claims**

Exhaust process for the dyeing of synthetic fibre materials from organic water-immiscible solvents wherein are used as dyestuffs anthraquinone dyestuffs of the formula



(I)

in which Ar, Hal and *n* have the meaning given below in the disclosure. By means of these dyestuffs there are obtained dyeings in excellent dyestuff yields and fastness properties.

3,792,971

EXHAUST PROCESS FOR THE DYEING OF SYNTHETIC FIBRE MATERIALS

Rutger Neeff, Leverkusen, and Dietmar Kalz, Cologne, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 16, 1970, Ser. No. 81,548

Claims priority, application Germany, Oct. 18, 1969, 1952535

Int. Cl. D06p *1/20, 3/54*

U.S. Cl. 8—39 **26 Claims**

Exhaust process for the dyeing of synthetic fibre materials from organic water immiscible solvents with disperse dyestuffs containing carboxamide groups.

3,792,972

PROCESS FOR THE PREPARATION OF FAST DYEINGS OR PRINTS ON SYNTHETIC FIBROUS MATERIALS

Erich Brenneisen, Hofheim/Taunus; Ernst Hoyer, Frankfurt/Main; Maria Kallay, Mammolshain/Taunus; Karl-Heniz Krell, Kronberg/Taunus, and Willi Steckelberg, Hofheim/Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellshaft vormals Meister Lucius & Bruning, Frankfurt, Germany

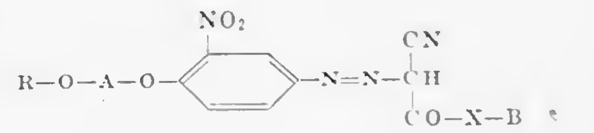
Filed Feb. 22, 1973, Ser. No. 334,778

Claims priority, application Germany, Feb. 26, 1972, 2209247

Int. Cl. D06p *3/72;* **C09b** *29/32*

U.S. Cl. 8—41 A **11 Claims**

A process for the preparation of fast dyeings or prints on synthetic fibrous materials, which comprises treating the said fibrous materials in an aqueous dispersion or in an organic solvent with a dyestuff of the formula (1)



(1)

in which A represents a linear branched alkylene group of 1 to 4 carbon atoms being unsubstituted or substituted by hydroxyl, methoxy, ethoxy, or phenoxy, B represents phenyl being unsubstituted or substituted by fluorine, chlorine, bromine, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, trifluoromethyl, cyano, carbo(lower)alkoxy, nitro, acetyl, benzoyl or phenyl or by combinations of two members thereof, or naphthyl, X represents -NH- or a direct linkage, and R represents hydrogen, acetyl, propionyl or benzoyl, the yellow dyeings or prints so obtained being distinguished by excellent fastness properties, particularly by a very good fastness to light, a high resistance to sublimation and furthermore, by very good colour yields.

3,792,973

3,792,975

sliced off to form ports for admitting water into and out of the

3,792,973

PROCESS FOR THE PREPARATION OF FAST DYEINGS OR PRINTS ON SYNTHETIC FIBROUS MATERIALS

Erich Brenneisen, and Willi Steckelberg, both of Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt, Germany

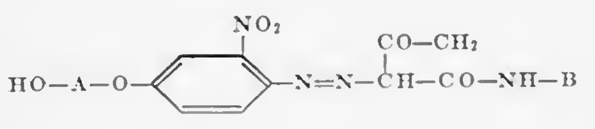
Filed Feb. 22, 1973, Ser. No. 334,779

Claims priority, application Germany, Feb. 26, 1972, 2209208

Int. Cl. D06p *3/72;* **C09b** *29/32*

U.S. Cl. 8—41 A **11 Claims**

A process for the preparation of fast dyeings or prints on synthetic fibrous materials, which comprises treating the said fibrous materials in aqueous dispersion or in an organic solvent with a dyestuff of the formula (1)



(1)

in which A represents a linear or branched alkylene group of 1 to 4 carbon atoms being unsubstituted or substituted by methoxy, ethoxy, phenoxy or hydroxyl, and B represents phenyl being unsubstituted or substituted by fluorine, chlorine, bromine, cyano, trifluoromethyl, acetyl, benzoyl, phenyl, phenoxy, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms or by combinations of 2 or 3 members thereof, or naphthyl the yellow dyeings or prints so obtained being distinguished by excellent fastness properties, particularly by a very good fastness to light, a high resistance to sublimation and, furthermore, by very good colour yields.

3,792,974

PROCESS FOR PREPARATION OF FAST DYEINGS OF PRINTS ON SYNTHETIC FIBER MATERIALS

Erich Brenneisen, Hofheim/Taunus; Ernst Hoyer, Frankfurt/Main; Maria Kallay, Mammolshain/Taunus; Karl-Heinz Krell, Kronberg/Taunus, and Willi Steckelberg, Hofheim/Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt, Germany

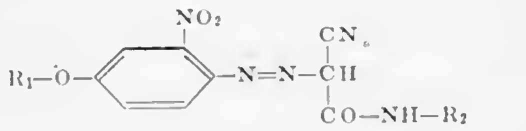
Filed Feb. 22, 1973, Ser. No. 334,836

Claims priority, application Germany, Feb. 26, 1972, 2209209

Int. Cl. D06p *3/60;* **C09b** *29/32*

U.S. Cl. 8—41 C **11 Claims**

A process for the preparation of fast dyeings or prints on synthetic fibrous materials which comprises treating the said fibrous materials in aqueous dispersion or in an organic solvent with dyestuffs of the formula



(1)

in which R_1 represents alkyl from one to four carbon atoms being unsubstituted or substituted by methoxy or ethoxy, and R_2 represents phenyl being unsubstituted or substituted by fluorine, chlorine, bromine, alkyl or one to four carbon atoms, alkoxy of one to four carbon atoms, trifluoro-methyl, nitro, hydroxy, cyano, carbo(lower)alkoxy, acetyl, benzoyl, phenyl or phenoxy, the yellow dyeings or prints so obtained being distinguished by excellent fastness properties, particularly by a very good fastness to light and a high fastness to sublimation.

3,792,975

PROCESS FOR THE PREPARATION OF FAST DYEINGS OR PRINTS OF SYNTHETIC FIBER MATERIALS

Maria Kallay, Mammolshain/Taunus; Karl-Heinz Krell, Kronberg/Taunus, and Willi Steckelberg, Hofheim/Taunus, all of Germany, assignors to Farhwerke Hoechat Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt, Germany

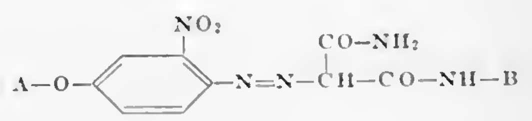
Filed Feb. 22, 1973, Ser. No. 334,835

Claims priority, application Germany, Feb. 26, 1972, 2209210

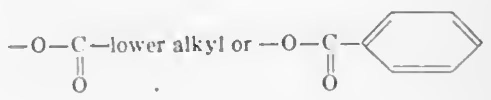
Int. Cl. D06p *3/72;* **C09b** *29/32*

U.S. Cl. 8—41 A **11 Claims**

A process for the preparation of fast dyeings or prints on synthetic fibrous materials, which comprises treating the said fibrous materials in an aqueous dispersion or in an organic solvent with dyestuffs of the formula



in which A represents alkyl of one to four carbon atoms being unsubstituted or substituted by hydroxyl, lower alkoxy, phenoxy,



or combinations of two members thereof, and B represents phenyl being unsubstituted or substituted by fluorine, chlorine, bromine, alkyl of one to four carbon atoms, alkoxy of one to four carbon atoms, trifluoromethyl, cyano, nitro, carbo(lower)alkoxy, acetyl, benzoyl or phenyl or combinations of two or three members thereof, or naphthyl, the yellow dyeings or prints so obtained being distinguished by excellent fastness properties, particularly by a good fastness to light and the extraordinary high fastness to thermofixation.

3,792,976

ALUMINUM-CHROME ACRYLIC ACID COMPLEX TANNAGE AND LEATHER ALUMINUM OR

Hans Erdmann, Heidelberg, and Franz Friedrich Miller, Ludwigshafen, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Division of Ser. No. 069,461, Sept. 3, 1970, Pat. No. 3,714,211. This application Nov. 4, 1971, Ser. No. 195,871

Claims priority, application Germany, Sept. 5, 1969, 1945006

Int. Cl. C14c *3/02*

U.S. Cl. 8—94.26 **6 Claims**

Complex trinuclear metal salts, methods for the production of these salts by reaction of salts of aluminum or of aluminum and trivalent chromium, which contain monovalent anions, with acrylic acid and the amount of an alkaline reacting agent necessary for their neutralization or with salts of acrylic acid and a method of tanning using these metal salts.

3,792,977

WATER-IN-FLUOROCARBON EMULSION

Richard A. Guenthner, Birchwood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 15, 1972, Ser. No. 253,163

Int. Cl. D06p *5/04*

U.S. Cl. 8—169 **11 Claims**

Water is dispersed in inert, non-polar fluorocarbon with a non-ionic emulsifier which is soluble in the water and

fluorocarbon and contains a hydrophobic fluoroaliphatic portion and a hydrophilic solubilizing portion, to provide a water-in-fluorocarbon emulsion useful in the dyeing of textiles.

3,792,978

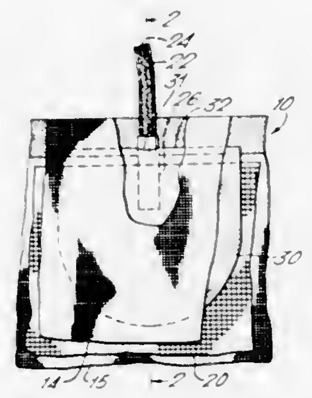
ENVELOPE ASSEMBLY FOR SPOOL TYPE OXYGENATOR

Frank B. Freedman, St. Louis, Mo., assignor to Sci-Med Life Systems, Inc., Minneapolis, Minn.

Filed May 30, 1972, Ser. No. 257,537

Int. Cl. A61m *1/03*

U.S. Cl. 23—258.5 **2 Claims**



The invention relates to an envelope assembly for a spool wound artificial lung. The envelope assembly is characterized by having unobtrusive tube attachments which allow the envelope to be wound smoothly and evenly about the spool of the oxygenator.

3,792,979

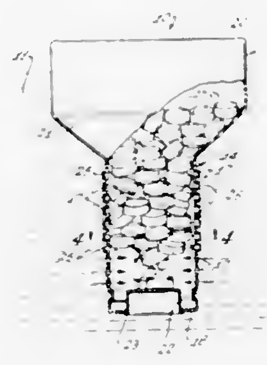
FLOATING CHEMICAL TREATMENT DEVICE

Harry M. Clinton, Northridge, Calif., assignor to Swimrite, Inc., Van Nuys, Calif.

Filed May 30, 1972, Ser. No. 257,635

Int. Cl. B01d *11/00*

U.S. Cl. 23—267 A **7 Claims**



A disposable swimming pool chlorinator in the form of a one-piece, blow-molded plastic container having a relatively large upper end portion defining a flotation chamber, a conically tapered intermediate section, and a depending neck having two rows of vertically spaced, hollow protuberances on its opposite sides and a fill opening in its lower end, closed by a heat-sealed and tearable plug. A charge of chlorine tablets is sealed in the container to fill the latter to above the top of the neck, so that a selected number of the protuberances can be sliced off to form ports for admitting water into and out of the neck while the chlorinator floats in a pool, the container being imperforate above the open ports to trap air therein for flotation purposes and to limit the water level.

3,792,980

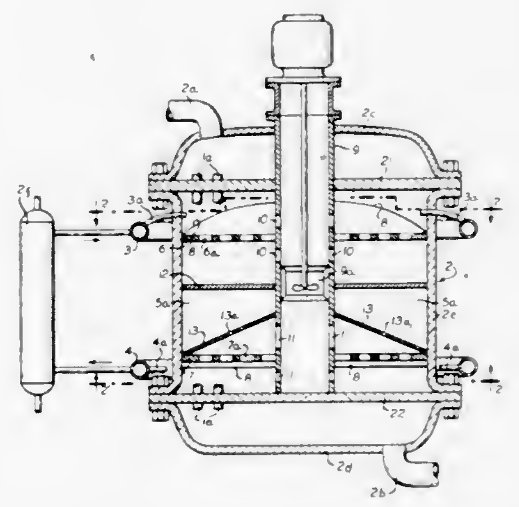
REACTOR FOR CARRYING OUT REACTIONS ACCOMPANIED BY A CHANGE IN HEAT

Herbert Vollmer; Josef Bomelburg, both of Bottrop; Gunther Kammholz, Geisenkirchenbuer; Oskar Wanka, Deggendorf/Donau, and Friedrich Gutlhuber, Ruhmannsefelden, all of Germany, assignors to VEBA-Chemie AG, Gelsenkirchen-Buer and Deggendorfer Werft Eisenbau GmbH, Deggendorf/Donau, both of, Germany

Continuation-in-part of Ser. No. 111,348, Feb. 1, 1971, abandoned. This application Aug. 27, 1971, Ser. No. 175,523

Int. Cl. B01j *9/04*

U.S. Cl. 23—288 L **5 Claims**



A shell and tube reactor for reactions accompanied by a change in heat. Reaction material flows through the tubes and a heat exchange medium flow through the shell to remove or supply heat of the reaction. Also a pump disposed in the reactor on the shell side circulates the heat exchange medium within the shell. The tubes are disposed in spaced sectors so that passageways are provided for the circulating heat exchange medium. Heat exchange medium is withdrawn and supplied to the shell and is itself subjected to heat exchange outside the reactor. Improved distribution of the heat exchange medium within the shell is obtained by withdrawing and supplying the heat exchange medium, respectively, from and to the aforesaid passageways.

3,792,981

CATALYTIC REACTOR

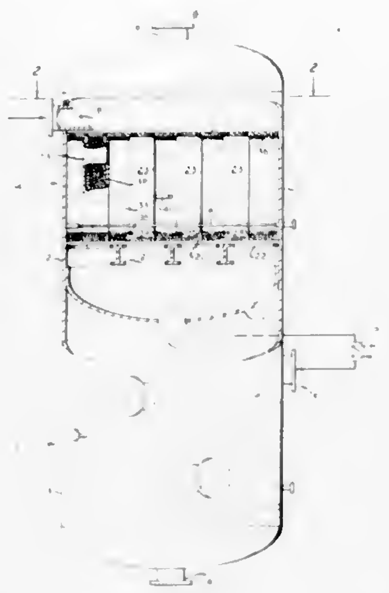
George R. Hettick; Donald M. Little, and Robert D. Bauer, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 853,281, Aug. 27, 1969, abandoned. This application Sept. 15, 1971, Ser. No. 180,844

Int. Cl. B01j *9/04;* **C07c** *11/04*

U.S. Cl. 23—288 R **2 Claims**

A plurality of vertically elongated tubular members are disposed within the shell of a catalytic reactor above a grating, and a bed of catalyst is supported by the grating and fills in the volume around the tubular members. Ethylene is purified from small quantities of acetylene by contact with a palladium on alpha alumina catalyst at a critical space velocity range of 5,500 to 6,000.



3,792,982

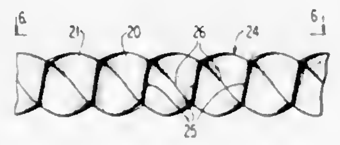
ART FORM STRUCTURE AND METHOD OF MAKING

Andrew Mitchell David, 107 Wythe Crescent Dr., Hampton, Va.

Filed Nov. 7, 1972, Ser. No. 304,475

Int. Cl. B21d *11/00*

U.S. Cl. 29—191.6 5 Claims



A pair of initially flat metal strips are disposed at right angles and interfolded repeatedly to produce a form which may be expanded axially or longitudinally with a simultaneous twisting movement to produce the art form which may be employed to make a variety of objects. The art form structure possesses a characteristic triangular shape in cross section with an interwoven appearance for the two strips of metal or similar sheet material.

3,792,983

ETHYLENE AND ACRYLATE ESTERS, THEIR PREPARATION AND THEIR USE AS WAX CRYSTAL MODIFIERS

Norman Tunkel, Perth Amboy; Harold N. Miller, Millington, and Max J. Wisotsky, Highland Park, all of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Continuation of Ser. No. 717,931, April 1, 1968, abandoned. This application May 7, 1971, Ser. No. 141,412

Int. Cl. C10l *1/18*

U.S. Cl. 44—62 4 Claims

Copolymers of about 4 to 40 molar proportions of ethylene and one molar proportion of acrylate ester, having number average molecular weights of 1,000 to 50,000 and prepared by free radical catalysis under pressures above 2,000 psig. are useful as wax crystal modifiers.

3,792,984

FUEL OIL BLENDING TO IMPROVE POUR REDUCTION

Edmund W. Cole, Poughkeepsie; Jerzy J. Bialy, Lagrangeville, and William M. Sweeney, Wappingers Falls, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 878,919, Nov. 21, 1969, abandoned. This application June 25, 1970, Ser. No. 49,991

Int. Cl. C10l *1/18*

U.S. Cl. 44—62 6 Claims

A low pour point fuel oil blend is prepared from a major amount of a high pour point, low sulfur, waxy, residual fuel and a minor amount of low-waxy, low pour, residual fuel oil by adding thereto from 0.01 to 0.5 percent by weight of an oil soluble ethylene-vinyl fatty acid ester copolymer in which the fatty acid component of the ester has a carbon content of from about 2 to about 6; the copolymer having a molecular weight between about 20,000 and 31,000, a melt index of about 5 to about 28 and a vinyl fatty acid ester content of from about 24 to about 34 percent. The copolymer may be added either in a water-glycol emulsion or in a hydrocarbon to one of the blend components which has been heated to between about 200° to 400°F.

3,792,985

METHOD OF MAKING GLASS-METAL FIBER COMPOSITES

August G. Siefert, Granville, and Fred T. Sens, Newark, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 860,417, Sept. 23, 1969, abandoned. This application Aug. 19, 1971, Ser. No. 173,265

Int. Cl. C03b *37/02*

U.S. Cl. 65—13 7 Claims

Composites of glass reinforced by metal fibers are made by fusing glass coated metal fibers together. The coated fibers may be made by drawing a fiber through a tube of the glass and softening a narrow band of the glass tube around the fiber as the fiber is pulled from the tube. Glass-metal fibers so produced are arranged next to one another, and the glass is fused together at a temperature above the annealing point of the glass and approximately at the softening point of the glass. In the case of boron fibers, the fibers are kept at a temperature desirably below 1,650°F. as the composite is being prepared. The composites of the invention include boron, tungsten, or molybdenum fibers in glass. Procedures given can also produce composites with stainless steel, or carbon steel fibers.

3,792,986

METHOD OF FABRICATING, USING AND RECONDITIONING APPARATUS FOR FORMING OPTICAL QUALITY ARTICLES FROM MOLTEN GLASS AND FORMING ELEMENTS FOR USE THEREIN

Jack T. Scott, and William H. Browne, both of Cincinnati, Ohio, assignors to Scott-Browne Corporation, Cincinnati, Ohio

Filed May 8, 1972, Ser. No. 250,963

Int. Cl. C03b *9/34*

U.S. Cl. 65—27 16 Claims

The overall process of manufacturing molded articles, and particularly optical quality articles from molten glass is greatly enhanced, and the cost thereof is greatly reduced, by an improved glass mold element and process of making, using and reconditioning glass mold elements. A hard heat conductive mold element core is formed and shaped undersize by at least about .010 inches relative to an ultimate desired shape and then is built up to beyond this shape by a heavy layer of electroplated nickel of roughly 0.050 to 0.100 inches in thickness, which layer is then machined and polished down to desired size and finish. The electroplating process is one which results in stress-free electroplated deposit which avoids warping and microcracking of the nickel layer. An electroplating process

which results in a lamilar crystalline structure of the plated layer is suitable, and of these processes a conventional sulfamate nickel plating process has been found highly successful and is therefore preferred. After continued use and repolishing to remove oxidation, scratches, etc., the mold is reconditioned by stripping the nickel layer and replating the mold as before. The repeated reconditionability provided by the process and mold element of the present invention reduces costs, and the mold elements formed thereby are found to be better and longer lasting than those of the prior art.

3,792,987

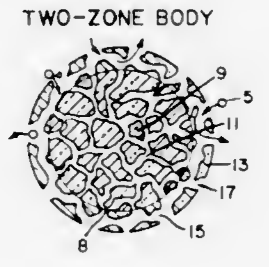
METHOD OF MAKING AN IMPROVED POROUS GLASS SUPPORT MATERIAL

David L. Eaton, 3250 Wheaton Rd., Big Flats, N.Y.

Filed Mar. 27, 1972, Ser. No. 238,258

Int. Cl. C03c *15/00*

U.S. Cl. 65—31 7 Claims



Porous glass support materials having two essentially distinct zones of porosity. An outer surface zone comprises an outer shell with relatively large pores of controlled diameter while an inner zone comprises a core portion having relatively smaller pores of controlled diameter. The materials are made by subjecting porous glass bodies of substantially uniform pore size to a carefully controlled alkali etching cycle in which only the outer zone of the bodies have their pores enlarged. The thus treated bodies are particularly useful as chromatographic support materials which, in use, demonstrate a desirably low height equivalent theoretical plate (HETP).

3,792,988

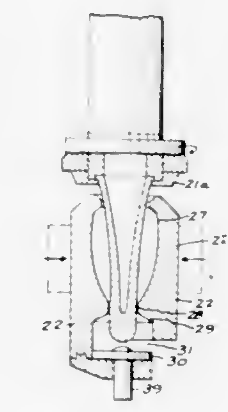
METHOD OF MAKING GLASSWARE

Edward A. Nowak, Toledo, Ohio, and Philip P. Pahl, Lambertville, Mich., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed July 6, 1971, Ser. No. 159,611

Int. Cl. C03b *9/14*

U.S. Cl. 65—79 4 Claims



A method of making glassware wherein a charge of glass is shaped in a parison mold to form an elongated hollow parison, thereafter enclosed in a finishing mold which has a hollow bowl shaping portion, an intermediate constricted portion, and large base forming portion. An intermediate portion of the parison is caused to engage the intermediate portion of the finishing mold and a portion of the hollow parison is caused to extend into the portion of the mold below the restricted portion. The hollow body portion of the parison is then blown outwardly onto the bowl shaping portion and the base forming portion of the finishing mold, and finally a force is applied to the lower end portion of the expanded parison to form it into solid configurational conformity with the base forming portion of the finishing mold and a movable forming plate.

3,792,989

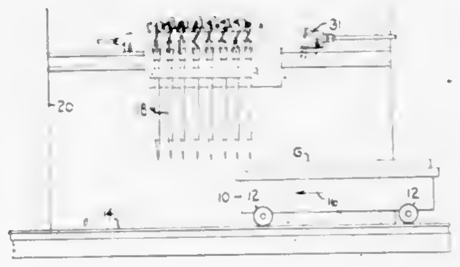
THERMALLY DIRECTED GLASS CUTTING

John R. Dahlberg, Jeannette; James L. Oravitz, Cheswick, and Edmund R. Michalik, West Mifflin, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 72,354, Sept. 15, 1970, Pat. No. 3,730,405. This application June 21, 1972, Ser. No. 265,080

Int. Cl. C03b *33/02*

U.S. Cl. 65—112 5 Claims



This invention relates to a method and apparatus for cutting glass wherein glass is thermally scored along an intended path of cut, using a non-radiant, surface heating means. A fracture is then directed along the intended path by applying a bending moment about the thermal score.

3,792,990

ALLOY FOR SUPERCONDUCTIVE MAGNET

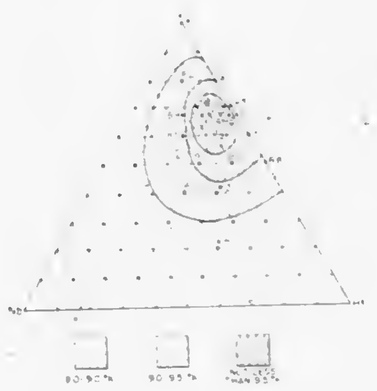
Kyoji Tachikawa, and Kiyoshi Inoue, both of Tokyo, Japan, assignors to The Director of National Research Institute for Metals, Tokyo, Japan

Filed Nov. 28, 1972, Ser. No. 310,023

Claims priority, application Japan, Dec. 27, 1971, 46-105345

Int. Cl. C22c *27/00*

U.S. Cl. 75—134 V 1 Claim



A ternary alloy, suitable for superconductive magnets, contains 30–90 atomic percent vanadium, 5–65 atomic percent hafnium, and less than 40 atomic percent niobium.

3,792,991

MACHINE FOR THE PRODUCTION OF HOLLOW GLASS BODIES

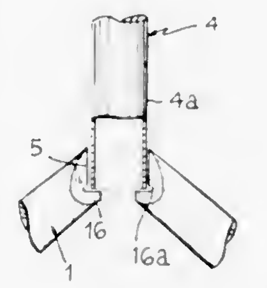
Dieudonne Couquelet, Esneux, Belgium, assignor to Ateliers de Construction mecanique Dieudonne Couquelet, societe anonyme, Grivegnee, Belgium

Filed Dec. 6, 1971, Ser. No. 205,042

Claims priority, application Belgium, Dec. 7, 1970, 759980

Int. Cl. C03b *23/04*

U.S. Cl. 65—272 **1 Claim**



A machine for the production of hollow glass bodies from glass tubes comprises a fixed pedestal, a drum rotatable on the pedestal about a vertical axis, and rotating upper and lower grippers on the drum. Fixed blowpipes about the drum heat the tubes whereupon the tubes sever by thermal shock. Each gripper comprises a plurality of coacting gripping fingers whose ends are specially shaped to support the severed hollow body.

3,792,992

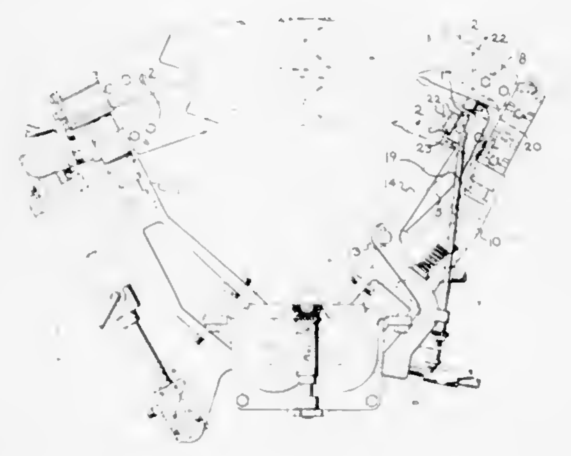
SPRING MOUNTED CHARGE DROP GUIDING MEANS

Andrew E. Brymer, Jr., Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Sept. 11, 1972, Ser. No. 288,142

Int. Cl. C03b *11/00*

U.S. Cl. 65—303 **4 Claims**



In the feeding of glass charges in the form of gobs which are severed from a downwardly flowing stream of glass, it is desirable that a drop guide be positioned beneath the cutting plane of the severing shears to prevent the gob or charge of glass from turning about its vertical axis. The adjustable mounting of drop guides is conventional practice, with the present invention being directed essentially to mounting the drop guide to its arm or support by means of a fairly flexible spring so as to permit successive gobs of slightly larger diameter or smaller diameter to be influenced by the drop guide but without sufficient force to disturb the vertical drop of the charge.

3,792,993

APPARATUS FOR HARDENING GLASS PLATES

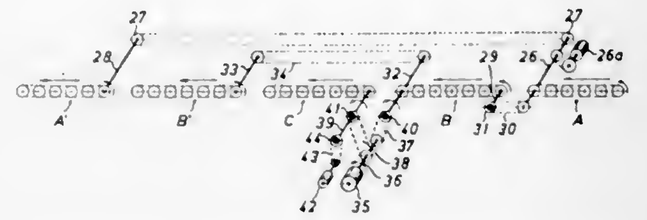
Arvi Artama, and Erkki Artama, both of Laukontori 4C, Tampere, Finland

Filed Sept. 20, 1971, Ser. No. 181,939

Claims priority, application Finland, Sept. 21, 1970, 2564/70

Int. Cl. C03b *25/04, 27/00*

U.S. Cl. 65—163 **6 Claims**



Apparatus for hardening glass plates, comprising a tunnel-like heating furnace, preferably including several aligned units, through which glass plates to be hardened are fed, rotary conveying elements, e.g., in the form of rollers, for feeding the glass plates into, through and out of the furnace, a quenching device being connected with the rear part of the furnace, for rapidly quenching the heated glass plates in order to harden them, and means for imparting a periodical rapid traverse movement to at least some of the rollers, the traverse movement making possible rapid conveying of the glass plates from the furnace to the quenching device, so as to insure uniformity of quenching and hardening as well as to avoid possible distortions.

3,792,994

ANILIDE CARBAMATES AS ALGICIDAL AGENTS

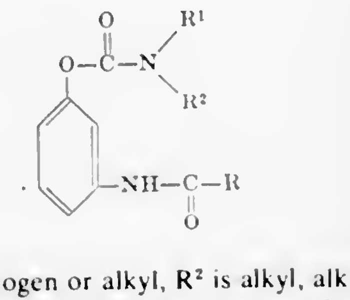
Don R. Baker, Orinda; Eugene G. Teach, El Cerrito, both of Calif., and Duane R. Arneklev, Antelope, Mont., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 119,852, March 1, 1971, abandoned. This application Dec. 26, 1972, Ser. No. 318,316

Int. Cl. A01n *9/20*

U.S. Cl. 71—67 **39 Claims**

This invention relates to the utility of certain anilide carbamates of the general formula:



wherein R^1 is hydrogen or alkyl, R^2 is alkyl, alkynyl, cycloalkyl, allyl, phenyl, 3,4-dichlorophenyl or benzyl and R is alkyl, haloalkyl, alkenyl, or cyclopropyl as algicidal agents.

3,792,995

PROCESS FOR PRODUCING CEPHALOSPORIN DERIVATIVES

Michihiko Ochiai, Osaka; Osami Aki, Kawanishi; Akira Morimoto, Osaka; Taiiti Okada; Kazuo Shinozaki, both of Kyoto; Yutaka Asahi, Takarazuka, and Katsutada Masuda, Ashiya, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Mar. 31, 1972, Ser. No. 240,286

Claims priority, application Japan, Apr. 5, 1971, 46-20901

Int. Cl. C07b *29/06;* **C07d** *93/15*

U.S. Cl. 204—72 **11 Claims**

Process for producing 3-ezomethylene cephalosporins by electrolytically reducing 7-amino- or 7-acylamino-3-(substituted methyl)-3-cephem derivatives.

3,792,996

HERBICIDAL COMPOSITION

Joseph E. Barron, Shelton; Adam Soboleski, Naugatuck, both of Conn., and William S. McIntire, Senatobia, Miss., assignors to Uniroyal, Inc., New York, N.Y.

Filed May 7, 1971, Ser. No. 141,388

Int. Cl. A01n *9/20*

U.S. Cl. 71—115 **5 Claims**

An N-arylphthalamate-dinitroalkyl phenolate herbicidal formulation is made stable in hard water by the addition of 2 to 20 percent by weight of a water soluble phenolic material.

3,792,997

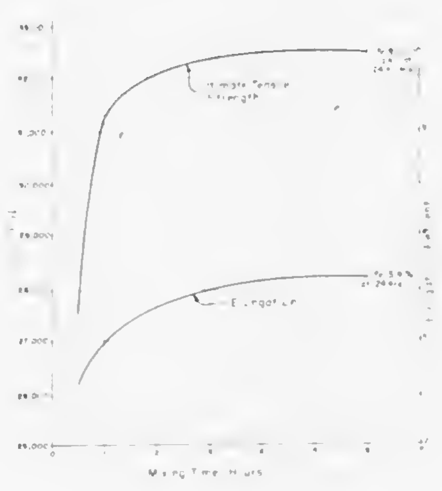
ALUMINUM-COPPER-MAGNESIUM POWDER METALLURGY

Samuel Storchheim, 104-40 Queens Blvd., Forest Hills, N.Y.

Filed May 17, 1972, Ser. No. 254,013

Int. Cl. B22f *3/00, 9/00*

U.S. Cl. 75—0.5 R **4 Claims**



Sintered compacts of aluminum-base powder containing copper and magnesium are obtained with superior mechanical properties by using as the copper component a non-leafing type copper flake containing on its surface from about 0.03 to a maximum of about 0.05 weight percent of a "leafing" component such as stearic acid or oleic acid, and the like.

3,792,998

METHOD FOR PREVENTING THE DILUTION OF SULPHUR DIOXIDE CONTAINING WASTE GASES OBTAINED IN COPPER CONCENTRATE ELECTRIC SMELTING FURNACES

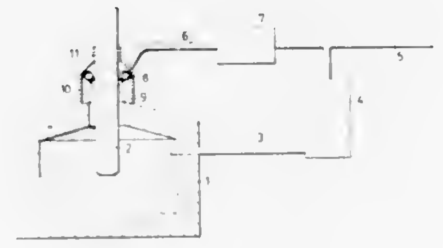
Allen Ferdinand Norro, Skelleftehamn, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

Filed Feb. 24, 1972, Ser. No. 229,108

Claims priority, application Sweden, Mar. 1, 1971, 2573/71

Int. Cl. C22d *7/02*

U.S. Cl. 75—10 R **1 Claim**



A method and apparatus for preventing the dilution of sulphur dioxide containing waste gases in copper concentrate electric smelting furnaces using an electrode of the Soderberg pattern. The waste gases are removed from the furnace chamber and passed to a cleansing station, where solid particles are removed from the gases. The cleansed gas is then divided into two streams, a major stream and a minor stream. The minor stream of gas is passed to an indirect heat exchanger and cooled therein, whereafter the cooled gas is injected back into the furnace in a manner such that it passes around the electrode. Air is prevented from entering the top of the furnace through the electrode lead-in by means of a seal structure.

3,792,999

METHOD OF PRODUCING A DRAWING AND DEEP DRAWING STEEL RESISTANT TO AGEING, PARTICULARLY FOR SINGLE-COAT ENAMELLING

Karl Ruttiger, Dortmund, Germany, assignor to Dortmund-Horder Huttenunion Aktiengesellschaft, Dortmund, Germany

Continuation of Ser. No. 620,208, Feb. 24, 1967, abandoned. This application Feb. 5, 1971, Ser. No. 113,075

Claims priority, application Germany, Feb. 26, 1966, 4945718; Apr. 29, 1966, 4998118; Oct. 18, 1966, 5133540

Int. Cl. C21c *7/10;* **C22c** *33/00*

U.S. Cl. 75—49 **6 Claims**

Process for producing deep drawing steel resistant to ageing includes reducing the carbon content of a steel melt having the composition 0.1% maximum carbon, manganese below 0.45%, 0.03% maximum phosphorus, 0.035% maximum sulphur and the balance iron to a maximum of 0.03% by vacuum treatment, adding manganese to the steel melt so that the maximum total manganese therein is 0.45%, and adding to the steel melt from 0.05 to 0.2 kg boron per ton of the steel melt.

3,793,000

PROCESS FOR PREPARING KILLED LOW CARBON STEEL AND CONTINUOUSLY CASTING THE SAME, AND THE SOLIDIFIED STEEL SHAPES THUS PRODUCED

Robert S. Miltenberger, Weirton, W. Va., assignor to National Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 7,231, Jan. 30, 1970, abandoned. This application June 12, 1972, Ser. No. 262,104

Int. Cl. C21c *7/10;* **B22d** *27/20*

U.S. Cl. 75—49 **13 Claims**

A heat of low carbon steel is killed by making an initial metallic aluminum addition to the ladle to produce partially deoxidized steel, followed by vacuum degassing and thereafter making a further metallic aluminum addition to complete the deoxidation. The heat of vacuum degassed killed steel contains 0.005–0.15% of carbon, 0.20–0.75% of manganese, residual silicon in an amount less than 0.020%, aluminum in an amount of at least 0.02% and less than 0.03%, less than 125 parts per million of oxygen and the remainder iron and incidental impurities, and it may be cast continuously. The solidified steel shapes thus produced may be in the form of slabs, and the slabs may be rolled to produce flat rolled products which are especially useful in the production of tinplate and galvanized steel.

3,793,001

PROCESS FOR MANUFACTURING STEEL

Aldo Ramacciotti, Rome, Italy, assignor to Centro Sperimentale Metallurgico S.p.A., Rome, Italy

Filed May 6, 1971, Ser. No. 140,962

Claims priority, application Italy, May 22, 1970, 50894/70

Int. Cl. C21c *5/32*

U.S. Cl. 75—60 **1 Claim**

Process for manufacturing steel, particularly special and alloyed, in a vessel revolving around its vertical axis, furnished with means for varying sharply its velocity or reversing the sense of rotation, said vessel being internally lined with basic or acid refractory, the steelmaking being carried out by downwardly blowing oxydizing gases, in particular technically pure oxygen, over the melt consisting of liquid pig iron, iron or steel scarp and/or iron in pigs, flux and possibly iron ore, said melt being dynamically curved by the rotation; in which process the oxygen required for the refining, or other oxydizing or inert gases are blown downwardly, these being called primary jet, and other oxygen and/or other oxydizing gases, called secondary jet, are blown down in order to burn up to 90 percent of CO formed during the refining actions and form CO_2 inside the vessel, including the metallic melt is directly overheated by the heat developed by said combustion of CO, without using other fuels, being the refractory lining of the vessel protected against the action of the heat as well as of the slag during the refining.

3,793,002
METHOD OF INTRODUCING A COMBUSTIBLE AUXILIARY LIQUID INTO BLAST FURNACE AND A TUYERE FOR CARRYING OUT THE METHOD

Daniel Borgnat, Senecourt, and Henri Della Casa, Metz, both of France, assignors to Institut de Recherches de la Siderurgie Francaise, Saint-Germaine-en-Laye, France

Filed Oct. 12, 1971, Ser. No. 188,247

Claims priority, application France, Oct. 4, 1971, 71.36906

Int. Cl. C21c *5/30;* **F27d** *7/00*

U.S. Cl. 75—60 **9 Claims**

A method and tuyere for introducing a combustible auxiliary liquid into a blast furnace to partially replace coke used as reduction agent, in which the hot blast necessary for the operation of the blast furnace is fed into a tuyere passage having a convergent inlet portion and a divergent output portion at such pressure so that the hot blast reaches supersonic speed in the passage and forms a shock wave in the divergent outlet portion. The combustible liquid is introduced into the passage upstream of the shock wave forming therein so that the latter will atomize and thoroughly mix the combustible liquid with the hot air to thus cause complete combustion of the mixture.

3,793,003
METHOD FOR PRODUCING ALUMINUM METAL DIRECTLY FROM ORE

Donald F. Othmer, 333 Jay St., Brooklyn, N.Y.

Filed Jan. 4, 1971, Ser. No. 103,765

Int. Cl. C22b *21/00*

U.S. Cl. 75—68 **10 Claims**

Aluminum may be separated from iron oxide containing ores hitherto unusable through conventional processing by conversion to a volatile tri-halide. This, at 1,000°-1,200°C converts, with additional aluminum from the ore, to three moles of mono-halide, which, on cooling below 1,000°C, reverts to one mole of tri-halide and two atoms of pure metallic aluminum. The aluminum trihalide, without cooling, unites with the iron oxide in imcoming ore to give volatile ferric chloride, which is removed from the system, and aluminum oxide which continues with the balance of the ore to form the subhalide. Different processes with other selected steps produce aluminum from clays, feldspars, oil shales, red muds from current aluminum production wastes, slimes from phosphate manufacture, etc., while producing economically and almost quantitatively the other metal values.

3,793,004
METHOD FOR TREATING ZINC CADMIUM LEAD AND TIN DROSS

Ronald Frederick Boddey, and Ian James, both of Nechells, England, assignors to Foseco International Limited, Birmingham, England

Filed May 26, 1971, Ser. No. 147,230

Claims priority, application Great Britain, June 9, 1970, 27885/70

Int. Cl. C22b *17/00*

U.S. Cl. 75—71 **7 Claims**

Drossing fluxes for zinc, lead or tin comprise a salt of a sulphur or phosphorus acid which contains hydrogen in the anion, and either an alkali metal chloride or an alkaline earth metal chloride.

3,793,005
REDUCTION OF NICKEL OXIDE IN A ROTARY HEARTH FURNACE

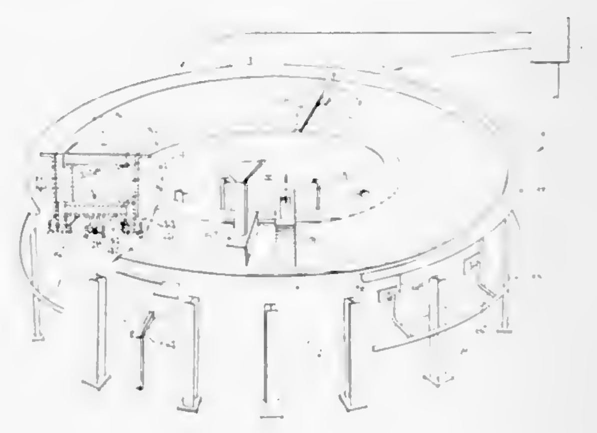
Daniel Kelly, Clarkson, Ontario, Canada; Walter Curlook, Neuilly, France, and Malcolm Charles Evert Bell, Oakville, Ontario, Canada, assignors to The International Nickel Company, Inc., New York, N.Y.

Filed July 2, 1971, Ser. No. 159,289

Claims priority, application Canada, July 8, 1970, 87696

Int. Cl. C22b *23/02*

U.S. Cl. 75—82 **10 Claims**



Briquetted compounds selected from the group consisting of nickel oxide, cobalt oxide and compounds heat decomposable thereto, particularly at temperatures below 1,000°C., are fed to a rotary hearth furnace to form a static shallow bed of briquettes that is heated by radiation and convection to a temperature between about 750°C. and 1,000°C. and is treated with a carbonaceous reductant to reduce the compound to metal. Advantageously, the carbonaceous reductant is incorporated in the briquettes and is a liquid hydrocarbon.

3,793,006
METHOD OF MANUFACTURING GRANULAR BASIC SLAG FORMING AGENT FOR USE IN STEEL MANUFACTURING

Takaho Kawawa, Kawasaki shi; Koichi Fukuro, and Shunsuke Matsumura, both of Kuzuu machi, all of Japan, assignors to Nippon Kokan Kabushiki Yoshizawa Lime Industry Company Limited, Tokyo, Japan

Filed Sept. 15, 1971, Ser. No. 180,866

Claims priority, application Japan, Sept. 25, 1970, 45-83702

Int. Cl. C22b *9/10;* **C21b** *1/08;* **C21c** *7/00*

U.S. Cl. 75—94 **10 Claims**

A granular basic slag forming agent for use in steel manufacturing is manufactured by the method comprising the steps of admixing 50 to 90 percent, by weight, of limestone, 10 to 50 percent, by weight, of ferric oxide, and 1 to 10 percent, by weight, of a member selected from the group consisting of carbonates and fluorides of alkali metals and alkaline earth metals and complex compounds thereof, pulverizing the resulting mixture, pelletizing the resulting powder to produce pellets of a predetermined grain size, and calcining the pellets in a rotary kiln to form calcined pellets each consisting of a core of burned lime covered by a coating of $2CaO \cdot Fe_2O_3$.

3,793,007
MANGANESE COMPOSITIONS

James D. Kline, Bay Village, Ohio; William C. T. Yeh, West Chester, and Ulysses A. Preston, Paoli, both of Pa., assignors to Foote Mineral Company, Exton, Pa.

Filed July 12, 1971, Ser. No. 161,876

Int. Cl. C22c *31/00*

U.S. Cl. 75—134 M **9 Claims**

A method, articles and compositions are described for the direct addition of manganese metal to molten aluminum, which provide more rapid dissolution of the manganese in the aluminum than has been possible heretofore. The manganese is added to the molten aluminum in powder form (minus 14 mesh) in intimate admixture with a flux capable of forming a molten phase at the temperature of the molten aluminum to which the mixture is added. The flux, which is employed in an amount from about 3 to about 10 percent by weight of the total manganese-flux composition, contains chlorides other than those of manganese, fluorides and mixtures of such chlorides and fluorides; the preferred flux being 40 percent sodium chloride, 40 percent potassium chloride and 20 percent cryolite (Na_3AlF_6).

3,793,008
MONOCARBIDE FIBER-REINFORCED IRON-BASE SUPERALLOY COMPOSITE EUTECTIC CASTINGS AND METHOD

Lemuel A. Tarshis, Latham, and Edward R. Buchanan, Burnt Hills, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 1, 1972, Ser. No. 230,928

Int. Cl. C22c *39/20*

U.S. Cl. 75—128 G **7 Claims**

A high performance eutectic casting comprised of an iron-base alloy matrix reinforced with 8 to 19 volume percent of uniformly aligned fibers of a metal monocarbide extending continuously entirely through the casting is made by directionally solidifying a melt containing the constituents of the monocarbide in amounts corresponding to the monocarbide content of the eutectic. The solidification rate is at least ¼ inch/hour.

3,793,009
IMPACT ANTISPARK ALLOY FOR MACHINE PARTS

Shota Semenovich Katsitadze, ulitsa Paliashvili, 102, kv. 4; Dzhansug Ilich Chkonia, ulitsa Kipshidze, 5, kv. 24, and Alexandr Petrovich Martiashvili, ulitsa Paliashvili, 82, kv. 6, all of Tbilisi, U.S.S.R.

Filed Oct. 24, 1972, Ser. No. 300,305

Int. Cl. C22c *9/06*

U.S. Cl. 75—159 **1 Claim**

A copper-based alloy also including aluminum and nickel and, additionally, chromium and zirconium, with all of the above components are taken in the following weight percent:

aluminum — 11.7–12.1
nickel — 7.5–8.2
chromium — 0.55–0.65
zirconium — 0.25–0.37
copper — the remainder

An advantage offered by the proposed alloy is that owing to the optimum composition of the alloy, said alloy possesses high physical and mechanical properties and is useful for manufacturing machine parts and tools noted for their strength, hardness and the absence of sparking.

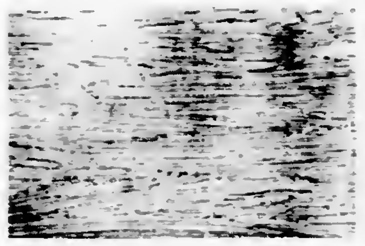
3,793,010
DIRECTIONALLY SOLIDIFIED EUTECTIC TYPE ALLOYS WITH ALIGNED DELTA PHASE

Franklin D. Lemkey, and Earl R. Thompson, both of Glastonbury, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Jan. 27, 1972, Ser. No. 221,165

Int. Cl. C22c *19/00*

U.S. Cl. 75—170 **10 Claims**



A nickel alloy containing columbium and/or tantalum and chromium and/or aluminum and displaying eutectic-type behavior is unidirectionally cast under conditions resulting in coupled growth, providing a lamellar biphase or multiphase microstructure displaying about 25–40 percent of a substantially aligned delta phase, Ni_3Cb, Ni_3Ta or $Ni_3(Cb,Ta)$, in a nickel alloy matrix containing chromium and/or aluminum.

3,793,011
NICKEL BASE ALLOY

Ranes P. Dalal, Stratford; Jeremy J. Walters, Trumbull, and Bruce A. Ewing, Shelton, all of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Nov. 8, 1971, Ser. No. 196,799

Int. Cl. C22c *19/00*

U.S. Cl. 75—171 **5 Claims**

The alloys of this invention contain relatively small, but nonetheless significant, amounts of tungsten and molybdenum for solid solution strengthening, chromium for oxidation and sulfidation resistance, tantalum for solid solution and carbide strengthening, and aluminum and titanium to enhance the strength by precipitation of a fine dispersed phase, gamma prime $Ni_3(Al,Ti)$.

3,793,012
NICKEL-BASE TANTALUM CARBIDE EUTECTIC ALLOYS

John L. Walter, Scotia, and Harvey E. Cline, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 138,555, April 29, 1971, abandoned. This application June 14, 1971, Ser. No. 153,006

Int. Cl. C22c *19/00*

U.S. Cl. 75—171 **5 Claims**

Unidirectionally solidified nickel-base carbide-reinforced cast superalloy bodies having high strength and exceptionally high stress-rupture properties, particularly at elevated temperatures. The reinforcing fibers present in the matrix comprise aligned fibers of single-crystal monocarbide essentially of tantalum. A preferred composition contains the nominal (melt) percentages: 6.7 w/o chromium, 18.25 w/o total tantalum, 1.1 w/o carbon, 5.0 w/o aluminum, 0.84 w/o titanium, 8.4 w/o cobalt and 5.0 w/o molybdenum, balance essentially nickel. The resulting article, after trimming, has the approximate composition: 7.9 w/o chromium, 7.0 w/o tantalum, 0.24 w/o carbon, 6.0 w/o aluminum, 0.38 w/o titanium, 9.6 w/o cobalt, 4.9 w/o molybdenum, balance essentially nickel.

3,793,013

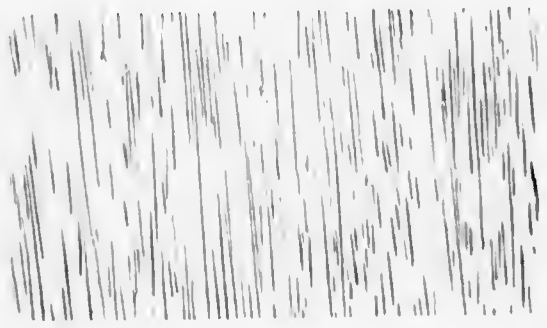
COBALT-BASE TANTALUM CARBIDE EUTECTIC ALLOYS

John L. Walter, Scotia, and Harvey E. Cline, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 134,235, April 15, 1971, abandoned. This application Sept. 21, 1971, Ser. No. 182,530

Int. Cl. C22c *19/00*

U.S. Cl. 75—171 **2 Claims**



Unidirectionally solidified cobalt-base carbide-reinforced cast superalloy bodies having high strength and high resistance to creep, particularly at elevated temperatures, and having an approximate nominal (melt) composition range which consists essentially, by weight, of a trace to 26.0 percent chromium, 13.5 to 19.0 percent tantalum, a trace to 14.5 percent nickel, a trace to 6.5 percent tungsten, a trace to 1.0 percent iron and 1.2 to 1.4 percent carbon, balance essentially cobalt. A preferred composition contains the nominal (melt) percentages: 15.0 w/o chromium, 8.5 w/o nickel, 6.0 w/o tungsten, 18.67 w/o total tantalum, 1.33 w/o carbon, for a total of 20.0 w/o TaC. The resulting article, after trimming, contains from 11.5 to 12.5 wt. percent tantalum. The tantalum and carbon, primarily as an aligned dispersion of TaC fibers in the matrix of the composite structure, constitutes about 5 to 15 volume percent of the body.

3,793,014

PROCESS FOR FABRICATING POROUS BERYLLIUM BILLETS

Stuart N. Rosenwasser, Malibu, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 15, 1973, Ser. No. 341,634

Int. Cl. B22f *3/16*

U.S. Cl. 75—221 **4 Claims**

Porous beryllium billets are prepared by cold isostactic pressing of a mold containing beryllium powder, and sintering under a vacuum the resulting beryllium billet. The billets so produced are particularly useful as a matrix material for active transpiration systems.

ERRATUM

For Class 75—13 V see:
Patent No. 3,792,900

3,793,015

DISPERSION OF PARTICLES IN AN ORGANIC LIQUID

Jozef Leonard Van Engeland, St. Katelijne Waver; Noel Jozef De Volder; Bernard Hippoliet Tavernier, both of Edegem, and Albert Lucien Poot, Kontich, all of Belgium, assignors to Gevaert-AGFA N. V., Mortsel, Belgium

Continuation of Ser. No. 613,759, Feb. 3, 1967, abandoned. This application Apr. 2, 1971, Ser. No. 130,781

Claims priority, application Great Britain, Feb. 4, 1966, 5057/66

Int. Cl. G03g *9/02, 5/04*

U.S. Cl. 96—1 LY **18 Claims**

A developing liquid for developing electrostatic images in electrophotographic reproduction in which electrostatically attractable pigment particles are dispersed in a non-polar, substantially water-immiscible organic liquid using as the dispersion assistant a bivalent or trivalent metal salt of a phosphorus oxyacid containing at least one organic residue having four or more carbon atoms. Preferred metal cations of the salt are zinc, cadmium, copper, aluminum and iron. The organic residue can be an aliphatic radical with a branched structure being preferred, and from 10 to 18 carbon atoms is an optimum range.

3,793,016

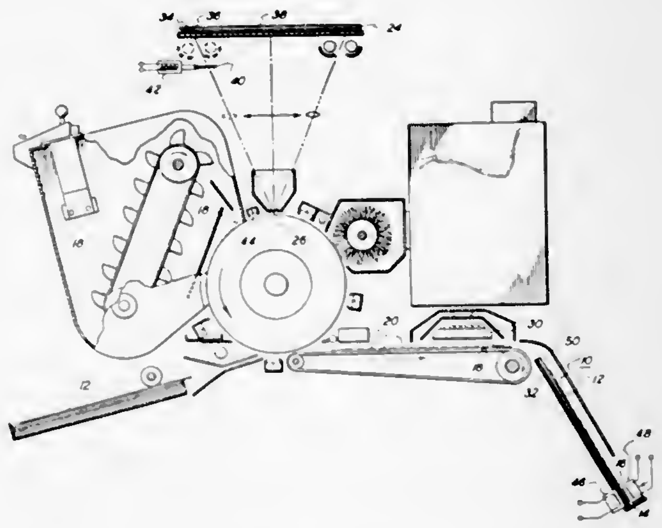
ELECTROPHOTOGRAPHIC SHEET BINDING PROCESS

Roger Hamilton Eichorn, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 19, 1972, Ser. No. 298,980

Int. Cl. G03g *13/00, 13/08*

U.S. Cl. 96—1 R **7 Claims**



Sheet binding where the printing medium itself is the sheet binder. In a xerographic process, high density areas of xerographic toner are provided at desired binding areas. Sufficiently high density toner areas are provided by inserting a finely apertured optical mask adapted to provide edge development effects to maximize overall toner density over the selected binding area, yet which is compatible with solid area coverage machines. These toner binding areas may then be subsequently re-fused between adjacent overlaying sheets to provide bound stacks, without requiring any additional binding material.

3,793,017

IMAGE FIXING METHOD

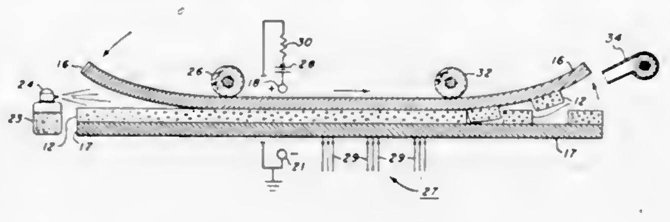
Gedeminas J. Reinis, 56 Woodhaven Dr., Rochester, N.Y.

Filed Oct. 27, 1972, Ser. No. 301,563

Int. Cl. G03g *13/00, 13/04*

U.S. Cl. 96—1 M **15 Claims**

This invention pertains to an imaging system wherein there is employed a structure comprising a cohesively weak electrically photosensitive imaging layer sandwiched between a donor sheet and a receiver sheet. The imaging layer is rendered structurally fracturable by treating the layer with an activator. After exposing the imaging layer to actinic electromagnetic radiation while the imaging layer subjected to an electric field, the sandwich is separated whereby the imaging layer fractures with the exposed portions of the imaging layer residing on one of the sheets and the unexposed portion residing on the other sheet. Images are produced in accordance with the present invention which are highly fixed to their substrates by employing in the imaging process an activator which is or contains an unsaturated hydrocarbon component that can be easily oxidized to form a protective coating in and on the image produced by the imaging process.



3,793,018

IMPROVEMENTS IN CLEANING ELECTROPHOTOGRAPHIC IMAGING SURFACES

Josef Leonard Van Engeland, St. Katelij; Pierre Richard De Roo, Wilrijk; Jan Frans Van Besauw, Brasschaat, and Albert Lucien Poot, Kontich, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed May 19, 1972, Ser. No. 254,903

Claims priority, application Great Britain, May 21, 1971, 16346/71

Int. Cl. C03g *13/08*

U.S. Cl. 96—1 R **16 Claims**

In an electrophotographic reproduction process in which an electrostatic image is formed on a surface, developed with powder particles, the particle image transferred to a reception material and the surface re-used to form further images, the cleaning of the surface as with a brush or fibrous web before re-use of the surface is facilitated by applying to the surface at least one hydrophobic bivalent or trivalent metal salt of a half ester of a branched-chain or straight-chain aliphatic dicarboxylic acid or of a mono- or di-ester of a phophorus oxyacid. The metal salt can be deposited on the surface prior to formation of any image thereon or after transfer of the powder particle image.

3,793,019

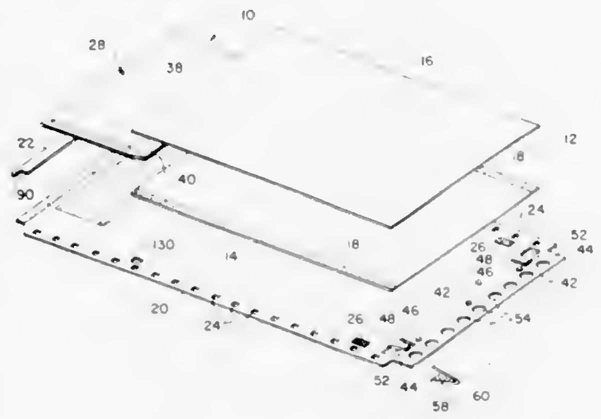
FILM UNIT

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 5, 1972, Ser. No. 268,938

Int. Cl. G03c *1/48*

U.S. Cl. 96—76 R **19 Claims**



An improved self-processing photographic film unit of the type including an image-recording section separably coupled to a resiliently flexible carrier sheet between a rupturable processing fluid pod and a trap assembly that are permanently affixed to the carrier sheet. Various novel means are employed to facilitate the proper separation of the image-recording section from the carrier sheet during the film processing operation.

3,793,020

PHOTOGRAPHIC SILVER HALIDE EMULSIONS SENSITIZED WITH BENZIMIDAZOLE CYANINE DYES

Shiro Kimura, Kanagawa; Yoshiyuki Nakazawa, Nakanuma; Akira Sato, Minami Ashigara, and Yashuharu Nakamura, Ashigara-Kamigun, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

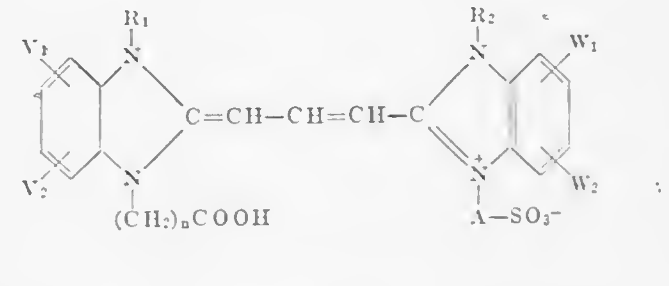
Continuation of Ser. No. 664,287, Aug. 30, 1967, abandoned. This application Sept. 1, 1972, Ser. No. 285,694

Claims priority, application Japan, Aug. 30, 1966, 41-57141

Int. Cl. G03c *1/18*

U.S. Cl. 96—137 **5 Claims**

A photographic silver halide emulsion having higher sensitivity and markedly reduced color staining incorporating a novel sensitizing dye represented by the general formula:



wherein each of groups V_1, V_2, W_1, and W_2 is a hydrogen or halogen atom, each of groups R_1 and R_2 is a lower alkyl group, A is a group selected from polymethylene and alkylpolymethylene group, and n is an integer from 1 to 4.

3,793,021

ELECTRONIC RECORDING MATERIAL

Nario Yamaguchi; Sakae Shimizu; Kazuo Tubuko, all of Tokyo; Kishichiro Kondo, and Hiroo Iwata, both of Nagoya, all of Japan, assignors to Kabushiki Kaisha Ricoh and Toa Gosei Chemical Industry Co., Ltd., both of Tokyo, Japan

Division of Ser. No. 828,776, May 28, 1969, Pat. No. 3,707,402. This application Oct. 24, 1972, Ser. No. 299,898

Int. Cl. G03g *5/00, 7/00*

U.S. Cl. 96—1.5 **8 Claims**

An electronic recording material, comprising a support having a recording layer consisting of a highly insulating resin or a photoconductive layer composed of said highly insulating resin and a photoconductive substance contained therein, said resin being a resin emulsion of vinyl copolymers having a hydroxyl group and containing an acidic compound.

3,793,022

DIFFUSION TRANSFER FILMS WITH ANTI-REFLECTION LAYERS AND PROCESSES

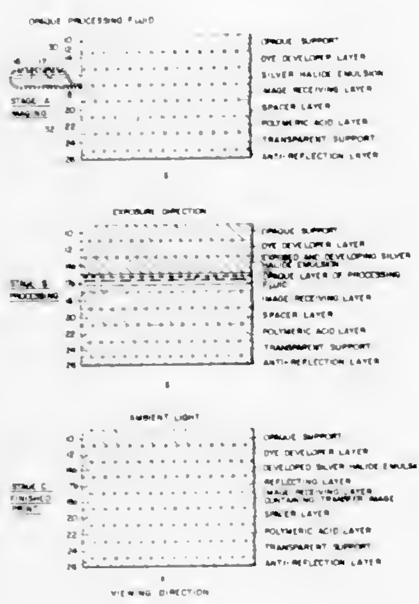
Edwin H. Land, Cambridge; Stanley M. Bloom, Waban, and Howard G. Rogers, Weston, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 1, 1972, Ser. No. 276,979

Int. Cl. G03c *7/00, 5/54, 1/76, 1/48, 1/40, 1/84, 1/78*

U.S. Cl. 96—3 **95 Claims**

Photographic images, particularly multicolor images, viewed through a transparent support have an anti-reflection coating on the outer surface of said support. The images may be formed by multicolor diffusion transfer processes using dye developers or other image dye-providing materials: In the preferred embodiments, the photographic image is an integral negative-positive reflection print. Where photoexposure is effected through a transparent support, e.g., the transparent support through which the final image is viewed, provision of



an anti-reflection coating and effecting photoexposure therethrough will permit more effective recording of light passing through the camera lens. The transparent support preferably has an index of refraction of at least 1.6.

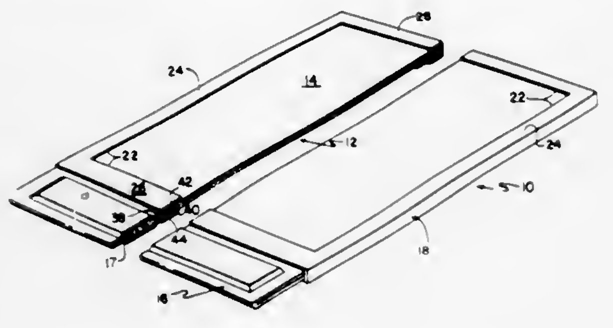
3,793,023
DIFFUSION TRANSFER FILM UNITS CONTAINING POLYETHYLENE GLYCOL, THEIR MANUFACTURE AND USE

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 209,754, Dec. 20, 1971. This application Apr. 24, 1972, Ser. No. 247,023

Int. Cl. G03c *7/00*

U.S. Cl. 96—3 **31 Claims**



Photographic diffusion transfer film units are disclosed which include a polyethylene glycol. In preferred embodiments, the film units utilize dye developers to form multicolor transfer images.

In a particularly useful embodiment, a solution of polyethylene glycol is utilized to laminate two sheets in face-to-face relation. A processing composition is so positioned that application thereof effects delamination between the layers laminated together by the polyethylene glycol.

Dye developer transfer film units containing polyethylene glycol initially positioned in the processing composition and/or in the laminating layer give improved photographic results.

3,793,024
PHOTOCONDUCTOR CONTAINING PRINTING PLATES

Robert F. Gracia, Scituate, Mass., assignor to Itek Corporation, Lexington, Mass.

Continuation-in-part of Ser. No. 743,738, July 10, 1968, abandoned. This application Nov. 8, 1971, Ser. No. 196,445

Int. Cl. G03f *7/02;* **G03c** *5/24*

U.S. Cl. 96—33 **10 Claims**

A planographic printing plate is prepared by exposing imagewise a copy medium comprising a physically developable photosensitive material such as a photoconductor and contacting the copy medium with image-forming materials which remain chemically reactive in the non-exposed areas of the copy medium but become substantially chemically non-reactive in the exposed areas, and contacting the thus treated copy medium with a compound having an oleophilic grouping and a grouping reactive with the chemically reactive image-forming materials of the non-exposed areas of the copy medium, thereby producing a positive oleophilic image of the original. The image-forming materials and/or oleophilic compound having a reactive grouping may be incorporated in the copy medium prior, during, or subsequent to exposure. This printing plate containing the oleophilic image is suitable for contacting with ink to produce multiple copies. When a greasy printing ink is used a positive of the original (positive to positive) is produced.

3,793,025
THERMORECORDING

Marcel Nicolas Vrancken, Hove, Belgium, and Wolfgang Lassig, Cologne-Stammheim, Germany, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

Filed May 17, 1966, Ser. No. 550,834

Claims priority, application Great Britain, May 17, 1965, 20818/65; May 29, 1965, 21985/65. The portion of the term of this patent subsequent to Nov. 4, 1986, has been disclaimed.

Int. Cl. G03c *5/10, 5/36*

U.S. Cl. 96—36 **11 Claims**

A heat sensitive recording layer which is normally permeable by water and consists essentially of a hydrophilic binder having generally homogenously distributed therethrough finely divided particles of a hydrophilic thermoplastic polymer softening at at least about 10°C above room temperature and also containing therein finely divided dye or pigment capable of absorbing electromagnetic radiation and converting the same into heat, is exposed while in heat conductive contact with the radiation absorptive image markings of an original to be reproduced for a time not greater than 10^{-1} second to electromagnetic radiation of an intensity of at least 0.3 Watt. sec per sq.cm and sufficient to heat the areas of the layer corresponding to the non-image areas of the original to reduce the water permeability thereof; and is then treated with an aqueous liquid to develop the image therein by selective permeation by the aqueous liquid of the areas of unchanged permeability.

3,793,026
PHOTOCHEMICAL REPRODUCTION PROCESS

Albert August Reyniers, Kontich; Hugo Vital Van Goethem, Edegem, and Johan Lodewijk Verelst, Kontich, all of Belgium, assignors to Geavaert-Agfa N.V., Mortsel, Belgium

Filed Mar. 9, 1971, Ser. No. 122,546

Claims priority, application Great Britain, Mar. 10, 1970, 11456/70

Int. Cl. G03c *1/58*

U.S. Cl. 96—49 **26 Claims**

A colored image or pattern formed of one or more colored hydrophilic colloid layers is produced on a permanent support by transferring onto such support in the presence of an aqueous liquid from a temporary support carrying the same, an unhardened colored hydrophilic colloid layer containing a

photosensitive iron (III) complex which yields iron (II) ions on exposure to active electromagnetic radiation, exposing the thus transferred colloid layer while in a substantially dry state to an image of such radiation, treating the exposed layer with an activator liquid containing a substance that releases iron (III) ions from the iron (III) complex, and washing away the exposed regions of the colloid layer leaving a relief pattern corresponding to the unexposed portion of such layer, these steps being repeated in sequence for each colored colloid layer transferred to the permanent support to constitute the ultimate colored image or pattern. A suitable activator liquid is an aqueous liquid having a pH above 8 and containing an alkaline compound selected from the group comprising an alkaline metal carbonate, ammonium hydroxide or a water-soluble organic base.

3,793,027
DEVELOPING COMPOSITION FOR USE WITH PHOTOGRAPHIC MATERIALS FOR THE GRAPHIC ARTS

Eiichi Okutsu; Yoo Iijima, and Haruhiko Iwano, all of Kanagawa, Japan, assigners to Fuji Photo Film Co., Ltd., Kanagawa, Japan

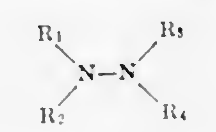
Filed Mar. 22, 1972, Ser. No. 237,001

Claims priority, application Japan, Mar. 26, 1971, 46-18123

Int. Cl. G03c *5/30*

U.S. Cl. 96—66 R **12 Claims**

A developing composition for use in photographic materials for printing, containing an infectious developing agent, sulfite and a hydrazine compound of the general formula:



$$\begin{matrix} R_1 & & R_3 \\ & N-N & \\ R_2 & & R_4 \end{matrix}$$

The developing composition of the invention has a good storage stability.

3,793,028
PHOTOGRAPHIC MATERIAL

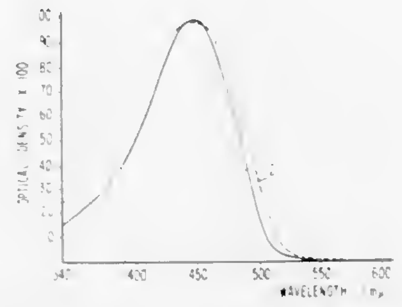
Kazuya Sano, and Seiki Sakanoue, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 6, 1972, Ser. No. 303,757

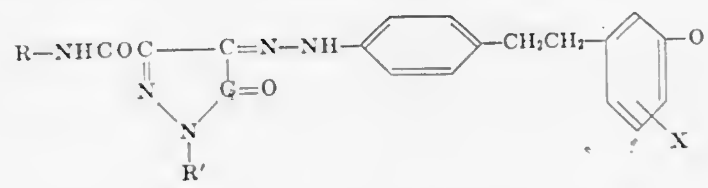
Claims priority, application Japan, Nov. 4, 1971, 46-87792

Int. Cl. G03c *1/40, 7/00*

U.S. Cl. 96—77 **14 Claims**



A silver halide type photographic material to be used in a diffusion transfer process characterised by the inclusion of a compound represented by the following formula (I):



$$\begin{array}{l} R{-}NHCOC{-\!-\!-}C{=}N{-}NH{-}C_6H_4{-}CH_2CH_2{-}C_6H_3(OH)X \\ \quad\;\; \| \qquad\quad | \\ \quad\;\; N \qquad\; C{=}O \\ \qquad \diagdown \;\; \diagup \\ \qquad\;\; N \\ \qquad\;\; | \\ \qquad\;\; R' \end{array} \qquad (I)$$

(wherein R is alkyl group containing 4–7 carbon atoms, X is a hydroxyl group located in the ortho- or para-position to the ring hydroxyl group, and R′ is an ortho-chlorophenyl group).

3,793,029
OPAQUE PHOTOGRAPHIC FILM SUPPORT

Henry G. Parker, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 26, 1971, Ser. No. 192,480

Int. Cl. G03c *1/84*

U.S. Cl. 96—84 R **15 Claims**

An opaque element comprises a flexible transparent film support, such as a polyester support, having thereon a first layer containing carbon black, casein and a compatible organic polymeric material over which is coated a contiguous second layer comprising casein and a compatible organic polymeric material such as a polyvinyl acetate or a styrene-acrylic acid polymer which improves the cracking resistance. The element may be a support for a light-sensitive layer or for an image receiving layer of the type used in an image transfer system.

3,793,030
PROCESS FOR PRODUCING DIAZOTYPE LIGHT-SENSITIVE MATERIAL

Tomiaki Asami, Yokohama, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Continuation-in-part of Ser. No. 777,496, Nov. 20, 1968, abandoned. This application Sept. 2, 1971, Ser. No. 177,423

Int. Cl. G03c *1/74*

U.S. Cl. 96—91 R **5 Claims**

A diazotype light-sensitive material is produced by coating a light-sensitive composition on a supporting sheet, said light-sensitive composition being prepared by dissolving a water soluble synthetic resin or a denatured starch in water and then dissolving in the resulting solution an azo coupling component and then adding thereto a light sensitive diazonium compound, which order of addition prevents the formation of a tar-like material or a water-insoluble precipitate by interaction of the azo coupling component and the diazonium compound.

3,793,031
COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS FOR DIFFUSION TRANSFER PROCESS

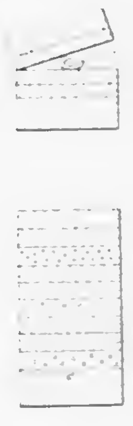
Keisuke Shiba; Masanao Hinata; Yasushi Oishi, and Yoshinobu Yoshida, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-shi, Kanagawa, Japan

Filed Dec. 30, 1971, Ser. No. 214,214

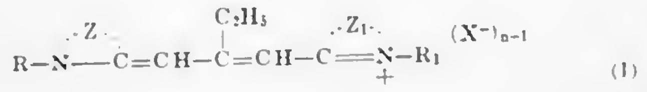
Claims priority, application Japan, Dec. 30, 1970, 45-123040

Int. Cl. G03c *1/40, 5/54, 7/00*

U.S. Cl. 96—99 **7 Claims**

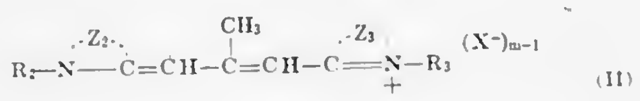


A red-sensitive silver halide photographic emulsion for photographic light-sensitive material containing dye developing agent suitable for diffusion transfer process which comprises a combination of at least one sensitizing dye represented by the following general formula (I) and at least one sensitizing dye represented by the following general formula (II):



$$R-\overset{\cdot\cdot Z\cdot\cdot}{N-\!\!-C}=CH-\overset{C_2H_5}{\overset{|}{C}}=CH-\overset{\cdot\cdot Z_1\cdot\cdot}{C=\!\!=\underset{+}{N}}-R_1\quad(X^-)_{n-1}\qquad(I)$$

wherein Z and Z_1, which may be the same or different, represent a nonmetallic atomic group necessary for completing a series of benzothiazole nucleus or a series of benzoselenazole nucleus; R and R_1 represent each an alkyl group or a substituted alkyl group; at least one of said R and R_1 being a hydroxyalkyl group, a carboxyl group-containing alkyl group, or a sulfo group-containing alkyl group; X represents an anion; and *n* is 1 or 2; and *n* being 1 when said dye forms an intramolecular salt and



$$R_2-\overset{\cdot\cdot Z_2\cdot\cdot}{N-\!\!-C}=CH-\overset{CH_3}{\overset{|}{C}}=CH-\overset{\cdot\cdot Z_3\cdot\cdot}{C=\!\!=\underset{+}{N}}-R_3\quad(X^-)_{m-1}\qquad(II)$$

wherein Z_2 and Z_3, which may be the same or different, represent each a non-metallic atomic group necessary for completing a series of benzothiazole nucleus or a series of benzoselenazole nucleus; R_2 and R_3 have the same significance as R and R_1 of the general formula (I); at least one of said R_2 and R_3 being a hydroxyalkyl group, a carboxyl group-containing alkyl group, or a sulfo group-containing alkyl group; X represents an anion; and *m* has the same significance as *n* of the general formula (I).

3,793,032

COATING AIDS FOR FILM-FORMING COATING COMPOSITIONS

Robert Joseph Pollet, Vremde; Marcel Cyriel DeFre, Edegem, and Arthur Henri DeCat, Mortsel, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

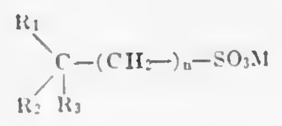
Filed June 4, 1971, Ser. No. 150,197

Claims priority, application Great Britain, June 4, 1970, 27080/70

Int. Cl. G03c *1/36, 1/02*

U.S. Cl. 96—114.5 **12 Claims**

Coating compositions comprising a hydrophilic colloid and at least one surface active compound corresponding to the formula:



$$\underset{R_2\;\;R_3}{\overset{R_1}{C}}-(CH_2-)_n-SO_3M$$

wherein:
M stands for hydrogen, an alkali metal atom, ammonium or organic ammonium,
n stands for 0 or 1,
R_3 stands for hydrogen or when $n = 1$ may be alkyl, and
each of R_1 and R_2 stands for a straight-chain or branched-chain alkyl group or together represent the atoms necessary to close an alicyclic ring structure,
and the use of the aforesaid hydrophlic colloids in photographic elements are described. The coating compositions are excellent inexpensive synthetic coating aids in photographic elements.

3,793,033

DEVELOPMENT-FREE PRINTING PLATE

Joan M. W. Mukherjee, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sept. 5, 1972, Ser. No. 286,111

Int. Cl. G03c *1/68*

U.S. Cl. 96—115 R **11 Claims**

A presensitized, light-sensitive article capable of providing a lithographic printing plate requiring only image-wise exposure to actinic light and no subsequent image development is provided. The article is comprised of a support coated with a hydrophilic composition comprised of: 1) an organic solvent-soluble phenolic resin, and 2) a hydroxyethylcellulose ether, and in reactive association therewith a photoinitiator capable of generating free radicals on exposure to actinic light. Upon imagewise exposure the coated composition becomes more oleophilic in exposed image areas, while remaining hydrophilic and water-receptive in unexposed background areas.

3,793,034

SPECTRALLY SENSITIZED SILVER HALIDE PHOTOGRAPHIC EMULSIONS

Akira Sato; Keisuke Shiba, and Haruo Takei, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

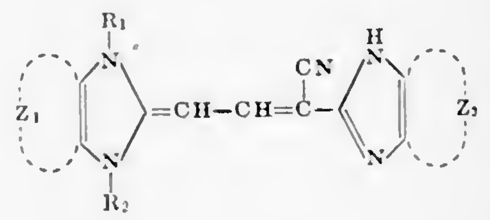
Filed Feb. 17, 1972, Ser. No. 227,026

Claims priority, application Japan, Feb. 18, 1971, 46-7525

Int. Cl. G03c *1/18*

U.S. Cl. 96—137 **8 Claims**

A silver halide photographic emulsion having high spectral sensitivity in the range 510–533 mμ containing at least one sensitizing dye represented by the following formula (1):



wherein Z_1 and Z_2 each represent a group of nonmetallic atoms necessary to complete a benzene ring, the hydrogen atoms of which may be substituted by substituents.

3,793,035

METHOD OF DEVELOPING OPAQUELY COATED SENSITIZED MATRIX WITH PERIODATE CONTAINING SOLUTION

Himanshu M. Patel, Horseheads, N.Y., and Douglas A. Griswold, Blossburg, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 16, 1973, Ser. No. 360,992

Int. Cl. G03c *5/00*

U.S. Cl. 96—36.1 **8 Claims**

A method for establishing a light absorbing pattern on a screen substrate of an image display device wherein opaquely coated sensitized matrix material is developed with a periodate containing solution to remove the sensitized matrix while leaving behind the opaque light absorbing pattern on the screen substrate.

3,793,036

METHOD OF PRODUCING RAPID-HARDENING CEMENT

Ashot Natanovich Grachian, ulitsa Pushkinskaya, 68, kv. 54; Pavel Petrovich Gaidzhurov, ulitsa Budennovskaya, 183, kv. 33; Georgy Sergeevich Zubar, ulitsa Zhdanova, 104, kv. 3; Valentina Vladimirovna Borodavkina, ulitsa Galiny Petrovoi, 16, all of Novocherkassk; Vladimir Sergeevich Dmitrievsky, ulitsa Studencheskaya, 31, kv. 21; Vladimir Mikhailovich Ozerov, ulitsa Svobody, 59, kv. 12, both of Voronezh, and Naum Aronovich Yarkno, Vtoraya Brestaskaya, 43, kv. 59, Moscow, all of U.S.S.R.

Filed Jan. 13, 1972, Ser. No. 217,644

Claims priority, application U.S.S.R., Jan. 13, 1971, 1608709

Int. Cl. C04b *7/02, 7/22*

U.S. Cl. 106—100 **3 Claims**

A method of producing rapid-hardening cement, characterized by the use of a mixture of raw materials, comprising from about 27 to about 42 weight percent of iron oxides, said mixture being roasted at a temperature of 980° to 1050°C in a reducing medium.

3,793,037

ELECTROLESS COPPER PLATING SOLUTION AND PROCESS

Kenneth J. Hacias, Sterling Heights, Mich., assignor to Oxy Metal Finishing Corporation, Warren, Mich.

Filed Mar. 13, 1972, Ser. No. 234,302

Int. Cl. C23c *3/00*

U.S. Cl. 106—1 **20 Claims**

A plating solution suitable for the electroless deposition of copper on ferrous metal surfaces which comprises an aqueous acidic solution containing copper ions; chloride, bromide, or iodide ions; a polyalkylene glycol; and a tertiary amine compound of the structure:

$$R_a-N\,[(CH_2)_nR']_b$$

wherein:
a is zero or 1;
b is 2 or 3;
$a + b$ is 3;
n is 0 to 4, inclusive; or substituted alkyl
R is alkyl/of 1 to 4 carbon atoms where the substituent may be hydroxy or halo; and,
R′ is phenyl or substituted phenyl where the substituent may be mono-, di-, or tri- halo or alkyl of 1 to 4 carbon atoms.

3,793,038

PROCESS FOR ELECTROLESS PLATING

Eileen Maguire, Pasadena, Calif., assignor to Crown City Plating Company, El Monte, Calif.

Continuation-in-part of Ser. No. 224,228, Feb. 7, 1972, abandoned, which is a continuation-in-part of Ser. No. 65,685, Aug. 20, 1970, abandoned. This application Jan. 2, 1973, Ser. No. 320,688

Int. Cl. C23c *3/02*

U.S. Cl. 106—1 **10 Claims**

Organo-nitrogen compounds containing at least two nitrogen atoms separated by no more than one carbon atom stabilize electroless plating solutions against plating of the metal on passivated stainless steel and solution decomposition as caused by the presence of impurities such as palladium ion.

3,793,039

FOAMED GLASS BODY

David Rostoker, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Aug. 2, 1972, Ser. No. 277,337

Int. Cl. C03c *3/08, 11/00*

U.S. Cl. 106—41 **10 Claims**

This invention relates to the production of low expansion, nondevitrifying alkali metal aluminoborosilicate glass foam bodies at temperatures not exceeding about 1,000°C. (1,832°F.).

3,793,040

REFRACTORY CEMENT

Owen M. Burrows, Holden, Mass., assignor to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 28,011, April 13, 1970, abandoned. This application Jan. 28, 1972, Ser. No. 221,776

Int. Cl. C04b *35/04, 35/10, 35/48*

U.S. Cl. 106—55 **5 Claims**

A loose granular mix for producing heat-refractory linings for furnaces is based on an aggregate of refractory oxide loose grains of mixed sizes such as fused alumina having a stable fused glassy coating bonded to the surfaces of individual grains, and includes at least 5 percent by volume of material finer than 30 microns.

Uncoated aggregate, and materials such as clay, magnesia, and flint may be included to produce desired properties of the mix and of the ultimate heat matured product.

3,793,041

REFRACTORY FIBERS OF ZIRCONIA AND SILICA MIXTURES

Harold G. Sowman, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 825,273, May 16, 1969, Pat. No. 3,709,706. This application Aug. 2, 1971, Ser. No. 168,298

Int. Cl. C04b *35/48*

U.S. Cl. 106—57 **21 Claims**

Refractory fibers of zirconia and silica mixtures are made by shaping and dehydratively gelling, for example by extruding in air, an aqueous mixture of a zirconium compound, such as zirconium diacetate, and colloidal silica, and heating the resulting gelled fiber in a controlled manner to decompose and volatilize undesired constituents and convert the fiber to a refractory fiber having a desired microstructure and useful to form refractory fabrics, reinforced composites, heat or sound insulation, filter or adsorption media, etc.

3,793,042

INSULATING MONOLITHIC REFRACTORY

Louis J. Jacobs, Chicago; Robert E. Fisher, Clarendon Hills, and Frank T. Felice, Chicago, all of Ill., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 24, 1970, Ser. No. 101,261

Int. Cl. C04b *35/14*

U.S. Cl. 106—68 **5 Claims**

An insulating, moldable monolithic refractory material for lining furnaces and the method of producing the same is disclosed. The material comprises diatomaceous earth which has been calcined for maximum volume stability, bentonite or other plastic clay materials and water. Also included may be expanded perlite for its insulating and strengthening characteristics and aluminum phosphate for its binding effect.

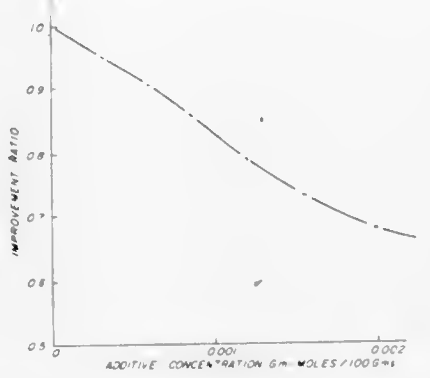
3,793,043
CELLULOSE ESTER DOPE SOLUTION CONTAINING INORGANIC CHROMIUM SALTS

Carl F. Dresie; William M. Tucker, and Walter R. White, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 30, 1969, Ser. No. 845,961

Int. Cl. C08b *27/02;* **C09j** *3/04*

U.S. Cl. 106—194 **1 Claim**



The addition of certain soluble metallic salts to dopes of cellulose esters having at most about 3.3 percent hydroxyl results in improved stripping performance of the resulting films after the dopes have been cast and partially dried on a smooth metallic sheet casting surface.

3,793,044
PIGMENT TREATMENT TO PREVENT SETTLING

Donald J. Voskuil, Muskego, and Zygmunt Konieczny, Milwaukee, both of Wis., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 1, 1970, Ser. No. 94,199

Int. Cl. C08h *17/02*

U.S. Cl. 106—262 **6 Claims**

Amine-modified clays when produced in the presence of a pigment produce a composition having improved settling properties when incorporated into an organic solvent base coating composition.

3,793,045
YELLOW TITANIUM DIOXIDE CRYSTALS

Antonio Lorenzo Almoguera, Bilbao, Spain; Barrie H. Bieler, and David C. Morgan, both of Walnut Creek, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 13, 1972, Ser. No. 297,469

Int. Cl. C09c *1/36*

U.S. Cl. 106—300 **8 Claims**

Yellow titanium dioxide crystals are produced by admixing titanium dioxide with lithium molybdate and aluminum oxide, and heating the resultant mixture above the melting point of the lithium molybdate. The resultant yellow titanium dioxide crystals can be water leached to remove any lithium molybdate coating thereon. These crystals are useful as a yellow paint pigment.

3,793,046
METHOD OF MANUFACTURING A PIGMENT

Willem Lambertus Wanmaker, and Johannes Gerardus Verriet, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 6, 1971, Ser. No. 205,133

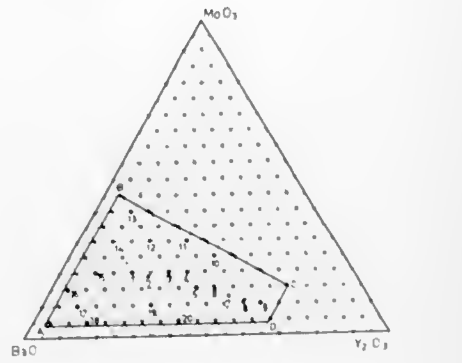
Claims priority, application Netherlands, Dec. 4, 1970, 7017716

Int. Cl. C09c *1/02;* **H01j** *1/63;* **C09k** *1/10*

U.S. Cl. 106—288 B **3 Claims**

A pigment manufactured by heating a mixture comprising p mol % of BaO, q mol % of Y_2O_3 and/or La_2O_3 and/or Gd_2O_3 and r mol % of MoO_3 in which up to 75 mol % of BaO may be replaced by SrO, up to 25 mol % of BaO may be replaced by CaO and up to 75 mol % of MoO_3 may be replaced by WO_3.

The percentages p, q, and r satisfy $r+5 \leq p, 4 \leq q \leq 65, 4 \leq r$ and $p+q+r=100$.



The pigment comprises a compound defined by the formula $3(Ba_{1-x-}Sr_xCa_y)O.Ln_2O_3.\ (Mo_{1-z}W_z)O_3$.

Paramount use: blue absorbing layer in fluorescent lamps having a satisfactory color rendition.

3,793,047
PROCESS FOR IMPROVING THE SURFACE PROPERTIES OF BIOLOGICALLY FORMED CALCIUM CARBONATE BODIES

Walter H. Von Massenhausen, Kuhbergstrasse 7, Kassel-Wilh, Germany

Filed Aug. 25, 1971, Ser. No. 175,003

Claims priority, application Germany, Mar. 18, 1971, 2044457; Sept. 9, 1970, 2113132

Int. Cl. B44d *1/02*

U.S. Cl. 117—3 **7 Claims**

Biologically formed calcium carbonate bodies such as mother-of-pearl, natural pearls, and cultured pearls as well as products made therefrom are improved as to their surface properties by subjecting the bodies to the action of an aqueous solution containing a soluble fluoride or silicofluoride for a time sufficient to permit formation of an opalescent abrasion and acid resistant, firmly adhering surface coating consisting essentially of calcium fluoride.

3,793,048
DEVELOPING PROCESS USING TONERS AT A REACTOR PRODUCT BETWEEN A DYE HAVING AN AMINO GROUP AND ORGANIC HALIDE

Shinichiro Nagashima, 566, 1-chome, Nishitamachi, and Terukuni Tuneda, 1622, Kamichibacho, both of Tokyo, Japan

Continuation-in-part of Ser. No. 63,229, Aug. 12, 1970, abandoned, which is a division of Ser. No. 722,274, April 18, 1968, abandoned. This application Sept. 14, 1972, Ser. No. 288,933

Int. Cl. G03g *9/02;* **G03b** *9/04*

U.S. Cl. 117—17.5 **2 Claims**

Toners for developing electrostatic charge images and processes for using said toners to develop electrostatic charge images. The toners comprise compounds produced by the reaction of a dye having an amino group with a halide having more than five carbons, said halide being selected from the group consisting of aliphatic halides, aromatic halides, heterocyclic halides, aliphatic acid halides, aromatic acid halides, and heterocyclic acid halides. Such toners are useful in both wet and dry electrostatic developing processes.

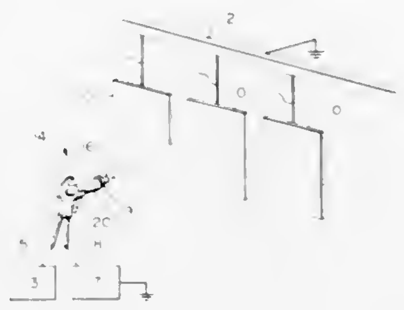
3,793,049
ELECTROSTATIC COATING METHOD

Richard O. Probst, 3939 W. 56th St., Indianapolis, Ind.

Substitute for Ser. No. 833,401, June 16, 1961, Pat. No. 3,630,442. This application May 25, 1971, Ser. No. 146,822

Int. Cl. B05b *5/02;* **B44d** *1/94*

U.S. Cl. 117—17 **1 Claim**



A method for electrostatically applying solid particles to an article includes the steps of forming the solid particles into a pattern and directing them at the article, preferably in a relatively flat, fan-like spray. An electrostatic field is established between the article and an electrode that creates a single highly ionized zone offset from and rearwardly of the spray. The percentage of solid particles which are sprayed but remain undeposited is reduced using this method.

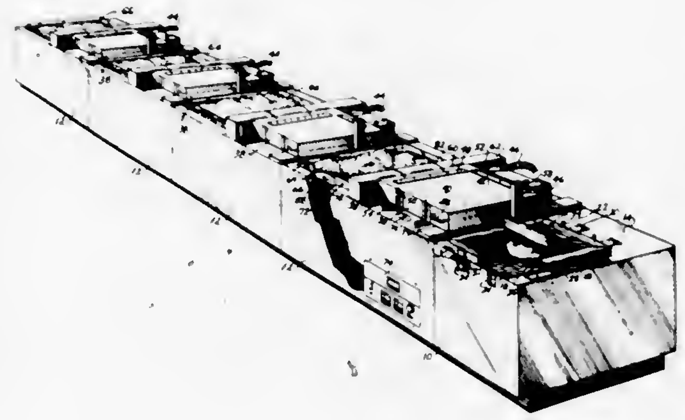
3,793,050
METHOD OF APPLYING FLOCKING TO A BASE

Earnest Mumpower, Jr., 201 Crestland Ave., Charlotte, N.C.

Filed Aug. 12, 1971, Ser. No. 171,264

Int. Cl. B05b *5/02;* **B44c** *1/08*

U.S. Cl. 117—17.5 **3 Claims**



A method of applying multi-color flocking to a base structure in a predetermined pattern. The base surface has an adhesive applied thereto over an area corresponding to the predetermined pattern, and the base surface is advanced through a series of flocking stations, each of which includes a supply of flocking of a different color and each of which includes a flocking stencil which is perforated with a different portion of the predetermined pattern. At each station, the particular flocking stencil thereat is interposed in spaced relation between the flocking supply and the base surface, and flocking is caused to pass through the perforations in the flocking stencil by an electrical potential.

3,793,051
PROCESS FOR COATING A WEB SURFACE WITH A PLURALITY OF EMULSION COATING LAYERS

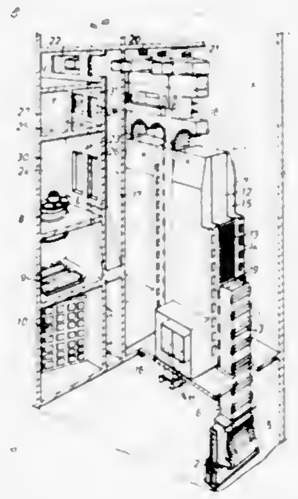
Peter Herzhoff, Leverkusen; Hans Gree, Cologne; Wolfgang Schweicher, Leverkusen; Hans Frenken, Leverkusen; Karl Voss, Leverkusen; Stephan Platz, Leverkusen; Gunther Koepke, Leverkusen, and Georg Brauniger, Cologne, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 4, 1970, Ser. No. 95,210

Claims priority, application Germany, Dec. 11, 1969, 1962089

Int. Cl. G03c *1/74;* **B44d** *1/14, 1/48*

U.S. Cl. 117—34 **9 Claims**



A method for the production of webs coated with several emulsions, comprising coating and drying means arranged in succession, in the latter being connected to air supply and discharge shafts. A plurality of coating means are arranged at a selectable spacing from one another along the web which is guided in loop formation, the physical parameters for coating and drying are adjustable for each layer.

3,793,052
PENCIL RECEPTIVE CELLOPHANE FILM

John S. Taylor, Newark, Del., assignor to FMC Corporation, Philadelphia, Pa.

Filed July 2, 1971, Ser. No. 159,466

Int. Cl. C09j *7/02*

U.S. Cl. 117—36 **3 Claims**

A regenerated cellulose film containing both finely-divided β-1,4 glucan particles, preferably microcrystalline cellulose, and finely-divided hard mineral filler particles is disclosed herein. The film is useful as a pencil mark receptive sheet which may be coated on one side with a pressure sensitive adhesive.

3,793,053
GLASS DECORATION

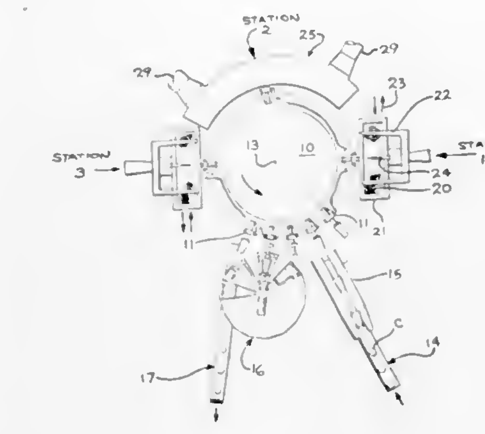
Charles L. Benford, Jr., and James E. Mielke, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 548,908, May 10, 1966, abandoned, Continuation of Ser. No. 64,081, July 27, 1970. This application June 24, 1970, Ser. No. 59,840

Int. Cl. C03c *5/00, 7/00*

U.S. Cl. 117—38 **13 Claims**

A fast drying, fluid, glass decorating composition especially suitable for silk screen decorating methods and having from about 40 to about 60 percent by weight of a finely divided ceramic and/or glass frit and having as the balance of the composition a liquid vehicle as a carrier for the frit and comprising, on a percent by weight basis, about 0.8 to about 6.5 percent of a copolymer of N-vinyl pyrrolidone and a vinyl substance such as vinyl acetate, and about 60 to about 95 percent of an aliphatic organic solvent containing oxygen in its structure and having a boiling temperature within the temperature range of from about 100°C. to about 190°C. The liquid vehicle preferably may also include sucrose benzoate and/or an acrylic resin, and an anionic surfactant.



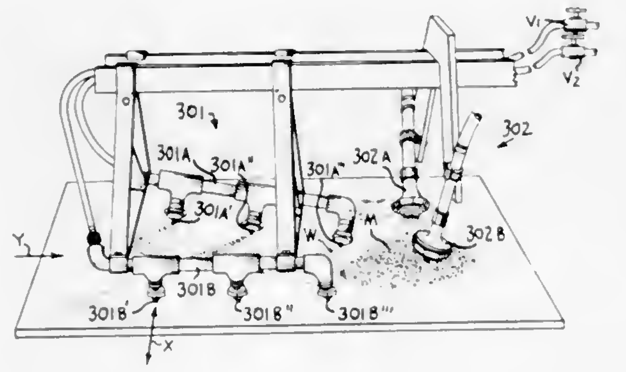
3,793,054
ANGLED CROSSFIRE RINSES

Helmut Franz, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed July 6, 1971, Ser. No. 159,746

Int. Cl. B08b *1/02*; **C03c** *17/14*; **B08h** *3/00*

U.S. Cl. 117—47 R **12 Claims**



A reciprocating crossfire set of rinsing means rinses the surface of a glass sheet while maintaining a uniform thickness of rinsing medium in an area on the glass surface where a subsequent spraying operation is to be carried out. The rinsing means are angled obliquely downward, rearward and outward, and rinse water or other medium is supplied at a rate suficient to force excess rinsing medium off the side and the trailing edge of the sheet, rather than being delivered into the spray area or accumulated along its trailing edge portion. The uniform thickness of rinsing medium prepares the substrate for receiving a more uniform transparent metal-boron coating in the spraying operation that follows.

3,793,055
FORMING PROTECTIVE INORGANIC COATING ON SUBSTRATE

Masahiko Shodai, Takatsuki, and Hideo Tomokawa, Neyagawa, both of Japan, assignors to Matsushita Electric Works, Ltd., Kadoma City, Japan

Filed June 17, 1971, Ser. No. 154,176

Claims priority, application Japan, June 25, 1970, 45-56277

Int. Cl. B44d *1/44*; **C01b** *33/32*

U.S. Cl. 117—47 R **4 Claims**

A method of forming an inorganic coating on a substrate is provided. The method includes applying on the surface of the substrate an aqueous inorganic coating composition comprising an alkali metal silicate and an inorganic condensed phosphate, which comprises applying before or after the application of the inorganic coating composition an effective amount of an aqueous curing agent solution of at least one compound selected from the group consisting of halides, sulfates, nitrates and organic acid salts of metals belonging to Groups II and III of Periodic Table and transition metals and ammonium halides, ammonium sulfate, ammonium persulfate, ammonium nitrate and inorganic acid salts of ammonium.

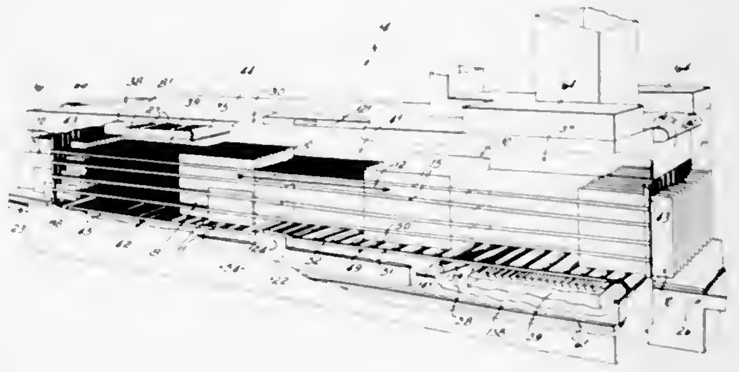
3,793,056
METHOD FOR COATING AND/OR IMPREGNATING SUBSTANTIALLY PLANAR ARTICLES

Ralph E. Stease, 8649 Melody Ln., Cincinnati, Ohio

Division of Ser. No. 881,239, Dec. 1, 1969, Pat. No. 3,635,193. This application July 6, 1971, Ser. No. 159,703

Int. Cl. B44d *1/08*; **B05b** *13/02*

U.S. Cl. 117—60 **9 Claims**



A method particularly adapted for impregnating corrugated paperboard with wax, the percentage wax pickup being variable within limits as desired. In operation, a plurality of boards is vertically positioned side-by-side, but slightly separated one from the other, into separate lines of travel. The group of vertically positioned boards is then passed underneath a free falling, unrestrained cascade of molten wax at a controlled rate to obtain complete flooding or coating of all exterior board surfaces. The cascade is developed in a plane transverse to the boards' lines of travel. Such flooding also occurs within the boards' flutes if the flutes are vertical as the boards pass through the cascade. A first air knife then directs hot air onto the top edges of the vertical boards to remove excess wax from the exterior faces or liners of the boards, as well as from the boards' interior if the corrugations or flutes are also vertical. The boards then move through a temperature controlled conditioning section the section being maintained at an elevated temperature, where impregnation takes place. Thereafter, a second air knife directs air onto the bottom edges of the vertical boards to remove excess wax in the form of beads or drips that may be formed toward the bottom of or at the bottom edge of the board. Finally, cool air is blown up through the vertical boards to set the wax and cool the boards for handling and stacking.

Depending on the wax used, the temperature of the molten wax, the temperature of the environment immediately after waxing but prior to cooling, and the throughout speed of the board, the board will be either dry waxed or wet waxed. The wax pickup percentage of the boards is controlled mainly by varying wax temperature and board exposure time in the wax flooding step. The wax distribution in the board is controlled mainly by varying environment temperature and board exposure time in the conditioning step. Thus, the method can be controlled to obtain either dry waxed or wet waxed paperboard at a desired wax pickup level.

3,793,057
PROCESS FOR IMPREGNATING NONWOVENS WITH ALKYL ACRYLATE-CARBOXYL LATICES

George L. Wheelock, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Continuation-in-part of Ser. No. 725,152, April 29, 1968, abandoned. This application July 14, 1972, Ser. No. 271,972

Int. Cl. B44d *1/44*, *1/48*; **B32b** *29/00*

U.S. Cl. 117—62.2 **10 Claims**

A process for obtaining nonwoven materials having improved physical properties, especially internal bond strength or delamination resistance and wet tensile strength, is provided. The nonwoven fabrics and papers are impregnated with an alkyl acrylate copolymer latex containing carboxyl functionality and exposed to ammonia or amine vapors prior to the drying and curing operations to obtain the improved properties. Papers treated in this manner have shown up to a two-fold increase in internal bond strength.

3,793,058
LIGHT-DIFFUSING CLAY COATINGS FOR LAMPS

David Rostoker, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Oct. 19, 1971, Ser. No. 190,657

Int. Cl. C03c *17/22*; **H01k** *1/32*; **B44d** *5/00*

U.S. Cl. 117—97 **7 Claims**

This invention relates to abrasion-resistant, tightly bonded, light-diffusing clay coatings particularly suited for use with incandescent lamps. The plating properties of certain low-iron smectite clays, including, for example, alkali metal and certain modified alkaline earth metal montmorillonites, render them particularly suitable for use as vehicles in glass coating systems to assure even and uniform dispersement of other light-diffusing and coloring agents. For lamp applications, the clay should have at least 25 percent of the exchange capacity thereof attributable to alkali metal ions and should contain less than about 1 percent by weight of iron.

3,793,059
BUFFER-TREATED RUBBER ARTICLE FOR CONTACT WITH SKIN

Ernest Wollmann, Pottschach, and Josef Zartl, Vienna, both of Austria, assignors to Semperit Osterreichisch-Amerikanesche Gummiwerke Aktiengesellschaft, Vienna, Austria

Division of Ser. No. 21,208, March 19, 1970, Pat. No. 3,662,054. This application Dec. 30, 1971, Ser. No. 214,490

Claims priority, application Austria, Mar. 21, 1969, 2846/69

Int. Cl. C08c *17/24*; **B29c** *25/00*

U.S. Cl. 117—95 **3 Claims**

A Rubber article manufactured according to the latex dipping method, in which the surface to come into contact with the human body is treated and prepared respectively with a buffer substance tolerated by the skin, selected from the group consisting of esters of oxy-benzoic acid, in order to neutralize traces of alkalis.

3,793,060
METALLIZED ULTRAFINE POROUS POLYMER ARTICLES

Joseph L. Weininger, Schenectady, N.Y., and Maynard C. Agens, Sarasota, Fla., assignors to General Electric Company, Schenectady, N.Y.

Filed June 3, 1971, Ser. No. 149,804

Int. Cl. C23c *3/02*

U.S. Cl. 117—98 **9 Claims**

Porous metal coated, ultrafine porous polymer articles and a process of producing such coated polymer articles are described. These materials may be prepared by incorporating an organic salt additive into a solid body of a crystalline thermoplastic polymer at a temperature of at least in the melting temperature range of the polymer to form a composite body, cooling the composite body until it solidifies, leaching out the salt additive to produce a polymeric body having an ultrafine porous structure, and treating at least one surface of the polymeric body with an electroless plating procedure whereby a porous metal coated, ultrafine porous polymer article is formed.

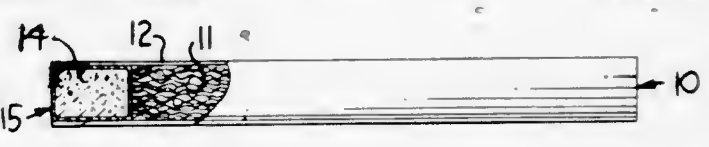
3,793,061
METHOD OF IMPROVING SMOKE FILTER

Joseph J. Hammel, Pittsburgh, Pa., and John D. MacKenzie, Los Angeles, Calif., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 822,213, May 6, 1969, Pat. No. 3,602,233, which is a continuation-in-part of Ser. No. 736,670, June 13, 1968, abandoned. This application Apr. 15, 1971, Ser. No. 134,158

Int. Cl. B44d *1/02*

U.S. Cl. 117—106 R **4 Claims**



A method of increasing the smoke filtering activity of porous glass which involves the incorporation of hydroxyl ions in high concentrations in the pores of the microporous glass article. The microporous glass is heated at a temperature in the order of 100° to 600°C for about 5 to 120 minutes in an atmosphere of water and an inert gas.

3,793,062
SIZING TEXTILE FIBERS WITH STARCHES CONTAINING NONIONIC, BASIC AND ACIDIC GROUPS

Lee H. Elizer, Keokuk, Iowa, assignor to The Hubinger Company, Keokuk, Iowa

Division of Ser. No. 58,988, July 28, 1970, Pat. No. 3,673,171, which is a continuation-in-part of Ser. No. 733,233, May 31, 1968, abandoned. This application Feb. 18, 1972, Ser. No. 227,672

Int. Cl. D06m *15/36*

U.S. Cl. 117—139.5 C **14 Claims**

Textile fibers are sized with starches, especially high amylose starches, containing nonionic, basic (cationic) and acidic (anionic) groups, preferably hydroxyalkylether (nonionic), tertiary amino, cyanamide or quaternary amino (cationic) and sulfonic acid or sulfonate groups or carboxylic or carboxylate, or phosphate or phosphonate (anionic), in the starch molecule. The process is especially useful for sizing threads or yarns of mixed fibers such as, for example, cotton fibers and polyester fibers, viz., polyethylene terephthalate fibers, and hydrophobic fibers that are difficult to size.

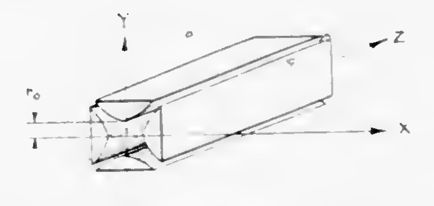
3,793,063
METHOD OF MAKING ELECTRODES FOR QUADRUPOLE TYPE MASS SPECTROMETERS

William C. Wiley, Pittsford, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Feb. 22, 1971, Ser. No. 117,598

Int. Cl. H01j *39/36*

U.S. Cl. 117—213 **6 Claims**



A method of making electrodes for a quadrupole type mass spectrometer which comprises the steps of extruding glass into rods having a hyperboloidal surface and coating the hyperboloidal surface with a conductive film by sputtering or vapor deposition.

3,793,064

applied to the carrier tape by deposition from a toothed

subjecting it to the action of a mixture of gases, one of which is

3,793,071

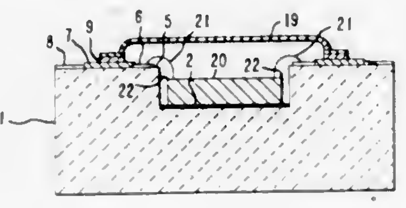
3,793,064
PRODUCT AND PROCESS FOR CAVITY METALLIZATION OF SEMICONDUCTOR PACKAGES

Joseph Paul Budd, Grand Island, N.Y.; Wayne Keith Robson, Newark, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 15, 1971, Ser. No. 198,584

Int. Cl. B44d *1/02, 1/14*

U.S. Cl. 117—217 **22 Claims**



A process and composition are provided for the gold metallization of the bottoms of cavities in semiconductor packages wherein the walls of such cavities are left free from gold which might otherwise create short circuits between the face of the package and the bottom of the cavity. Semiconductor packages provided by the use of this process are different from and preferred over packages produced by their prior methods.

3,793,065
SIZE COATED GLASS FIBERS

Albert R. Morrison, Newark, and Harold L. Haynes, Granville, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 10, 1972, Ser. No. 233,726The portion of the term of this patent subsequent to May 23, 1989, has been disclaimed.

Int. Cl. B32b *17/02;* **C03c** *25/02;* **C08b** *25/02*

U.S. Cl. 117—126 GQ **18 Claims**

A size for lubricating fibers, including glass fibers, which is a water dispersion of a solid unctuous material, as for example a solid wax, fat, or gelled or otherwise solidified oil, and a starch ester of a cyclic hydrocarbon, as for example a starch ester of an aryl compound, an aralkyl compound, an alkaryl compound, a cycloalkyl compound and a cycloalkenyl compound, or homologues thereof. The wax may be an animal, vegetable, mineral, or synthetic wax which is unctuous and insoluble in water. The oils can be gelled by adding any gelling agent, and preferably a thixotropic gelling agent to the oil. The starch esters are only partially cooked so that unburst starch granules are retained, and this dispersion is intimately mixed with the unctuous solid emulsified particles. Other ingredients such as cationic lubricants, coloring matter, bactericides, waxes having particular characteristics, etc. can be added to provide their separate functions. The combination of the above defined partially burst starch granules of esterified starch, and the emulsified particles of the solid unctuous material have very low migration from coated glass fibers, and when dried, provide low tensions when pulled over guide surfaces.

3,793,066
METHOD FOR CONTINUOUSLY PROGRESSIVELY DEPOSITION A FLUID ON A FLEXIBLE SUBSTRATE SURFACE

Hans Frenken, Leverkusen-Schlebusch, and Willi Wasser, Leverkusen, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

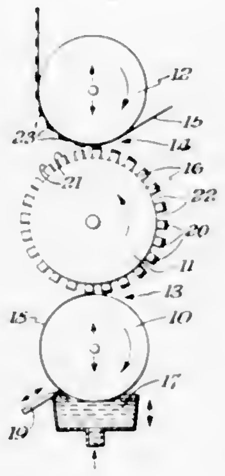
Continuation-in-part of Ser. No. 875,727, Nov. 12, 1969, abandoned. This application Jan. 13, 1972, Ser. No. 217,503

Claims priority, application Germany, Dec. 17, 1968, 1815144

Int. Cl. H01f *10/00*

U.S. Cl. 117—237 **5 Claims**

A method for applying a fluid having magnetic characteristics to a carrier tape in uniform parallel strips uniformly spaced apart and of symmetrical cross-section. The strips are applied to the carrier tape by deposition from a toothed rotatable cylindrical body. Fluid layers on the peripheral surfaces of the teeth contact the tape with the teeth moving at a higher rate of travel than the moving carrier tape. The teeth deposit the fluid in the spaced strips on the tape surface without contact between the peripheral tooth surface and the tape surface and in such a manner that the deposited strip assumes a symmetrical cross-section.



The teeth are preferably spaced from each other circumferentially on the cylindrical body by a distance approximately equal to the circumferential peripheral dimension of the teeth.

3,793,067
FOOD RELEASE COATING

Robert Gallino, Englewood Cliffs, N.J., assignor to Lowe Paper Company, Ridgefield, N.J.

Continuation-in-part of Ser. No. 13,193, Feb. 20, 1970, abandoned. This application June 16, 1972, Ser. No. 263,506

Int. Cl. D21b *1/38*

U.S. Cl. 117—155 UA **1 Claim**

Coating composition for applying grease resistant, nonsticking coatings to sheets of cellulosic material and the resultant products which are suitable for use in storing, displaying and cooking food products, the coating composition comprising at least one thickener or film forming material, a Werner type chromium complex and water.

3,793,068
METHOD OF PRODUCING COATINGS TO BE USED AS MASKING, PASSIVATION, CONTACTING AND DOPING LAYERS ON SEMICONDUCTOR SURFACES

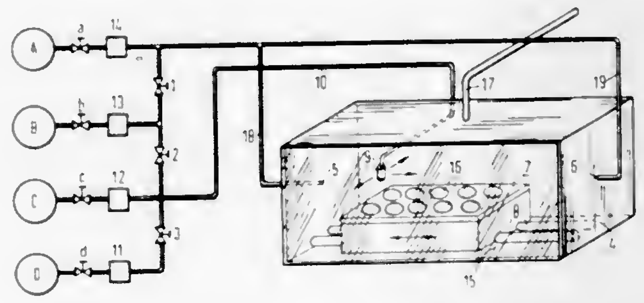
Erich Pammer, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed May 24, 1971, Ser. No. 146,098

Claims priority, application Germany, May 26, 1970, 2025779

Int. Cl. B44d *1/18*

U.S. Cl. 117—201 **10 Claims**



Semiconductor crystals are provided with metal, metal oxide and metal sulfide layers by heating the crystal wafer and subjecting it to the action of a mixture of gases, one of which is a compound containing an element to be included in the layer. The gases are mixed and caused to react immediately upon being put into contact with the wafer whereby the reaction product precipitates onto the surface of the wafer. The method is performed in an apparatus including a reaction chamber, and a supporting and heating stage for the wafers. The apparatus also includes a nozzle for ejecting the gas mixture directly above the surface of the wafer.

3,793,069
PROCESS FOR PREPARING A LAYER OF COMPOUNDS OF GROUPS II AND VI

Kazuo Shimizu; Okio Yoshida, both of Yokohama; Kazuo Terakawa, Yokosuka, and Satoshi Aihara, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Aug. 17, 1971, Ser. No. 172,454

Claims priority, application Japan, Aug. 17, 1970, 45-71391

Int. Cl. B44d *1/02*

U.S. Cl. 117—201 **4 Claims**

A process for preparing a layer of compounds of Groups II and VI characterized in that a layer of the compounds is formed on the surface of a substrate, and the formed layer is heat-treated in an atmosphere comprising an inert gas, 0.1 - 10 percent by volume of oxygen on the basis of said inert gas and vapour of at least one element selected from a group consisting of sulfur, selenium and tellurium so that uniform grain growth with a narrow range grain size distribution is effected.

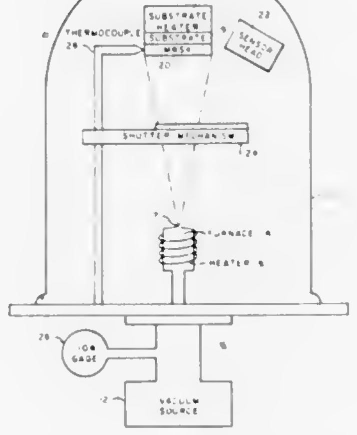
3,793,070
METHOD OF VARYING THE CARRIER CONCENTRATION OF LEAD-TIN SULFIDE EPITAXIAL FILMS

Richard B. Schoolar, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 1, 1971, Ser. No. 152,463

Int. Cl. H01l *7/36*

U.S. Cl. 117—201 **15 Claims**



A method of varying the carrier concentration of epitaxial films of $Pb_x Sn_{1-x}S$, wherein X varies from 0.8 to 1 inclusive, which are deposited in vacuum from a source of material in a sublimation furnace which is at a temperature above the sublimation temperature of the material comprising varying the sublimation furnace opening size and temperature. The products can be used as infrared detectors.

3,793,071
TITANIUM WELDING ELECTRODE

Howard B. Bomberger, Jr., Canfield, Ohio, assignor to RMI Company, Niles, Ohio

Filed Feb. 24, 1972, Ser. No. 228,877

Int. Cl. B23k *35/00;* **C23g** *1/00*

U.S. Cl. 117—206 **5 Claims**

A titanium welding electrode which consists of a titanium rod, an oxidation-resistant metal coating on the rod, and an arc-stabilizing additive. The additive is a metal of the group which consists of barium, strontium, cerium and yttrium. Preferably the additive is incorporated in the coating metal, but alternatively may be incorporated in the titanium rod. The invention is an improvement over the electrode covered in U.S. Pat. No. 3,574,678, in which the arc-stabilizing material is applied as a separate coating.

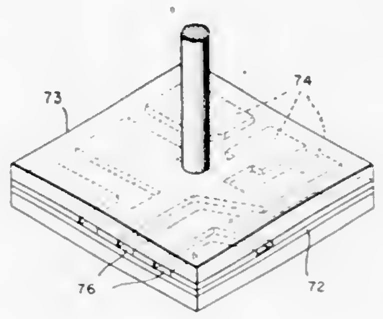
3,793,072
METHOD OF DEPOSITING A METAL ON A SURFACE OF A SUBSTRATE

David Jacob Lando, Lawrence Twp., Mercer County, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Nov. 26, 1971, Ser. No. 202,305

Int. Cl. C23c *3/02*

U.S. Cl. 117—212 **3 Claims**



A method of depositing a metal on a surface of a substrate is disclosed. A suitable colloidal sensitizing solution, comprising insoluble hydrous oxide particles, selected from among solutions revealed in application Ser. No. 8,022, filed Feb. 2, 1970, is applied to a surface of a substrate. The sensitized substrate surface is then treated with a suitable redox agent to delineate a pattern capable of reducing an activating metal ion to an activating metal. Alternatively, a positive colloidal sensitizing solution, i.e., a solution comprising ions capable of reducing an activating metal ion to an activating metal is applied to the surface and the sensitized surface is then treated with an activating metal ion containing solution to deposit an activating metal pattern thereon. Alternatively, a colloidal activating metal solution is applied to the surface and the surface is then treated with a solution comprising an ion capable of reducing an activating metal ion to deposit an activating metal pattern thereon.

3,793,073
ELECTRICAL STEEL SHEETS AND STRIPS HAVING EXCELLENT PUNCHING AND WELDING CHARACTERISTICS FOR THE USE OF A LAMINATED IRON CORE

Minoru Kitayama; Montonaru Nakamura; Kiyoshi Matsui, and Hiroshi Okada, all of Himeji, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Sept. 15, 1971, Ser. No. 180,653

Claims priority, application Japan, Sept. 17, 1970, 45-81473; Dec. 7, 1970, 45-108353

Int. Cl. C23f *7/10, 7/26*

U.S. Cl. 117—230 **3 Claims**

Electrical steel sheets and strips having excellent punching and welding characteristics for production of a laminated iron

purposes. The workpieces are arranged in a removable con-

electrode of a nickel-cadmium cell supporting an insert of an

3,793,082
PROCESS FOR MAKING ELECTRICAL CONTACTS OF

core, which comprises an organic type coating film applied on the surface of an electrical steel sheet and strip substrate having a surface roughness larger than 20 Hr.m.s.µinch.

3,793,074

MANUFACTURING OF MAGNETIC RECORDING MEDIA

Karl Uhl Frankenthal; Georg Schnell; Job-Werner Hartmann; Heinz Stritzinger, all of Ludwigshafen; Werner Balz, Willstaett, and Rainer Pruegl, Hiltrup, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed Jan. 13, 1972, Ser. No. 217,657

Int. Cl. H01f *10/02*

U.S. Cl. 117—235 **4 Claims**

Manufacture of magnetic recording media by preparing a dispersion of particulate magnetic pigment in a binder based on a mixture of polycondensates with the addition of organic solvents and, optionally, conventional additives, applying a coating of said dispersion to the substrate and finally drying or curing the coating. The binder used for the dispersion of magnetic pigment consists of a mixture of phenol/formaldehyde condensates and thermoplastic polyester of terephthalic and isophthalic acids and ethylene glycol and neopentyl glycol.

3,793,075

DIALKYL TARTRATE-HETEROPOLYACID DEVELOPING SYSTEM FOR DYE PRECURSOR COMPOUNDS

George E. Maalouf, Niagara Falls, N.Y., assignor to Moore Business Forms Inc., Niagara Falls, N.Y.

Filed Dec. 20, 1971, Ser. No. 210,121

Int. Cl. B41m *5/00*

U.S. Cl. 117—36.2 **20 Claims**

Record material for forming a durable image with a basic dye or dye precursor compound, preferably colorless, characterized by the presence on an absorbent surface thereof of a heteropolyacid reactive with the dye compound to form a colored "lake" or complex and a dialkyl tartrate containing about three to six carbon atoms in the alkyl groups thereof. Preferably, the heteropolyacid and dialkyl tartrate are contained in a clay-based surface coating in an amount of about 2–25 percent by dry coating weight of each. The dye compound can be applied to the record material from a transfer sheet carrying the same in an appropriate pressure-releasable state, for example, within microcapsules adhered as a layer on the sheet, and transfer sheets of this character can be manifolded with the present record material to form a pressure-sensitive record system.

3,793,076

HANDLING WORKING PIECES IN LIQUIDS IN DENTAL TECHNOLOGY

Hans Lea, Frankfurt, Germany, assignor to Deutsche Gold-und Silber-Scheideanstalt Vormals, Frankfurt, Germany

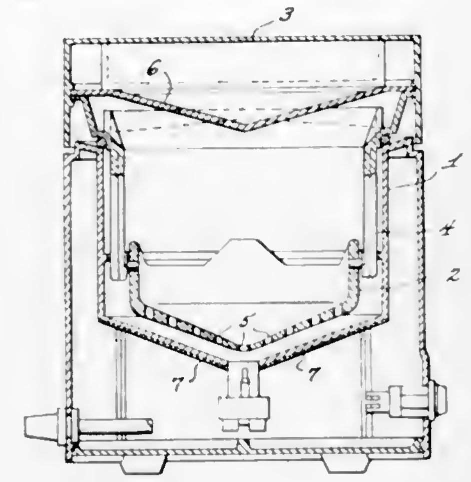
Filed Sept. 22, 1972, Ser. No. 291,166

Claims priority, application Germany, Nov. 26, 1971, 2158637

Int. Cl. B08b *3/08*

U.S. Cl. 134—25 R **4 Claims**

Work pieces are treated in pickling liquids especially in dental technology and gold and silver forging for deoxidation purposes. The workpieces are arranged in a removable container swingingly mounted on the cover of the bath apparatus.



This avoids the necessity of using material handling equipment such as forceps and tongs.

3,793,077

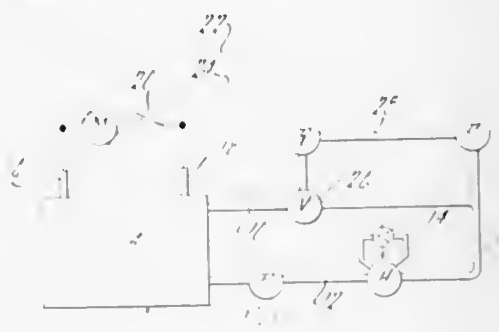
BATTERY INCLUDING APPARATUS FOR MAKING HALOGEN HYDRATE

Harvey L. Behling, Clawson, Mich., assignor to Occidental Energy Development Company, Madison Heights, Mich.

Filed July 5, 1972, Ser. No. 257,114

Int. Cl. H01m *35/00*

U.S. Cl. 136—6 E **6 Claims**



Electrical energy system including apparatus for making halogen hydrate whereby water in an aqueous solution and an elemental halogen are combined in the form of a thin liquid film on a continuously moving surface which is maintained within a controlled temperature range to promote the formation of the corresponding halogen hydrate as a solid layer on the surface. The layer of solidified halogen hydrate is continuously removed from the surface by scraping and the resultant flakes or particles are transferred by a conveyor to storage.

3,793,078

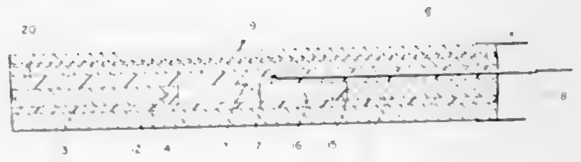
NEGATIVE ELECTRODE WITH AN INSULATED BODY OF CONDUCTOR MATERIAL SUPPORTED THEREIN

Edward C. Duncan, Palos Verdes; Ernest Levy, Jr., Woodland Hills, and John J. Rowlette, Arcadia, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed May 4, 1972, Ser. No. 250,405

Int. Cl. H01m *45/06*

U.S. Cl. 136—24 **3 Claims**



Modification of a negative electrode with an insulated body of conductor material supported therein and particularly of an electrode of a nickel-cadmium cell supporting an insert of an active conductor therein in parallel with the electrode whose resistance is being measured and the method of determining or monitoring the state of capacity of the electrode and corresponding the state of charge of the battery in which the electrode is utilized.

3,793,079

BATTERY ELECTROLYTE COMPOSITION

Henry Brown, Huntington Woods, and Donald H. Becking, Birmingham, both of Mich., assignors to Occidental Energy Development Company, Madison Heights, Mich.

Filed Nov. 18, 1971, Ser. No. 200,220

Int. Cl. H01m *43/06*

U.S. Cl. 136—30 **39 Claims**

An electrolyte composition for use in an electrical energy storage device such as the battery, and, particularly a rechargeable secondary type battery comprising an aqueous solution containing a metal halide and an effective dendrite reducing amount of a soluble organic compound containing an oxygen ether group and a group of a structure $—SO_2 NH—$.

3,793,080

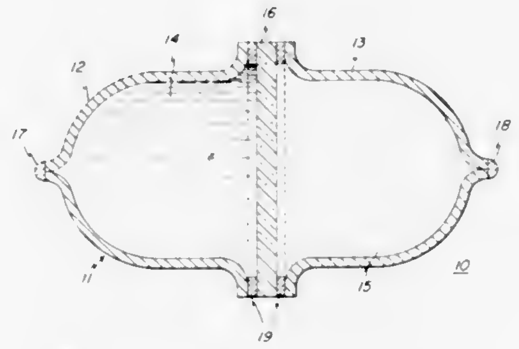
SEALED PRIMARY SODIUM-HALOGEN BATTERY WITH BROMINE-IODINE MIXTURE

Heinrich J. Hess, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 10, 1972, Ser. No. 216,427

Int. Cl. H01m *15/04, 27/16*

U.S. Cl. 136—83 **5 Claims**



A sealed primary sodium-halogen battery is disclosed which comprises a casing, an anode positioned in the casing, the anode selected from the class consisting of sodium, sodium as an amalgam, and sodium in a nonaqueous organic electrolyte, a solid sodium crystalline ion-conductive electrolyte positioned in the casing adjacent the anode, and a cathode positioned adjacent the opposite side of the electrolyte, the cathode comprising a mixture of bromine and iodine with from 5 to 60 weight percent of iodine with electronically conductive material selected from the class consisting of porous matrix material, dissolved small amounts of specific additives, and combinations of such materials and additives.

3,793,081

SULFIDED TRANSITION METAL FUEL CELL CATHODE CATALYSTS

Gideon M. Varga, Jr., Hohokus, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 820,678, April 30, 1969, abandoned. This application Apr. 28, 1971, Ser. No. 138,282

Int. Cl. H01m *27/04*

U.S. Cl. 136—86 D **5 Claims**

An improved electrochemical cell has an acid electrolyte and a catalytic amount of at least one acid insoluble sulfide of a transition metal in the cathode. The preferred cathode catalyst is a mixture of a transition metal disulfide and thio spinel.

3,793,082

PROCESS FOR MAKING ELECTRICAL CONTACTS OF SOLAR BATTERIES AND SOLAR BATTERIES MADE ACCORDING TO THIS PROCESS

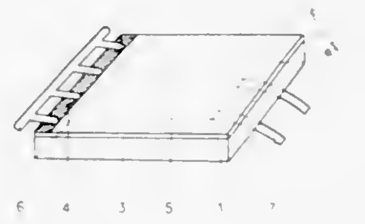
Jacques Roger, Paris, France, assignor to Societe Anonyme de Telecommunications, Paris, France

Filed May 7, 1971, Ser. No. 141,325

Claims priority, application France, Sept. 24, 1970, 70.34679

Int. Cl. H01l *15/02*; **B01j** *17/00*

U.S. Cl. 136—89 **6 Claims**



The invention relates to a process for making solar batteries by means of which a photo-sensitive semi-conductor part is produced and this part provided with two contact areas onto which, according to the invention, contact pieces are fixed by intermetallic diffusion between the two parts to be joined.

3,793,083

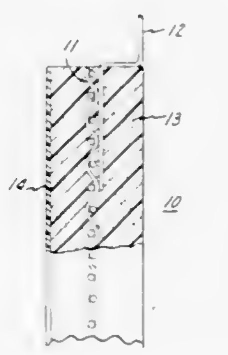
METHOD OF FORMING AN ELECTRODE OF MIXED CATALYST POWDERS

John Paynter, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 30, 1968, Ser. No. 787,972

Int. Cl. H01m *13/04*

U.S. Cl. 136—120 FC **5 Claims**



A method of forming mixed catalyst powders is described which comprises mixing together a first at least partially soluble metallic salt containing an ion capable of being reduced, a second at least partially soluble metallic salt containing an ion capable of being oxidized, and an aqueous alkaline solution. The ions of the first and second salts are reacted together thereby simultaneously reducing the first ion to a first powder and oxidizing the second ion to a second powder. The first and second powders are precipitated as highly dispersed mixed powders which are then filtered, washed and dried. An electrode is formed from the mixed powders by rolling or pressing the mixed powders against a current collector grid; by adding a dry binder, and pressing and sintering the mixed powders against a current collector; or by adding a liquid-containing binder to the mixed powders to form a paste, and applying the paste onto a current collector and sintering the mixed powders. The electrical conductivity of either the mixed powders or the electrode can be increased by the addition of carbon powder to the mixed powders during or after their preparation.

tor lugs are placed on each side of a battery partition wall, ad-

3,793,084
ELECTRODE FOR ELECTROCHEMICAL CELLS WITH GRADUATED CATALYST CONCENTRATION

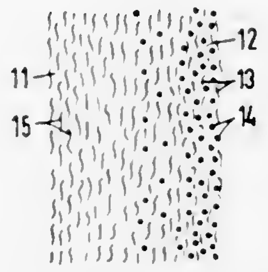
Manfredo Marchetto, Zingonia, Italy, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed July 29, 1971, Ser. No. 167,136

Claims priority, application Germany, July 30, 1970, 2037795

Int. Cl. H01m *13/00*

U.S. Cl. 136—120 FC **2 Claims**



An electrode, for electrochemical cells, with pulverulent catalyst material and a porous cover layer of fibrous material. The electrode comprises a layer of fibrous material with two sequential semilayers. One of the semilayers comprises fibrous material only and the other of the semilayers comprises fibrous material and pulverulent catalyst. Also described is a method of forming the electrode.

3,793,085
GAS DIFFUSION ELECTRODE FOR CELLS

Takashi Hino, Hirakata-shi, and Masataro Fukuda, Takatsuki-shi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 613,466, Feb. 2, 1967, abandoned. This application Feb. 16, 1971, Ser. No. 115,875

Claims priority, application Japan, Feb. 14, 1966, 41-9489; Feb. 14, 1966, 41-9490; Feb. 14, 1966, 41-9491; Apr. 13, 1966, 41-23863; Apr. 13, 1966, 41-23864; Apr. 13, 1966, 41-23865

Int. Cl. H01m *13/02, 27/04*

U.S. Cl. 136—121 **11 Claims**

A gas diffusion electrode for cells comprising a layer participating in the electrode reaction, said layer consisting essentially of carbon powder and a binder therefor, and a preformed porous fluorocarbon resin film integrally attached to said carbonaceous layer.

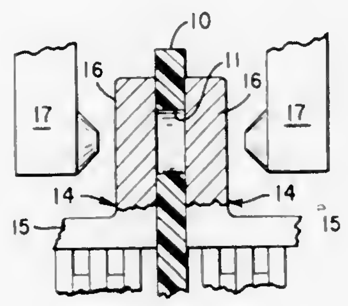
3,793,086
METHOD OF CONSTRUCTING A BATTERY CONNECTOR

John P. Badger, 2530 Smith Dr., Genoa, Ohio

Filed Apr. 13, 1972, Ser. No. 243,598

Int. Cl. H01m *35/32*

U.S. Cl. 136—134 R **5 Claims**



A method is disclosed for producing through-the-partition battery intercell electrical connections. Flat surfaced connector lugs are placed on each side of a battery partition wall, adjacent an aperture. The connector lugs are each cold formed by a pair of opposed electrodes under the application of high shear force sufficient to extrude the lugs into the aperture until they meet. The high initial shear force on the electrodes then is reduced to a lower secondary shear force, and an electrical welding current is then applied. The welding current is increased as the metal-to-metal contact of the opposed connector lugs increases until the welded connector lugs fills the aperture with metal. The welding current then ceases and the welded connector lugs are allowed to cool while still under the lower secondary shear force. The electrodes are removed from connection and the battery casing, containing liquid-tight intercell battery connections, is ready for further manufacturing or assembling steps.

3,793,087
METHOD FOR PRODUCING A SLEEVE EXTENDING THROUGH AN APERTURE IN THE BATTERY LID AND SECURING THE TERMINAL POST TO THE SLEEVE

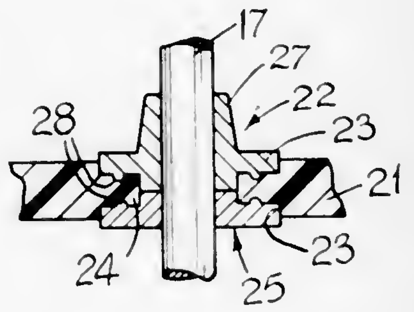
Kenneth George Blandford, deceased, late of Solihull, England, and Joyce Margaret Blandford, administratrix, Solihull, England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Division of Ser. No. 862,321, Sept. 30, 1969, abandoned. This application June 7, 1972, Ser. No. 260,591

Claims priority, application Great Britain, Oct. 11, 1968, 48293/68; Jan. 27, 1969, 4418/69

Int. Cl. H01m *1/02*

U.S. Cl. 136—168 **14 Claims**



To manufacture an electric storage battery of the kind including a battery box divided into a plurality of compartments, a lid closing the battery box, an assembly of battery plates and separators within each compartment, means interconnecting plates within adjacent compartments so that the assemblies within the compartments are connected in series, and a pair of posts extending upwardly from the assemblies in the end compartments through apertures in the lid, a pair of sleeve parts are first located in position relative to each aperture in the lid so that the sleeve parts extend into their respective aperture. Each pair of sleeve parts are then secured together by resistance welding to produce a sleeve extending through each aperture in the lid, whereafter the posts are secured to the sleeves respectively.

3,793,088
COMPATIBLE PNP AND NPN DEVICES IN AN INTEGRATED CIRCUIT

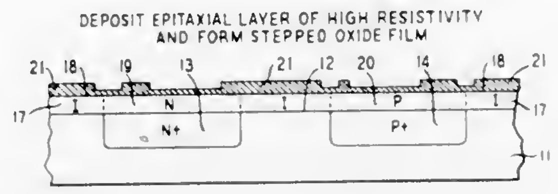
Wallace Henry Eckton, Jr., Reading, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 15, 1972, Ser. No. 306,924

Int. Cl. H01l *7/54*

U.S. Cl. 148—1.5 **5 Claims**

Compatible, matched, complementary semiconductor devices are fabricated in a common semiconductor body using a combination of oxide-masked diffusion, epitaxial deposition and photoresist-masked, ion implantation. A pair of zones of opposite conductivity type are formed in a high resistivity substrate by sequential oxide-masked diffusion, ion implantation, epitaxial deposition and subsequent out-diffusion. Using a series of photoresist masks, successive ion-implantation steps of P- and N-type impurities produce the base and emitter zones of the complementary transistors as well as zones of enhanced conductivity for connecting to the collector zone.


DEPOSIT EPITAXIAL LAYER OF HIGH RESISTIVITY AND FORM STEPPED OXIDE FILM
21
18
19
13
21
12
20
14
18
21
17
N
I
I
P
I
17
N+
P+
11

3,793,089
ALUMINUM SHEET

Ralph C. Dorward, Livermore; Earl C. Beatty, Danville, and Frank L. Howard, Livermore, all of Calif., assignors to Kaiser Aluminum and Chemical Corporation, Oakland, Calif.

Filed Dec. 22, 1971, Ser. No. 211,063

Int. Cl. C22f *1/04;* **C22c** *21/04*

U.S. Cl. 148—2 **5 Claims**

This invention relates to an improved aluminum sheet material which, when integral color anodized, forms an anodic coating having a color from gold to black within a commercially acceptable thickness range. The alloy composition is essentially 0.05–0.20 percent silicon, 0.15–0.40 percent iron, 0.15–0.30 percent copper, 0.10–0.30 percent manganese, 0.6–1.0 percent magnesium, 0.04–0.12 percent chromium, and the balance aluminum and inconsequential amounts of other elements. In the process of forming the sheet product the alloy is cast into an ingot, homogenized at a temperature between about 1,000°F and 1,125°F and hot rolled to a desired thickness.

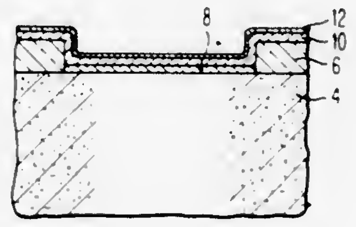
3,793,090
METHOD FOR STABILIZING FET DEVICES HAVING SILICON GATES AND COMPOSITE NITRIDE-OXIDE GATE DIELECTRICS

Conrad Albert Barile, Wappingers Falls; Robert Charles Dockerty, Highland, and Arunachala Nagarajan, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 21, 1972, Ser. No. 308,608

Int. Cl. H01l *7/34*

U.S. Cl. 148—1.5 **11 Claims**



Large threshold voltage shifts of silicon gate FET devices having a composite nitride-oxide gate dielectric are greatly reduced by subjecting the nitride to a dry oxygen annealing at temperatures between 970°–1,150°C prior to depositing the silicon gate electrode. Annealing at 1,050°C applied for a duration of one-half to one hour produces excellent results.

3,793,091
SUPERPLASTIC CONDITIONING OF TERNARY AND QUATERNARY ZINC-ALUMINUM ALLOYS

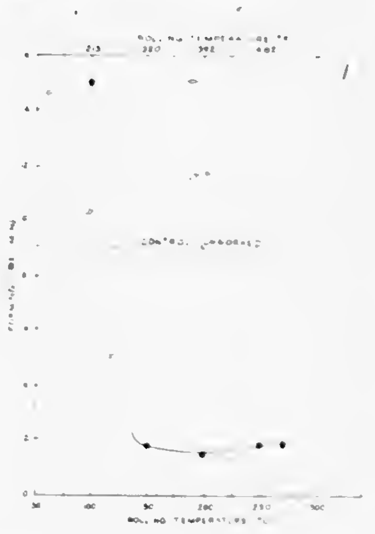
Edouard Gervais, Montreal, Quebec; Pierre Chollet, Pierrefonds, Quebec, and Robert Ranger, Ile Perrot, Quebec, all of Canada, assignors to Noranda Mines Limited, Toronto, Canada

Filed Dec. 7, 1971, Ser. No. 205,616

Claims priority, application Canada, Aug. 20, 1971, 121,060

Int. Cl. C22f *1/16*

U.S. Cl. 148—11.5 R **11 Claims**



Ternary and quaternary zinc-aluminum alloys are conditioned to exhibit superplastic behaviour by hot-working thereof at temperatures between about 205°C and the eutectoid temperature of the alloy. This conditioning may be preceded by homogenization and quenching of the alloy and followed by drawing of the alloy.

3,793,092
FINE-GRAINED, COMPLETELY DECRYSTALLIZED, ANNEALED COBALT-IRON-VANADIUM ARTICLES AND METHOD

Howard C. Fieldler, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 847, Jan. 5, 1970, abandoned. This application Nov. 10, 1972, Ser. No. 305,588

Int. Cl. C04b *35/00*

U.S. Cl. 148—31.55 **2 Claims**

Sheet or strip articles composed of an alloy nominally composed of about 49 percent cobalt, 49 percent iron and 2 per cent vanadium are disclosed which have a 0.2 per cent yield strength of about 70,000 p.s.i. or greater and a magnetic induction of about 20,000 gausses or greater at 13 oersteds and 22,400 gausses or greater at 85 oersteds are disclosed.

3,793,093
METHOD FOR PRODUCING A SEMICONDUCTOR DEVICE HAVING A VERY SMALL DEVIATION IN LATTICE CONSTANT

Junichi Nishizawa, Sendai, and Ichiemon Sasaki, Yokohama, both of Japan, assignors to Handotai Kenkyu Shinkokai Kawauchi, Gendai-shi, Miyagi-ken, Japan

Filed Jan. 12, 1973, Ser. No. 323,265

Int. Cl. H01l *7/38, 7/44*

U.S. Cl. 148—186 **6 Claims**

A method for producing a semiconductor device using a semiconductor, in which at least two kinds of impurities having different atomic radiuses from one another and from that of the semiconductor are doped in the semiconductor for providing one conduction band therein, so that the lattice constant of the semiconductor is substantially constant.

3,793,094

FABRICATION OF JUNCTION LASER DEVICES HAVING MODE-SUPPRESSING REGIONS

Hans A. Strack, Richardson, and George D. Clark, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 787,760, Dec. 30, 1968, Pat. No. 3,617,929. This application Feb. 25, 1971, Ser. No. 118,982

Int. Cl. H01l *7/44*

U.S. Cl. 148—189 **7 Claims**

A p-n junction laser device having a central lasing region paralleled by p-type regions which serve to suppress transverse lasing modes is prepared from an n-type gallium arsenide crystal by the selective diffusion of zinc, employing a three-layer masking system. The first layer is phosphorus-doped SiO_2, substantially impermeable to zinc, patterned to preserve n-type conductivity between the mode-suppressing regions and the central p-type region. The second and third masking layers are SiO_2 patterned to reduce excessive build-up of dopant concentrations at the semiconductor surface, and to control the diffusion rates so that the mode-suppressing regions are diffused deeper than the central p-type region.

3,793,095

METHOD FOR INDIFFUSING OR ALLOYING-IN A FOREIGN SUBSTANCE INTO A SEMICONDUCTOR BODY

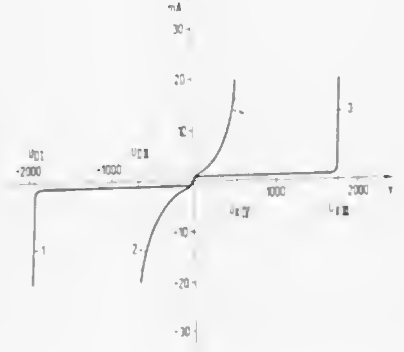
Norbert Schink, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed Apr. 19, 1971, Ser. No. 135,003

Claims priority, application Germany, Apr. 21, 1970, 2019251

Int. Cl. H01l *7/36, 7/461*

U.S. Cl. 148—189 **10 Claims**



To remove atomic hydrogen which forms recombination centers from silicon wafers, the silicon wafers used for indiffusing or in-alloying a foreign substance, are heated in a closed processing vessel whereinto is placed a catalyst, preferably divalent lead ions, which accelerates the formation of molecular hydrogen from atomic hydrogen.

3,793,096

AQUEOUS SLURRY EXPLOSIVE CONTAINING A NITRATOALKANOLAMINE NITRATE SENSITIZER

Herbert L. Young, Salt Lake City, Utah, assignor to Hercules Incorporated, Wilmington, Del.

Filed Mar. 1, 1972, Ser. No. 231,005

Int. Cl. C06b *19/00*

U.S. Cl. 149—2 **23 Claims**

A salt explosive of the aqueous slurry type containing a nitratoalkanolamine nitrate as a sensitizer, soluble, and dissolved, in sensitizing amount in the aqueous solution phase.

Method for in-situ formation of the sensitizer along with all or part of the salt component in aqueous solution for incorporation into the finished explosive as aqueous solution phase; and method for manufacture of the explosive, including preparation of the aqueous phase solution and mixing the remaining ingredients for the explosive therewith to form the finished explosive.

3,793,097

METHOD OF INCREASING PROPELLANT BURNING RATE BY THE USE OF HIGH CONDUCTIVE WIRES

Ralph W. Lawrence, Glendora, Calif., assignor to Aerojet-General Corporation, Azusa, Calif.

Filed Jan. 17, 1964, Ser. No. 338,527

Int. Cl. C06d *5/06*

U.S. Cl. 149—5 **17 Claims**

4. A solid propellant composition which comprises a cured intimate mixture of a solid non-metallic oxidizing salt and a cross-linked resin binder which comprises the reaction product of a compound having, as its sole reacting groups, not less than two active hydrogen groups capable of polymerizing with an isocyanate as determined by the Zerewitinoff method, and a compound having, as its sole reacting groups, not less than two groups capable of undergoing a urethane-type reaction with hydroxy groups and as a burning rate additive, elongated metallic staples having a heat conductivity of from about 0.10 to about 1.05 gram-cal/(sec) (sq.cm.) (°C/cm) and a melting point above about 600°C, in an amount effective to increase the burning rate up to an amount not greater than that equivalent to about 15 percent by weight of the propellant composition.

3,793,098

COMPOSITE DOUBLE BASE PROPELLANT WITH β-DIKETONE STABILIZER

Kazuhiro Inoue, Chita-gun; Kazutoshi Kito, Nagoya, and Fumio Matsui, Chita-gun, all of Japan, assignors to Nippon Oils and Fats Company Limited, Tokyo, Japan

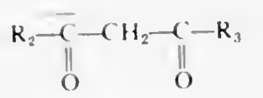
Filed Dec. 21, 1972, Ser. No. 317,122

Claims priority, application Japan, Dec. 27, 1971, 46/2635

Int. Cl. C06d *5/06*

U.S. Cl. 149—19.8 **3 Claims**

Propellant composition having an excellent stability at a high temperature is a composite modified double base propellant containing an oxidizing agent and a diketone having the general formula



$$R_2-\underset{\underset{O}{\|}}{C}-CH_2-\underset{\underset{O}{\|}}{C}-R_3$$

wherein R_2 and R_3 are alkyl having one to 10 carbon atoms, haloalkyl having one to 10 carbon atoms or aryl radical.

3,793,099

SOLID PROPELLANT WITH POLYURETHANE BINDER

Robert L. Duerksen, Pomona, and Joseph Cohen, Carmichael, both of Calif., assignors to Aerojet-General Corporation, Azusa, Calif.

Filed May 31, 1960, Ser. No. 33,054

Int. Cl. C06d *5/06*

U.S. Cl. 149—19 **21 Claims**

1. A solid substantially homogeneous propellant composition which comprises a cured intimate mixture of finely divided aluminum, which is uniformly dispersed throughout said propellant composition a solid inorganic oxidizing salt, and a polyurethane resin binder which comprises the reaction product of an aromatic diisocyanate, a polyether having a molecular weight between about 400 and about 10,000, and a trihydroxy cross-linker compound; the aluminum being present in an amount between about 5 and about 40 percent by weight, the resin binder being present in an amount between about 40 and about 10 percent by weight, and the solid inorganic oxidizing salt being present in an amount between about 85 and about 40 percent by weight, all percentages being given on a total propellant weight basis.

3,793,100

IGNITER COMPOSITION COMPRISING A PERCHLORATE AND POTASSIUM HEXACYANO COBALTATE III

John W. Fronabarger, Phoenix, Ariz., assignor to Unidynamics/Phoenix, Inc., Goodyear, Ariz.

Filed Nov. 24, 1972, Ser. No. 308,965

Int. Cl. C06c *1/00*

U.S. Cl. 149—77 **3 Claims**

Energetic and rapid burning compositions suitable for use as a rapid deflagrating material, for ignition of other materials, e.g., hot wire ignition and/or for use in primers and the like, are prepared by dissolving in aqueous solution one or more powerful oxidizer salts such as alkali metal, especially potassium perchlorates, chlorates, chromates, or nitrates, along with a cyano metal complex fuel such as potassium or sodium ferricyanide, ferrocyanide, cobaltocyanide, or closely similar materials, then coprecipitating by pouring the aqueous solution into a water-compatible organic non-solvent liquid such as C_2 to C_4 monohydric alcohol. Specifically disclosed are compositions of major proportions of potassium perchlorate or dichromate and minor proportions of potassium ferricyanide $K_3Fe(CN)_6$, or the analogous cobaltate $K_3Co(CN)_6$. The reaction product is precipitated from the water solution by dumping it into an excess of 2-propanol. The precipitation procedure produces a much smoother and more homogeneous product than comparable prior art pyrotechnic materials. The products have a burning velocity which is intermediate between those of conventional pyrotechnic ignition materials and detonating materials such as "Primacord" and similar products.

3,793,101

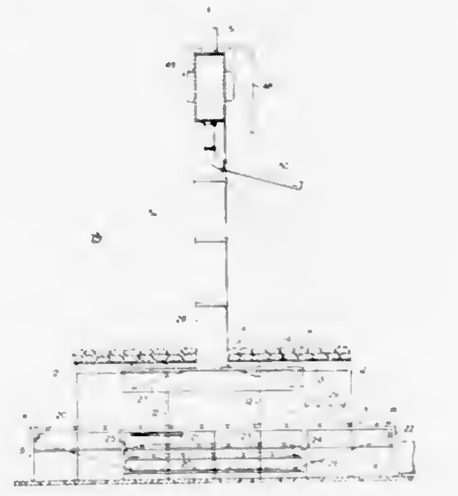
METHOD FOR AMMUNITION DISPOSAL

Thomas W. Mullarkey, Port Chester, N.Y., assignor to Thermal Reduction Corporation, Brooklyn, N.Y.

Division of Ser. No. 153,639, June 16, 1971. This application June 29, 1972, Ser. No. 267,735

Int. Cl. F42b *35/00;* **G01n** *33/22*

U.S. Cl. 149—109 **13 Claims**



A bunker has therein a light charge and a heavy charge chamber with light and heavy charge conveyors, respectively, extending therethrough. Burners within the light charge chamber ignite light charges therein, and resultant ashes fall through the links of the light charge conveyor onto a cinder conveyor. Within the heavy charge chamber is an explosion chamber having separate preheat, main heat and detection sections. In both the light and heavy charge chambers are located charge presence detectors which activate time relays. Subsequently, the charges are scanned by temperature detectors, whereby if the charges have not been ignited, the conveyors will be shut down. In the heavy charge chamber, the temperature detector may be replaced by an acoustic shock detector.

3,793,102

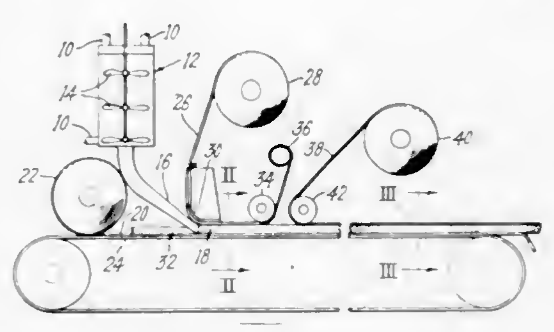
PROCESS FOR FORMING BACKED MICROPOROUS SHEET

John T. Day, Manchester, Mass., assignor to USM Corporation, Boston, Mass.

Filed Sept. 13, 1972, Ser. No. 288,563

Int. Cl. B32b *5/18*

U.S. Cl. 156—78 **10 Claims**



Process for forming a microporous polyurethane body backed with fibrous sheet material in which process a body of an emulsion is prepared of which the discontinuous phase is a volatile non-solvent liquid and the continuous phase is a liquid polymeric material which sets through reaction to solid condition, the liquid emulsion is formed as a layer and reacted under conditions preserving the uniformity of the emulsion to pressure flowable stage having a pre-gel structure which will prevent sinking in of a fibrous sheet material and fibrous sheet material is laid on the layer and pressed into engagement with it to cause the emulsion to adhere to the fibrous sheet and to conform to irregularities. The reaction is continued to solidify the emulsion in firmly adherent relation to the fibrous sheet and the volatile liquid is removed from the solidified emulsion.

3,793,103

SKIN STORAGE SYSTEM

Arthur A. Beisang, St. Paul, and Robert A. Ersek, Minneapolis, both of Minn., assignors to Genetic Laboratories, Inc., Roseville, Minn.

Filed Oct. 27, 1972, Ser. No. 301,426

Int. Cl. B29c *27/00*

U.S. Cl. 156—80 **6 Claims**

A method and means for preparing large cellular skin patches for preservation for cyrogenic storage and subsequent thawing which comprises applying a woven scrim to one side of a large patch of cellular skin, with the scrim having a generally open and reticulate pattern of less than about 64 openings per square inch, and thereafter freezing the skin patch for cyrogenic preservation. Large cellular skin patches are normally stored by rolling the patch prior to freezing, and for thawing, the fluid being used gains ingress to the zones between adjacent rolled layers through the reticulate pattern of the interposed scrim.

3,793,104

PROCESS FOR RESTORING AND COVERING SUCTION COUCH SHELLS

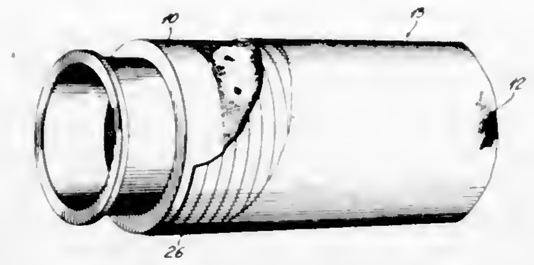
Stewart Harrowing, East Farnham, Quebec, Canada, assignor to Lawron Industries Limited, East Farnham, Quebec, Canada

Filed Mar. 31, 1972, Ser. No. 240,218

Int. Cl. B32b *35/00*

U.S. Cl. 156—94 **11 Claims**

A process for restoring and covering suction couch shells, which shells consist of a metal cylinder perforated by multiple drainage holes, when the drainage holes have become badly affected by outer surface cavitation due to abrasive particles in the water. The process comprises the steps of: cleaning and roughening the metal surface of the holes as well as the outer surface of the cylinder; winding around the outer surface of the cylinder plural layers of a polyethylene tape; winding a re-inforcing layer of a transparent cellulose tape over the polyethylene tape; pouring a thermosetting resin into the drainage holes from the inside of the cylinder and allowing the



resin to set; removing the polyethylene and the re-inforcing transparent cellulose tapes; winding under tension on the outer surface of the cylinder successive layers of a woven glass or synthetic fibre tape impregnated with a thermosetting resin; heat treating the cylinder; and redrilling the holes.

3,793,105

GLASS LAMINATES

James Derek Birchall, Norley; John Edward Cassidy, Hartford; John Edward Priddle, Welwyn, and Laurence Michael Smith, Harpenden, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Dec. 10, 1971, Ser. No. 211,856

Claims priority, application Great Britain, Dec. 11, 1970, 59029/70

Int. Cl. B32b *31/12, 17/06*

U.S. Cl. 156—106 **9 Claims**

Glass laminates comprising two sheets of glass bonded together by a transparent plastics material have at least one of the bonded surfaces of the glass provided with a layer of aluminum phosphate. The aluminum phosphate is preferably generated from an alcoholic coating solution of a complex phosphate of aluminum, e.g., aluminum chlorophosphate ethanolate, which may be applied to the glass surface and cured by gentle heating.

3,793,106

PROCESS FOR FORMING PLASTIC PARTS HAVING SURFACES RECEPTIVE TO ADHERENT COATINGS

John J. Grunwald, New Haven; Eugene D. D'Ottavio, Thomaston; Harold L. Rhodenizer, Bethlehem, and Michael S. Lombardo, Waterbury, all of Conn., assignors to MacDermid Incorporated, Waterbury, Conn.

Division of Ser. No. 889,472, Dec. 31, 1969, Pat. No. 3,620,933. This application Nov. 9, 1971, Ser. No. 197,163

Int. Cl. B32b *31/24;* **C09j** *5/02;* **C23b** *9/02*

U.S. Cl. 156—155 **7 Claims**

Plastic parts are formed against an anodically treated aluminum surface by molding, laminating, etc., whereby the surface of the formed part, after chemically stripping or dissolving away the aluminum, has a high energy level and is receptive to adherent coatings of metal plate. In particular, laminates are prepared which are useful in producing substrates for the additive formation of printed circuit boards after stripping the aluminum chemically from the substrate, and then catalyzing the stripped surface and depositing a conductor metal plate thereon by electroless and or electrolytic deposition.

3,793,107

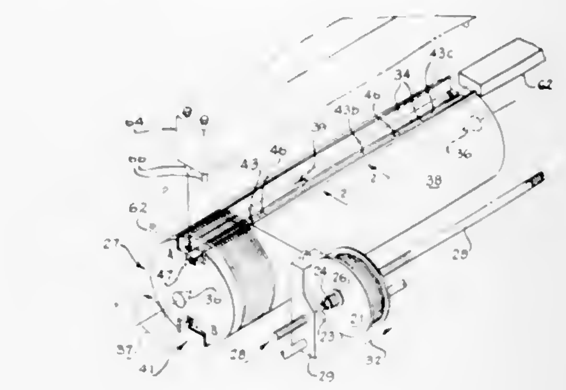
ELECTROSTATIC RECORDING HEAD AND METHOD OF MANUFACTURE

William A. Lloyd, San Jose, Calif., assignor to Versatec, Inc., Cupertino, Calif.

Division of Ser. No. 81,073, Oct. 15, 1970, Pat. No. 3,693,185. This application Sept. 8, 1972, Ser. No. 287,445

Int. Cl. B65h *81/04*

U.S. Cl. 156—174 **3 Claims**



Electrostatic recording head constructions are made by the method described below to comprise a first and second series of conductors disposed in spaced, parallel relation and having a pair of elongated, insulative head members secured together in confronting relation sandwiching one end of each of the conductors therebetween. The tips of the conductor ends are exposed in a line lying substantially in a plane between said members. Finally, first and second elongated handling elements are readily releasably secured respectively to the other ends of the first and second series of conductors. In forming the above head structure, a method is pursued comprising the steps of winding a length of wire to form uniformly laterally spaced convolutions about a mandrel, underlying the convolutions with an elongated strip of insulative material coated with a hardenable adhesive material, the strip extending transversely to the planes of the convolutions. The next step is to move the coated strip radially outwardly of the convolutions to urge the adhesive material against portions of the convolutions. Then another strip of insulative material is adhered to the convolutions in confronting relation to the first named strip so as to sandwich portions of the convolutions between the confronting strips. The strips are then compressed tightly together and after permitting the adhesive material to harden, the convolutions and strips are severed by cutting through the strips and the convolution portions along a line extending lengthwise of the strips.

3,793,108

AUGMENTED CURING OF REINFORCED PLASTIC STOCK

William Brandt Goldsworthy, Palos Verdes Estates, Calif., assignor to Glastrusions, Inc., Torrance, Calif.

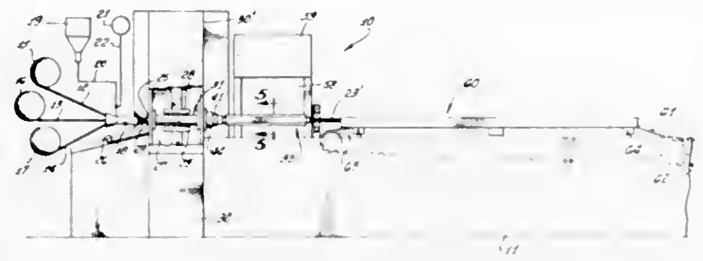
Division of Ser. Nos. 61,934, Aug. 7, 1970, Pat. No. 3,674,601, and Ser. No. , , Continuation-in-part of Ser. No. 648,347, June 23, 1967, Pat. No. 3,556,888. This application Oct. 14, 1971, Ser. No. 189,103

Int. Cl. B29h *9/02;* **B29c** *19/04*

U.S. Cl. 156—180 **8 Claims**

A pultrusion machine and process wherein a composite fibre strand is pulled through successive stages of impregnation, curing, and forming. At the impregnation stage liquid thermosetting resin is mixed with hardener and the fiber strand saturated with the mixture and rough formed. During the initial curing stage a cure is started throughout the resin mixture by use of electrical wave energy. Before final curing,

the saturated strand is pulled through the finish die where it is externally heated and wherein the saturated strand is given its



final cross-sectional shape and external finish, and cured to completion immediately prior to final emergence at the exit end of the finish die.

3,793,109

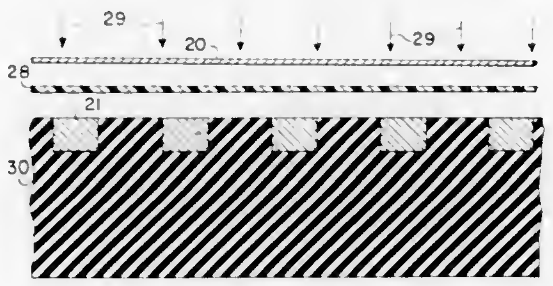
METHOD OF FABRICATING AN ARTICLE WITH CAVITIES

Walter J. Dale, Hampton, and George M. Jurscaga, Newport News, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 8, 1972, Ser. No. 224,489

Int. Cl. C09j *5/02, 7/00*

U.S. Cl. 156—245 **15 Claims**



An article having a cavity with a thin bottom wall is provided by assembling a thin sheet, for example, a metal sheet, adjacent the surface of a member having one or more apertures extending to that surface. A bonding adhesive is interposed between the thin sheet and the subadjacent member and the thin sheet is subjected to a high fluid pressure to subject the assembly to a high differential pressure to laminate the thin sheet to the member. In order to prevent the differential pressure from being exerted against the thin sheet adjacent the apertures in the subadjacent member, the aperture is filled with a plug of solid material having a linear coefficient of thermal expansion higher than that of the member. When the assembly is subjected to pressure, the material is heated to a temperature such that its expansion exerts a pressure against the thin sheet thus reducing the differential pressure across the thin sheet adjacent the plug. It is thus possible to readily produce members having hundreds of cavities having thin, flat, bottom walls. Stainless steel members are readily produced, for example, with seventy four such cavities, each with a diameter of 0.750 inches and having a flat bottom wall having a thickness of 0.006 inches.

3,793,110

MANUFACTURE OF WATER TIGHT PROTECTIVE COVERINGS

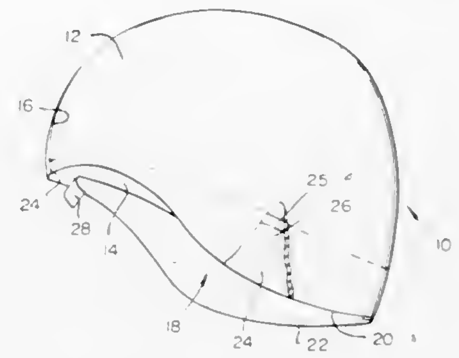
Clare C. Saunders, 525 Lexington Ave., New York, N.Y.

Filed Feb. 22, 1971, Ser. No. 117,380

Int. Cl. B32b *31/00;* **A42b** *1/12*

U.S. Cl. 156—247 **11 Claims**

A water tight covering, e.g., a bathing cap, limb covering, etc. having at its mouth, an inner, annular coated margin of pressure-sensitive adhesive overlain by a strippable tape is constructed by juxtaposing two films of thin, flexible thermoplastic material. Each film has an outwardly facing straight narrow zone covered with a pressure-sensitive adhesive. The zones on the two films are registered. On each film, the adhesive is backed by a thin, flexible vehicle web which is not readily autogenuously welded. The juxtaposed films, together with the vehicle webs, are placed between a platen and a rule die of a high frequency dielectric welding device. Die strips of the rule die cut along the entire outline of the protective



covering and peripherally bond the juxtaposed films except at the mouth of the covering. Portions of the vehicle webs are coincident with the mouth of the protective covering and are cut by the die to form the strippable tapes. The webs are not affected by the dielectric bonding operation yet allow portions of the films which are sandwiched between the webs and the adhesive coatings to bond together. The covering is subsequently turned inside out. Because the webs do not bond to the films, they can be easily peeled off to expose the pressure sensitive adhesive.

3,793,111

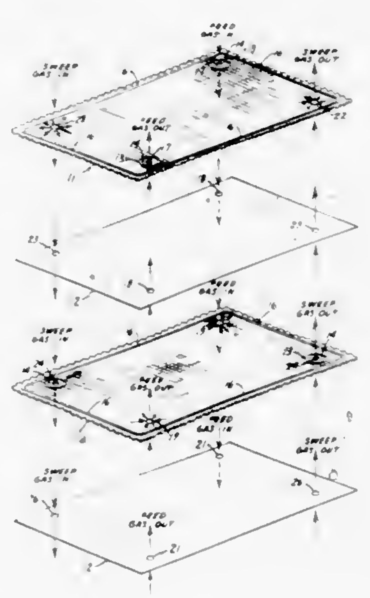
MEMBRANE PACKAGE CONSTRUCTION

Alfred E. Judkins, Waterford, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 20, 1972, Ser. No. 236,276

Int. Cl. B01d *53/22*

U.S. Cl. 156—253 **4 Claims**



An improved process for the preparation of a packaged membrane device is described whereby alternating diagonally-located confined areas of fluid sealant are prepared on each screen separator as it is incorporated in a stack between spaced membranes disposed in substantially parallel surface-to-surface array. After the package components are stacked, the sealant areas cured and the assembly sealed around the periphery, holes are drilled into the package in line with the areas of confined cured sealant to develop the manifold system and define a first group of flow volumes and a second group of flow volumes alternating between the first group. The completed structure is essentially the structure described and claimed in U.S. Pat. No. 3,564,819 - Neulander et al.

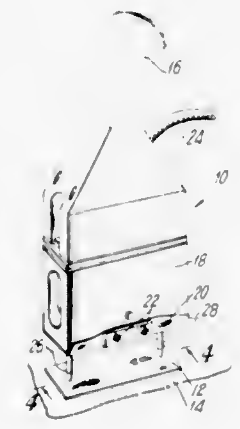
3,793,112
HAND HELD LABEL ATTACHING IRON

Rollin H. Sontag, Kings Point, N.Y., and Karl H. Keim, Granville Summit, Pa., assignors to John S. Sontag, Kings Point, N.Y.

Continuation-in-part of Ser. No. 236,366, March 20, 1972, abandoned. This application Oct. 18, 1972, Ser. No. 298,597

Int. Cl. B65c *5/04, 9/26, 11/06*

U.S. Cl. 156—306 **8 Claims**



A hand-held device for applying a label having a thermoplastic backing material onto a garment includes an element for releasably grasping and holding the label while the label is being transferred to the garment for attachment. The device also includes a heating surface that is brought into contact with the label to heat the thermoplastic material and thereby attach the label to the garment, after which the grasping element is released from the label. Several elements are disclosed for releasably grasping and holding the label, including prongs, a magnet, and an electrostatic field producing element. For use with the applicator device utilizing a magnet, a label is disclosed containing magnetic material for attraction to the device.

3,793,113
ADHESIVE COMPOSITIONS AND METHOD OF MAKING PLYWOOD

Clifford H. Pearson, Star Rt., Box 607-H, Winston, Oreg.

Filed July 13, 1972, Ser. No. 271,258

Int. Cl. C09j *3/14, 5/06*

U.S. Cl. 156—335 **4 Claims**

An adhesive for the bonding of wood such as veneers in the production of products such as plywood. The adhesive contains a phenolic resin, and from 4 to 11 percent by weight polyvinyl alcohol based on the resin solids in the adhesive. The resin in the adhesive includes fractions at two degrees of advancement, including a fraction of relatively low molecular weight and a fraction of relatively higher molecular weight. The polyvinyl alcohol is introduced into the adhesive as part of a glutinous mass including cereal flour and water, whereby the material may become fully dispersed in the adhesive during its manufacture. The adhesive when used to make plywood and with relatively low spreads exhibits excellent prepressability. The adhesive produces good bonds between woods of different densities and moisture contents, and between woods of different species as, for instance, hardwood and softwood, by reason of a controlled penetrating characteristic of the adhesive. The adhesive is particularly well adapted for the bonding of thin hardwood veneers, with minimal to no staining resulting through its use.

3,793,114
LABELLING MACHINE

James Ernest Thomas, Eastwood, England, assignor to Pricemaster Limited, Dagenham, Essex, England

Filed July 8, 1971, Ser. No. 160,850

Claims priority, application Great Britain, July 9, 1970, 33436/70

Int. Cl. B65c *9/18, 9/36, 9/42*

U.S. Cl. 156—361 **6 Claims**

A machine for dispensing adhesive labels from a carrier strip has supply and collector reels, a pivotable rocker arm carrying an application roller, and an adjacent guide member disposed between the reels and the roller so that labels on the strip are peeled therefrom by movement of the strip around the guide member. The rocker arm moves in one direction for dispensing a label and drawing a new label from the supply reel, and in the other direction for driving the collector reel by a connecting rod and unidirectional clutch.

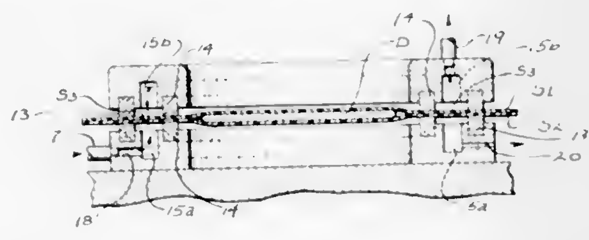
3,793,115
APPARATUS FOR SHAPING AND WELDING PLASTIC SHEET MATERIAL FOR PACKAGING ARTICLES

Theodore H. Jindra, 823 Cedar Cir. Grove, Northfield, Ohio

Filed Nov. 22, 1971, Ser. No. 200,907

Int. Cl. B32b *31/04*

U.S. Cl. 156—381 **5 Claims**



Method and means for forming superposed sheets of thermo-plastic material, as for packaging articles. Superposed sheets are sealed along spaced coextending lines of juncture defining an intermediate area of the material exposed within a closed chamber, and thereby dividing the chamber into inlet and outlet compartments. Heated gaseous medium under pressure within inlet compartment generates void in said intermediate area, initially by penetrating the same, to form severed edge portions which shrink away from each other and form heat-sealed welds contiguous with said spaced lines of juncture. Gaseous medium entering outlet compartment is conducted therefrom in manner to remove all traces of plastic residue from the closed chamber.

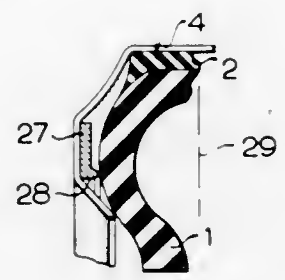
3,793,116
RECAPPING OF TIRES

Wilhelm Schelkmann, Grengeldanzstrasse 85a, Witten, Ruhr, Germany

Continuation of Ser. No. 713,514, March 15, 1968, abandoned. This application Feb. 4, 1971, Ser. No. 112,816

Int. Cl. B29h *5/04, 17/36*

U.S. Cl. 156—394 **8 Claims**



An envelope which is applied around a tire to surround at least that portion of the tire which requires recapping or other repair. The envelope comprises an elastic wrapper which has a marginal portion overlapping another portion of the wrapper or a portion of the tire and a sealing ring interposed between such portions and having an annular edge which bears against the adjoining surface to provide a fluidtight seal. The edge is urged against the adjoining surface in response to evacuation of gas from the area between the wrapper and the tire. The sealing action of the ring can be enhanced by employing a clamping ring which biases a portion of the wrapper against a portion of the sealing ring at one or both sides of the edge. The sealing ring may form an integral part of the wrapper or it may constitute a discrete part which is inserted between two portions of the wrapper or between the wrapper and the tire.

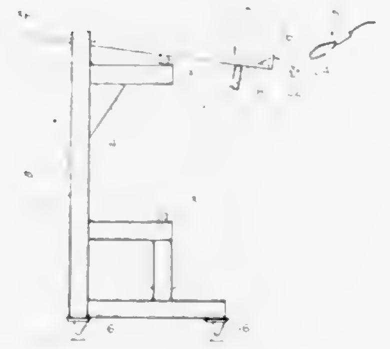
3,793,117
SPLICING HEAT DEFORMABLE YARNS

Charles T. Brooks, Summerville, Ga., assignor to Bigelow-Sanford, Inc., Greenville, S.C.

Filed June 28, 1972, Ser. No. 267,245

Int. Cl. B65h *69/06, 69/08*

U.S. Cl. 156—433 **3 Claims**



Shown is apparatus for fusing together pairs of thermally deformable yarn ends, each pair comprising a first yarn end wound on a multiple-yarn beam and a second yarn end. The apparatus comprises a first thermally insulating multiply-dented comb-like member releasably mountable adjacent the beam and extending the full length of the beam for receiving a single yarn end from the beam in each dent. A second multiply-dented comb-like member is provided for receiving the second yarn end of each pair in the individual dents thereof for transfer to the individual dents of the first comb-like member. Means are provided for applying heat successively to the pairs adjacent the first comb-like member.

3,793,118
APPARATUS FOR MANUFACTURING CONVEYOR BELTS WITH STEEL CABLE INSERTS

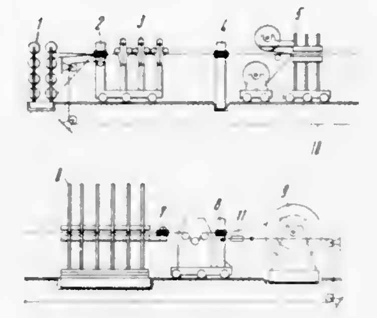
Martin Gilles, Cologne, and Anton Thiel, Garching/Alz, both of Germany, assignors to Clouth Gummiwerke AG, Koln, Germany

Filed Jan. 28, 1972, Ser. No. 221,570

Claims priority, application Germany, Feb. 1, 1971, 2104501

Int. Cl. B29h *9/00*

U.S. Cl. 156—436 **8 Claims**



An apparatus for making conveyor belts of rubber with inserts of longitudinally extending steel cables, in which first movable clamping means for selectively firmly grasping sections of the cables to be incorporated in the conveyor belt to be made are arranged between winding-off means for the steel cables and first fixed clamping means, while second movable clamping means are arranged between second fixed clamping means and winding up means for the finished belt, tensioning means being arranged between the first movable clamping means and the first fixed clamping means. Each of all clamping means is adapted selectively firmly to grasp and release the cable means.

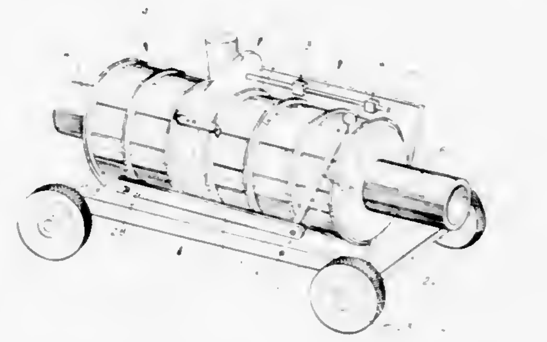
3,793,119
FACING TOOL FOR PLASTIC PIPE FUSION APPARATUS

William F. Province, 2031 Dewey, Bartlesville, Okla.

Filed Jan. 4, 1972, Ser. No. 215,359

Int. Cl. B23b *3/22*

U.S. Cl. 156—499 **5 Claims**



This invention describes an improved plastic pipe facing tool for use in pipe fusion joining apparatus. The novelty lies in the design of the rotating portion of the tool by means of which the ends of two pipes, pressed inward against the rotating means, are faced to square ends, which later will be heated by a heating means to a temperature at which the plastic is fluid, and by pressing the two heated ends together the pipe will be joined.

The pipe facing tool comprises an annular frame inside of which is supported a rotating means, comprising two parallel circular plates and an annular ring sprocket. The three parts are spaced with washers and bolted together to provide a relatively thin rotating structure with cutting blades on the outside surfaces. Rollers are provided on the frame which fit into grooves which are cut into the inner surfaces of the two plates and the rotation of the cutting means is guided by those circumferential rollers. By this means of circumferential support of the rotating means the rotating cutter blades can be placed much more closely together than is possible in conventional design. A driving sprocket is mounted on the frame and chain means connects the driving sprocket to the sprocket on the rotating cutter means.

3,793,120

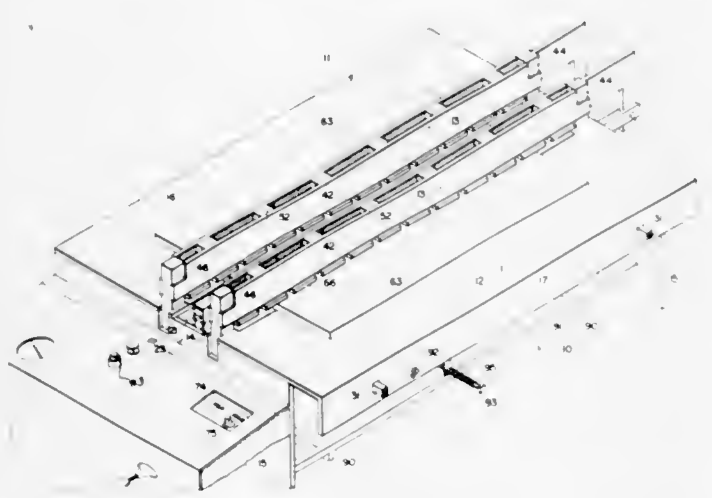
MACHINE FOR HEAT SEALING TOGETHER THE EDGES OF PLASTIC SHEETS AND THE LIKE

Vincenzo Spadano, 273 Maryland St., Winnipeg, Manitoba, Canada

Filed Jan. 28, 1972, Ser. No. 221,683

Int. Cl. B32b *31/00*

U.S. Cl. 156—499 **21 Claims**



Clamp bars on a fixed table hold one piece of plastic and clamp bars on a movable table hold the other. An elongated electric heat shoe moves up between the tables, the movable table moves towards the fixed table thus engaging the edges of the plastic pieces against the heat shoe. When welding temperature is reached, the movable table opens sufficiently to enable the heat shoe to retract downwardly whereupon the movable tables moves towards the fixed table until the partially melted edges of the plastic abut under pressure so that they weld together.

3,793,121

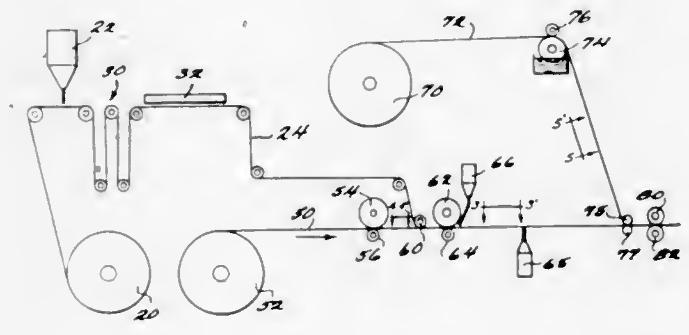
METHOD AND APPARATUS FOR MANUFACTURING MITTS

David H. Eberly, Jr., Fairfield, and Charles R. Schwartz, Wilton, both of Conn., assignors to United States Banknote Corporation, New York, N.Y.

Filed Dec. 14, 1971, Ser. No. 207,946

Int. Cl. B32b *31/00, 7/14*

U.S. Cl. 156—522 **7 Claims**



A method and apparatus for manufacturing disposable mitt for shining shoes having a first sheet of buffing material which is glued to a second sheet of material to which is attached a mass of quality shoe shine material for example in microcapsules or a sponge attached to the second sheet. A third sheet of material is removably glued to the side of the second sheet opposite the side to which the first sheet is glued so as to form a closed pocket which protects the shoe shine material in the microcapsules or sponge. Such a mitt can be made by continuously forming spongy masses at separated locations on a continuously moving sheet of the first material or depositing and attaching a suitable number of microcapsules, depositing patterns of glue at separated locations on a continuously moving sheet of the second material, pressing the first two continuously moving sheets together to form pockets, depositing suitable patterns of glue on a continuously moving sheet of the third material, pressing the third and second sheets together so that each pattern of glue on the third sheet defines a closed pocket which contains the shoe shine material and cutting the moving sheets to form the disposable mitts.

3,793,122

DEVICE FOR PRODUCING IN CONTINUOUS PROCESS PLATES OF POLYURETHANE HARD FOAM WITH COVERING PLATES

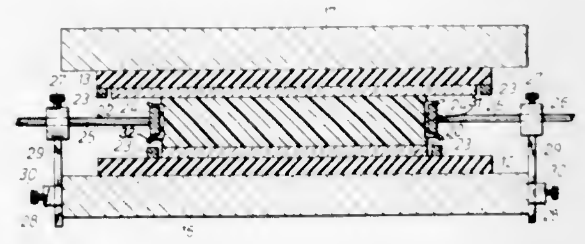
Heinz Sullhofer, Niederrheinstr. 158, Dusseldorf, Germany

Division of Ser. No. 767,645, Oct. 15, 1968, Pat. No. 3,620,863. This application June 7, 1971, Ser. No. 150,546

Claims priority, application Germany, Oct. 16, 1967, 1124133

Int. Cl. B32b *31/06, 5/20*

U.S. Cl. 156—537 **4 Claims**



Production in a continuous process of laminated plates with a core of polyurethane hard foam, according to which the reaction components to produce the polyurethane hard foam core are fed between two vertically spaced cover plates while the cover plates are advanced at a speed in conformity with the reaction speed of the components and while simultaneously with the advancement of said cover plates lateral strips are fed along the lateral longitudinal planes which define approximately the width of the laminated plates to be produced. At least one of the upper and lower marginal ends of said strips are folded outwardly away from the core being formed so as to leave at least one longitudinal gap between the lateral strips and the respective adjacent cover plate for permitting excessive foam material to escape therethrough.

3,793,123

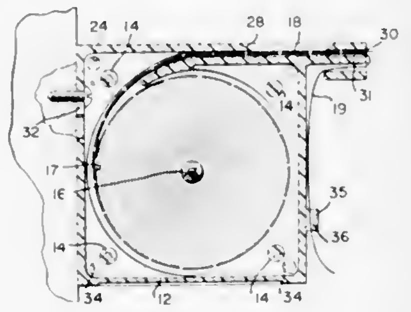
LABEL DISPENSER

Michael Aronson, 34 Princeton Dr., Tappan, N.Y.

Filed May 31, 1972, Ser. No. 258,145

Int. Cl. B65h *35/06*

U.S. Cl. 156—584 **3 Claims**



A label dispenser is shown which includes a hollow body having opposite spaced sides and a rear face and provided with an outlet opening. A substantially centrally disposed support extends across the sides and is adapted to support a roll of interconnected separable labels. The sides of the body each carry fasteners thereupon with the fasteners on one side of the body being complementary to the fasteners upon the opposite side of the body. The rear face of the body also carries fastening means.

3,793,124

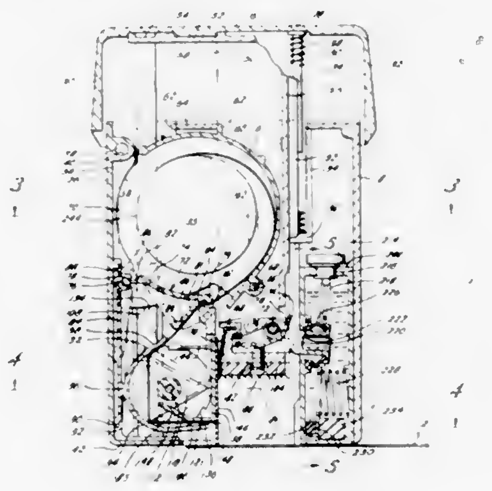
STAMP AFFIXER

Raymond Embree Babb, El Cajon; Maurice Corbridge Butler, San Diego, and Paul Edward Becking, El Cajon, all of Calif., assignors to Data-Link Corporation, San Diego, Calif.

Filed Mar. 31, 1972, Ser. No. 240,201

Int. Cl. B32b *31/00*

U.S. Cl. 156—532 **11 Claims**



A portable device adapted to contain a roll of postage stamps which are fed, cut off, moistened and adhered to a surface by a single movement of the device.

3,793,125

METHOD OF MAKING WOOD-CHIP BOARDS

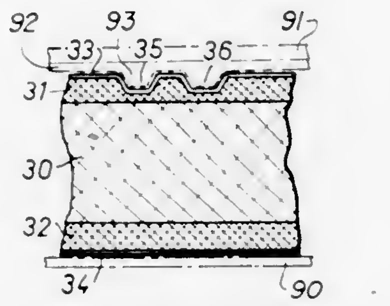
Albrecht Kunz, Gschwend, Germany, assignor to Uniboard AG, Zug, Switzerland

Filed May 7, 1971, Ser. No. 141,301

Claims priority, application Germany, June 24, 1970, 2031296

Int. Cl. B29j *5/02;* **B32b** *21/02*

U.S. Cl. 156—62.2 **6 Claims**



A method for fabricating a wood-chip board equipped with at least one decorative layer provided with relief-like formed portions which comprises the steps of forming pre-compressed chip stock composed of at least a coarse chip layer and a fine chip layer. A deformable decorative layer is placed on top of the fine chip layer. A relief carrier provided with relief-like protuberances is inserted between the decorative layer and a substantially flat press member placed over such decorative layer. Then, during the same working operation the chip stock and the decorative layer are pressed and glued together and a relief-like pattern is formed at the decorative layer and at least at the neighboring portions of the fine chip layer.

The wood-chip board produced according to the inventive method comprises a coarse chip layer and at least one fine chip layer arranged upon said coarse chip layer. A relief-like decorative layer is located on said fine chip layer. The decorative layer possesses formed portions extending into the fine chip layer, and said decorative layer consists of a single material layer.

3,793,126

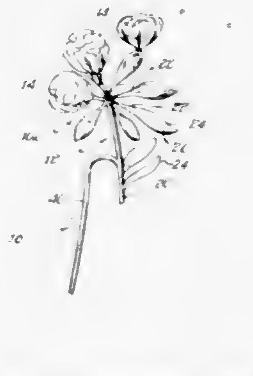
BOUQUET FORM FOR USE IN THE PREPARATION OF FLORAL ARRANGEMENTS

Newton Day McAdams, 326 Birkdale Ave., Lake Bluff, Ill.

Filed Mar. 22, 1971, Ser. No. 126,544

Int. Cl. A01n *3/00;* **A01g** *5/00;* **A47g** *7/00*

U.S. Cl. 161—28 **9 Claims**



A bouquet construction and method of fabrication utilizing a novel floral form. The form employed includes one or more elongate stem portions and a plurality of petiole or auxiliary stem portions depending therefrom, each said petiole terminating in one or more leaflet shaped pads adapted to have a floral element applied thereto. The petiole stem portions are disposed and of a selected number such that they may be positioned to arrange the leaflet shaped pads in a geometric pattern conforming to the floral pattern desired. The floral form is constructed so as to resemble a plant stem and preferably of material permitting bending thereof.

3,793,127

TOUGHENED GLASS

Erwin W. Wartenberg, Brunnenwiesen 6, Riedenberg, Stuttgart, Germany

Division of Ser. No. 74,897, Sept. 23, 1970, Pat. No. 3,653,866, and a continuation-in-part of Ser. No. 692,778, Dec. 22, 1967, abandoned. This application Nov. 30, 1971, Ser. No. 203,428

Claims priority, application Germany, Dec. 28, 1966, W43078

Int. Cl. C03b *27/00*

U.S. Cl. 161—1 **12 Claims**

Toughened glass of thickness in the range 0.8 mm to 3.5 mm is obtained by quenching in a two-component liquid medium, and has a modulus of rupture of from 14×10^3 p.s.i. and, upon destruction by sharp impact fracture, shatters into from 8 to 100 fragments per cm^2 of the glass.

3,793,128

CHAIR MAT

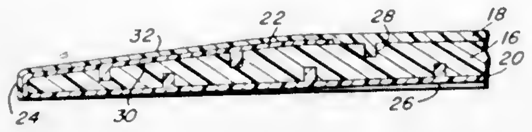
Charles W. Chancellor, Jr., Midland, Tex., assignor to Chancellor Chair Company, Midland, Tex.

Filed Dec. 6, 1971, Ser. No. 205,049

Int. Cl. B32b *1/04, 3/10*

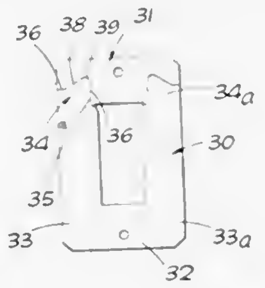
U.S. Cl. 161—44 **1 Claim**

A floor protecting mat of the type used with rolling chairs when used in conjunction with a desk especially when carpet-ing is employed as a floor covering and including a laminated panel having a core in the form of a panel encapsulated with glass fiber reinforced resin with the core having a plurality of recesses in the surfaces thereof for receiving the resin and keying the resin encapsulation to the core.



3,793,129
TWO-PART TRANSFORMER LAMINATION OF SLIDINGLY ENGAGEABLE PARTS

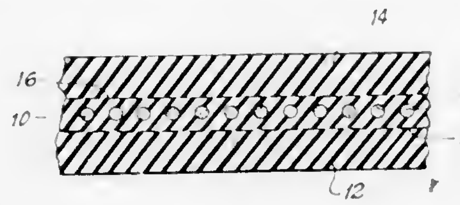
John Doggart; Harry Leslie Skelton, and Paul Rogerson Gleave, all of Stockport, England, assignors to V & E Friedland Limited, Cheshire, England
Filed Sept. 10, 1971, Ser. No. 179,623
Int. Cl. B32b *3/30, 3/10;* **H01f** *27/26*
U.S. Cl. 161—49 **3 Claims**



A two-part transformer lamination of which the two parts are slidingly engageable and are shaped to define together at least one locking means comprising a tongue and a correspondingly shaped closely fitting portion, of which the tongue has a region that in the plane of the lamination is narrower than a region nearer the tip of the tongue. Each tongue is preferably formed as an extension to a limb of a lamination and narrows towards its tip owing to an oblique side that has a widening step in it.

3,793,130
FIBER REINFORCED ELASTOMERS

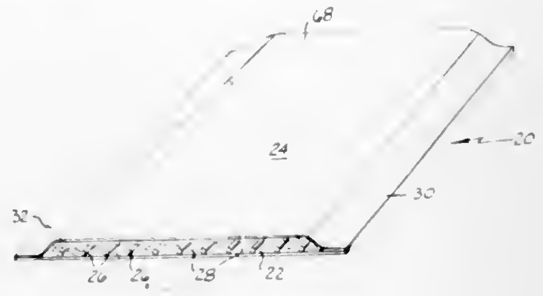
Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed Mar. 9, 1971, Ser. No. 122,394
Int. Cl. B32b *17/04;* **C03c** *25/02*
U.S. Cl. 161—93 **36 Claims**



This invention is addressed to the improvement in the bonding relationship between inorganic and organic fibers with elastomeric materials in the manufacture of fiber reinforced elastomeric products wherein impregnated bundles of fibers are provided with at least a coating of a vulcanization retarder to moderate the rate of vulcanization of the elastomeric material with which the bundles of fibers are combined to eliminate an elastomer-elastomer interface heretofore formed to thereby further improve the bonding relationship established between the fiber bundles and the elastomeric material.

3,793,131
FLEXIBLE INSULATED CONDUIT AND METHOD OF MAKING THE SAME

Lee Minor Hedges, Somerville, N.J., assignor to Johns-Manville Corporation, New York, N.Y.
Filed Dec. 1, 1971, Ser. No. 203,764
Int. Cl. B32h *3/02, 5/02*
U.S. Cl. 161—143 **8 Claims**



The disclosure relates to a flexible, insulated conduit and the frame stock for the conduit. The frame stock comprises a pair of flexible facing sheets with a layer insulating material and a plurality of spaced-apart elongate stiffening elements disposed therebetween and bonded thereto. The frame stock is made by passing two continuous sheets of adhesively coated facing material, a continuous blanket of insulating material and a plurality of wires between pressure rolls with the blanket of insulating material and wires being disposed intermediate the facing sheets. The conduit is made by folding a sheet of frame stock into an enclosed passage and forming a flexible joint to unite the edges of the thus folded sheet.

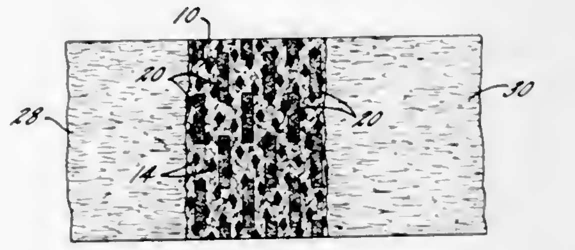
3,793,132
MODIFIED POLYESTER AND RUBBER STRUCTURES MADE THEREFROM

Roop S. Bhakuni, Copley, and Joseph L. Cormany, Jr., Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 23, 1972, Ser. No. 228,761
Int. Cl. B29h *9/04;* **C08g** *39/10*
U.S. Cl. 161—144 **2 Claims**

Relates to an improved rubber structure reinforced with an improved polyethylene terephthalate reinforcing fiber modified with anthraquinone, a hindered phenol, calcium aluminum silicate, or a polyphenylene ether, the modifier being present with the polyester prior to fiber formation.

3,793,133
HIGH ENERGY ABSORBING CONTINUOUS FILAMENT WEB LAMINATE

Jean M. Beaudoin; Robert J. Brock, both of Appleton, and Herman G. Minshell, Menasha, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Continuation-in-part of Ser. No. 126,530, March 22, 1971, abandoned. This application Feb. 22, 1972, Ser. No. 228,349
Int. Cl. B32b *7/14*
U.S. Cl. 161—148 **30 Claims**



Improved laminates comprising a low strength, fluid permeable web and a web of continuous filaments of a thermoplastic polymer are disclosed. The continuous filment web contains easily releasable intermittent autogenous bonds. Ply attachment in the laminate is achieved with a polymeric material which encapsulates the filaments to form disruptable adhesive bonds and extends into the permeable web at intermittent discrete areas. The disclosed laminates are attractive in appearance, absorb and retain fluid, and, in particular, possess unexpected superiority with respect to energy absorption, strength, and tear resistance.

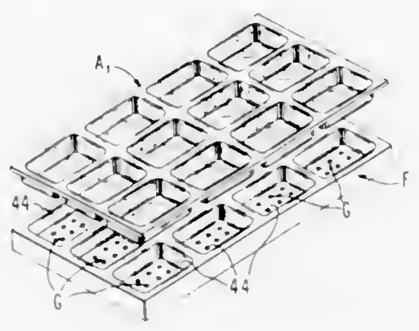
3,793,134
LOW DENSITY, HIGH STRENGTH CERAMIC ARTICLE

Paul Wilson Hardy, Barrington, and Orrin Martel Peterson, Crystal Lake, both of Ill., assignors to American Can Company, New York, N.Y.
Division of Ser. No. 61,831, Aug. 6, 1970, Pat. No. 3,689,611, Continuation of Ser. No. 706,741, Jan. 31, 1968, abandoned, which is a continuation-in-part of Ser. No. 578,064, Sept. 8, 1966, abandoned. This application Nov. 1, 1971, Ser. No. 334,021
Int. Cl. B32b *5/16, 19/00*
U.S. Cl. 161—162 **3 Claims**

A method for producing a low-density ceramic article containing a mixture of clay and low-density aggregate. The materials are intermixed with water and charged into a mold where the mixture is compacted into the shape of the article. Thereafter, it is dried, glazed and fired to produce the final article.

3,793,135
FORMABLE BARRIER PACKAGING MATERIAL, PROCESS THEREFOR AND PACKAGE THEREOF

Victor Monia, Mountain View, Calif., assignor to Guardian Packaging Corporation, Newark, Calif.
Continuation-in-part of Ser. No. 812,238, April 1, 1969, abandoned. This application Oct. 6, 1971, Ser. No. 187,073
Int. Cl. B32b *27/32*
U.S. Cl. 161—165 **5 Claims**



A strip of methyl methacrylate styrene polymer is laminated with a coating of a vinyl chloride-vinylidene chloride polymer. This lamination is a transparent semi-rigid, flexible packaging material which can be readily drawn in a mold to form a food containing package. The package can be filled with food product at relatively high temperature, and provides, when sealed, a food preserving package of long shelf life.

3,793,136
HIGH CRIMP, HIGH STRENGTH RAYON FILAMENTS AND STAPLE FIBERS

George C. Daul, Whippany, and Fabian P. Barch, Succasunna, both of N.J., assignors to Rayonier Incorporated, New York, N.Y.
Division of Ser. No. 719,919, April 9, 1968, Pat. No. 3,632,468. This application July 16, 1971, Ser. No. 163,485
Int. Cl. D02g *1/00;* **D01f** *3/28;* **D01d** *5/22*
U.S. Cl. 161—173 **1 Claim**

High tenacity rayon filaments and staple fibers having an exceptionally high number of crimps per inch are produced by spinning a viscose spinning solution into a coagulating-type spin bath to obtain coagulated, incompletely regenerated viscose filaments, the coagulated viscose filaments withdrawn from the spin bath being stretched from about 120 to 280 percent in length while the filaments are still substantially soluble in dilute alkali solution, the filaments being treated with a hot acid bath while being stretched. The tension of the filaments is then relaxed about 20–60 percent while the filaments are less than 50 percent regenerated, and the thus relaxed partially regenerated filaments are treated with an alkaline solution having a pH of from about 7.5 to 10. Regeneration of the filaments, or of staple fibers prepared therefrom, is then completed without additional stretching, followed by conventional desulfurization and washing of the highly crimpled filament or staple fiber product.

3,793,137
METHOD OF PERFORMING A SURGE-BOIL STEP DURING THE HEATING PERIOD OF A LIGNOCELLULOSIC MATERIAL COOKING STAGE

Sture Olof Erik Backlund, Sundsvall, Sweden, assignor to SCA Projekt Aktiebolaget, Sundsvall, Sweden
Filed Dec. 20, 1971, Ser. No. 209,883
Claims priority, application Sweden, Dec. 30, 1970, 17702/70
Int. Cl. D21c *7/12*
U.S. Cl. 162—42 **2 Claims**

A surge-boil step is performed during the heating period of a pulp cooking stage at a point of time when the chlorine number of the pulp is 20 to 30, said surge-boil step being created by causing a pressure drop in the digester by removing gas from or supplying cooling liquid to the top of the digester.

3,793,138
SYSTEM FOR DEPOSITING FIBERS FROM A SUSPENSION ONTO A HOLLOW, PERFORATED MOLD WHEREIN A MOVABLE HEAD APPLIES SUCTION FROM WITHIN THE MOLD

Ernst Rohrer, Ch 9470, Buchs SG, Switzerland
Filed Jan. 28, 1972, Ser. No. 221,657
Int. Cl. D21j *7/00*
U.S. Cl. 162—219 **10 Claims**

The present invention relates to a process for depositing a predetermined thickness of fibers upon the surface of a mold comprising, moving a slurry supply container into surrounding relationship with a perforated hollow mold, filling the slurry supply container with a fibrous slurry, moving a suction head into the interior of the hollow mold, pulling a suction through the suction head to cause fibers from the slurry to be deposited on the outside of the mold, moving the suction head so as to pull a suction on an additional area of the mold.

A device is provided for carrying out the process comprising a container for holding a fiber suspension therein, a suspension arrangement for holding a hollow mold, cylinders and piston rods for moving the container into surrounding relationship with the hollow mold, a slidably movable suction head extending into the container for insertion into the hollow mold therein, cylinder and sleeve for moving the suction head (and suction pipe connected thereto) in sealing relationship into and out of the interior of the hollow mold for accreting fibers onto the outside surface.

3,793,139
PROCESS OF MAKING HARDBOARD

John C. Caresio, Evergreen, Ill., assignor to Masonite Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 843,126, July 18, 1969, abandoned. This application Apr. 14, 1971, Ser. No. 134,016

Int. Cl. D21j *1/06*

U.S. Cl. 162—225 **5 Claims**

A process for making cellulose hardboard in which a wet lap of cellulose fiber containing in excess of 25 percent water is subjected to a hot press at an initial high pressure step of 200 to 500 psi. The said cellulose fibers are then subjected to at least one intermediate pressure step of 60–150 psi to reduce the moisture content to less than 20 percent and finally subjecting the said cellulose fibers to a final pressure step of 5–20 psi to reduce the moisture content greater than 5 percent.

3,793,140
ARC FOIL BLADE FOR MACHINE WIRES OF PAPER MAKING MACHINES

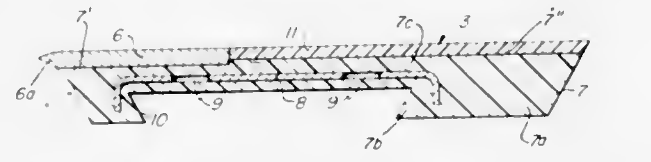
Glauco Corbellini, Via Del Bon, 61, Udine, Italy

Continuation of Ser. No. 872,203, Oct. 29, 1969, abandoned. This application Nov. 17, 1971, Ser. No. 199,733

Claims priority, application Italy, Jan. 29, 1969, 60504/69

Int. Cl. D21g *9/00*

U.S. Cl. 162—352 **3 Claims**



An arc foil blade which is placed below a paper making machine forming wire to aid in liquid drainage is formed by a casting process and includes a body member made of plastic material, a strip of wear resistant hard casting metal alloy secured to the upper portion of the body member, and an elongated member made of antiabrasive plastic material secured to the body member in superimposed relation to the trailing edge portion thereof and presenting a substantially flat coplanar surface trailing from the strip of metal alloy. A metal insert is embedded within the body member for reinforcement. The casting alloy may contain 2 percent carbon, 35 percent chromium, 18 percent tungsten, cobalt, and traces of iron manganese, silicon, and nickel.

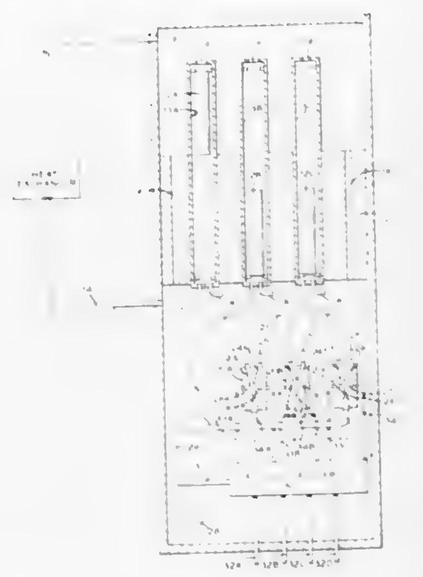
3,793,141
NUCLEAR REACTOR CONTROL SYSTEM

Russell M. Ball, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New York, N.Y.

Continuation-in-part of Ser. No. 38,818, May 19, 1970, abandoned. This application Sept. 29, 1972, Ser. No. 293,634

Int. Cl. G21c *7/16*

U.S. Cl. 176—36 R **6 Claims**



A nuclear reactor in which the neutron absorber rods are positioned by fluid power applied in accordance with binary coded command signals in fluidic form and piped to a decoder within the reactor pressure vessel.

3,793,142
NUCLEAR REACTOR HAVING MEANS FOR CLAMPING A STEAM TREATING UNIT

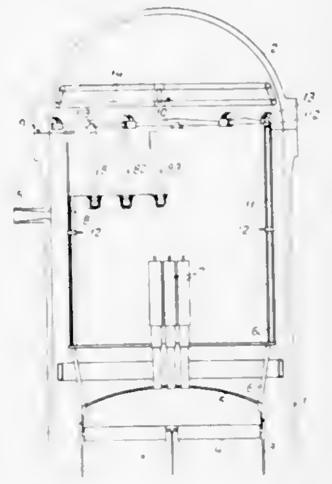
Christer Gunnarsson, Vasteras, Sweden, assignor to Aktiebolaget Asea-Atom

Filed Sept. 14, 1972, Ser. No. 289,131

Claims priority, application Sweden, Oct. 11, 1971, 12818/71; Apr. 14, 1972, 4860/72

Int. Cl. G21c *15/16*

U.S. Cl. 176—55 **12 Claims**



In a nuclear reaction which includes a reactor tank with a lid and a steam treating unit including a moderator tank lid with steam separators attached to it and a steam drying unit arranged above the lid of the moderator tank, in order to clamp the steam treating unit members are secured in the lid of the reactor tank which exert a pressure on the steam treating unit and press it against the moderator tank when the lid is applied on the reactor tank. These members may be elastically deformable beams fixed on the ends to the reactor tank lid and arranged in a polygonal formation for exerting a clamping pressure during steam treating which is greater than the forces which may arise from a normal type of accident.

3,793,143
LIQUID COOLED NUCLEAR REACTOR

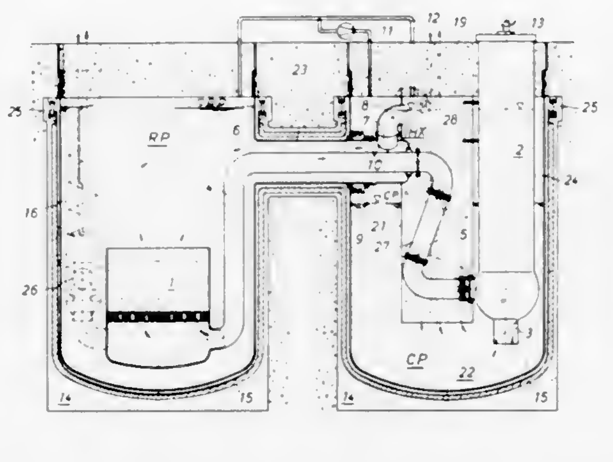
Richard Arno Muller, Neuthard, Germany, assignor to Gesellschaft fur Kernforschung m.b.H, Karlsruhe, Germany

Filed Mar. 22, 1971, Ser. No. 126,855

Claims priority, application Germany, Mar. 21, 1970, 2013586

Int. Cl. G21c *13/02, 15/24*

U.S. Cl. 176—65 **10 Claims**



There is disclosed a nuclear reactor that has a reactor tank enclosing a reactor core and a component tank accommodating a coolant pump and a heat exchanger disposed in a shell which is secured gastight to the top wall of the component tank. The coolant is carried by conduits in both directions between the heat exchanger and the reactor core. The space above the coolant level in the component tank externally of the shell communicates by means of a further conduit with the space above the coolant level in the reactor tank. The space above the coolant level in the reactor tank communicates with the space above the coolant level in the shell by means of a pressure equalizing conduit.

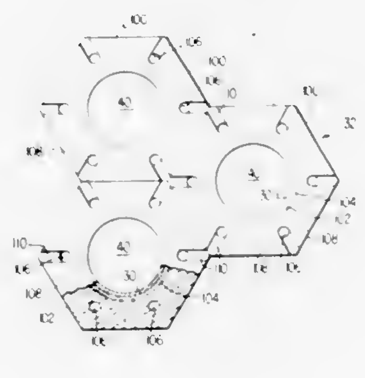
3,793,144
FUEL ELEMENT FOR A NUCLEAR REACTOR OF THE PASSIVE METHOD HYDRIDE CONTROL TYPE

Robert E. Magladry, Baltimore, Md., assignor to Teledyne, Inc., Los Angeles, Calif.

Division of Ser. No. 680,618, Nov. 6, 1967, Pat. No. 3,644,173. This application July 30, 1969, Ser. No. 861,529

Int. Cl. G21c *3/64*

U.S. Cl. 176—69 **6 Claims**



A fuel element for a nuclear reactor of the passive metal hydride control type comprises a porous pellet of zirconium hydride and uranium of hexagon or other shape, thereby permitting assembly into a closely packed system. The porous pellet has a coolant tube extending longitudinally therethrough with a ceramic, glass or enamel layer on the side of the tube contaeting the fuel.

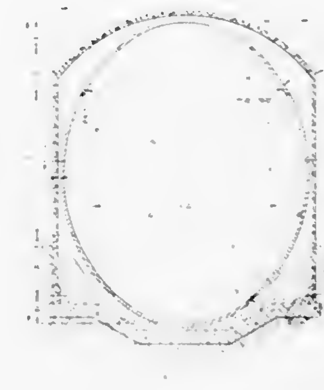
3,793,145
NUCLEAR CONTAINMENT VESSEL AND METHOD OF MAKING SAME

Robert W. Jordan, Pittsburgh; Roger L. Cornith, Coraopolis; Norman W. Edwards, Sewickley, and Stephen M. Preg, Jr., Coraopolis, all of Pa., assignors to Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa.

Filed May 25, 1971, Ser. No. 146,724

Int. Cl. G21c *13/00*

U.S. Cl. 176—87 **45 Claims**



A nuclear containment vessel and method of making same, wherein said vessel comprises a closed shell of revolution having a substantially doubly curved shape with an elongate vertical dimension, said shell comprising a plurality of different portions merging into one another, at least one of said portions having different curvature or different thickness, or different curvature and thickness than adjacent portions.

3,793,146
PROCESS FOR THE PRODUCTION OF CITRIC ACID

Kazumitsu Ishii; Yoshikazu Nakajima, and Tatsuya Iwakura, all of Tokyo, Japan, assignors to Mitsui Sugar Co., Ltd., Tokyo, Japan

Filed Nov. 15, 1971, Ser. No. 198,966

Claims priority, application Japan, Nov. 26, 1970, 45-104247

Int. Cl. C12c *1/00*

U.S. Cl. 195—37 **1 Claim**

A process for making citric acid is disclosed which is formed by inoculating a strain of Candida oleophilia to a culture medium of a waste glucose solution containing a high calcium ion and chloride ion content formed by adding calcium chloride to a mixed sugar solution of fructose and glucose. The fructose-calcium chloride addition compound is precipitated out and the remaining solution is employed as the culture medium for producing citric acid. High yields of the citric acid on an industrial scale result.

3,793,147
ANTIBIOTIC 18.631 RP

Denise Mancy, Charenton; Leon Ninet, and Jean Preud Homme, both of Paris, all of France, assignors to Rhone-Poulenc S.A., Paris, France

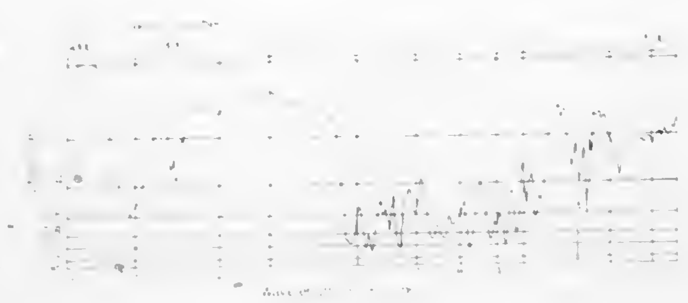
Division of Ser. No. 798,980, Feb. 13, 1969, Pat. No. 3,682,886. This application Oct. 14, 1971, Ser. No. 189,259

Int. Cl. C12k *1/00*

U.S. Cl. 195—80 R **11 Claims**

The new acidic antibiotic 18.631 R.P. is prepared by aerobically cultivating *Streptomyces hygroscopicus* DS 9.751 (NRRL 3418), *Streptomyces albocinerescens* DS

21.647 (NRRL 3419) or *Streptomyces roseochromogenes. var. oscitans* DS 12.976 (NRRL 3504) on an aqueous nutrient medium containing assimilable sources of carbon. nitrogen and inorganic substances. The antibiotic is particularly effective against gram-positive microorganisms.



3,793,148
MICROBIOLOGICAL REDUCTION OF 1,3,-DIOXO-2-ALKYLCYCLOALKANES

Raymond P. Lanzilotta, San Jose, Calif., assignor to Syntex Corporation

Filed July 24, 1972, Ser. No. 274,297

Int. Cl. C12b *1/00*

U.S. Cl. 195—51 R **16 Claims**

An improved method of microbiologically reducing a 1,3-dioxo-2-alkylcycloalkane using members of a group of compounds which increase the production of the 1β-hydroxy-2β-alkyl-3-oxocycloalkane product. The products are useful as intermediates in the total synthesis of useful steroid compounds. Alkyl alcohol and acrylonitrile are illustrated as representative of the useful group of compounds.

3,793,149
CELL-BOUND KERATINOLYTIC ENZYMES OR TRICHOPHYTON MENTAGROPHYTES AND PROCESS THEREFOR

Fritz Blank, Merion, and Ruey J. Yu, Philadelphia, both of Pa., assignors to Temple University, Philadelphia, Pa.

Filed Jan. 3, 1972, Ser. No. 215,120

Int. Cl. C07g *7/02*

U.S. Cl. 195—66 R **7 Claims**

Two cell-bound keratinases are produced by incubating T. mentagrophytes for several days in growth medium, at a pH of 7.8, containing horse hair, magnesium salt, thiamine, pyridoxine and inositol. Preferably, glucose is also included. These keratinases are extracted from the fungus mycelium after filtering off the growth media, partially purifying the enzymes by adsorbing them separately on diethylaminoethyl cellulose and carboxymethyl cellulose. The first enzyme which is eluted from the diethylaminoethyl cellulose and purified by molecular sieves has a molecular weight of 440,000. The second enzyme which is eluted from the carboxymethyl cellulose and purified by molecular sieves has a molecular weight of 20,300. Physicochemical properties as well as their keratinolytic activities have been determined.

3,793,150
EQUINE STRANGLES VACCINE AND METHOD OF PREPARING AND USING THE SAME

Myron G. Usdin, Kansas City, Mo., assignor to Richardson-Merrell Inc., New York, N.Y.

Filed Jan. 20, 1971, Ser. No. 108,147

Int. Cl. C12k *5/00;* **A61k** *23/00*

U.S. Cl. 195—96 **3 Claims**

A vaccine effective in immunizing equines against infection by virulent strains of *S. equi* may be prepared by extraction of *S. equi* bacteria to recover a proteinaceous antigen. The invention includes the vaccine, its method of preparation, and the immunization of equines therewith by intramuscular inoculation.

3,793,151
METHOD OF SCREENING FOR ANTICAPSULAR SUBSTANCES

Jerry W. Denney, 5232 Nob Ln., Indianapolis, Ind.

Continuation of Ser. No. 8,736, Feb. 4, 1970, abandoned. This application July 10, 1972, Ser. No. 270,098

Int. Cl. C12k *1/04*

U.S. Cl. 195—103.5 R **6 Claims**

A method of screening for compounds which inhibit the formation of hyaluronic acid capsules implicated in the virulence of certain pathogenic microorganisms.

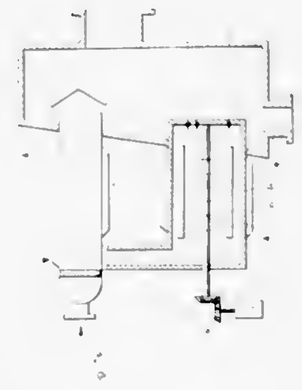
3,793,152
METHOD OF AEROBIC CULTIVATION OF MICROBES AND APPARATUS THEREFOR

Nagamasa Sassa, Kobe, Japan, assignor to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed June 24, 1971, Ser. No. 156,451

Int. Cl. C12b *1/14*

U.S. Cl. 195—109 **10 Claims**



Method and apparatus for aerobically cultivating microbes in which a cultivating medium including nutrients are dispersed and fed into a tank, dispersing air through the bottom thereof, separating the air from the medium at the top thereof, and circulating the deaerated medium through a circulating tube and returning same together with added cultivating medium to the tank.

3,793,153
METHOD FOR PROPAGATING YEASTS AND MOLDS BY MIXED CULTURING AND METHOD OF FERMENTATION THEREOF

Yoshiharu Miura, 8-28, Katagiri-cho, Ibaragi-shi, Osaka, Japan

Filed May 27, 1971, Ser. No. 147,422

Claims priority, application Japan, June 6, 1970, 45-48904

Int. Cl. C12b *1/00*

U.S. Cl. 195—111 **6 Claims**

A strain of bacteria is added to a fermentation system wherein yeasts or molds capable of assimilating hydrocarbons or carbohydrates are fermented using hydrocarbons or carbohydrates as the main carbon source, and mixed culturing is carried out.

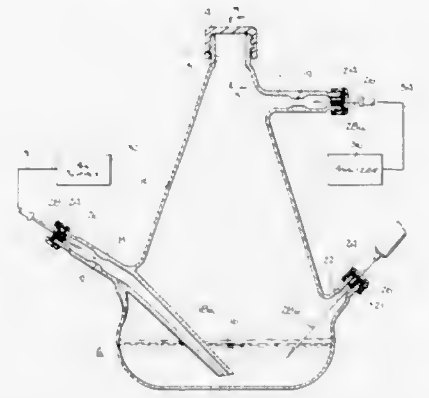
3,793,154
APPARATUS FOR GASEOUS ENVIRONMENTAL CONTROL OF BATCH CULTURES OF MICRO-ORGANISMS

Constantine Efthymiou, Kew Gardens, N.Y., assignor to St. John's University, New York, N.Y.

Filed Dec. 21, 1970, Ser. No. 99,952

Int. Cl. C12b *1/00*

U.S. Cl. 195—139 **4 Claims**



A flask for establishing and maintaining environmental control for microbial cultures. The flask has a body resembling an erlenmeyer flask, and a screw capped large opening in the top thereof. The flask also has three sidearm tubes extending through its walls, one for outlet of gas from the flask, and another, extending into the flask to a point near its bottom, which functions as a gas input conduit. A third sidearm tube is provided for inoculation of the flask and sampling of its contents. Each sidearm is provided with a septum-type plug and a perforated screw cap to hold the plug in sealing position. The plugs and caps permit aseptic injection and withdrawal of gas or liquid to and from the flask by means of hypodermic needles inserted through the caps and plugs without disturbing the atmospheric conditions established within the flask. Methods for use of the apparatus for establishing and maintaining aerobic and anaerobic environmental systems are also disclosed.

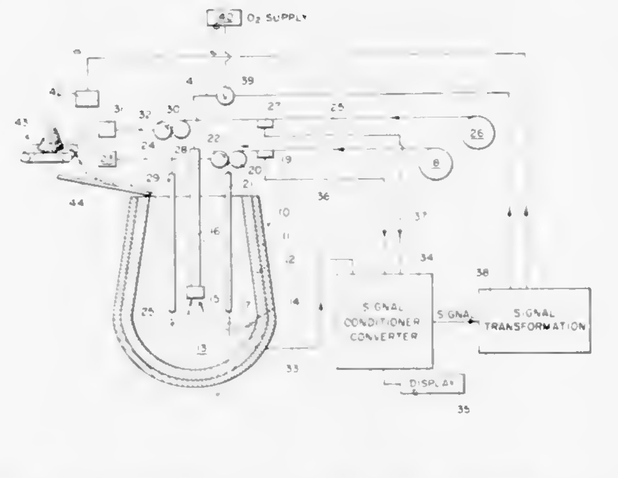
3,793,155
APPARATUS FOR MONITORING THE OXYGEN CONTENT OF A MOLTEN METAL

Harold W. Flood, Acton; George H. Hall, Westford, and Herman P. Meissner, Winchester, all of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Division of Ser. No. 886,819, Dec. 22, 1969, Pat. No. 3,652,427. This application Jan. 4, 1972, Ser. No. 215,388

Int. Cl. G01n *27/46*

U.S. Cl. 204—195 S **12 Claims**



Method and apparatus for continuously measuring the oxygen and carbon contents of a molten metal, particularly of iron in a BOF furnace. A wire containing as a component a metal which is a getter for oxygen is continuously fed into the melt. A concentration cell is established and the EMF developed is used as a measure of oxygen content. Carbon content is a function of the reciprocal of the oxygen content and is calculated therefrom. Automatic control over the oxygen feed results in automatic control over the carbon content. When the EMF of the cell is temperature dependent, means are incorporated for simultaneously measuring the melt temperature.

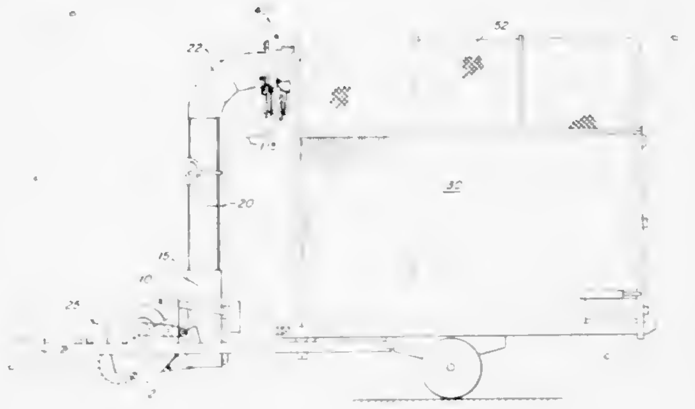
3,793,156
AUTOMATIC HOOD SYSTEM

Glenn G. Kanengieter, Blooming Prairie, and Gerald E. Barry, Owatonna, both of Minn., assignors to Owatonna Manufacturing Co., Inc., Owatonna, Minn.

Filed Nov. 21, 1972, Ser. No. 308,530

Int. Cl. B65g *53/40*

U.S. Cl. 302—60 **8 Claims**



An automatic hood system for distributing material such as hay, straw, etc. in which the distribution assembly is mounted on the end of a conveying pipe and includes a motor adapted to rotate the entire assembly through a range of limited pivotal movement on the end of the pipe and to raise and lower deflecting hood sections included therein simultaneously with the pivotal movement of the entire hood assembly.

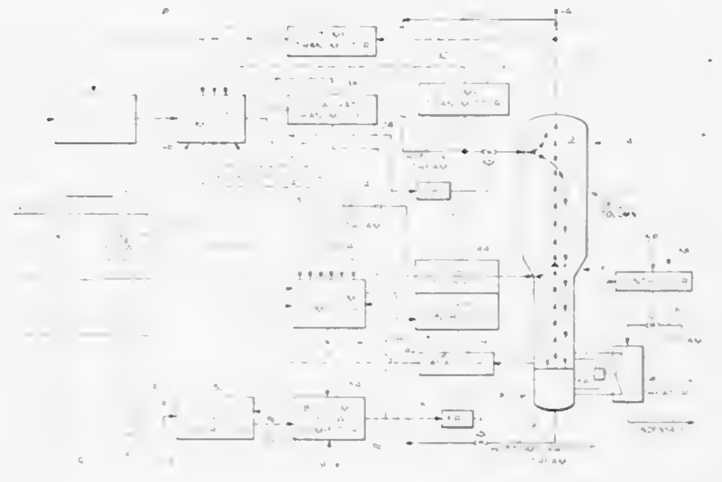
3,793,157
METHOD FOR SEPARATING A MULTICOMPONENT FEEDSTREAM

James W. Hobbs, Bartlesville, Okla., and Ricardo J. Callejas, Old Ocean, Tex., assignors to Phillips Petroleum Company, Washington, D.C.

Filed Mar. 24, 1971, Ser. No. 127,542

Int. Cl. B01d *3/42;* **C10g** *7/00*

U.S. Cl. 203—2 **20 Claims**



A method for separating a multicomponent hydrocarbon feedstream in a column into an overhead vapor stream and a

3,793,164

rapidly and positively identified to enable the early remedying liquid bottoms-product stream having a specified purity by maintaining the overhead vapor stream at about one preselected temperature, maintaining the rate of heat input into the column by the feedstream at a value greater than the heat input into said column by a lower portion heating means, and regulating the rate of heat input into the column by the feedstream for maintaining the liquid bottoms-product stream at the preselected purity.

ERRATUM

For Class 204—195 see:
Patent No. 3,793,155

3,793,158

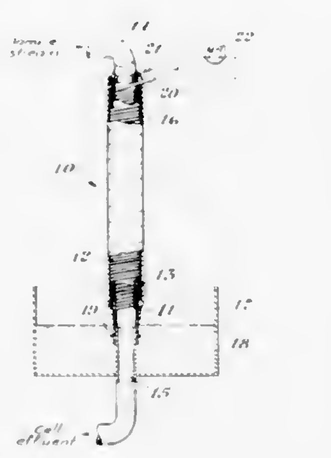
DEVICE AND METHOD FOR MEASURING RELATIVE CONCENTRATION CHANGES IN GAS STREAM COMPONENTS

Charles Eugene Hamilton, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 5, 1971, Ser. No. 112,980

Int. Cl. G01n *27/46*

U.S. Cl. 204—1 T **20 Claims**



A device for detecting and measuring fluctuations on a continuous basis and at most any concentration level, in a flowing gas stream, of a reactive component such as, oxygen, chlorine, bromine, iodine, sulfur dioxide, sulfur trioxide, hydrogen sulfide, carbon monoxide and compatible mixtures thereof utilizes as the detecting element a concentration cell made from two electrodes formed of substantially identical metal, a reference electrode and a sample electrode, at least the latter being foraminous in nature, an aqueous electrolyte containing a mobile soluble ion, the electrolyte contacting substantial areas of both electrodes, a substantially constant atmosphere or a lack of any atmosphere around the reference electrode, an enclosed zone around the sample electrode and means for bringing the gas stream to and from the enclosed zone. No impressed voltage or amperage is applied. The small potential difference across the electrodes generated by chemical equilibrium shifts in the concentration cell caused by fluctuations in the gas stream composition are measured by a sensitive Wheatstone bridge or a microammeter or other sensitive detection means.

3,793,159

ELECTROPLATING PLASTICS

Johnny L. Wells, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 5, 1972, Ser. No. 250,585

Int. Cl. C23b *5/60;* **B44d** *1/092*

U.S. Cl. 204—30 **7 Claims**

In an electroless process for electroplating plastics containing a siliceous filler, a wash solution containing a nonionic surfactant is employed to remove the chromium from the plastic subsequent to the acid chromate etch and before electroplating.

3,793,160

METHOD OF FORMING CASE-HARDENED METALS BY ELECTROLYSIS

Oris T. Homan, Las Vegas, Nev., assignor to Triangle Industries, Inc., Newark, N.J.

Division of Ser. No. 782,436, Dec. 9, 1968, Pat. No. 3,634,145. This application Dec. 16, 1970, Ser. No. 98,898

Int. Cl. C23b *5/30*

U.S. Cl. 204—39 **16 Claims**

A process of boronizing a metal article is described which comprises immersing the selected metal article in a fused bath composed of at least one alkali metal halide or alkaline earth metal halide and a boron salt of the empirical formula $M_xB_yF_z$ wherein M is an alkali metal, and the ratio of $x:y:z$ is 1:0.4 to 2.0:0.5 to 2.5 with y being preferably above 1 and z is preferably below 1.5, the fused bath being maintained at a temperature between 1200°F to 1750°F for a sufficient duration to impregnate the metal with boron. There is also described novel boron products, their process of manufacture and salt baths containing such boron products. The process produces an extremely hard, uniform, adherent and corrosion resistant boride casing on metals such as carbon and alloy steels.

3,793,161

METHODS FOR ELECTROPLATING SOLDER

Howard Manko, Teaneck, N.J., assignor to Alpha Metals, Inc., Jersey City, N.J.

Filed Aug. 11, 1972, Ser. No. 279,933

Int. Cl. C23b *5/14, 5/38, 5/40*

U.S. Cl. 204—43 S **4 Claims**

A consumable solder anode being an anode shaped body composed of an alloy of 5 to 100 percent high purity tin and 0 to 95 percent high purity lead with approximately 50 p.p.m. of a grain refiner such as calcium, phosphorous, tellurium, sulfur.

3,793,162

ELECTRODEPOSITION OF RUTHENIUM

James Hope, Solihull, England, assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Dec. 12, 1972, Ser. No. 314,390

Claims priority, application Great Britain, Dec. 17, 1971, 58780/71

Int. Cl. C23b *5/24*

U.S. Cl. 204—47 **19 Claims**

An electroplating bath and process for electroplating ruthenium. The bath is prepared by dissolving $Ru_2N(OH)_5 \cdot nH_2O$ in sulfuric or sulfamic acid and adjusting the pH to 4 or less.

3,793,163

PROCESS USING ELECTROLYTE ADDITIVES FOR MEMBRANE CELL OPERATION

Ronald L. Dotson, Mentor, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Feb. 16, 1972, Ser. No. 226,934

Int. Cl. C01d *1/06*

U.S. Cl. 204—98 **9 Claims**

The operation of electrolytic cells employing a permselective cation-exchange membrane is improved by addition to the anolyte of a compound capable of forming, at an elevated pH, an insoluble reversible gel with any polyvalent cations present. The use of monobasic phosphates to combine with hardness ions is exemplary.

3,793,164

HIGH CURRENT DENSITY BRINE ELECTROLYSIS

James M. Kolb, Mentor; Charles R. Franks, North Madison, and Barry A. Schenker, Mayfield Heights, all of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Apr. 19, 1973, Ser. No. 352,418

Int. Cl. C01d *1/06;* **B23p** *3/00;* **C01b** *7/06*

U.S. Cl. 204—99 **5 Claims**

Described is a method of electrolyzing brine in a mercury cell, at applied current densities of at least 6 amperes per square inch, employing as the anode a titanium substrate bearing on at least a portion of the surface thereof a mixed oxide coating of from 30 to 90 percent stannic oxide, from 1.0 to 10 percent antimony oxide, from 1.0 to 50 percent of at least one platinum group metal oxide, and from 0.5 to 30 percent of a valve metal oxide selected from the group consisting of titanium and tantalum oxides.

3,793,165

METHOD OF ELECTRODEPOSITION USING CATALYZED HYDROGEN

Walter Juda, Lexington, and Robert Lee Novak, Hanover, both of Mass., assignors to Prototech Company, Burlington, Mass.

Filed Dec. 27, 1971, Ser. No. 212,789

Int. Cl. C22d *1/00*

U.S. Cl. 204—106 **8 Claims**

This disclosure deals with the novel use of a hydrogen anode, diffusion barrier and anolyte circulation for the electrodeposition of a metal of oxidation potential below that of hydrogen from a salt solution thereof and in controlled locations maintained apart from the hydrogen catalyst surface at the anode which normally would plate out the metal thereon.

3,793,166

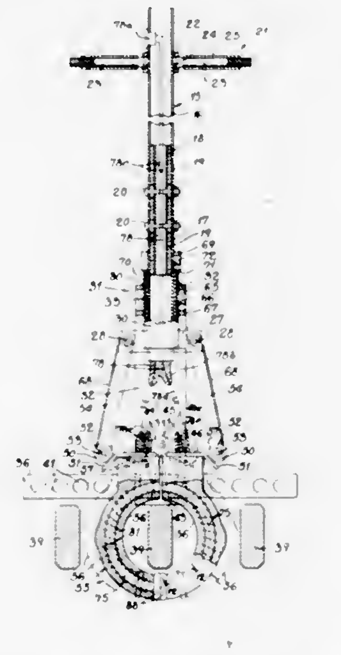
ELECTRICAL CURRENT MEASUREMENT AND RAPIDLY LOCATING AND POSITIVELY IDENTIFYING CATHODES HAVING ABNORMAL ELECTRICAL CONDITIONS ASSOCIATED THEREWITH IN AN ELECTROLYTIC COPPER REFINING PROCESS TANKHOUSE

Frank D. Shaw, Rumson, N.J., assignor to American Smelting and Refining Company, New York, N.Y.

Division of Ser. No. 1,108, Jan. 7, 1970, Pat. No. 3,652,935. This application Nov. 15, 1971, Ser. No. 198,589

Int. Cl. C22d *1/16*

U.S. Cl. 204—108 **2 Claims**



Cathodes having abnormal electrical conditions associated therewith in an electrolytic copper refinery tankhouse are rapidly and positively identified to enable the early remedying of the abnormal condition or conditions, for instance short circuited cathodes or poor contacts, by closing the normally-open, cathode bar receptive, pivotally mounted, automatically closeable and automatically openable jaws of a sensing head of an electrical current measuring instrument, or of the sensing heads of a plurality of current measuring instrument units depending from a common supporting means of a current measuring apparatus, about one or more of a plurality of spaced apart cathode bars in the tankhouse and from which the cathodes are suspended and immersed in the electrolyte. The sensing head jaws are closed about the cathode bars by lowering the instrument or apparatus whereby shoes of the instrument's operating mechanism are forcefully applied against the cathode bar or bars due to the weight of instrument or apparatus parts, thereby automatically closing the jaws of the sensing head or heads to substantially encompass the cathode bar or bars. The current passing through each cathode bar is measured by utilizing the magnetic field created by the current passing through the cathode bar to induce a measurable e.m.f. and a measurable electrical current in conductive coils on non-magnetic cores of the sensing head jaws in a preferred embodiment. The current measurement value for the cathode bar or each of the cathode bars is compared with a predetermined desired current measurement value for its suspended cathode thereby positively identifying any cathode or cathodes having an abnormal electrical condition or conditions associated therewith.

3,793,167

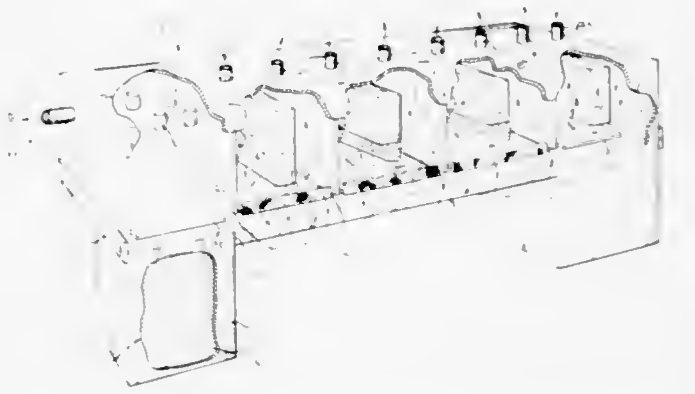
APPARATUS FOR MANUFACTURING METAL-COATED GLASS

John H. Glaser, Abington, Pa., assignor to Globe-Amerada Glass Co., Elk Grove Village, Ill.

Filed June 1, 1972, Ser. No. 258,874

Int. Cl. C23c *15/00*

U.S. Cl. 204—298 **9 Claims**



Glass sheets are conveyed through a vacuum tunnel oven. The glass sheets are heated and outgassed, decontaminated, metal coated, and overcoated to protect the metal finish. The metal and refractory coatings are applied by an electromagnetic sputtering deposition in which the material is deposited at a controlled rate with particle impact upon a glass substrate at a very high velocity and a high voltage. Optical sensors monitor the process and activate the movement of the glass sheets as they reach the desired state of preparation at each station.

3,793,168

METHOD OF RECOVERING SILVER

Robert B. Lilly, 6106 Oakclair Dr., Austin, Tex.

Filed Jan. 18, 1971, Ser. No. 107,133

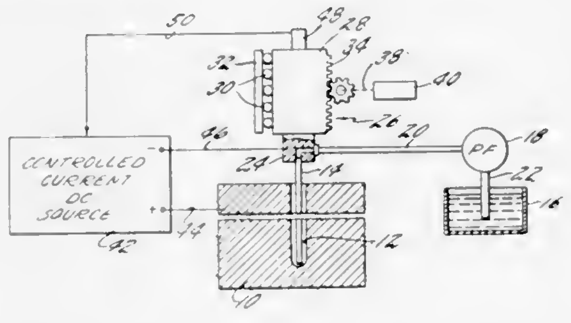
Int. Cl. C22d *1/12;* **C22b** *11/04*

U.S. Cl. 204—109 **15 Claims**

A method of recovering metallic silver from scrap photographic film in which the film is first immersed in a solution of hydrochloric or hydrobromic acid and a chromate; thereafter immersed in a hypo bath; the free silver thereafter being removed from the hypo bath by an electrolytic process.

3,793,169
SMALL HOLE ECM DRILLING WITH CONTROLLED CURRENT

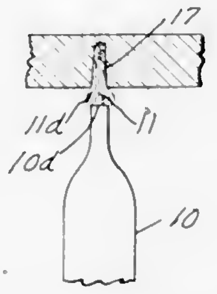
Frederick R. Joslin, Lebanon, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Jan. 10, 1972, Ser. No. 216,784
Int. Cl. B23p *1/02, 1/12, 1/16*
U.S. Cl. 204—129.55 **1 Claim**



Electrochemical machining of small deep holes (several hundredths of an inch in diameter and less) is achieved at higher feed rates utilizing a constant current source and constant feed rate, allowing the voltage and power to vary with depth. Small holes with profiled cross section are achieved by programming the controlled current for different current/feed rate ratios as a function of hole depth.

3,793,170
ELECTROCHEMICAL MACHINING METHOD AND APPARATUS

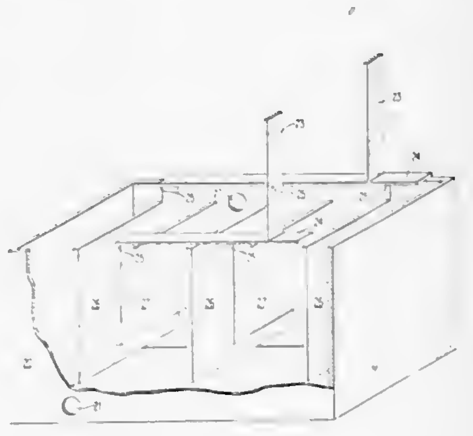
James D. Andrews, Bloomfield Village, Mich., assignor to TRW Inc., Cleveland, Ohio
Filed June 9, 1971, Ser. No. 151,275
Int. Cl. B23p *1/00*
U.S. Cl. 204—129.6 **9 Claims**



An electrochemical machining method and apparatus wherein electrolyte is impinged against a workpiece from nonconductive inert nozzles which do not penetrate the workpiece. The electrolyte is cathodically charged from an electrode remote from the nozzles so that very fine jets of electrolyte may be discharged. The nozzles are preferably made of glass and extend in a group or bunch from a header containing the electrode. The current potential is controlled to effect localized accurate cutting of the anodically charged workpiece by the cathodically charged electrolyte jets from each nozzle preventing overlapping of the cuts as by splashing or random uncontrolled jet flow. The outside dimensions of the nozzles have no effect on the size of the cut. In hole drilling operations, any undesired taper of the hole is removed by increasing the current potential after a through hole is formed to flow the electrolyte in a straight path for removing any stock creating the taper. Since the nozzles need not penetrate the workpiece, they may be stationarily mounted and hole patterns and spacings not obtainable with movable tools are now easily provided.

3,793,171
PROCESS FOR REMOVING POLLUTANTS FROM GAS STREAMS

Ernest R. Zabolotny, Syracuse; Wendell J. Biermann, Fayetteville, and Peter L. Chang, Syracuse, all of N.Y., assignors to Carrier Corporation, Syracuse, N.J.
Filed Sept. 4, 1970, Ser. No. 69,804
Int. Cl. C01d *7/34*
U.S. Cl. 204—130 **38 Claims**



A process for removing oxidizable impurities from "waste" gas streams which comprises contacting the gas stream, typically air, which carries the oxidizable impurities with an aqueous acid stream containing an electrolytically regenerable oxidizing agent. After a sufficient contact time to remove oxidizable impurities from the gas stream, the gas stream is removed from the contact area with a lowered impurity content and vented or further treated as desired, the aqueous acid stream containing the electrolytically regenerable oxidizing agent and oxidizable impurities is removed from the contact area, the electrolytically regenerable oxidizing agent is regenerated, and the above described cycle is repeated. Preferably, the regenerable metal oxidizing agent is cobalt in the +3 valence state and the aqueous stream contains sulfuric acid. Destruction of oxidizable impurities is continuous throughout the system, i.e., in the mass transfer contact area, the electrolytic regeneration area and in all process interconnections.

Apparatus in accordance with the present invention comprises a contact area for mass transfer between the acid stream containing the electrolytically regenerable oxidizing agent and the gas stream containing the oxidizable impurities and electrolytic means for regenerating the electrolytically regenerable oxidizing agent.

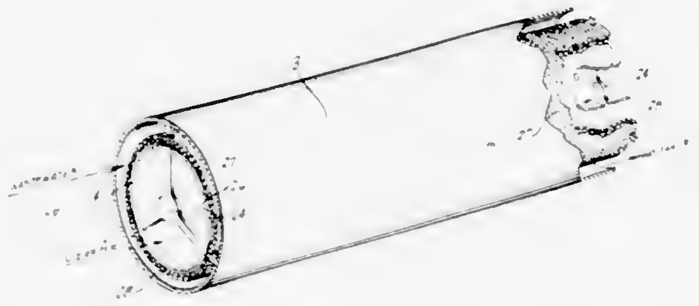
3,793,172
PROCESSES AND BATHS FOR ELECTRO-STRIPPING PLATED METAL DEPOSITS FROM ARTICLES

Charles T. Cadieux, New Whiteland, Ind., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed Sept. 1, 1972, Ser. No. 285,817
Int. Cl. B01k *3/00*
U.S. Cl. 204—146 **8 Claims**

An electrolytic stripping bath and process that are ideally suited for stripping a large number of different types of plated metal deposits, singularly, in selective combinations, or in the form of selective alloys thereof, from a base metal, such as titanium, forming an article. The bath does not attack or otherwise adversely affect the exposed surface of the base metal, and with the bath being operated at ambient temperature, evaporation of the bath constituents and the generation of fumes during an electrochemical stripping operation are minimized.

3,793,173
WASTEWATER TREATMENT USING ELECTROLYSIS WITH ACTIVATED CARBON CATHODE

Masayuki Kawahata, 14 Laury Ln., Scotia, and Kenneth R. Price, 1020 University Pl., Schenectady, both of N.Y.
Filed Feb. 3, 1969, Ser. No. 795,917
Int. Cl. B01k *3/00*
U.S. Cl. 204—149 **5 Claims**



An improvement in the electrolytic treatment of wastewater is described in which the reduction of oxygen on an activated carbon cathode is employed to form hydrogen peroxide, which in turn serves to oxidize organic carbon pollutants in the wastewater.

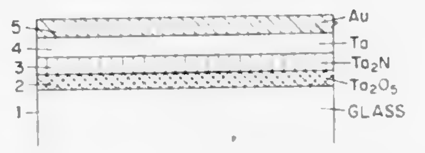
3,793,174
METHOD OF TREATING WASTE WATER CONTAINING LIGNINSULFONATE

Minoru Ichiki, and Masahito Ishii, both of Tokyo, Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan
Filed Sept. 6, 1972, Ser. No. 286,713
Claims priority, application Japan, Sept. 9, 1971, 46-69977
Int. Cl. C02c *5/12*
U.S. Cl. 204—149 **2 Claims**

A method of treating the waste water containing ligninsulfonate, wherein waste water contains sodium salt, calcium salt, potassium salt, etc. of ligninsulfonic acid, comprises the steps of: conducting electrolysis with a ferrous anode plate utilizing said waste water as an electrolyte which has been made to have pH within the range from 5 to 9 prior to the start of electrolysis, while air is being blown therein by a suitable means, whereby said ligninsulfonate is rendered insoluble; and subsequently separating said insoluble substances from the mother liquid by floating them.

3,793,175
THIN FILM CIRCUITS WITH INTERCONNECTING CONTACTS

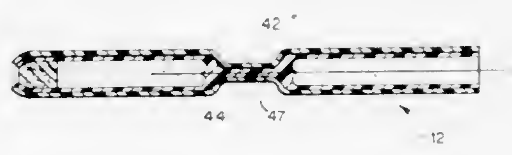
Jean Joly, and Michel Moulin, both of Paris, France, assignors to Societe Lignes Telegraphiques Et Telephoniques, Paris, France
Filed Oct. 20, 1971, Ser. No. 190,906
Claims priority, application France, Nov. 5, 1970, 70.39766
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **4 Claims**



In thin film circuits made of tantalum nitride an underlayer of tantalum is provided on the tantalum nitride layer before deposition of the contact metal layer. It is preferred to deposit the three layers in the same vacuum equipment, and to successively etch first the contacts and then the circuit pattern.

3,793,176
ELECTROCHEMICAL ELECTRODE INTERNAL HALF CELL

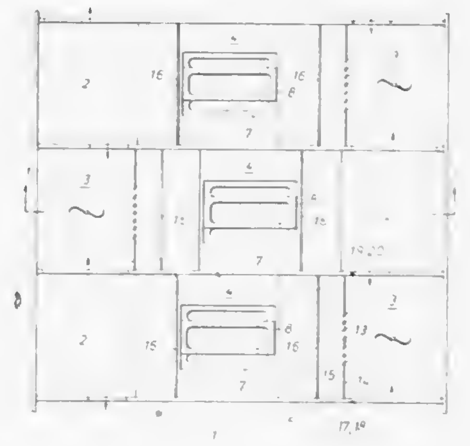
Paul Jerrold-Jones, Claremont, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.
Filed June 19, 1972, Ser. No. 263,782
Int. Cl. G01n *27/30, 27/32*
U.S. Cl. 204—195 F **5 Claims**



An electrochemical electrode internal half cell in which the conductor is sealed within a plastic shrink tube by means of an inner layer of plastic having a melting temperature less than that of the shrink tube. A porous plug closes one end of the tube and the section of the tube between the plug and the seal is packed with a mixture of a metal and a sparingly soluble salt of the metal. Methods of making the internal half cell are described.

3,793,177
DEVICE FOR THE CONTINUOUS EXTRACTIVE SEPARATION OF COMPOUNDS OF VALUABLE SUBSTANCES BY ELECTROLYTIC REDUCTION

Franz Baumgartner, Grotzingen; Helmut Schmieder; Hubert Goldacker, both of Karlsruhe, and Helmut Hausberger, Bad Langenbrucken, all of Germany, assignors to Gesellschaft fur Kernforschung mbH, Karlsruhe, Germany
Filed Mar. 22, 1972, Ser. No. 237,062
Claims priority, application Germany, Oct. 1, 1971, 2149089
Int. Cl. B01k *3/00*
U.S. Cl. 204—269 **13 Claims**



A device for continuously extracting compounds of valuable substances which are contained within a first phase. The first phase containing the compounds is mixed with a second phase. The device then separates the compounds by electrolytic reduction of at least one of the valuable substances and transfers the reduced compound into combination with the second phase. The device includes a plurality of stages which are located within housings which are designed as cathodes and are provided with anode cells which are electrically insulated from the cathodes but are in direct communication with the cathodes.

3,793,178
ELECTROLYTIC FLOTATION APPARATUS

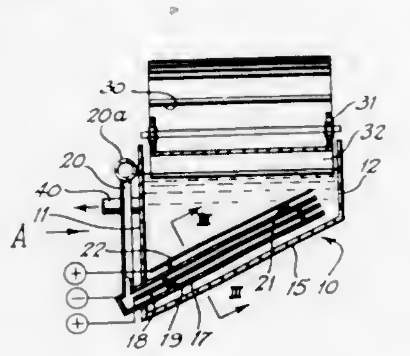
Eric Paul Austin, Sandbach, England; Geoffrey David Kemp, Bramalea, Ontario; Fernando Antonio Francesca Modesto Tonelli, Windsor, Ontario, both of Canada, and Ian Marshall, Shaw, England, assignors to Simon-Hartley Limited, Staffordshire, England

Filed May 1, 1972, Ser. No. 248,988

Claims priority, application Great Britain, May 8, 1971, 14183/71

Int. Cl. B01k *3/02*

U.S. Cl. 204—272 **10 Claims**



Flotation apparatus of the kind wherein a liquid to be treated, such as activated sludge for example, is caused to flow through a tank and subjected to treatment by gas bubbles generated by electrolytic action, whereby suspended materials, usually but not necessarily solids, in the liquid are carried to the surface of the tank by said bubbles to form a layer of thickened material, and including means for removing the thickened material from the surface of the liquid contained within the tank, characterised in that the liquid to be treated is introduced into the tank by flow through at least one elongated tube of conducting material which defines a cathode with respect to an anode mounted within said tube and which extends substantially over the length thereof.

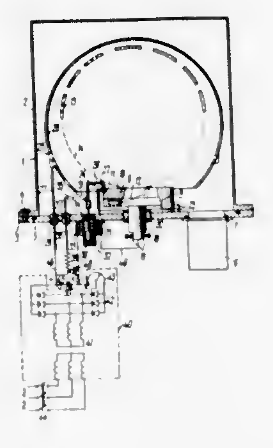
3,793,179
APPARATUS FOR METAL EVAPORATION COATING

Leonid Pavlovich Sablev, ulitsa Entuziastov, 3, kv. 51; Nikolai Petrovich Atamansky, bulvar Mira, 2, kv. 8; Valentin Nikolaevich Gorbunov, ulitsa Vesnina, 7, kv. 19; Jury Ivanovich Dolotov, bulvar Mira, 2, kv. 50; Vadim Nikolaevich Lutseenko, prospekt Kurchatova, 13, kv. 21; Valentin Mitrofanovich Lunev, ulitsa Entuziastov, 5, kv. 37, and Valdislav Vasilievich Usov, prospekt Kurchatova, 27, kv. 34, all of Kharkov, U.S.S.R.

Filed July 19, 1971, Ser. No. 163,757

Int. Cl. C23c *15/00, 11/00, 13/12*

U.S. Cl. 204—298 **7 Claims**



An apparatus for metal evaporation coating, comprising an evacuated chamber, an anode made as an envelope of arbitrary shape, a cathode made of the metal being evaporated, the evaporation surface of said cathode facing the space defined by said envelope, a trigger electrode generating a cathode spot on the cathode, means for retaining the cathode spot on the cathode, in the form of a shield, and an electric arc supply.

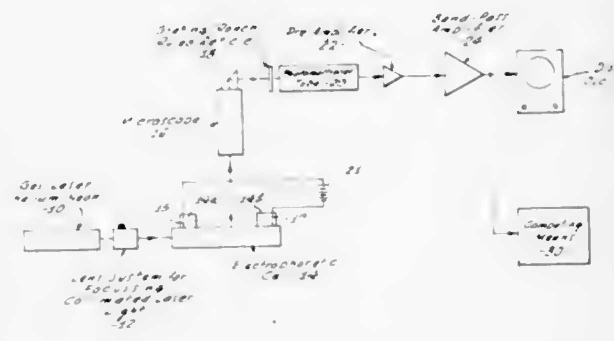
3,793,180
LASER-RECTICLE ELECTROPHORESIS INSTRUMENT

Robert A. Flower, White Plaines, N.Y., and Ivan A. Greenwood, Stamford, Conn., assignors to The Singer Company, Little Falls, N.J.

Filed Mar. 21, 1972, Ser. No. 236,616

Int. Cl. B01k *5/00*

U.S. Cl. 204—299 **7 Claims**



An improved instrument is provided for measuring electrophoretic mobility by reticle velocity measurements of laser illuminated particles. The instrument of the invention finds particular utility in industrial processing of colloidal suspensions, and particularly in the purification of industrial and drinking water. A laser beam is provided in the instrument of the invention which is focused on the particles in the sample solution which is contained in an electrophoretic cell. A reticle or grating is positioned such that the reflection of the laser beam from the particles passes through the reticle to a phototube placed on the other side of the reticle. Then, as the particles move through the solution the photo-tube is intermittently illuminated through the reticle and, as a result, generates a train of electric pulses whose frequency is directly proportional to the velocity of the particles, and is therefore a measure of electrophoretic mobility.

ERRATUM

For Class 204—72 see:
Patent No. 3,792,995

3,793,181
FUEL FOR GAS TURBINE

Julio Tintori, St. Cloud, France, assignor to Progil, Paris, France

Filed Nov. 10, 1970, Ser. No. 88,512

Claims priority, application France, Nov. 14, 1969, 69.39325

Int. Cl. C10l *1/00*

U.S. Cl. 208—15 **2 Claims**

A fuel for use in gas turbines which is a heavy distillate corresponding to the 300° – 450°C. fraction from the first distillation of a crude oil having a flow point no greater than 48°C, a viscosity at 100°C. no greater than 10cs, a flashpoint greater than 75°C. and generally between 150°–250°C., and a low sulfur, metal and water content.

3,793,182
HYDROCRACKING PROCESS FOR BENZCORONENE-CONTAMINATED FEEDSTOCKS

John W. Ward, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 241,434, April 5, 1972, abandoned. This application Jan. 30, 1973, Ser. No. 328,102

Int. Cl. C10g *9/16, 13/02;* **C01b** *33/28*

U.S. Cl. 208—111 **18 Claims**

Mineral oil feedstocks which contain dissolved benzcoronenes are subjected to hydrocracking over certain catalysts based on a steam treated, metal-cation-deficient Y zeolite while maintaining a sufficient recycle of unconverted oil to bring about, in systems using non-steam-treated Y zeolite catalysts, a substantial buildup and eventual precipitation of benzcoronenes in cooler parts of the systems such as heat exchange surfaces. According to the invention, this buildup and precipitation is prevented by virtue of the higher activity of the steam-treated Y zeolite catalysts for conversion of benzcoronenes, as compared to the more conventional non-steam-treated Y zeolite catalysts.

3,793,183
METHOD FOR STARTING UP A REFORMING PROCESS EMPLOYING A CATALYST CONTAINING A GROUP VIII METAL, RHENIUM, AND SELENIUM

John A. Mahoney, Park Forest South, Ill., and Thomas D. Nevitt, Valparaiso, Ind., assignors to Standard Oil Company, Chicago, Ill.

Filed Dec. 11, 1972, Ser. No. 314,134

Int. Cl. C10g *35/04*

U.S. Cl. 208—134 **8 Claims**

The method comprises treating the catalyst in a reforming zone with a first oxygen-containing gas at a temperature of at least 880°F.; subsequently treating the catalyst with a second oxygen-containing gas; after purging the reforming zone with an inert gas, treating the catalyst with a hydrogen-containing gas while cooling the average catalyst temperature to a temperature of about 700°F.; introducing the petroleum hydrocarbon stream to be reformed into the reforming zone at one-half to one of the weight hourly space velocity to be employed during the reforming process; increasing the average catalyst temperature to a temperature of 850°F. at a selected rate; increasing the weight hourly space velocity to that desired for the process; and replacing the hydrogen-containing gas with hydrogen-containing recycle gas.

The first oxygen-containing gas may be air while the second oxygen-containing gas may be essentially pure oxygen.

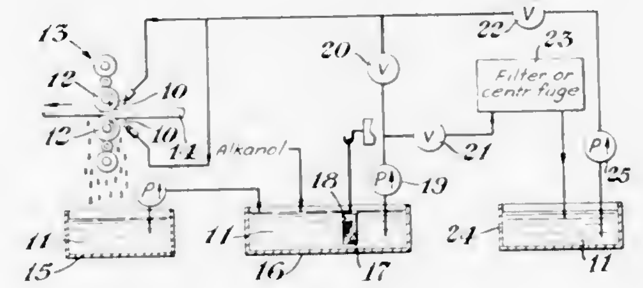
3,793,184
RECONDITIONING OIL USED IN COLD WORKING METAL

Thomas J. Loftus, Caseyville, Ill., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sept. 9, 1971, Ser. No. 179,072

Int. Cl. C10m *11/00*

U.S. Cl. 208—183 **14 Claims**



Used non-aqueous metalworking lubricant, such as, cold rolling oil, is reconditioned by contacting it with sufficient strong base in the form of particulate or dissolved alkanol-soluble alkali metal hydroxyde and monohydric alkanol to reduce the total acid number of the oil to less than about 0.12 mg. KOH per gram of oil and preferably less than about 0.08 mg. KOH per gram of oil. At about 0.025 mg. KOH per gram of oil to zero total acid number the oil becomes a light golden color. On filtering or centrifuging the oil to remove precipitate formed during the strong base treatment, the oil is clarified and the ash content is reduced. If the oil already contains alkanol, only the strong base need be added as by suspending pellets of strong base in the oil in a cloth bag or wire screen enclosure or by circulating the coil through a charge of the particulate strong base. The reduced total acid number is maintained by steadily or periodically contacting the oil with strong base in the presence of monohydric alkanol.

An improved combination for handling the oil comprises a cold rolling mill with a circulating lubricant system including a sump, a circulating pump, a reservoir and nozzle arrays immediately adjacent the rolls of the mill, and oil conduits operatively connecting the parts of the system, and, a charge of cold rolling oil, and in combination therewith, either a foraminous enclosure containing solid particulate strong base positioned in said charge of rolling oil, or a vessel holding a charge of particulate strong base and connected in series in the circulating lubricant system. Preferably, the combination also includes a filter or a centrifuge for removing solids such as those generated by the action of the strong base.

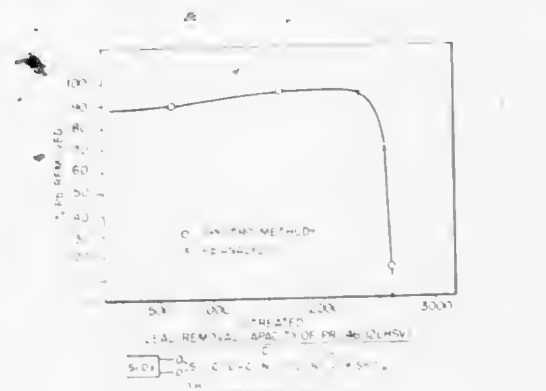
3,793,185
SORBENT FOR REMOVAL OF HEAVY METALS

Darrell D. Whitehurst, Titusville; Stephen A. Butter, East Windsor, and Paul G. Rodewald, Rocky Hill, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 319,099, Dec. 27, 1972. This application May 30, 1973, Ser. No. 365,358

Int. Cl. C10g *17/00*

U.S. Cl. 208—251 R **34 Claims**



A novel use for sorbents involving the selective removal of heavy metals from liquid streams has been discovered. More specifically it has been discovered that these sorbents selectively remove alkyl lead moieties from gasoline. The sorbents are comprised of metal halides (preferably tin tetrachloride or antimony pentachloride) bonded to a suitable substrate through at least one amine or alkyl halide functional group. The sorbents can be effectively regenerated.

3,793,186
LUBE OIL IMPROVEMENT

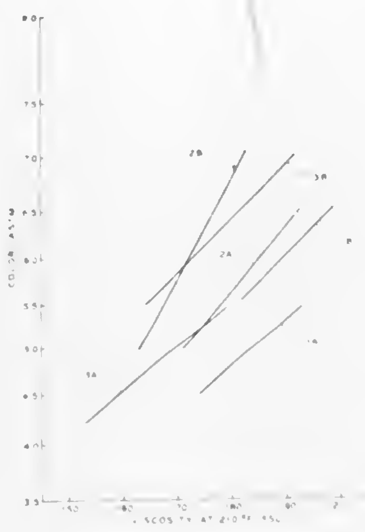
Lloyd M. Guenther, Orinda, and Alan G. Bridge, El Cerrito, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed July 19, 1971, Ser. No. 163,775

Int. Cl. C10g *23/02*

U.S. Cl. 208—264 **2 Claims**

A process for improving the ASTM color of lube stocks which comprises contacting crude lube stock, at a temperature between 400° and 850°F., a pressure between 100 and 3000 psig, and in the presence of gaseous hydrogen, with a hydrofining catalyst having a mean pore diameter of at least



140 A. Preferred hydrofining catalysts include compositions containing Group VIB or Group VIII metals and a refractory support and dispersed metal phosphate particles such as titanium phosphate.

3,793,187
PROCESS FOR REMOVING CARBONYL COMPOUNDS FROM HYDROCARBONS

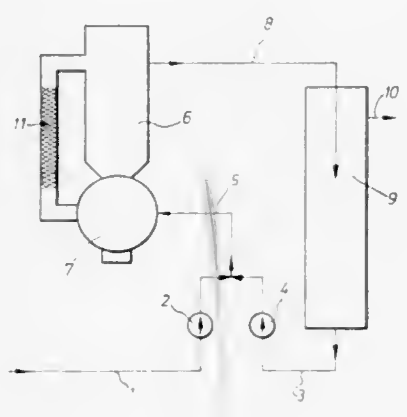
Hans-Dieter Marx; Helmut Scherb, and Bernhard Schleppinghoff, all of Dormagen, Germany, assignors to Erdolchemie Gesellschaft mit beschrankter Haftung, Cologne, Germany

Filed Aug. 1, 1972, Ser. No. 277,021

Claims priority, application Germany, Aug. 19, 1971, 2141469

Int. Cl. C10g *19/00;* **C07c** *3/30*

U.S. Cl. 208—289 **6 Claims**



Liquid hydrocarbons and mixtures thereof containing carbonyl compounds as impurities are purified by a liquid-liquid extraction with an aqeuous solution of a hydrazinium compound. The carbonyl free hydrocarbon phase is then separated from the aqueous phase.

3,793,188
PROCESS FOR THE ISOLATION AND SIMULTANEOUS PURIFICATION OF HYDROCARBONS

Klaus Wehner, Leuna; Werner Kisan, Halle-Neustadt; Gerhard Esser, Leuna, and Gerald Kunz, Merseburg, all of Germany, assignors to VEB Leuna-Werke "Walter Ulbricht", Legina DDR, Germany

Continuation-in-part of Ser. No. 17,907, March 9, 1970, abandoned. This application Apr. 21, 1972, Ser. No. 246,379

Int. Cl. G10g *21/20*

U.S. Cl. 208—313 **7 Claims**

In the process of selective extraction and extractive distillation of hydrocarbons, superior results, namely less corrosion, are achieved, if the solvent system is a N-substituted ϵ-caprolactam together with an auxiliary agent, which is water, ethylene glycol, diethylene glycol, or other aliphatic hydrocarbon compound substituted with at least one hydroxy and/or amino group.

3,793,189
RECONSTITUTED ASPHALT PAVING COMPOSITIONS

Luke W. Corbett, Mountainside, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.

Filed Dec. 3, 1971, Ser. No. 204,738

Int. Cl. C10c *3/00*

U.S. Cl. 208—23 **6 Claims**

Asphaltic compositions suitable for use in paving formulations and having desirable viscosity, temperature susceptibility and ductility properties can be made by combining propane precipitated asphalt, asphaltenes and a liquid petroleum derivative such as a heavy distillate or residual oil. These compositions allow maximum utilization of low cost asphaltenes and produce compositions having improved viscosity and temperature susceptibility properties.

3,793,190
PROCEDURE AND REACTOR FOR DESTRUCTIVE HYDROGENATION OF LUBE OILS

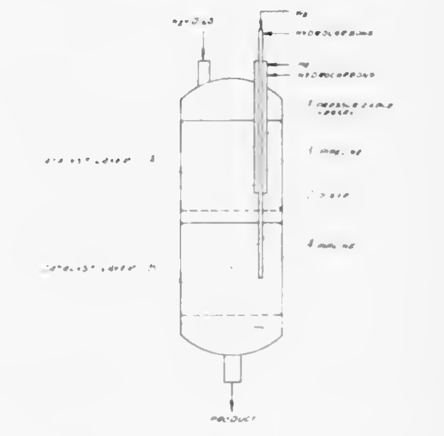
Adrian Vasile Nastast; Ion Zirna, both of Ploiesti; Ion Doru Grigoriu, Bucharest; Constantin L. Savu, Ploiesti; Corneliu Nicolae Stefanescu, Ploiesti; Dumitru C. Iorga, Ploiesti; Ion V. Ghejan, Ploiesti; Alexandru C. Platon, Ploiesti; Flavia T. Constantin, Ploiesti; Petru T. Bohiltea, Ploiesti; Stelian GH. Dumitrescu, Bucharest, and Ion T. Bohiltea, Cimpina, all of Romania, assignors to Institutul De Cercetare Si Proiectare Tehnologica Pentru Prelucrarea Titeiului, Ploiesti, Romania

Filed Mar. 8, 1972, Ser. No. 232,682

Claims priority, application Romania, Feb. 6, 1971, 65824

Int. Cl. C10g *13/06, 37/10*

U.S. Cl. 208—57 **2 Claims**



Destructive hydrogenation of lubricating oils by hydrogenating, hydrocracking and isomerizing oils, which have not been conditioned, in the presence of at least two layers of catalysts in a single reaction, to obtain a synergistic effect of their hydrogenating, hydrocracking, and isomerizing functions.

3,793,191
PROCESS FOR MANUFACTURING LUBRICATING OIL

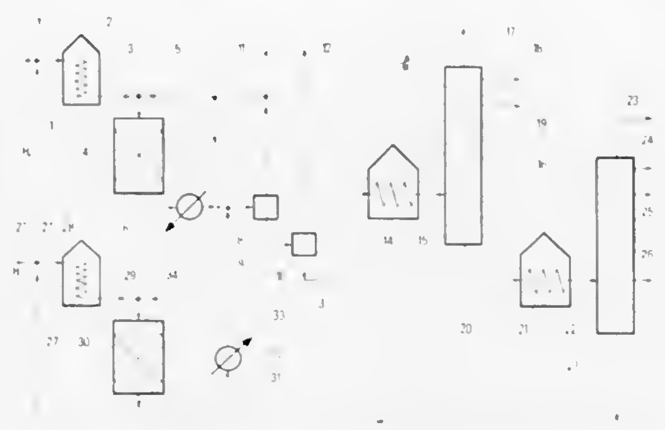
Alain Billon, Lyon, and Michel Derrien, Rueil-Malmaison, both of France, assignors to Institut Francais Du Petrole, Des Carburants et Lubrifiants, Rueil-Malmaison, France

Filed Apr. 6, 1972, Ser. No. 241,690

Claims priority, application France, Apr. 7, 1971, 71.12416

Int. Cl. C10g *13/06, 37/10*

U.S. Cl. 208—59 **9 Claims**



A process for manufacturing a lubricating oil comprising a first step of passing a deasphalted crude oil distillation residue containing by weight at least 85 percent of constituents boiling above 500°C and at least 75 percent of consituents boiling above 525°C, with hydrogen over a hydrogenating catalyst with a cracking carrier at 330°–450°C, at a hydrogen partial pressure of 80–240 kg/cm², at such a flow rate that the hydrocarbons in the resulting product boiling below 525°C amount to 70–95 percent of the initial weight of such hydrocarbons, separating the products boiling below 525°C, and recovering a first lubricating oil fraction of high V.I. and a second step of passing at least a portion of the products boiling above 525°C over a similar catalyst, at the same temperature and pressure ranges of the first step, at such a flow rate that the major part of the first zone heavy products are converted to products boiling below 525°C and separating therefrom, by distillation, a second lubricating oil fraction.

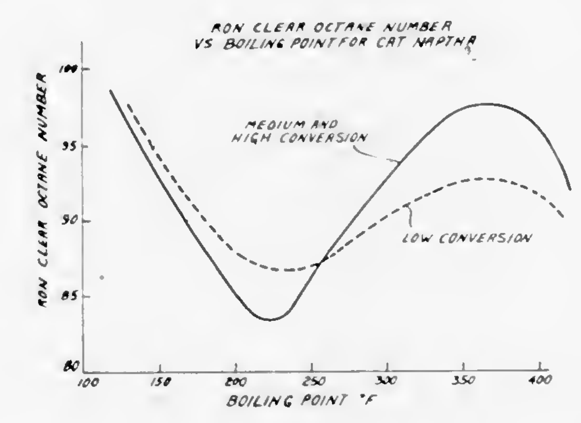
3,793,192
CATALYTIC CRACKING PROCESS

Elroy M. Gladrow, and Charles N. Kimberlin, Jr., both of Baton Rouge, La., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed Apr. 14, 1972, Ser. No. 244,249

Int. Cl. C10g *37/10*

U.S. Cl. 208—70 **15 Claims**



Process for preparing high clear octane gasoline is provided comprising:

a. catalytically cracking a hydrocarbon feed stream at high conversion levels for the production of a C_5/430°F. fraction;
b. fractionating said C_5/430°F. fraction to obtain a light fraction, e.g., a C_5/180°F. fraction, an intermediate fraction, e.g., a 180°/270°F. fraction, and a heavy fraction, e.g., a 270°/430°F. fraction;
c. reforming at least a portion of said intermediate fraction over a reforming catalyst to obtain a high octane reformate; and,
d. blending said reformate with said light and heavy fractions to obtain a high clear octane gasoline.

3,793,193
ION EXCHANGE

Nikolaas Hendrik Siewertsz van Reesema, Rotterdamseweg 119, Delft, Netherlands

Filed June 14, 1971, Ser. No. 153,034

Claims priority, application Netherlands, June 19, 1970, 7009021

Int. Cl. B01d *15/04*

U.S. Cl. 210—30 **2 Claims**

Dipolar organic compounds, such as ammonium bipolar carbamate, are used for exchanging and entraining ions in ion exchangers.

3,793,194
SCALE AND CORROSION CONTROL IN FLOWING WATERS

David C. Zecher, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 127,756, March 24, 1971, abandoned. This application Feb. 28, 1972, Ser. No. 230,060

Int. Cl. C02b *5/04*

U.S. Cl. 210—58 **3 Claims**

Disclosed is a method of conditioning water, particularly flowing or circulating water streams (e.g., as used in cooling water systems), to reduce the corrosive attack and/or scale accumulation on metal surfaces which the water contacts. The method includes introducing into the water a water soluble cationic polymer and a polyphosphate. The cationic polymer is a polyamide containing quaternary ammonium groups or a polyureylene containing quaternary ammonium groups. The polyphosphate is an inorganic polyphosphate or a polyfunctional acid phosphate ester of a polyhydric alcohol (i.e., a phosphorylated polyol). The cationic polymers synergistically increase the effectiveness of the polyphosphate as corrosion and scale inhibitors in certain waters. A typical inorganic polyphosphate is sodium tripolyphosphate. A typical phosphorylated polyol is phosphorylated pentaerythritol.

3,793,195
COATED BEARING SURFACES

Robert Keith Betts, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 86,078, Nov. 2, 1970, abandoned. This application Oct. 10, 1972, Ser. No. 296,032

Int. Cl. C10m *7/06*

U.S. Cl. 252—12 **5 Claims**

Improvment in the wear resistance of surfaces which bear and slide one on the other is achieved by coating at least one, and preferably both, of such surfaces with a base coating of a shear promoting alloy, for example, Cu—Ni—In or Cu—Co—In and then applying to both surfaces a low friction coating of a sulfide of an element from the group Mo, W and their mixtures.

3,793,196

aliphatic radical having from one to eight carbon atoms, R^2 is

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compound, in which the alkyl-substituent has an average molecular weight of from about 600 to about 100,000, (2) an

3,793,204
THERMAL INSULATION

3,793,196
SOFTENING AGENT

Norikazu Okazaki, Chiba, and Akio Miyamura, Narashino, both of Japan, assignors to Lion Fat & Oil Co. Ltd., Tokyo, Japan

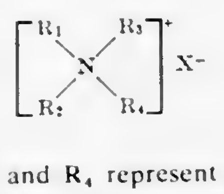
Filed Apr. 13, 1972, Ser. No. 239,081

Claims priority, application Japan, Mar. 31, 1971, 46-19967

Int. Cl. D06m *13/46*

U.S. Cl. 252—8.8 **2 Claims**

A softening agent capable of imparting softness, which comprises quaternary ammonium salt to be expressed by the following general formula



(wherein R_1, R_2, R_3 and R_4 represent any of alkyl radical, hydroxyalkyl radical and benzyl radical, and X represents halogen atom)

and higher alcohol, together with 0.5 to 5.0 wt % of sorbitan fatty acid ester and 0.3 to 6.0 wt % of polyoxyethylene alkyl or alkenyl ether.

3,793,197
LUBRICATING GREASE COMPOSITION

Richard Metthews Chapman, Gales Ferry, Conn., assignor to CMR & T, Inc., Westerly, R.I.

Filed June 7, 1972, Ser. No. 260,543

Int. Cl. C10m *7/50, 7/28*

U.S. Cl. 252—28 **14 Claims**

A highly corrosion resistant lubricating grease emposition comprising a lubricating oil thickened with a gelling agent wherein the lubricating oil is prepared by intimately admixing a synthetic halogen containing polymeric lubricating oil and a fluorocarbon resin, freezing the mixture and thawing the frozen product.

3,793,198
LUBRICATING AND METAL COATING WAX COMPOSITION

Richard Matthews Chapman, Gales Ferry, Conn., assignor to CMR & T, Inc., Westerly, R.I.

Filed June 7, 1972, Ser. No. 260,544

Int. Cl. C10m *7/50, 7/28*

U.S. Cl. 252—28 **13 Claims**

A highly corrosion resistant wax composition comprising a lubricating oil thickened with a gelling agent wherein the lubricating oil is prepared by intimately admixing a synthetic halogen containing polymeric lubricating oil and a fluorocarbon resin, freezing the mixture and thawing the frozen product. Said wax composition has utility as a lubricant and as a metal protective coating.

3,793,199
FRICTION REDUCING AGENT FOR LUBRICANTS

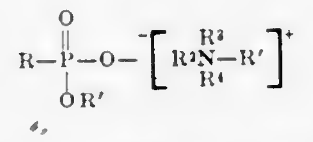
Raymond C. Schlicht, Fishkill, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed June 8, 1970, Ser. No. 44,549

Int. Cl. C10m *1/46*

U.S. Cl. 252—32.5 **5 Claims**

Ammonium salt of alkyl alkanephosphonates represented by the formula:



$$R-\overset{\overset{\displaystyle O}{\|}}{\underset{\underset{\displaystyle OR'}{|}}{P}}-O^-\left[R^2\overset{R^3}{\underset{R^4}{N}}-R'\right]^+$$

in which R is a substantially straight chain aliphatic radical having from about 11 to 40 carbon atoms, R' is a lower aliphatic radical having from one to eight carbon atoms, R^2 is a hydrocarbyl radical having from 1 to 40 carbon atoms and R^3 and R^4 are hydrogen, a hydrocarbyl radical having from one to 40 carbon atoms, or a substituted hydrocarbyl radical having amino, alkylamino or hydroxyl functional groups, the reaction of preparing same from an ester of an alkanephosphonic acid, and a lubricating oil composition containing an ammonium alkyl alkanephosphonate.

3,793,200
LUBRICATING OIL ADDITIVES

William G. Billings, Bartlesville, Okla., assignor to Phillips Petroleum Company, Washington, D.C.

Filed July 13, 1970, Ser. No. 54,651

Int. Cl. C10m *1/48, 1/38*

U.S. Cl. 252—32.7 E **4 Claims**

The addition of minor amounts of an asphaltene and a zinc 0,0-di-alkylphosphorodithioate minimizes viscosity increases of mineral lubricating oils containing hydrogenated butadiene-styrene copolymer VI improvers when subjected to extreme operating conditions that ordinarily cause substantial viscosity increases. The compositions are not subject to substantial viscosity increases when heated to elevated temperatures for prolonged periods.

3,793,201
STABILIZED BASIC MAGNESIUM SULFONATE COMPOSITIONS

Jack Lee Karn, Cleveland Heights, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Dec. 28, 1970, Ser. No. 102,089

Int. Cl. C10m *1/40;* **C10l** *1/24*

U.S. Cl. 252—33.4 **13 Claims**

Solutions of basic magnesium salts of organic acids in organic diluents are made more resistant to the formation of insoluble films on their surfaces during exposure to the atmospheric conditions on standing by incorporating therein metal salts of bridged phenols. For example, concentrated solutions of basic magnesium sulfonates or carboxylates in mineral oil are made more resistant against the formation of surface films when stored in the presence of moisture by incorporating therein neutral or basic calcium salts of alkylated phenol-formaldehyde condensation products. In addition, the presence of at least one high molecular weight carboxylic acid or derivative thereof with the metal salt of the bridged phenol also assists in stabilizing these solutions against the formation of surface films, insoluble precipitates, haze, and the like.

3,793,202
OIL SOLUTION OF ALIPHATIC ACID AND ALIPHATIC ALDEHYDE MODIFIED HIGH MOLECULAR WEIGHT MANNICH REACTION PRODUCTS

Edmund J. Piasek, Chicago, and Robert E. Karll, Batavia, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Division of Ser. No. 68,469, Aug. 31, 1970, which is a continuation-in-part of Ser. No. 54,558, July 13, 1970. This application Mar. 1, 1972, Ser. No. 231,031

Int. Cl. C10m *1/32*

U.S. Cl. 252—51.5 A **10 Claims**

Protection against corrosion and deposition of sludge and varnish is provided by lubricating oils containing a minor amount of the ashless type addition agents which are prepared by reacting under conditions of the Mannich Reaction (1) a high molecular weight alkyl-substituted hydroxy aromatic

compound, in which the alkyl-substituent has an average molecular weight of from about 600 to about 100,000, (2) an amine compound containing at least

one $HN\langle$ group.

(3) an aliphatic aldehyde, and (4) an aliphatic acid containing at least six carbon atoms, in the respective reactant molar ratio of 1:0.1–10:1–10:0.014–1.0 and further reacting such modified condensation product with from about 2 to about 6 moles of an aliphatic aldehyde per mole of the alkyl-substituted hydroxy aromatic compound.

3,793,203
LUBRICANT COMPRISING GEM-STRUCTURED ORGANO COMPOUND

Gary L. Driscoll, Boothwyn, and Marcus W. Haseltine, Jr., Brookhaven, both of Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of Ser. Nos. 135,295, April 19, 1971, and Ser. No. 144,165, May 17, 1971, Pat. No. 3,715,313. This application June 11, 1971, Ser. No. 152,303

Int. Cl. C10m *1/24, 1/26*

U.S. Cl. 252—56 R **15 Claims**

Polyolefins, paraffins and polar compounds containing a gem-structured hydrocarbon "backbone" are useful as traction fluids or as components of traction fluids. For example, compositions, useful as additives to libricants (e.g., components of traction fluids), are produced by oxonolysis of polyolefins, particularly of polyisobutylene oligimers containing at least one pair of maximally crowded geminal methyl groups. For example, ozonolysis of the novel polyisobutylenes can produce oxygenated derivatives (ketones, esters, acids, aldehydes, alcohols, etc.) which are useful as components of traction fluids. Blends of the ketones or of mixtures of the acids and ketones with a base oil (e.g., a paraffinic lube, naphthenic lube, a hydrogenated naphthenic or paraffinic lube, polyolefins or hydrogenated polyolefins) are especially useful as traction fluids or as a lubricant for a friction drive or a limited slip differential. Other polar compounds, useful as additives to lubricants or other mineral oil products (e.g., rubber process oils) can be obtained by conversion of polyisobutylene oligimers to polar compounds containing such functional groups as amine, imine, thioketone, amide, thioester, phosphate esters of the alcohols, ether, oxime, acyl halide, acyl hydrazide, chloride, bromide and maleic anhydride adducts. Salts of the carboxylic acids can also be useful as lubricant additives. A tin complex can also be made which has antiwear properties.

3,793,204
THERMAL INSULATION

Zane L. Ardary, Kingston, Tenn.; David H. Sturgis, Muskegon, Mich., and Carl D. Reynolds, Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed July 28, 1972, Ser. No. 276,209

Int. Cl. C04b *43/02;* **B29c** *25/00*

U.S. Cl. 252—62 **6 Claims**

The thermal insulating properties of fibrous thermal insulation are improved for high temperature applications by incorporating graphite flakes in the insulation to substantially reduce radiant heat transfer in fibrous insulation which comprises randomly oriented fibers joined primarily at their nexus by a binder of carbonized starch and graphite flakes oriented in the insulation with the greatest surface area of the flakes being disposed normal to the direction of radiant heat transfer.

3,793,205
CHARGELESS DEVELOPER

Kenneth A. Metcalfe, Lockleys, and William H. Lowe, Beaumont, both of Australia, assignors to The Commonwealth of Australia, Melbourne, Victoria, Australia

Continuation of Ser. No. 754,251, Aug. 21, 1968, abandoned, which is a continuation-in-part of Ser. No. 381,347, July 9, 1964, abandoned. This application Aug. 5, 1971, Ser. No. 169,547

Claims priority, application Australia, July 11, 1963, 32926/63

Int. Cl. G03g *9/04*

U.S. Cl. 252—62.1 **1 Claim**

An improved developer for xerographic surfaces in which an image is produced without an applied charge, in which a controlled developer pigment of one polarity is suspended in an insulating carrier liquid, and a second developer medium also capable of acting as a developer, but of opposite polarity and incapable of wetting the first pigment, is used to enhance deposition of the first pigment in image areas and to shield the non-image areas against deposition of the first developer.

3,793,206
PIEZOELECTRIC SINGLE CRYSTAL

Masakazu Kimura; Kikuo Doi, and Satoshi Nanamatsu, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Oct. 11, 1972, Ser. No. 296,652

Claims priority, application Japan, Oct. 14, 1971, 46-81487

Int. Cl. C04b *35/16, 35/46;* **C01g** *23/00*

U.S. Cl. 252—62.9 **3 Claims**

A piezoelectric single crystal is composed of a solid solution of barium oxide (BaO), germanium dioxide (GeO_2), and titanium dioxide (TiO_2), having a composition expressed by the formula: $(BaO)x\ (GeO_2)Y\ (TiO_2)z$; where $1.8 \leq x \leq 2.2$, $1.8 \leq Y \leq 2.2$, $0.9 \leq z \leq 1.1$; and $x+y+z=5$.

3,793,212

3,793,216

ants for oil slicks. Oil slick dispersal is achieved by sup-

3,793,207

FIRE-RESISTANT HYDRAULIC FLUID

Merwyn L. Burrous, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 5, 1971, Ser. No. 196,209

Int. Cl. C09k *3/02*

U.S. Cl. 252—78 **7 Claims**

Fire-resistant hydraulic fluids having improved low temperature characteristics, e.g., viscosity, pour point, and cloud point, consist mainly of a mixture of a synthetic hydrocarbon, a dialkyl carboxylate ester and an orthosilicate.

3,793,208

METHOD OF RECTIFYING COMMERCIAL SALT BATHS

Robert W. Foreman, Bloomfield Hills, Mich., assignor to Park Chemical Company, Detroit, Mich.

Filed Jan. 4, 1973, Ser. No. 320,885

Int. Cl. C09k *3/02*

U.S. Cl. 252—71 **7 Claims**

A method of rectifying commercial salt baths which operate generally within the temperature range from about 300°–600° F, said rectifying being to remove undesirable carbonates and/or hydroxides impurities.

3,793,209

ORGANIC DEPOSIT AND CALCIUM SULFATE SCALE REMOVAL EMULSION AND PROCESS

James L. Thompson, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 9, 1971, Ser. No. 170,373

Int. Cl. C02b *5/06*

U.S. Cl. 252—87 **5 Claims**

An emulsion which is successful for removing calcium sulfate deposits which are coated and/or commingled with an organic deposit is disclosed and claimed. The emulsion comprises a continuous aqueous phase of at least one of sodium citrate, a water soluble salt of ethylenediaminetetraacetic acid, or potassium glycolate, having dispersed therein an aromatic solvent and, as an emulsifier, an acid phosphate ester.

3,793,210

KETO ACID CONTAINING COMPOSITIONS

Garland George Corey, Milltown, N.J., assignor to Colgate-Palmolive Co., New York, N.Y.

Continuation of Ser. No. 835,256, June 20, 1969, abandoned. This application Sept. 3, 1971, Ser. No. 177,855

Int. Cl. C11d *3/20*

U.S. Cl. 252—89 **8 Claims**

Improved surfactant and shampoo compositions which have improved solubility and foaming characteristics, which compositions comprise a keto acid in combination with surfactants, brighteners, conditioners, and the like.

3,793,211

EFFERVESCENT COMPOSITION

Frederick F. Kohlhepp, Princeton Junction, and Herman E. Jass, Princeton, both of N.J., assignors to Carter-Wallace, Inc., New York, N.Y.

Filed July 23, 1971, Ser. No. 165,395

Int. Cl. C11d *7/54*

U.S. Cl. 252—99 **10 Claims**

A stable cleansing composition, for example, a powder for dentures, which dissolves at a favorable rate to form a clear, non-foamy oxygen-effervescent solution and which comprises certain proportions of sodium perborate monohydrate, lithium hypochlorite, and phosphate salts.

3,793,212

DETERGENT COMPOSITION AND METHOD OF PREPARING SAME

Frederick William Gray, Summit, and Peter Arthur Munger, Mountain Lakes, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 780,216, Nov. 29, 1968, abandoned. This application July 23, 1971, Ser. No. 165,701

Int. Cl. C11d *7/56*

U.S. Cl. 252—99 **4 Claims**

A detergent composition for automatic dishwashers is prepared by hydrating an alkali metal trimetaphosphate by reaction with a sodium hydroxide solution in the presence of an anionic wetting agent selected from sodium dodecyldiphenyl ether disulfonate or sodium 2-acetamido hexadecane-1-sulfonate or mixtures thereof. The hydrated tripolyphosphate is formulated with an alkali metal silicate, a bleach composition and sodium sulfate to form an excellent detergent composition.

3,793,213

GERMICIDAL PROCESS AND DETERGENT COMPOSITIONS

David Taber, Evanston, and Moneeb Zakaria, Chicago, both of Ill., assignors to Armour-Dial, Inc., Chicago, Ill.

Division of Ser. No. 868,937, Oct. 23, 1969, Pat. No. 3,686,418, which is a division of Ser. No. 683,585, May 15, 1967, abandoned. This application Jan. 24, 1972, Ser. No. 220,474

Int. Cl. C11d *3/48, 9/50*

U.S. Cl. 252—107 **8 Claims**

The use of N-Acyl-N'-(halogenated aryl) ureas as antibacterial agents and germicidal detergent compositions containing such ureas are disclosed.

3,793,214

TRANSPARENT SOAP COMPOSITION

John J. O'Neill, Cresskill; Joseph A. Komor, Ramsey; Thomas E. Babcock, Mahwah, all of N.J.; Robert J. Edmundson, Cornwall, and Edward G. Shay, Suffern, both of N.Y., assignors to Avon Products, Inc., Suffern, N.Y.

Filed Oct. 22, 1971, Ser. No. 191,794

Int. Cl. C11d *7/32, 13/16, 17/00*

U.S. Cl. 252—117 **5 Claims**

A transparent soap composition, preferably in the form of a bar, which will maintain its transparency and surface gloss after repeated use comprising an admixture of saturated fatty acids and a branched chain C_5–C_{18} saturated aliphatic monocarboxylic acid neutralized with an agent comprising a mixture of an alkaline sodium compound and an alkanolamine, and an alkanolamine. The process of making such compositions comprises mixing the acids, neutralizing agent, and alkanolamine as a hot melt and forming the composition to the shape desired by cooling without further working.

3,793,215

SOAP BARS

Brian Robson Smith, Oldham, England, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Aug. 31, 1972, Ser. No. 285,318

Int. Cl. C07c *143/12;* **C11d** *1/12, 9/46*

U.S. Cl. 252—117 **6 Claims**

A detergent bar including a major amount of anhydrous water-soluble higher fatty acid soap and a minor amount of a water-soluble synthetic detergent chosen from the group including fatty ester amides of sulphosuccinic acid.

3,793,216

CALCIUM HYPOCHLORITE COMPOSITION

George Roman Dychdala, Norristown, and Robert Sloane Custer, Radnor, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Dec. 6, 1971, Ser. No. 205,286

Int. Cl. C01b *11/06*

U.S. Cl. 252—187 H **3 Claims**

A calcium hypochlorite composition, containing at least about 55 percent $Ca(OCl)_2$ and which is resistant to exothermic, self-propagating decomposition, consists essentially of calcium hypochlorite uniformly mixed with water-soluble, hydrated inorganic salt in an amount sufficient to provide a water content in the total mixture in the range of about 3 percent to about 13 percent.

3,793,217

FILTER LAYER COMPOSITION COMPRISING ULTRAVIOLET-ABSORBING POLYMERS

Wilhelmus Janssens, Aarschot, and Armand Maria Van Den Bergh, Berchem, both of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

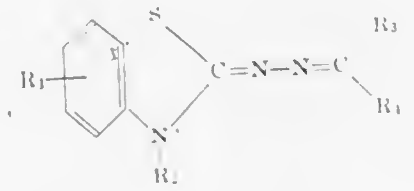
Division of Ser. No. 144,233, May 17, 1971, Pat. No. 3,745,010. This application Apr. 10, 1973, Ser. No. 349,722

Claims priority, application Great Britain, June 9, 1970, 27978/70

Int. Cl. G03c *1/84*

U.S. Cl. 252—300 **4 Claims**

The invention claims an ultraviolet-absorbing filter layer composition formed from an aqueous solution of a hydrophilic colloid having dispersed therein a hydrophobic copolymer obtained by emulsion polymerization of at least one α, β-ethylenically unsaturated monomer and of an ultraviolet-absorbing, solid, water-insoluble monomer of the formula.



wherein: R_1 = hydrogen, (meth)acryloyloxy or (meth)acryloylamino,

R_2 = hydrogen, methyl, ethyl or phenyl,

R_3 = hydrogen, alkyl or phenyl,

R_4 = hydrogen, (meth)acryloyloxy-substituted phenyl, (meth)acryloylamino-substituted phenyl, (meth)acryloyloxyalkoxy-substitubed phenyl.

The ultraviolet-absorbing filter layer composition may be used for the protection of light-sensitive photographic materials against ultraviolet light and for the production of ultraviolet-absorbing filters and filter layers.

3,793,218

OIL SLICK DISPERSANT AND METHOD

Gerard P. Canevari, Cranford, N.J., assignor to Esso Research and Engineering Company

No Drawing. Filed June 15, 1971, Ser. No. 153,430

Int. Cl. B01f *17/00;* **B01j** *13/00*

U.S. Cl. 252—312 **11 Claims**

Mixtures of C_{10}–C_{20} aliphatic carboxylic acids or the sorbitan monoesters thereof, sorbitan monoacylates, polyoxyalkylene adducts of the sorbitan monoesters and dialkyl sulfosuccinate salts having a hydrophilic-lipophilic balance of about 9 to about 11.5, preferably about 10 to 11, are highly efficient, nontoxic biodegradable dispersants for oil slicks. Oil slick dispersal is achieved by supplying the dispersant composition to the oil slick either alone or admixed with a suitable solvent. An advantage of these dispersant compositions is that they require little or no mixing energy in order to achieve dispersion of the slicks.

3,793,219

ANIONIC LIQUID DETERGENT COMPOSITION

Ichiro Kashiwa and Hiroshi Nakano, Tokyo, Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan

No Drawing. Filed June 28, 1971, Ser. No. 157,728

Claims priority, application Japan, June 30, 1970, 45/57,169

Int. Cl. C11d *3/065*

U.S. Cl. 252—526 **5 Claims**

A transparent anionic liquid detergent composition comprising 5 to 30% by weight of an anionic surface active agent having SO_3 radical or SO_4 radical, 5 to 45% by weight of a water-softening builder, 5 to 25% by weight of an alkaline inorganic salt, wherein more than 70% of the total amount of cations (in terms of the number of ions) in said three compounds is alkanol ammonium ion.

3,793,220

METHOD FOR STABILIZING 1,1,1 - TRICHLORETHANE AND PRODUCT PRODUCED THEREBY

Arsene Isard, 20 Avenue Albert ler de Belgique, and Daniel Pillet, 131 Cours de la Liberation, both of Grenoble, France

No Drawing. Filed Apr. 1, 1971, Ser. No. 130,505

Claims priority, application France, Apr. 3, 1970, 7012126

Int. Cl. C11d *7/52*

U.S. Cl. 252—171 **3 Claims**

1,1,1-trichlorethane, an industrial solvent, is stabilized to prevent its reaction with metals by the addition thereto of from about 0.1% to about 10% of a stabilizing agent comprising at least one substituted oxazole containing 1 to 3 alkyl radicals and having a boiling point at ambient pressure below about 140° C. in combination with one or more other stabilizers having a boiling point in the range from about 50° C. to about 130° C. and having a molecular structure which comprises at least one of the molecular groups consisting of ethylenic bond, acetylenic bond, acetal, ketone, alcohol, nitrile, amine, ester function, ether or thioether bond-bridge, nitrated group and 1,2-epoxy group, said substituted oxazole being present in the stabilizing combination at a level of not less than about 5% by weight of the combination.

3,793,221

THICKENED ACID CLEANER

Joseph V. Otrhalek, Dearborn, and Robert E. Gansser, Wyandotte, Mich., assignors to BASF Wyandotte Corporation, Wayne, Mich.

No Drawing. Filed Sept. 13, 1972, Ser. No. 288,772

Int. Cl. C11d

U.S. Cl. 252—136 **9 Claims**

A thickened acid cleaner concentrate composition comprising an aqueous hyrochloric acid, an organic acid, e.g. oxalic, a nonionic surfactant, an anionic surfactant and water is useful in cleaning vehicles such as railroad rolling stock equipment without subsequent neutralization.

3,793,222

3,793,225

3,793,228

3,793,230

3,793,222

PROCESS OF FORMING COMPLEXING AGENTS FROM POLYALDEHYDO CARBOXYLIC ACIDS

Heinz Haschke, Grossauheim, and Erich Bäder, Hanau, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Continuation-in-part of applications Ser. No. 7,251, now Patent No. 3,686,145, and Ser. No. 7,252, both Jan. 30, 1970. This application Aug. 21, 1970, Ser. No. 66,078

Claims priority, application Germany, Aug. 21, 1969, P 19 42 556.0

Int. Cl. C02b *1/00*

U.S. Cl. 252—180 **4 Claims**

Washing and cleansing compositions and degreasing, rust-removal and peroxide baths are formed by employing complexing agents formed of straight, substantially not cross-linked oligomers or polymers of which the main chain predominantly comprises C—C bonds and which include (a) carboxyl or carboxylate groups in a molar content of at least 50%, and (b) carbonyl groups in a molar content of at most 50%. The oligomers-polymers may also contain free or partially or completely lactonized hydroxyl groups in a molar content of at most 66.6%. The polymerization degree of the complexing agents is between 3 and 500. The molar content percentages are to be understood here as relating to the mean number of said groups per hundred monomer units in the oligomer or polymer.

3,793,223

DEFOAMER COMPOSITIONS CONTAINING ORGANIC PARTICLES

Irwin A. Lichtman, Oradell, and Fred E. Woodward, Watchung, N.J., assignors to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Continuation of application Ser. No. 837,297, June 27, 1969, now Patent No. 3,697,440, dated Oct. 12, 1972. This application June 15, 1972, Ser. No. 263,227

The portion of the term of the patent subsequent to Oct. 10, 1989, has been disclaimed

Int. Cl. B01d *17/00*

U.S. Cl. 252—358 **11 Claims**

Defoamer compositions are prepared by using particular oil insoluble normally solid organic polymer particles, secondary organic polymers which may be oil soluble or oil insoluble and liquid hydrocarbons. Optionally, amide and silicone oils are present.

3,793,224

CARBON MOLECULAR SIEVE CATALYSTS

Barry John Cooper, London, England, assignor to Johnson, Matthey & Co., Limited, London, England

No Drawing. Filed Dec. 10, 1970, Ser. No. 97,043

Claims priority, application Great Britain, Dec. 12 ,1969, 60,743/69

Int. Cl. B01j *11/16*

U.S. Cl. 252—423 **4 Claims**

A selective catalyst comprising a catalytically active material associated with molecular sieve carbon in such manner that the carbon prevents access to the catalytically active material of molecules having a size above a predetermined value. The catalyst is prepared by forming a dispersion of a catalytically active material in an aliphatic alcohol, polymerizing the alcohol to form a thermosetting polymeric resin and carbonizing the resin in an inert atmosphere.

3,793,225

OXIDATIVE DEHYDROGENATION CATALYST

Brent J. Bertus and Darrell W. Walker, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed May 6, 1971, Ser. No. 140,973

Int. Cl. B01j *11/82*

U.S. Cl. 252—437 **6 Claims**

Organic compounds are dehydrogenated to compounds having a higher degree of unsaturation by contacting the feedstock in the vapor phase at an elevated temperature in the presence of an oxygen-containing gas with a calcined catalyst containing a ferrous group metal, e.g., nickel, in combination with phosphorus, at least one Group II*a* metal and oxygen. Representative of such conversions is the oxidative dehydrogenation of butane to 1,3-butadiene. The conversion products are valuable compounds particularly useful as intermediates for the preparation of polymeric materials such as synthetic rubbers and the like.

3,793,226

DETERGENT COMPOSITION CONTAINING MONOAMIDE HYDROCARBYL SULFONIC ACID SALTS OF HYDROCARBYL SUCCINIC ACID

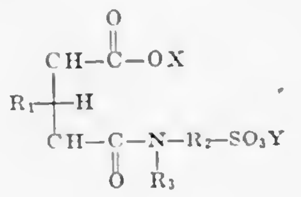
Mitchell Danzik, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Original application Dec. 17, 1969, Ser. No. 885,977, now Patent No. 3,732,290. Divided and this application Sept. 27, 1971, Ser. No. 184,203

Int. Cl. C11d *3/06*

U.S. Cl. 252—526 **3 Claims**

Detergent composition containing as active materials monoamide hydrocarbyl sulfonic acid salts of hydrocarbyl succinic acid of the formula



$$\begin{array}{l} \mathrm{CH{-}\overset{\overset{O}{\|}}{C}{-}OX} \\ \mathrm{R_1{-}{|}{-}H} \\ \mathrm{CH{-}\underset{\underset{O}{\|}}{C}{-}\underset{\underset{R_3}{|}}{N}{-}R_2{-}SO_3Y} \end{array}$$

in which R_1 is a hydrocarbyl group of 8 to 30 carbon atoms; R_2 is a hydrocarbylene group of 1 to 8 carbon atoms; R_3 is H, a hydrocarbyl group of 1 to 8 carbon atoms, or $—R_2—SO_3Y$; X is H or Y; and Y is a water-soluble salt-forming cation; and non-phosphate builders and additives.

3,793,227

CATALYST COMPOSITION FOR FLUID-BED PRODUCTION OF TRICHLOROETHYLENE

William K. Snead and Fred Abraham, Wheeling, W. Va., assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 799,993, Feb. 17, 1969. This application Apr. 27, 1972, Ser. No. 248,142

Int. Cl. B01j *11/78*

U.S. Cl. 252—441 **4 Claims**

Thermal chlorination of hydrocarbons and/or hydrocarbon chlorides using a bed of porous 20 to 200 mesh calcined fuller's earth base particles impregnated with an alkali metal chloride is described. When perchloroethylene and trichloroethylene are produced in the presence of these particles, trichloroethylene production is favored.

3,793,228

DETERGENT COMPOSITIONS CONTAINING MALEIC ACID VINYL ALCOHOL COPOLYMERS AS BUILDERS

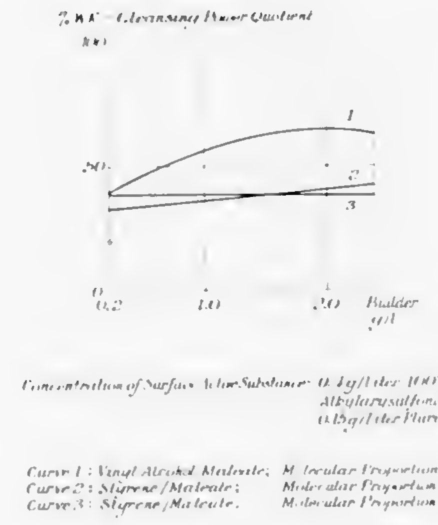
Joachim Kandler and Karl Merkenich, Cologne, Herbert Landgraber, Efferen, near Cologne, Klaus Henning, Hurth, near Cologne, and Alfred Kohlkamp, Hofheim, Taunus, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

Original application Sept. 16, 1970, Ser. No. 72,705, now abandoned. Divided and this application Oct. 24, 1972, Ser. No. 299,821

Claims priority, application Germany, Oct. 8, 1969, P 19 50 702.9

Int. Cl. C02b *5/06;* **C08f** *15/02;* **C11d** *3/20*

U.S. Cl. 252—541 **7 Claims**



Builders for detergent and cleaning agents. The builders are comprised of water-soluble salts of cotelomers or copolymers of vinyl alcohol with maleic acid.

3,793,229

ALUMINUM FLUORIDE-BASED CATALYST FOR THE GAS-PHASE FLUORINATION OF HYDROCARBONS

Giovanni Groppelli and Martino Vecchio, Milan, Luciano Lodi, Bollate, Romano Covini, Milan, and Vittorio Fattore, San Donato Milanese, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed June 8, 1971, Ser. No. 150,916

Claims priority, application Italy, June 10, 1970, 25,759/70

Int. Cl. B01j *11/78*

U.S. Cl. 252—442 **2 Claims**

A catalyst is disclosed for preparing fluorinated or chlorofluorinated hydrocarbons by fluorination or chlorofluorination or disproportionation reactions in the gas phase, which catalyst comprises aluminum fluoride containing minor quantities of zinc, chromium, nickel and preferably also iron compounds which are present in quantities corresponding to the following percentages by weight of metal based on the total: from 0.05 to 5% Zn, from 0.05 to 5% Cr, from 0.05 to 5% Ni, and up to 3% Fe. The zinc, chromium, nickel and iron, if any, are present at least partly in the form of halides, in particular fluorides, or oxides or oxy-halides. A process for preparing the catalyst is disclosed, as well as various details relating to the aforesaid processes for using the catalyst.

3,793,230

CATALYST FOR SULFURIC ACID CONTACT PROCESS

Ludwig Dorn, Cologne, Gerhard Heinze, Schildgen, and Jürgen Wokulat, Wilhelm Möller, and Franz Rübsam, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of abandoned application Ser. No. 36,234, May 11, 1970. This application Feb. 24, 1972, Ser. No. 229,163

Claims priority, application Germany, May 23, 1969, P 19 26 564.6

Int. Cl. B01j *11/34, 11/44*

U.S. Cl. 252—452 **10 Claims**

A catalyst for oxidation of SO_2 to SO_3, which can be used as a fluidized bed catalyst. An abrasive resistant support is formed by adding silica filler and a clay binder to a silica sol; adding hydrated magnesium oxide to the resulting mixture, to form a gellable composition; dispersing the gellable composition in a liquid to form gel spheres; calcining the spheres; and treating them with an acid to remove acid soluble components. After the acid treatment, the support is impregnated with an alkali metal vanadate solution and calcined.

3,793,231

PREPARATION OF SILVER CATALYSTS FOR THE PRODUCTION OF ETHYLENE OXIDE

Herbert Bergmann, Willi Brauckmann, Hermann Springmann, and Horst Ueberschaer, Marl, Germany, assignors to Chemische Werke Huels, Aktiengesellscraft, Marl, Germany

No Drawing. Filed Apr. 14, 1971, Ser. No. 134,039

Claims priority, application Germany, Apr. 14, 1970, P 20 17 733.7

Int. Cl. B01j *11/20*

U.S. Cl. 252—463 **17 Claims**

Silver catalysts useful for the production of ethylene oxide by the oxidation of ethylene with oxygen or an oxygen containing gas are produced by a process in which a porous support material is impregnated with a suspension of silver oxide in an aqueous solution of a silver salt of an organic acid wherein the molar ratio of silver oxide to dissolved silver salt is about 1.86:1 to 1:1.86 (35–65 molar percent silver oxide based on combined silver oxide and silver salt) and the impregnated support is then heated to 160–230° C.

3,793,232

REFORMING CATALYST, ITS MANUFACTURE AND USE

Pierre Duhaut, Le Vesinet, and Jean Miquel, Paris, France, assignors to Societe Francaise des Produits pour Catalyse

No Drawing. Filed June 30, 1972, Ser. No. 267,946

Claims priority, application France, July 5, 1971, 7124567

Int. Cl. B01j *11/08*

U.S. Cl. 252—466 PT **11 Claims**

Catalyst for the conversion of hydrocarbons, particularly for reforming reactions having an alumina base and the following contents of metals expressed by weight with respect to the alumina:

platinum: from 0.005 to 1%
iridium: from 0.005 to 1%
thallium or indium: from 0.05 to 3%.

The catalyst may further contain optionally from 0.1 to 10% by weight of a halogen and up to 10% by weight of zinc or a zinc compound said proportions being also relative to the alumina weight.

3,793,233

LIQUID DETERGENT COMPOSITIONS

Frederick G. Rose and Kenneth W. Theile, Springfield Township, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Nov. 24, 1969, Ser. No. 879,522

Int. Cl. C11d *1/14, 1/28, 1/83*

U.S. Cl. 252—547 **8 Claims**

Liquid detergent compositions having excellent sudsing and mildness characteristics and consisting essentially of (1) from about 8% to about 35% of an alkyl ether sulfate obtained by sulfating and neutralizing the condensation product of from about 5 to about 12 moles of ethylene oxide and 1 mole of a high molecular weight alcohol having from about 10 to about 16 carbon atoms: (2) an alkyl sulfate having the formula $ROSO_3$—M wherein R is alkyl having from about 10 to about 16 carbon atoms: and M is a salt-forming cation: the ratio of said alkyl ether sulfate to said alkyl sulfate being from about 2:1 to about 6:1 and the balance being water. The compositions have a desirable balance of cleaning, sudsing and mildness properties and are particularly useful in dishwashing and light-duty laundering situations.

3,793,234

LIQUID DEVELOPER COMPOSITION

Mary K. Ormsbee, 314 Gale Ave.,
River Forest, Ill. 60305

No Drawing. Continuation of abandoned application Ser. No. 818, Jan. 5, 1970. This application Jan. 14, 1972, Ser. No. 218,023

Int. Cl. G03g *9/04*

U.S. Cl. 252—62.1 **4 Claims**

A liquid developer composition for converting a latent electrostatic image to a visible image and for fixing the visible image to produce permanent and smudge free copies comprising a toner concentrate formulated to contain a rosin and pigment material in a liquid solvent which may be admixed with a carrier comprising a resinous binder dispersed in an organic solvent.

3,793,235

RECLAMATION OF POLYFLUOROHALOCARBONS

Charles V. Goebel, Jr., Wyomissing, Pa., assignor to The Polymer Corporation, Reading, Pa.

Filed Apr. 3, 1972, Ser. No. 240,392

Int. Cl. C08f *3/24, 47/24, 3/26*

U.S. Cl. 260—2.3 **8 Claims**

Scrap and off-grade polyfluorohalocarbons are reclaimed for further use by chemically oxidizing the impurities contained therein in a mixture of concentrated sulphuric and perchloric acids and a catalyst. The process includes the steps of reducing the materials to a fine power by cryogenic grinding, heating the powder in the acid mixture, separating and washing the purified powder, and recycling the acid mixture.

3,793,236

OXAZOLIDONE-MODIFIED ISOCYANURATE RESINS

Kaneyoshi Ashida, Tokyo, Japan, and Kurt C. Frisch, Grosse Ile, Mich.; said Ashida assignor to Mitsubishi Chemical Industries Limited, Tokyo, Japan

No Drawing. Filed Feb. 12, 1971, Ser. No. 115,061

Int. Cl. C08g *22/34, 22/44*

U.S. Cl. 260—2.5 AW **26 Claims**

Resins having a polyisocyanurate structure are produced by trimerizing an isocyanate-terminated polyoxazolidone by means of a trimerization catalyst such as a tertiary amine. Foamed resins of the foregoing type exhibit unexpectedly low friability and high flame resistivity, and thus are useful as building materials and for other applications requiring a combination of high heat and flame resistance. These resins are also useful as coatings, adhesives, elastomers, and the like.

3,793,237

OPEN-CELL RIGID POLYETHER POLYURETHANE FOAM

John Watkinson, Shrub Oak, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Aug. 11, 1972, Ser. No. 279,881

Int. Cl. C08g *22/14, 22/46*

U.S. Cl. 260—2.5 AH **14 Claims**

Process for the production of open-cell rigid polyether polyurethane foam employing as the cell-opening agent a siloxane-oxyalkylene $(AB)_n$ block copolymer and the cured foams produced thereby.

3,793,238

SHAPED ARTICLES OF CROSSLINKED URETDIONE POLYURETHANE RESINS AND PROCESS FOR THE PRODUCTION THEREOF

Hans Dieter Winkelmann and Heinrich Rinke, Leverkusen, Harald Oertel, Odenthal-Globusch, and Norbert Weimann, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 10, 1971, Ser. No. 179,573

Claims priority, application Germany, Sept. 10, 1970, P 20 44 838.8

Int. Cl. C08g *22/18, 22/48*

U.S. Cl. 260—2.5 AY **26 Claims**

Shaped articles of crosslinked polyurethane resins obtained by a process in which a crosslinking reactive component which is a bifunctional NH-compound is caused to act during or after the shaping process on a high molecular weight uretdione group containing polyurethane which is free from NCO groups.

3,793,239

FOAMED THERMOPLASTICS

John Albert Rixon, Shefford, and Anthony Graham Marshall Last, Welwyn Garden City, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Apr. 30, 1971, Ser. No. 139,273

Claims priority, application Great Britain, May 8, 1970, 22,381/70

Int. Cl. C08f *47/10, 29/12*

U.S. Cl. 260—2.5 E **15 Claims**

Producing foamed films from a blend of a polyolefine and a small amount of a higher melting polymer, especially HD polyethylene/polypropylene blends, by the PEF process involving a 2-component blowing agent system.

3,793,240

POLYURETHANE FOAMS

John Liberty Smith, Water Orton, near Birmingham, England, assignor to Dunlop Limited, St. James's, London, England

No Drawing. Filed Sept. 7, 1972, Ser. No. 286,888

Claims priority, application Great Britain, Sept. 22, 1971, 44,142/71

Int. Cl. C08g *33/02, 51/58, 22/44*

U.S. Cl. 260—2.5 AB **9 Claims**

Flame-resistant polyurethane foams are obtained by reacting a polymeric polyol with an organic polyisocyanate in a reaction mixture which contains (a) as a catalyst an anionic surfactant and (b) an acidogenic substance as an anti-aging additive. Suitable catalysts are the sodium or potassium salt of oleic acid, and the anti-aging additive is preferably a chloro- or bromo-derivative of a trialkyl orthophosphate, of which the following is a specification.

3,793,241

DIMENSIONALLY STABLE HYDROPHILIC FOAM AND METHOD OF PREPARING SAME

Robert C. Kyle, Minneapolis, and John F. Kistner, Afton, Minn. (both % 3M Center, St. Paul, Minn. 55133)

No Drawing. Filed Mar. 20, 1972, Ser. No. 236,465

Int. Cl. C08g *22/44*

U.S. Cl. 260—2.5 AD **6 Claims**

Resilient, crosslinked, hydrophilic, open-celled polyoxyalkylene urea/urethane foam comprising hydrophilic and hydrophobic segments of relatively high molecular weight, the foams having relatively high resistance to bottoming out and good dimensional stability with absorption of water, and a process for preparing the same.

3,793,242

FOAMABLE THERMOPLASTIC POLYMER GRANULES AND METHOD FOR MAKING

Gerald D. Ilavsky, Sarnia, Ontario, Canada, assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Aug. 17, 1972, Ser. No. 281,525

Int. Cl. C08j *1/26*

U.S. Cl 260—2.5 B **8 Claims**

Foamable styrene polymers are prepared by coating expandable styrene polymer granules with behenic acid. Improved cooling times and anti-clumping properties are obtained, together with lowered steam pressures required for molding.

3,793,243

STORABLE WATER-CLEAR BRIGHT-DRYING EMULSIONS CONTAINING WAXES

Ludwig Endros, Affing, Otto Malitschek, Augsburg, and Werner Strassberger, Gersthofen, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed June 23, 1971, Ser. No. 156,048

Claims priority, application Germany, June 26, 1970, P 20 31 669.2

Int. Cl. C08f *45/24, 45/52*

U.S. Cl. 260—28.5 R **5 Claims**

A water-clear, storable aqueous bright-drying emulsion, which consists of a wax emulsion and a water-clear polymer dispersion, as well as of, optionally, further additives, is obtained by using a wax emulsion which is an aqueous emulsion of a waxlike ester of an aliphatic monocarboxylic acid and a polyethylene glycol having a determined molar weight. The bright-drying emulsion is suitable above all for the care of floor coverings.

3,793,244

WATER-RETAINING LATEXES OF STYRENE-BUTADIENE-ITACONIC ACID TERPOLYMERS

James Francis Megee, 5 Redwood Road, Acton, Mass. 01720, and Richard Gorham Nickerson, 1 Colonial Way, Weston, Mass. 02193

No Drawing. Filed Aug. 17, 1972, Ser. No. 281,309

Int. Cl. C08d *1/09, 3/02;* **C08f** *15/40;* **C09d** *11/10*

U.S. Cl. 260—29.7 H **4 Claims**

A latex of styrene-butadiene-itaconic acid is made to be water-retaining by interpolymerizing while supplying all the butadiene gradually to an aqueous phase containing all the styrene and itaconic acid from the start, in the presence of surfactant in amount of at least 5%, based on weight of total terpolymer. Pigmented paper-coating slips have excellent machinability when prepared with a binder consisting essentially of this latex.

3,793,245

PROCESS FOR THE PREPARATION OF A POLYMER DISPERSION IN AN INERT ORGANIC LIQUID

Michael Raymond Clarke, Ottawa, Ontario, and Leon Filipowicz, Montreal, Quebec, Canada, assignors to Balm Paints Limited, Melbourne, Victoria, Australia

No Drawing. Continuation-in-part of abandoned application Ser. No. 840,056, July 8, 1969. This application June 2, 1971, Ser. No. 149,376

Int. Cl. C08f *47/20;* **C08g** *53/18*

U.S. Cl. 260—34.2 **5 Claims**

A process of preparing a dispersion of polymerized α,β-ethylenically unsaturated monomer in an inert organic liquid in a two-stage process consisting of a seed stage and a feed stage. From 7–70% by weight of the total polymerizable monomer is first polymerized in the liquid in the presence of copolymerizable polymeric stabilizer in the weight proportion of from 1:10 to 15:1 as the seed stage. The remaining monomer is then added to and polymerized in the seed stage in the presence of seed stage stabilizer, the total weight of polymeric stabilizer in the dispersion being from 0.5–50% by weight of the weight of disperse polymer.

3,793,246

PROCESS FOR PRODUCING AROMATIC POLYETHERS

Shinichi Izawa, Tokyo, Kazuhiko Harada, Kanagawa, and Ken Mizushiro and Miyoko Ishihara, Tokyo, Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

No Drawing. Filed Dec. 17, 1971, Ser. No. 209,302

Claims priority, application Japan, Dec. 18, 1970, 45/113,058

Int. Cl. C08g *23/18*

U.S. Cl. 260—47 ET **10 Claims**

Aromatic polyethers having excellent thermal, mechanical and electrical properties are obtained by oxidative polymerization of 2,6-disubstituted phenols in the presence of a catalyst comprising a copper or manganese salt, a primary amine and at least one aliphatic, alicyclic or aromatic aldehyde.

3,793,247

CURABLE EPOXIDE RESIN COMPOSITIONS CONTAINING BORON-TRICHLORIDE-TERTIARY AMINE COMPLEXES

George Latto Fleming, Saffron Walden, and Richard John Martin, Linton, England, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Aug. 9, 1971, Ser. No. 170,380

Claims priority, application Great Britain, Aug. 11, 1970, 38,648/70

Int. Cl. C08g *30/12*

U.S. Cl. 260—47 EA **8 Claims**

Curable compositions comprise an epoxide resin and as heat-curing agent, a polycarboxylic acid or anhydride, an aromatic polyamine, a polycarboxylic acid polyhydrazide, a polyhydric phenol, dicyandiamide, or a compound having at least two primary amino groups directly attached to a 1,3,5-triazine nucleus, and as accelerator, a complex of boron trichloride with amine in which the amino nitrogen is solely tertiary. The curable compositions may be applied as a one-, two- or three-part pack whereby the accelerator may be incorporated in either the resin or the hardener part, or in both. They are useful as laminating resins, surface coating resins, sinter powders, dipping or casting resins and adhesives.

3,793,248

ADDUCTS, CONTAINING EPOXIDE GROUPS, FROM POLYEPOXIDE COMPOUNDS AND BINUCLEAR N-HETEROCYCLIC COMPOUNDS

Daniel Porret, Binningen, Juergen Habermeier, Allschwil, and Hans Batzer, Arlesheim, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Continuation of abandoned application Ser. No. 816,029, Apr. 14, 1969. This application Dec. 27, 1971, Ser. No. 212,763

Claims priority, application Switzerland, Apr. 17, 1968, 5,635/68

Int. Cl. C08g *30/04*

U.S. Cl. 260—47 EP **8 Claims**

New "advanced" adducts, containing epoxixde groups, from (1) polyepoxide compounds which on an average contain more than one epoxide group in the molecule, and (2) less than one equivalent of NH groups for every epoxide equivalent of the polyepoxide Compound 1 of a binuclear, five or six-membered, unsubstituted or substituted N-heterocyclic compound with an endocyclic NH group in each nucleus, the heterocyclic rings being linked by a divalent aliphatic, cyclo aliphatic or araliphatic radical, preferably an alkylene radical, which may be interrupted by oxygen atoms, e.g. the reaction product of 2 mols of diomethane-diglycidyl ether and 1 mol of 1,1′-methylene - bis - (5,5-dimethyl-hydantoin). The epoxide resins "advanced" by means of such nitrogen compounds have a good storage stability and excellent electrical properties.

3,793,249

POLYESTERS OF 2,2′-SPIROBI(CHROMAN)DIOLS

Frederick L. Hamb and John C. Wilson, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed June 30, 1971, Ser. No. 158,526

Int. Cl. C08g *17/08*

U.S. Cl. 260—47 C **18 Claims**

Novel high molecular weight polymers of 2,2′-spirobi[chroman]diols, dicarboxylic acids of four or more carbon atoms and other diols which are useful in the preparation of photographic film bases.

3,793,250

PROCESS OF MAKING A MODIFIED POLYESTER IMIDE WIRE INSULATION AND PRODUCT OBTAINED THEREBY

Karl Schmidt and Gerhard Boockmann, Hamburg, Germany, assignors to Dr. Beck & Co. AG., Hamburg, Germany

No Drawing. Continuation of abandoned application Ser. No. 838,382, July 1, 1969. This application Dec. 17, 1971, Ser. No. 209,415

Int. Cl. C08g *20/30, 20/32*

U.S. Cl. 260—75 N **8 Claims**

A polyester imide lacquer is formed by reacting a polycarboxylic acid, a polybasic alcohol, a poly-functional amino compound or derivative of these compounds in the presence of a solvent and a condensation catalyst, at least one of the starting materials including at least one five-member lactam ring and at least one other of the starting materials including at least one five-member imide ring.

The lacquer thus formed retains the high heat resistance of pure ester imide resins but has improved lacquer properties, and increased surface hardness and better application properties for forming a wire coating.

3,793,251

SATURATED HYDROCARBON AVERAGING

Thomas R. Hughes, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Continuation of application Ser. No. 149,068, June 1, 1971, and a continuation-in-part of application Ser. No. 864,870, Oct. 8, 1969, both now abandoned. This application Feb. 7, 1973, Ser. No. 330,535

Int. Cl. C07c *3/00, 9/00*

U.S. Cl. 260—676 R **24 Claims**

A process for averaging saturated hydrocarbon feed components of different molecular weight to components of intermediate molecular weight relative to the feed components which comprises contacting the saturated hydrocarbon feed components at a temperature between about 400° and 850° F. in a reaction zone with a catalytic mass comprising a Group VI–B metal component and a Group VIII metal component, and maintaining the olefin concentration in the reaction zone sufficiently low to produce in the reaction zone a saturated hydrocarbon product containing said components of intermediate molecular weight and containing less than 5 mole percent olefin. Preferably the catalytic mass contains platinum on alumina (platinum being the Group VIII metal component); and tungsten oxide on silica (tungsten oxide being the Group VI–B metal component).

Low olefin concentrations in the reaction zone are crucial in the process of the present invention.

3,793,252

VULCANIZABLE COMPOSITIONS

Patrick Joseph Corish and Malcolm Cedric Kirkham, Sutton Coldfield, and Brian David William Powell, Coventry, England, assignors to Dunlop Holdings Limited, London, England

No Drawing. Filed Oct. 26, 1971, Ser. No. 192,670

Claims priority, application Great Britain, Nov. 12, 1970, 53,802/70

Int. Cl. C08c *11/48, 11/58;* **C08d** *9/00*

U.S. Cl. 260—77.5 CR **16 Claims**

A vulcanizable rubber composition which comprises a natural and/or synthetic rubber containing an adduct of a poly(isocyanate/uredione) compound and a substituted aromatic compound, the substituents including a nitroso group and a hydroxyl group, the adduct being capable of dissociating under vulcanizing conditions. Preferably, the adduct does not decompose below 100° C. The poly(isocyanate/uredione) compound is preferably a diisocyanate dimer. The adduct is normally present in an amount of from 0.25 to 12 parts by weight per 100 parts by weight of rubber.

3,793,253

MIXTURES OF 5-SILAIMIDAZOLIDONES-(2) WHICH CONTAIN ISOCYANATE GROUPS AND URETHANES

Bernd Quiring and Kuno Wagner, Leverkusen, Ingrid Irene Klärchen Gölitz, Cologne, and Walter Noll, Opladen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 1, 1972, Ser. No. 277,000

Claims priority, application Germany, Aug. 4, 1971, P 21 38 943.5

Int. Cl. C08g *22/22;* **C09j** *3/00*

U.S. Cl. 260—77.5 AT **2 Claims**

Mixtures of urethanes and 5-silaimidazolidones-(2) which contain isocyanate groups and a process for the preparation of said mixtures are disclosed. The compositions of the invention are eminently suited as bonding interlayers for siliceous or metallic surfaces which are to be coated with synthetic resins or elastomers.

3,793,254

CATALYSTS FOR THE REACTION OF NITRILE CARBONATES-ACTIVE HYDROGEN COMPOUNDS

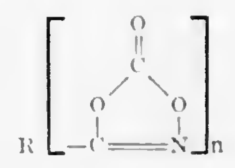
Larry G. Wolgemuth, Cherry Hill, N.J., assignor to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed Dec. 4, 1972, Ser. No. 312,088

Int. Cl. C08g *22/00*

U.S. Cl. 260—77.5 R **20 Claims**

A method of preparing organic compounds having one or more urea, urethane or thiourethane groups by reacting cyclic nitrile carbonates of the formula:



wherein R is an organic radical which is free of reactive hydrogen atoms and n is 1 or more, such as, adipodi (nitrile carbonate), with nucleophilic compounds containing a reactive hydrogen atom, such as polyester and polyether polyols, in the presence of a catalytically-effective amount of an N-oxide of an amine at a temperature of about 50° to 150° C.

3,793,255

PROCESS FOR THE CONTINUOUS PERFORMANCE OF AN ANIONIC POLYMERIZATION OF LACTAMS

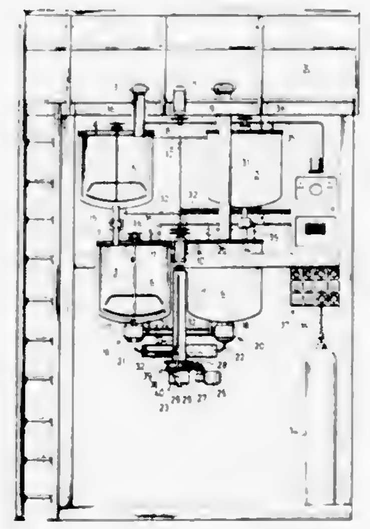
Arthur Handtmann, 25 Vorarlbergerstrasse, 795 Biberach an der Riss, Germany

Filed Feb. 14, 1972, Ser. No. 225,997

Claims priority, application Germany, Feb. 24, 1971, P 21 08 759.2

Int. Cl. C08g *20/18*

U.S. Cl. 260—78 L **4 Claims**



A process for the continuous performance of an anionic polymerization of lactans is disclosed. In the process catalysts such as lactam alkali or alkaline earth metal compounds and activators such as acylated lactams or acylatable compounds are mixed with molten lactam in the presence of nitrogen. The process is characterized by the fact that simultaneously one portion of molten lactam is mixed with an activator and a second portion is mixed with a catalyst, in each case with exclusion of oxygen and continuous nitrogen action on the two melts, before eventually being metered via a syphon-like spiral tube system under the same temperature action as the melts to a mixing device into which the two spiral tube systems discharge whereby polymerization takes place.

Also disclosed is apparatus for use in the described process characterized by two first containers for preparing the two lactam melt partial quantitives to which is connected in each case a second container for a catalyst or an activator which via synchronously operating liquid pumps are each connected with a syphon-like spiral tube system leading to a mixing device, whereby all containers are sealed in an air-tight manner and pumps and spiral tube system are heatable and wherein a nitrogen feed and drain system and a stirrer are provided.

3,793,256

CONTROLLED CURING PF POLY(ARYLENE SULFIDE) RESINS

Jack S. Scoggin, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Aug. 30, 1972, Ser. No. 284,703

Int. Cl. C08g *23/00*

U.S. Cl. 260—79 **10 Claims**

The molecular weight of poly(arylene sulfide) resins can be increased by heat treatment under oxidizing atmosphere at an elevated temperature below the melting point of the resin. This curing reaction can be terminated by flushing out the oxidizing atmosphere with an inert gas, such as steam, and then cooling the resin in the presence of the inert gas to a temperature at which no significant curing would be accomplished in an oxidizing atmosphere. The cooling of the resin can then be completed in the presence of air.

3,793,257

OLEFIN ISOMERIZATION AND/OR HYDROGENATION THROUGH RUTHENIUM HYDRIDE COMPLEX-CATALIZED PROCESSES

Filippo Pennella and Mark R. Rycheck, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Nov. 1, 1971, Ser. No. 194,698

Int. Cl. C07c *5/00, 5/14*

U.S. Cl. 260—683.2 **23 Claims**

Ruthenium hydride complexes containing tertiary phosphine, arsine, or stibine ligands are employed as catalysts for isomerization and/or hydrogenation of olefins. Terminally unsaturated olefins are selectively isomerized to internally unsaturated olefins by complexes that contain nitrogen or ammonia.

3,793,258

PROCESS FOR THE ANIONIC POLYMERIZATION OF LACTAMS

Klaus Reinking, Bert Brassat, and Kurt Schneider, Krefeld-Bockum, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 16, 1971, Ser. No. 163,413

Claims priority, application Germany, July 18, 1970, P 20 35 733.9

Int. Cl. C08g *20/18*

U.S. Cl. 260—78 L **6 Claims**

The invention relates to an improved process for the anionic polymerization of a lactam having at least 5

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ring members in the presence of an alkaline catalyst and

3,793,261

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zone. The hydrocarbon phase is fractionated to recover an alkylate product. The acid phase is recycled to the

3,793,267

HETEROCYCLIZED POLYMER

ring members in the presence of an alkaline catalyst and an activator, wherein an alkali metal lactamate, the catalyst, dissolved in a mixture of a α-pyrrolidone and a lactam member selected from the groups consisting of a single lactam and a mixture of lactams having at least 6 ring members, is added to the lactam melt containing the activator.

3,793,259
CONTINUOUS BULK POLYMERIZATION OF VINYL CHLORIDE

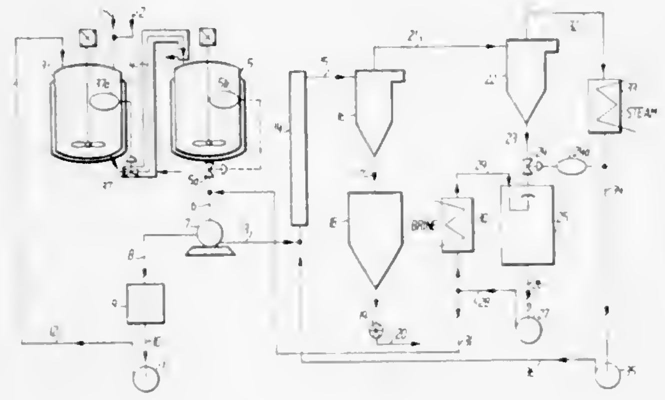
Horst Brinkmann, Johann Dietrich, Gunter Beckmann, and Jurgen von Guionneau, Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed Aug. 18, 1972, Ser. No. 281,654

Claims priority, application Germany, Aug. 20, 1971, P 21 41 770.9

Int. Cl. C08f *1/04, 1/06, 1/98*

U.S. Cl. 260—78.5 R **19 Claims**



A process for the continuous bulk polymerization of vinyl chloride which comprises polymerizing vinyl chloride in a polymerization reactor employing an oil-soluble free radical catalyst at an elevated polymerization temperature while maintaining the temperature of polymerization reactor surfaces contacted by said vinyl chloride and said catalyst below about 0° C. Clogging of polymerization apparatus is thereby eliminated or greatly reduced.

3,793,260
THERMOSETTING MOLDING COMPOSITION COMPRISING HIGH VINYL BUTADIENE POLYMER

Peter Henry Westermann, Dorking, England, assignor to BP Chemicals Limited, London, England

No Drawing. Filed July 20, 1971, Ser. No. 164,421

Claims priority, application Great Britain, July 27, 1970, 36,295/70

Int. Cl. C08f *15/02, 15/40*

U.S. Cl. 260—879 **4 Claims**

Thermosetting moulding compositions comprising high vinyl butadiene polymer, a free radical initiator and an acrylamide compound having the general formula

$$H_2C{:}CR^1CONHR^2$$

wherein R^1 is hydrogen or an organic hydrocarbon substituent and R^2 is hydrogen or an organic substituent have improved rates of cure and the thermoset products have good flexural strength. The preferred acrylamide compounds are acrylamide itself, methacrylamide, N-phenyl acrylamide and N,N^1-methylene bisacrylamide.

3,793,261
PROCESS FOR PREPARING PETROLEUM RESIN

Shigeru Katayama, Iwakuni, Kinya Mizui, Ohtake, and Katsuhiko Tasaka, Iwakuni, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

No Drawing. Filed Sept. 27, 1971, Ser. No. 184,290

Claims priority, application Japan, Oct. 2, 1970, 45/85,845

Int. Cl. C08f *15/42*

U.S. Cl. 260—82 **10 Claims**

Process for preparing petroleum resin which comprises polymerizing a by-product hydrocarbon fraction in petroleum refining, cracking, etc. containing five carbon atoms boiling at temperatures in the range from 30° to 45° C., mainly composed of C_5 unsaturated hydrocarbons, at a temperature of from 70° C. to 120° C. in an aromatic hydrocarbon solvent in the presence of an aluminum chloride catalyst of a particle size such that it passes through a 100 Tyler mesh screen.

3,793,262
ALTERNATING COPOLYMERS OF ETHYLENE/ ALKYL ACRYLATES AND A PROCESS FOR THEIR PREPARATION

Anestis Leonidas Logothetis, Louisville, Ky., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 132,178, Apr. 7, 1971. This application Feb. 29, 1972, Ser. No. 230,483

Int. Cl. C08f *1/72*

U.S. Cl. 260—86.7 **9 Claims**

A substantially linear alternating copolymer having a glass transition temperature lower than about 0° C. and an inherent viscosity of about 1 to about 6 (measured on a 0.1 weight percent solution in chloroform at 30° C.), said copolymer consisting essentially of about 50 mole percent of units derived from at least one alkyl acrylate said alkyl having 2 to 8 carbon atoms, the balance being ethylene units. A process for the preparation of these copolymers which consists essentially of reacting monomers in the presence of boron trifluoride and a free radical initiator. The copolymers are particularly useful as elastomers.

3,793,263
POLYMERIZATION CATALYST AND PROCESS USING A CHLORIDE TREATED SUPPORTED MOLYBDENUM OXIDE

Robert V. Morris, Naperville, Ill., assignor to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Feb. 14, 1972, Ser. No. 226,269

Int. Cl. C08f *3/06, 15/04, 1/66*

U.S. Cl. 260—88.2 R **7 Claims**

An improved composition of matter useful, when promoted by certain metals or their hydrides, for catalyzing the polymerization of ethylene and mixtures thereof with minor amounts of propylene to produce normally solid, crystalline polymers and copolymers which is made by a process comprising contacting a partially reduced, alumina-supported molybdenum (VI) compound with a chlorine-containing substance that is capable of removing a majority of the molybdenum, calculated as MoO_3.

3,793,264
PURIFICATION OF HF CATALYST IN ALKYLATION PROCESS

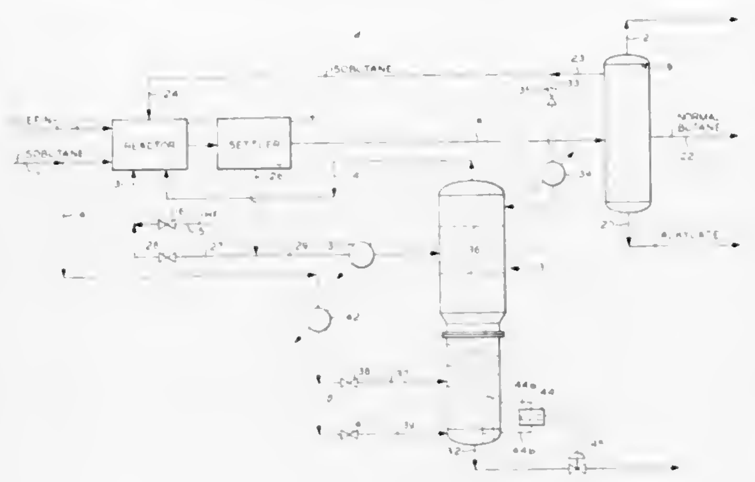
Charles C. Chapman, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Dec. 1, 1971, Ser. No. 203,768

Int. Cl. C07c *3/54*

U.S. Cl. 260—683.48 **3 Claims**

Olefins and isoparaffins are alkylated in the presence of an HF catalyst. The reactor effluent is passed to a settling zone. The hydrocarbon phase is fractionated to recover an alkylate product. The acid phase is recycled to the reactor. A portion of the recycled acid is passed to a purification column for removal of acid soluble oil. Stripping vapor is introduced into the purification column both above and below the surface of said soluble oil accumulated therein. Baffles are positioned in the lower region of the column to increase the vapor-liquid contacting.



3,793,265
NUCLEATION OF NORMALLY CRYSTALLINE VINYLIDENE CHLORIDE POLYMERS

Henry N. Beck, Walnut Creek, Calif., and Harvey D. Ledbetter and John A. Schmitt, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Sept. 5, 1972, Ser. No. 286,172. Divided and this application Apr. 20, 1973, Ser. No. 353,021

Int. Cl. C08f *3/28*

U.S. Cl. 260—91.7 **2 Claims**

Normally crystalline vinylidene chloride polymers containing at least about 70 percent by weight of vinylidene chloride with any remainder being vinyl chloride are admixed with minor amounts of a compound selected from the group consisting of melamine, trichloromelamine, 5,6-dichlorobenzimidazole, 2-phenylbenzimidazole, 6-nitrobenzimidazole, 6-nitrobenzimidazole sodium salt and 6-nitroindazole, among other compounds, to provide improved crystallization rates.

3,793,266
METHOD FOR PREPARING AMINE DERIVATIVES OF FLUORINATED POLYSTYRENES

Jerzy J. Bialy, Lagrangeville, and William R. Siegart, Poughkeepsie, N.Y., William D. Blackley, Lake Elmo, Minn., and Harry Chafetz, Poughkeepsie, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Application Aug. 6, 1970, Ser. No. 61,796, now Patent No. 3,652,238, which is a continuation-in-part of abandoned application Ser. No. 873,706, Nov. 3, 1969. Divided and this application Oct. 13, 1971, Ser. No. 189,016

Int. Cl. C08f *7/04, 27/08*

U.S. Cl. 260—93.5 A **4 Claims**

Anti-static fuel composition comprising a mixture of hydrocarbons in the gasoline, kerosene and/or furnace oil boiling ranges and a minor amount of a reaction product of an aliphatic monoamine having the formula RHN_2 in which R is an aliphatic radical having from 8 to 20 carbon atoms and either a fluorinated polystyrene having the empirical formula:

$(C_{16}H_3F_{25})_x$ in which x is an average integer between 3 to 5, or a fluorinated polypropylene having the empirical formula:

$(C_3HF_5)_x$ in which x has a value from 20 to 40, and a method for preparing the above-noted aliphatic monoamine derivatives.

3,793,267
HETEROCYCLIZED POLYMER

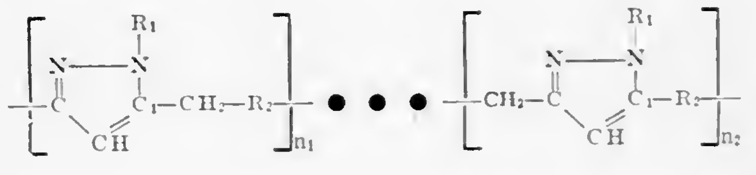
William Bracke, Ransbeekstraat 120, Brussels, Belgium

No Drawing. Continuation of abandoned application Ser. No. 61,849, Aug. 6, 1970. This application June 26, 1972, Ser. No. 266,346

Int. Cl. C08f *9/00*

U.S. Cl. 260—94.1 **17 Claims**

A new polymer composition prepared by the reaction of a polybutadynylene with a hydrazine, said polymer having the formula



where R_1 is hydrogen or a monovalent hydrocarbonyl radical, R_2 is a divalent radical which is either an aliphatic, alicyclic, aliphatic-alicyclic radical or a carbocyclic or heterocyclic aryl radical or a substituted such radical, and wherein n_1 and n_2 are 0 or an integer with the sum of n_1 and n_2 being at least 5. The process by which such new polymer is prepared is also included.

3,793,268
PROCESS FOR THE PRODUCTION OF POLYURETHANE FOAM RESINS

Werner Dietrich, Cologne-Stammheim, Konrad Uhlig and Kuno Wagner, Leverkusen, Dieter Maaben and Horst Conrad, Dormagen, and Heinrich Bormann and Helmut Piechota, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

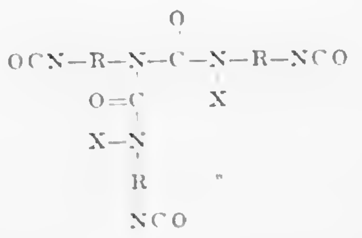
No Drawing. Filed Mar. 19, 1971, Ser. No. 126,266

Claims priority, application Germany, Mar. 23, 1970, P 20 13 787.5

Int. Cl. C08g *22/18, 22/46*

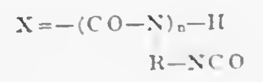
U.S. Cl. 260—2.5 AT **7 Claims**

A process for the production of polyurethane foam resins from polyisocyanates, polyethers which contain hydroxyl groups, water and optionally other blowing agents and optionally flame retarding agents, emulsifiers, activators and other additives is provided which is characterized in that the polyisocyanates used are 20% to 85% solutions in liquid monomeric polyisocyanates (which are free from urethane groups or biuret groups) of urethane-containing polyisocyanates having molecular weights of about 410 to 3000 or of biuret-containing polyisocyanates of the general formula:



$$OCN-R-\underset{\substack{| \\ O=C \\ | \\ X-N \\ | \\ R \\ | \\ NCO}}{N}-\overset{\overset{\displaystyle O}{\|}}{C}-\underset{\underset{\displaystyle X}{|}}{N}-R-NCO$$

in which R represents a divalent aliphatic, araliphatic, cycloaliphatic or aromatic radical and X represents hydrogen or the group:



$$X=-(CO-\underset{\displaystyle R-NCO}{N})_n-H$$

(n represents an integer of from 0 to 5), and the polyethers used are mixtures of polyethers having an alkylene oxide content of from about 65% to about 100% by weight and preferably 100% by weight of ethylene oxide, the polyether mixtures containing from about 25% to about

75% by weight, and preferably 40% to 60% by weight of difunctional and/or trifunctional polyethers and from about 75% to about 25% by weight, preferably 60% to 40% by weight, of polyethers having a functionality of 4 to 8. This invention also contemplates the use of an additional polyisocyanate which contains urethane groups and has an average molecular weight of from about 410 to 3000 in liquid monomeric polyisocyanates which are free from biuret groups.

3,793,269

WALLBOARD TAPE JOINT COMPOSITION EMPLOYING A WATER-SOLUBLE POLYMERIC BINDER CONTAINING POLYACRYLAMIDE, CELLULOSE ETHER, LIMESTONE, MICA AND ASBESTOS

Fabio B. Bruschtein and Dennis L. Lyftogt, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed July 21, 1972, Ser. No. 273,843

Int. Cl. C08b *21/32*

U.S. Cl. 260—17 **4 Claims**

Desirable wallboard tape joint compositions comprise a conventional mineral filler mixture, such as finely ground limestone, mica and asbestos, intimately mixed with a conditioner, such as a water-soluble cellulose ether, and containing as the binder a polyacrylamide having a controlled degree of hydrolysis and viscosity characteristics.

3,793,270

POLYAMIDES FROM THE REACTION OF PHENOLIC NUCLEUS CROSS-LINKED DIMER, A DIAMINE, AND A MONOCARBOXYLIC FATTY ACID

Atsushi Goukon, Yasuyuki Kawakatsu, Wataru Yano, and Itsuo Minakata, Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

No Drawing. Filed Dec. 27, 1971, Ser. No. 212,667

Claims priority, application Japan, Dec. 29, 1970, 46/126,390

Int. Cl. C08g *20/26*

U.S. Cl. 260—18 N **5 Claims**

New polyamides are prepared by reacting a diamine, a fatty acid of 1–24 carbon atoms and phenolic, nucleus-cross-linked dimeric acid ester or a dimeric acid which is a hydrolysis product of said ester (hereinafter referred to as "nucleus-cross-linked dimers") obtained by addition polymerization of 2 moles of an unsaturated fatty acid/lower alcohol ester and 1 mole of phenol or a phenol derivative (hereinafter referred to as "phenols"), which nucleus-cross-linked dimer is composed of two molecules of the unsaturated fatty acid ester linked together through an aromatic nucleus of one molecule of the phenol.

3,793,271

ACCELERATOR COMBINATION FOR EPOXY CURING

Norman Bell Godfrey and Floyd Edward Bentley, Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Filed July 28, 1971, Ser. No. 166,995

The portion of the term of the patent subsequent to Feb. 8, 1989, has been disclaimed

Int. Cl. C08g *30/14*

U.S. Cl. 260—18 PN **11 Claims**

Use of an accelerator-hardener composition containing salicylic acid, N-(3-aminopropyl)piperazine and a polyamide provides a synergistic curing effect for setting polyepoxide resins. The accelerator-hardener composition provides unexpectedly rapid low temperature curing. Solventless coatings of an epoxy resin cured with our accelerator-hardener composition are smoother, glossier and freer from blush than coatings prepared without the accelerator-hardener composition.

3,793,272

SYNTHETIC RESIN COMPOSITIONS OF VINYL OR ACRYLIC RESINS WITH HYDROXYBUTYLHYDROXYETHYL CELLULOSE

Shunichi Koyanagi and Kinya Ogawa, Yokohama, and Yoshiro Onda, Naoetsu, Japan, assignors to Shinetsu Chemical Company, Chiyoda-ku, Tokyo, Japan

No Drawing. Filed Aug. 30, 1971, Ser. No. 176,329

Claims priority, application Japan, Sept. 1, 1970, 45/76,819

Int. Cl. C08b *21/32;* **C08f** *45/00*

U.S. Cl. 260—17 R **8 Claims**

Synthetic resin compositions in the form of emulsion or latex which contain hydroxybutylhydroxyethyl cellulose have superior stability against any pigments and salts that are present therein. They are useful for paints, adhesives, and textile-finishing agents.

3,793,273

ANION EXCHANGE RESINS WITH BOTH AMINE OXIDE AND QUATERNARY AMMONIUM GROUPS

Herbert Corte, Opladen, and Harold Heller and Otto Netz, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 16, 1971, Ser. No. 172,249

Claims priority, application Germany, Aug. 8, 1970, P 20 39 495.0; Oct. 9, 1970, P 20 49 690.6

Int. Cl. C08f *27/22*

U.S. Cl. 260—2.1 E **6 Claims**

Weakly basic anion exchange resins having amine-oxide groups and a method for producing such resins by oxidizing tertiary amino groups containing anion exchange resins.

3,793,274

PROCESS FOR PROCESSING POLYVINYL CHLORIDE RESIN

Osamu Hiyama, Yasuhiro Torimae, Kazuo Ito, and Yoshio Kawahara, Wakayama, Japan, assignors to Kao Soap Co., Ltd., Chuo-ku, Tokyo, Japan

No Drawing. Filed Aug. 19, 1971, Ser. No. 173,285

Claims priority, application Japan, Aug. 25, 1970, 45/74,431

Int. Cl. C08f *19/14, 21/04*

U.S. Cl. 260—23 XA **3 Claims**

The release properties of polyvinyl chloride resin are improved by incorporating therein a total of from 0.05 to 2.0 percent by weight of one or more materials selected from the group consisting of polymerized fatty acid, hydrogenated polymerized acid and polymerized fatty alcohols.

3,793,275

HARD SURFACE POLISHES

Garland G. Corey, Milltown, and Francis S. Csorba, Westfield, N.J., Karl A. Torok, New York, N.Y., and Bernard Weinstein, North Plainfield, N.J., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Oct. 1, 1971, Ser. No. 185,799

Int. Cl. C08f *45/52*

U.S. Cl. 260—28.5 R **8 Claims**

Hard surface cleaning and/or polishing compositions are described which contain a halogenated hydroxy-diphenyl ether that provides excellent residual anti-microbial action on a substrate-coated with a cleaning and/or polishing composition containing such a material.

3,793,276

PLASTICS COMPOSITIONS

Geoffrey Vincent Dallow Blunt and Newton John Hodges, Cheltenham, England, assignors to Coal Industries (Patents) Limited, London, England

No Drawing. Filed Dec. 3, 1971, Ser. No. 204,744

Claims priority, application Great Britain, Dec. 22, 1970, 60,768/70

Int. Cl. C08g *51/52*

U.S. Cl. 260—28 **6 Claims**

The invention provides a plastics composition for use as a joint sealant consisting essentially of an oil-extended coal digest having a needle penetration index, converted to a Ring and Ball softening point of 85° C., of at least 10, and preferably at least 15, and an epoxide resin compatible therewith. The preferred epoxide resins are flexible epoxide resins, formed, for example, from the diglycidyl ethers of polyalkyleneglycols or polymethylene diols. The invention further includes a two-part system for the plastics composition comprising, in the two parts, the constituents of such plastics compositions, one of the parts containing the epoxide and the other part containing the hardener therefor. The two parts may be mixed and poured into the joint at ambient temperature.

3,793,277

SOLUTION AND METHOD OF DELUSTERING ACRYLIC FIBERS WITH PARTICULATE METAL SALT DISPERSANT OF COPOLYMER OF 1-OLEFIN AND MALEIC ANHYDRIDE COMPOUND AS AID

Darrell R. Thompson, Somerville, N.J., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Filed Sept. 7, 1971, Ser. No. 178,439

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 AN **10 Claims**

Delustering polyacrylonitrile fibers by dispersing a particulate delustrant in a mixture of a solvent comprising a lower alkyl nitrile having from 2 to 4 carbon atoms and a metal salt of a copolymer of a maleic anhydride and a 1-olefin, and incorporating the delustrant dispersion into polyacrylonitrile to form a spinning solution.

3,793,278

METHOD OF PREPARING SULFONIUM GROUP CONTAINING COMPOSITIONS

Bruce T. De Bona, Monroeville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Mar. 10, 1972, Ser. No. 233,725

Int. Cl. C08g *53/18, 30/04*

U.S. Cl. 260—29.2 EP **4 Claims**

Synthetic resins containing quaternary sulfonium base groups are prepared by reacting a resin containing epoxy groups with a sulfide in the presence of an acid. These resins, which are water-dispersible, can be dissolved or dispersed in water to provide aqueous coating compositions, and particularly electrodepositable coating compositions which deposit upon a cathode.

3,793,279

MONO PRIMARY POLYAMINE AND ORGANIC DIHALIDE MODIFIED, EPOXIDIZED POLYAMIDE FOR PAPER WET STRENGTH RESIN

Stanley A. Lipowski, Livingston, N.J., assignor to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Filed Nov. 8, 1972, Ser. No. 304,729

Int. Cl. D21h *3/58;* **C08g** *20/38*

U.S. Cl. 260—29.2 EP **24 Claims**

Cationic extended terminated polyamide resins are prepared which exhibit highly desirable paper wet strength properties.

3,793,280

STABLE SOLUTIONS OF MELAMINE-UREA-FORMALDEHYDE CONDENSATES CONTAINING A STABILIZING ALDEHYDE AND PROCESSES FOR THEIR PREPARATION

Stanley Robert Sandler, 221 Hemlock Lane, Springfield, Pa. 19064

No Drawing. Filed June 25, 1970, Ser. No. 49,962

Int. Cl. C08g *51/58, 9/30*

U.S. Cl. 260—29.4 R **12 Claims**

Stable aqueous alkaline solutions of curable melamine-urea-formaldehyde condensates suitable for adhesives and for treatment of paper and textiles are prepared by incorporating 0.1 to 5 moles, per mole of melamine, of a stabilizing aldehyde selected from the group of acetaldehyde, glyoxal, propionaldehyde and glutaraldehyde.

3,793,281

THERMOPLASTIC COPOLYIMIDES

Luis Acle, Jr., San Diego, Calif., assignor to International Harvester Company, San Diego, Calif.

No Drawing. Continuation-in-part of application Ser. No. 88,510, Nov. 10, 1970, which is a division of application Ser. No. 835,226, June 20, 1969, both now abandoned. This application July 14, 1972, Ser. No. 272,034

Int. Cl. C08g *20/32*

U.S. Cl. 260—2.5 N **32 Claims**

Aromatic thermoplastic copolyimides made from a 3,3′,4,4′-benzophenonetetracarboxylic acid derivative and two or more aromatic diamines, at least one of which is meta-substituted and both or all of which are either meta- or para-substituted, together with precursors for and methods of preparing and using such copolyimides and precursors.

3,793,282

HEAT-HARDENABLE CARRIER-FREE FOILS

Jurgen Fock, Essen-Bredeney, and Ulrich Holtschmidt, Essen, Germany, assignors to Th. Goldschmidt AG, Essen, Germany

No Drawing. Filed Mar. 2, 1973, Ser. No. 337,698

Int. Cl. C08f *45/04, 45/38*

U.S. Cl. 260—31.8 M **10 Claims**

This invention relates to a heat-hardenable, carrier-free foil which is stable in storage, and impact-resistant in the hardened condition thereof, which contains 0.05 to 1% by weight of acid catalyst, and

(A) an elastomeric copolymerizate which has a glass point of not more than +10° C., and which is obtained by polymerization of
  (A_1) 70 to 99% by weight of an acrylic acid alkyl ester with 1 to 8 carbon atoms in the alkyl residue, and
  (A_2) 1 to 20% by weight of at least one compound selected from the group consisting of hydroxyalkyl ester with 2 to 4 carbon atoms in the alkyl residue and an acid amide of acrylic acid or methacrylic acid,
wherein the sum of the component A_1 and A_2 add up to 100% by weight, and
(B) a hard-brittle copolymerizate obtained in the presence of the copolymerizate A by polymerization of
  (B_1) 60 to 80% by weight of at least one compound selected from the group consisting of styrene and a methacrylic acid alkyl ester with 1 to 20 carbon atoms in the alkyl residue,
  (B_2) 1 to 20% by weight of an acrylic acid alkyl ester with 1 to 8 carbon atoms in the alkyl residue,
  (B_3) 1 to 20% by weight of at least one compound selected from the group consisting of an N-methoxy-methyl amide of acrylic acid or methacrylic acid,

3,793,290

photographic operations are described; the resultant pho-

(B_4) 1 to 20% by weight of a hydroxy-alkyl ester of acrylic acid or methacrylic acid with 2 to 4 carbon atoms in the alkyl residue, and

(B_5) 1 to 20% by weight of acrylic or methacrylic acid amide, wherein the molar ratio of the component B_3 to the sum of B_4 and B_5 is approximately 1:1 and the ratio of B_4:B_5 is 4:1 to 1:4,

wherein the sum of the components B_1 to B_5 adds up to 100% by weight, and wherein the weight ratio of the elastomeric copolymerizate A to the hard-brittle copolymerizate B is 1:3 to 1:20. The invention also relates to a process for the preparation of the heat-hardenable carrier-free foils.

3,793,283

IMPACT-IMPROVED POLYPROPYLENE COMPOSITIONS

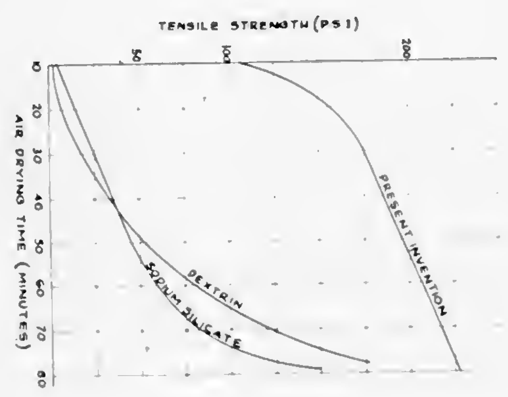
Nevin E. Frailey, Turnersville, N.J., and Ralph A. Welch, Columbus, Ohio, assignors to Shell Oil Company
No Drawing. Filed Mar. 16, 1972, Ser. No. 235,407
Int. Cl. C08c *11/22;* **C08f** *19/08*
U.S. Cl. 260—33.6 AQ **5 Claims**

The impact resistance of impact-improved compositions of polypropylene modified with added ethylene-propylene elastomers or with 1–20% by weight of appropriately copolymerized ethylene is further substantially improved by the presence of certain block copolymers of mono-alpha-alkenyl arenes and conjugated dienes. The compositions are especially suitable for foam structures.

3,793,284

FOUNDRY CORE PASTE

Bela Klaudinyi, Chicago, Robert E. Fisher, Clarendon Hills, and Louis J. Jacobs, Chicago, Ill., assignors to Combustion Engineering, Inc., Windsor, Conn.
Continuation-in-part of abandoned application Ser. No. 888,786, Dec. 29, 1969. This application Dec. 22, 1971, Ser. No. 211,054
Int. Cl. C08c *11/24*
U.S. Cl. 260—33.8 UA **1 Claim**



A foundry core paste is disclosed for bonding core sections together which contains a methyl methacrylate resin, a solvent such as methylene chloride, a gelling and suspending agent, a filler and a plasticizer.

3,793,285

POTTING COMPOUND, HIGH STRENGTH, FOR 550° F. EXPOSURE

Muriel L. Koss, Arlington, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.
No Drawing. Filed June 26, 1972, Ser. No. 266,276
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 EP **4 Claims**

Potting compounds which can be used for fastener reinforcement of honeycomb panel structures. Components of the potting compound include dicyclopentadiene dioxide, maleic anhydride, a bifunctional epichlorohydrin bisphenol A epoxy resin, and a filler selected from the group including calcium carbonate and silica. The compounds may additionally include benzophenone tetracarboxylic dianhydride.

3,793,286

RESIN SYSTEM BASED ON FURFURYL ALCOHOL AND HALOMETHYLATED PHENOLICS

Kenneth C. Petersen and Lewis H. Bowers, Scotia, and John L. Sullivan, Burnt Hills, N.Y., assignors to Schenectady Chemicals, Inc., Schenectady, N.Y.
No Drawing. Filed Nov. 18, 1971, Ser. No. 200,175
Int. Cl. C08g *51/04*
U.S. Cl. 260—38 **16 Claims**

Highly halomethylated heat reactive phenols are employed as hardeners for furfuryl alcohol resins. The furfuryl alcohol can be modified by urea or phenol-formaldehyde resins. The products are useful as binders in the foundry industry.

3,793,287

MIXTURES OF POLYTETRAFLUOROETHYLENE AND FILLERS AND THEIR MANUFACTURE

Herbert Fitz and Alfred Steininger, Burgkirchen (Alz), Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning
No Drawing. Continuation of abandoned application Ser. No. 865,963, Oct. 13, 1969. This application Jan. 7, 1972, Ser. No. 216,307
Claims priority, application Germany, Oct. 22, 1968, P 18 04 409.2
Int. Cl. C08f *45/04*
U.S. Cl. 260—41 A **9 Claims**

The invention provides mixtures of polytetrafluoroethylene and fillers which are prepared in the presence of specific cationic substances, which mixtures are suitable for paste extrusion. Even with a filler content of up to 60% by volume the mixtures have excellent paste extrusion properties and are especially suitable for the manufacture of extremely thin profiles. The invention also provides a process for the manufacture of the said mixtures.

3,793,288

BONDING OF THERMOPLASTIC POLYMERS TO INORGANIC OXIDES PARTICLES

John A. Elder, Jr., Plainfield, N.J., assignor to Union Carbide Corporation, New York, N.Y.
No Drawing. Original application Oct. 9, 1969, Ser. No. 865,188, now Patent No. 3,650,814, dated Mar. 21, 1972. Divided and this application Apr. 15, 1971, Ser. No. 134,392
Int. Cl. C08f *45/10*
U.S. Cl. 260—41 A **6 Claims**

Thermoplastic polymers can be treated directly with an organo-functional silane coupling agent and a resinous copolymer of ethylene and acrylic and/or methacrylic acid so as to enhance their bonding to inorganic oxide substrates thereby providing moldable products with superior physical properties heretofore unattainable.

3,793,289

FLAME RETARDANT NYLON COMPOSITIONS

Paul J. Koch, Mount Freedom, John B. O'Brien, Morris Plains, and Herman Stone and Marvin T. Tetenbaum, Convent, N.J., assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Oct. 13, 1971, Ser. No. 189,006
Int. Cl. C09k *3/28*
U.S. Cl. 260—45.8 N **10 Claims**

Certain substituted s-triazines, when added to polyamides in minor amounts, are effective flame retardant additives.

3,793,290

STABILIZED POLYMERIC COMPOSITION

James S. Dix, Greenville, and Ronald D. Mathis, Mauldin, S.C., assignors to Phillips Petroleum Company
No Drawing. Filed Aug. 31, 1971, Ser. No. 176,697
Int. Cl. C08f *45/58, 45/62*
U.S. Cl. 260—45.75 N **9 Claims**

A stabilized polymeric composition comprising a normally solid polymer of a mono-1-olefin having incorporated therein certain nickel amine complexes, an antioxidant, an organic phosphite, a metal salt of a monocarboxylic fatty acid, and a trialkyl substituted hindered phenol.

3,793,291

AROMATIC POLYIMIDES COMPRISING CARBINOL GROUPS, THEIR MANUFACTURE AND USES

Choua Cohen, Pierre Giuliani, and Bernard Sillion, Grenoble, France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil Malmaison, France
No Drawing. Continuation-in-part of abandoned application Ser. No. 9,409, Feb. 6, 1970. This application Aug. 16, 1972, Ser. No. 281,196
Claims priority, application France, Feb. 10, 1969, 6903109
Int. Cl. C08g *20/32*
U.S. Cl. 260—47 CP **12 Claims**

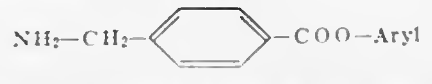
Soluble, high molecular weight, carbinol-containing polyimides provided by reacting meta- (or para-) phenylene-bis-(4-hydroxymethylene-phthalic acid), a diester or a tetraester thereof with a primary diamine at 100–400° C.

3,793,292

ESTERS OF 4-AMINOMETHYL BENZOIC ACID

Yuichi Yamamura, Osaka, Setsuro Fujii, Tokushima, Atsuji Okano and Miyoshu Hirata, Tokyo, Yasushi Abiko, Matsudo, Masato Inaoka, Funabashi, Reimei Moroi, Chiba, Masahiro Iwamoto and Shoichi Funabashi, Tokyo, and Takeo Naito, Ichikawa, Japan, assignors to Daiichi Seiyaku Co., Ltd., Chuo-ku, Tokyo, Japan
No Drawing. Original application Sept. 30, 1969, Ser. No. 862,512. Divided and this application Apr. 12, 1971, Ser. No. 133,398
Int. Cl. C07c *101/42*
U.S. Cl. 260—471 R **10 Claims**

New compounds of the general formula



wherein "Aryl" is a phenyl group which may have one or more substituents selected from hydroxy, halogen, nitro, amino, carboxyl, formyl, sulfamoyl, carboxyalkylamino, C_1 to C_6-alkyl, C_1 to C_6-alkoxy, C_1 to C_6-alkenyl, phenyl, carboxyalkoxy, carboxyalkenyl, carboxyalkylcarbonyl, hydroxyalkyl, alkoxycarbonyl, and carboxyalkyl the alkyl portion of which may be substituted with amino, hydroxy or halogen, and the pharmaceutically acceptable salts thereof have been found to be useful as having anti-plasmin and anti-fibrinolytic activities without any ill effect against warm-blood animals. The method for their preparation is also disclosed.

3,793,293

ELECTROPHOTOGRAPHIC COATING COMPOSITIONS HAVING BROMINE-CONTAINING POLYMER BINDERS

Dilip K. Ray-Chaudhuri, Somerville, Paul C. Georgoudis, Dunellen, and Hans H. Stockmann, Plainfield, N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.
No Drawing. Filed Aug. 4, 1971, Ser. No. 169,075
Int. Cl. C08f *15/00, 15/16*
U.S. Cl. 260—47 UA **3 Claims**

Photoconductive coating compositions for application to solid substrates which are to be utilized in electrophotographic operations are described; the resultant photoconductive coatings comprise a layer of photoconductive pigment particles bonded to themselves and to the solid substrate with a binder comprising a novel interpolymer, at least one of whose constituent monomers contains bromine. Novel bromine-containing monomers are also disclosed.

3,793,294

PROCESS FOR THE PREPARATION OF VINYL CHLORIDE POLYMERS

Carlhans Suling, Odenthal-Hahnenberg, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Oct. 15, 1971, Ser. No. 189,774
Claims priority, application Germany, Oct. 15, 1970, P 20 50 723.7
Int. Cl. C08f *1/08, 1/62*
U.S. Cl. 260—92.8 W **8 Claims**

The object of the invention is a process for the preparation of high molecular weight vinyl chloride polymers having increased proportions of syndiotactic sequences and improved thermal stability. Polymerizing is carried out at low temperatures in an alcohol/water mixture as precipitation polymerization in the presence of a redox catalyst system, a complex compound and a lithium or zinc salt at pH-value below 7.

3,793,295

CATALYSTS FOR THE POLYMERIZATION OF OLEFINS

Luciano Luciani, Gianni Nava, and Giorgio Foschini, Ferrara, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy
No Drawing. Filed Dec. 21, 1970, Ser. No. 100,353
Claims priority, application Italy, Dec. 22, 1969, 26,163/69
Int. Cl. B01j *11/84;* **C08f** *1/56, 3/00*
U.S. Cl. 260—93.7 **13 Claims**

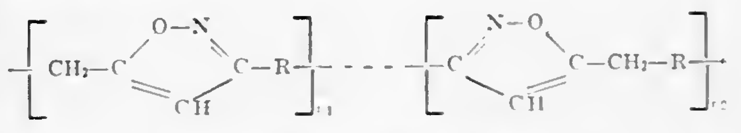
New catalysts for the polymerization of olefins are disclosed. The catalysts are prepared by contacting an alcoholic compound containing one or more hydroxy groups with delta titanium trichloride under conditions such that at least 1% and preferably 20%, of the fine powders having a particle size smaller than 20 microns, normally present in the trichloride, disappear, and then mixing the resulting product with an alkyl aluminum compound. Also disclosed is the use of the new catalysts in the polymerization of propylene, butene-1, 4-methylpentene-1 and similar alpha-olefins to highly isotactic polymers characterized by a very narrow granulometric distribution, a low content of fine powders, and a high bulk density.

3,793,296

HETEROCYCLIZED POLYMER

William J. I. Bracke, 120 Ransbeekstraat, Brussels, Belgium
No Drawing. Continuation-in-part of abandoned application Ser. No. 61,826, Aug. 6, 1970. This application July 17, 1972, Ser. No. 272,457
Int. Cl. C08f *9/00*
U.S. Cl. 260—94.1 **14 Claims**

A new polymer composition prepared by the reaction of a polybutadiynylene with hydroxylamine, said polymer having the formula



wherein R is a divalent radical which is either an alicyclic, aliphatic, alicyclic-aliphatic radical or a heterocyclic or carbocyclic aryl radical or a substituted such radical and wherein n_1 is 0 or an integer and n_2 is 0 or an integer but with the total of n_1 and n_2 being no less than 5.

3,793,297
REACTION PRODUCT OF A PHOSPHORODITHIOATE AND A CARBODIIMIDE

Milton Braid, Westmont, N.J., assignor to Mobil Oil Corporation

No Drawing. Original application Aug. 23, 1968, Ser. No. 754,943, now Patent No. 3,499,838. Divided and this application June 24, 1969, Ser. No. 844,714

Int. Cl. C07f *9/16;* **C10m** *1/48*

U.S. Cl. 260—944 **9 Claims**

Novel compounds are prepared by reacting a di(organo), preferably a dihydrocarbyl, phosphorodithioate with a di(organo), preferably a dihydrocarbyl, carbodiimide. These compounds possess excellent antioxidant properties and can be used in industrial organic fluids. such as lubricating oils, hydraulic fluids and the like. Diarylphosphorodithioates are preferred reactants.

3,793,298
METHOD FOR HALOGENIZING SURFACES OF SYNTHETIC AND/OR NATURAL RUBBER MATERIAL

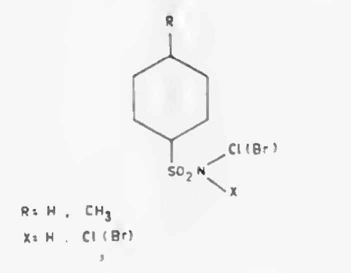
Josephus Sychbertus Adrianus Langerwerf, Waalwijk, Netherlands, assignor to Nederlandse Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek ten behoeve van Nijverheid, Handel en Verkeer, The Hague, Netherlands

Filed May 11, 1972, Ser. No. 252,228

Claims priority, application Netherlands, May 28, 1971, 7107444

Int. Cl. C08d *5/04*

U.S. Cl. 260—96 HA **9 Claims**



It is known to halogenize surfaces of synthetic and/or natural rubber material to make these surfaces better gluable to rubber or other materials. As a halogen donor an acidified solution of a N-halogen sulphonamide is used according to this invention.

3,793,299
CELLULOSE GRAFT POLYMER ION EXCHANGE MATERIAL

Roger Earl Zimmerer, Springfield Township, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Oct. 2, 1972, Ser. No. 294,051

Int. Cl. C08f *27/14*

U.S. Cl. 260—2.2 R 3 Claims

A rapid exchange, high capacity cellulose graft polymer cationic exchange material is obtained by graft polymerizing a vinyl monomer onto cellulose and thereafter contacting the grafted cellulose with concentrated caustic at elevated temperature. The vinyl monomer is selected from carboxylated vinyl compounds or from vinyl compounds possessing a functional group which is convertible to carboxyl on hydrolysis.

3,793,300
FLEXIBLE POLYESTER URETHANE FOAMS USING LIQUID SILOXANE-OXYALKYLENE POLYMERIC FOAM STABILIZERS

Bela Prokai, Mahopac, and Bernard Kanner, West Nyack, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Original application Apr. 8, 1971, Ser. No. 132,534. Divided and this application June 26, 1972, Ser. No. 266,203

Int. Cl. C08g *22/44*

U.S. Cl. 260—2.5 AH **15 Claims**

Organosilicone polymers are provided containing monomeric units A, B and C where A is $SiO_{4/2}$, B is a polyfunctional siloxy unit in which silicon is bonded to at least one organic moiety bearing a poly(oxyalkylene) chain, and C is a monofunctional triorganosiloxy unit, and in which there are from about 0.4 to about 2 moles of A, and from about 0.2 to about 2 moles of C, per mole of B. The polymers are useful as surfactants and find particular application in the manufacture of flexible polyester urethane cellular products, including flame-retarded foams.

3,793,301
SURFACE-COATING COMPOSITIONS CONTAINING ORGANOTIN-IMIDE FUNGICIDES

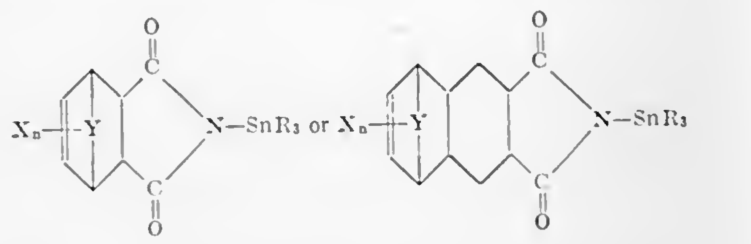
Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc., Saddle Brook, N.Y.

No Drawing. Continuation of application Ser. No. 766,982, Oct. 11, 1968, now Patent No. 3,544,588. This application Apr. 2, 1970, Ser. No. 25,303

Int. Cl. C08f *45/64;* **C09d** *5/14*

U.S. Cl. 260—45.75 K **6 Claims**

Organotin imides that have the structural formula



wherein each R represents phenyl or an alkyl group having from 4 to 8 carbon atoms, X represents an alkyl group having from 1 to 4 carbon atoms, an alkenyl group having from 4 to 8 carbon atoms, halogen, or phenyl; Y represents methylene, ethylene, chloromethylene, or chloroethylene; and *n* represents an integer in the range of 0 to 4 can be used to protect surface-coating compositions from deterioration resulting from attack by fungi and other microorganisms.

3,793,302
FILM-FORMING COMPOSITION COMPRISING A SILICA-UREA FORMALDEHYDE POLYMER FLATTING AGENT

Gregor Berstein, Newton, John F. Hardy, Andover, and Leonard H. Doppler, Lexington, Mass., assignors to Cabot Corporation, Boston, Mass.

No Drawing. Original application Oct. 12, 1971, Ser. No. 188,563, now Patent No. 3,714,085. Divided and this application Nov. 24, 1972, Ser. No. 309,173

Int. Cl. C08b *21/12;* **C08g** *51/04;* **C08h** *17/02*

U.S. Cl. 260—15 **14 Claims**

This disclosure relates to the use of a combination of non-porous materials comprising a certain group of urea-formaldehyde polymers and a certain group of pyrogenically prepared colloidal silicas as flatting additives in the preparation of flatted compositions such as paints, lacquers, varnishes and the like.

3,793,303
PROCESS FOR THE PRODUCTION OF HOMO- OR COPOLYMERS OF TRIOXANE

Herbert Amann and Gerhard Morlock, Grossauheim, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Filed May 22, 1972, Ser. No. 255,690

Claims priority, application Germany, June 22, 1971, P 21 30 867.8

Int. Cl. C08g *1/04*

U.S. Cl. 260—67 FP **8 Claims**

In a process for the polymerization of trioxane by reacting trioxane in the presence of a cationically active catalyst and a chain-transfer agent, the improvement wherein the chain-transfer agent is a silane of the formula

$$R_nSi(OR^1)_{4-n}$$

in which each R is independently selected from hydrogen, a straight chain or branched alkyl or alkenyl radical, a cycloalkyl radical, an aralkyl radical or an aryl radical, each R^1 is independently selected from a straight chain or branched alkyl or alkenyl radical, a cycloalkyl radical, an aralkyl radical or an aryl radical, and *n* is whole number from 0 to 2 inclusive. The polymers re useful in the preparation of plastic goods and articles.

3,793,304
CYCLIC DECAPEPTIDES COMPRISING AN L-TYROSINE RADICAL

Theodor Wieland, Heidelberg, Christian Rietzel, Eschelbronn, and Christian Birr, St. Ilgen, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

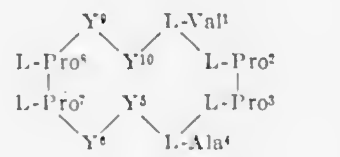
No Drawing. Filed June 9, 1972, Ser. No. 261,256

Claims priority, application Germany, June 18, 1971, P 21 30 410.9

Int. Cl. C07c *103/52;* **C07g** *7/00*

U.S. Cl. 260—112.5 **5 Claims**

Cyclic decapeptides of the formula



wherein one Y is L-tyrosine and the others L-phenylalanine, and their condensation products with oxygen-containing inorganic acids or with organic acids; the compounds are useful as anti-toxins against phalloidin.

3,793,305
ONE-STEP PROCESS OF PREPARING AZO DYES BY SIMULTANEOUS DIAZOTIZATION AND COUPLING AT LOW pH

Walter J. Balon, Woodstown, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Sept. 14, 1970, Ser. No. 72,101

Int. Cl. C09b *29/00, 33/00, 41/00*

U.S. Cl. 260—154 **12 Claims**

A one-step process for preparing azo dyes in a reaction mixture comprising an aromatic amine, coupler, diazotizing agent and an acidic liquid medium capable of dissolving at least a portion of the amine and the coupler and capable of producing a pH of 4 or less when the mixture is diluted with 25% its volume of water, maintaining the concentration of the diazotizing agent and the temperature and acidity of the mixture so that the rate of consumption of diazotizing agent is substantially the same as the rate of formation of azo dye.

3,793,306
PROCESS FOR REMOVAL OF CATALYST RESIDUES

Ralph C. Farrar and Richard J. Sonnenfeld, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

No Drawing. Filed Jan. 3, 1973, Ser. No. 320,715

Int. Cl. C08d *5/04*

U.S. Cl. 260—85.1 **10 Claims**

The removal of hydrogenation catalyst residues from hydrogenated thermoplastic or elastomeric polymers in solution is readily achieved by treating the hydrogenated catalyst residue-containing polymer solution with an aqueous solution of a water-soluble phosphate salt in the presence of an oxidizing agent prior to separation.

3,793,307
PROCESS FOR REMOVAL OF CATALYST RESIDUES

Albert N. De Vault, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

No Drawing. Filed Dec. 19, 1972, Ser. No. 316,529

Int. Cl. C08d *5/04*

U.S. Cl. 260—85.1 **6 Claims**

The removal of hydrogenation catalyst residue from hydrogenated thermoplastic or elastomeric polymers in solution is readily achieved by treating the hydrogenated catalyst residue-containing polymer solution with an aqueous solution of a water-soluble phosphate salt in the presence of an oxidizing agent prior to separation.

3,793,308
4-SPIRO[CYCLOPROPYL]ANDROSTENES AND PROCESS FOR THEIR PRODUCTION

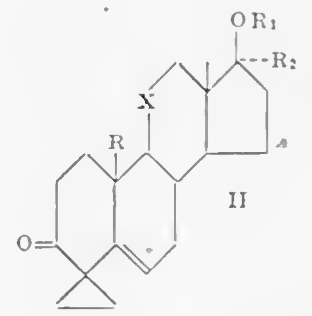
Gilbert A. Youngdale, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Nov. 8, 1972, Ser. No. 304,849

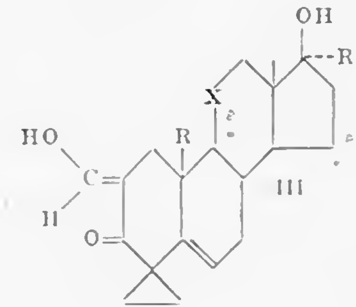
Int. Cl. C07c *173/10*

U.S. Cl. 260—239.55 R **12 Claims**

Novel 4-spiro[cyclopropyl]androstenes embraced by the formulae:

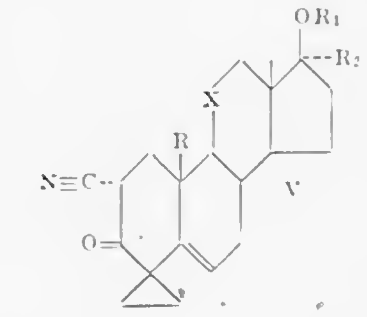


II



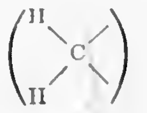
III

and

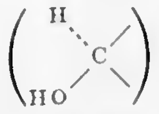


V

wherein R is selected from the group consisting of hydrogen and methyl; R_1 is selected from the group consisting of hydrogen and acyl; R_2 is selected from the group consisting of hydrogen, lower-alkyl, lower-alkenyl and lower-alkynyl; and X is selected from the group consisting of methylene



β-hydroxymethylene

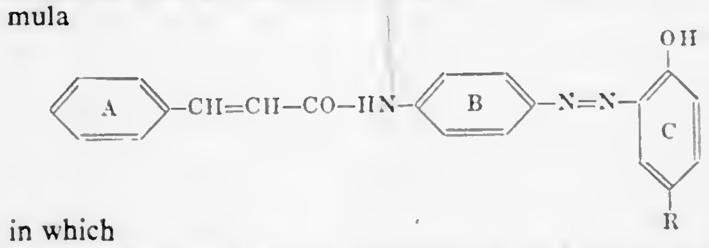


and carbonyl (O=C<). The compounds of Formulae II, III and V inhibit the enzyme 3β-hydroxy steroid dehydrogenase and are thus useful in regulating the production of gonadal hormones. The aforesaid compounds of Formulae II, III, and V are consequently useful in treating mammals, including birds in those conditions where the foregoing properties make the novel compounds valuable in medical and veterinary practice.

3,793,309
PHENYL-ACRYLIC ACID-N - [4' - (PARASUBSTITUTED PHENOLAZO)-PHENYL]-AMIDE COMPOUNDS

Edgar Siegel, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Nov. 2, 1971, Ser. No. 194,924
Claims priority, application Germany, Nov. 2, 1970, P 20 53 711.5
Int. Cl. C07c *107/06;* **C09b** *43/12*
U.S. Cl. 260—207 **7 Claims**

Monoazo dyestuffs are disclosed which are free from sulphonic acid groups and correspond to the general formula



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in which

R represents an alkyl or aryl radical and the benzene nuclei A, B and C may carry further non-ionic substituents, as well as their production and use for the dyeing and printing of hydrophobic fibre materials, for example, those consisting of synthetic superpolyamides, cellulose esters and aromatic polyesters, more particularly, those of polyethylene glycol terephthalate. The dyeings obtained on synthetic polyester and polyamide fibres are particularly valuable and are characterized by good general fastness properties.

3,793,310
AMPHOTERIC STARCH AND PREPARATION AND USES THEREFOR

Lee H. Elizer, Keokuk, Iowa, assignor to The Hubinger Company, Keokuk, Iowa
No Drawing. Filed Nov. 24, 1972, Ser. No. 308,963
Int. Cl. C08b *19/04*
U.S. Cl. 260—233.3 R **15 Claims**

Amphoteric starches, especially high amylose starches, containing basic (cationic) and acidic (anionic) groups, preferably tertiary amino, cyanamide or quaternary amino (cationic) and sulfonic acid or sulfonate groups or carboxylic or carboxylate, or phosphate or phosphonate (anionic), with or without nonionic groups, e.g., hydroxyalkylether, in the starch molecule, are esterified to produce compositions which are especially useful for sizing threads or yarns of fibers such as, for example, mixed cotton fibers and polyester fibers, viz, polyethylene terephthalate fibers, glass fibers, and hydrophobic fibers that are difficult to size.

3,793,311
SUBSTITUTED ANTHRANILIC ACIDS

Peter Werner Feit, Gentofte, and Ole Bent Tvaermose Nielsen, Vanlose, Denmark, assignors to Lovens kemiske Fabrik Produktionsaktieselskab, Ballerup, Denmark
No Drawing. Filed Dec. 8, 1970, Ser. No. 96,297
Claims priority, application Great Britain, Dec. 16, 1969, 61,318/69
Int. Cl. C07d *5/16, 31/34, 63/12*
U.S. Cl. 260—239.6 **16 Claims**

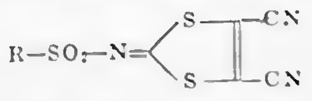
The invention relates to new anthranilic acid derivatives being mono- or di-N-substituted, having an ether or thioether group in the 4-position and an alkylsulphonyl group in the 5-position, and to esters and salts thereof, the said compounds being diuretics and saluretics.

The invention also comprises a method for and intermediates in the production of the said derivatives and their salts and esters.

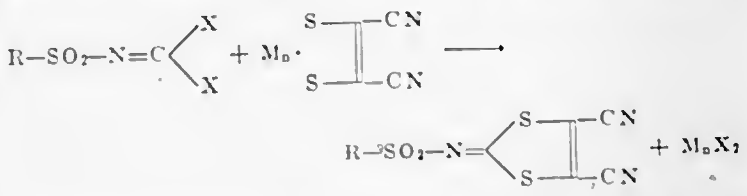
3,793,312
1,2-DICYANO-3,5-DITHIO-4-SULFONYLIMIDO CYCLOPENTENES

Teruhisa Noguchi, Fujisawa, Yasushi Ysauda and Sho Hashimoto, Hiratsuka, and Saburo Kano, Odawara, Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan
No Drawing. Filed Mar. 22, 1971, Ser. No. 126,896
Int. Cl. C07d *71/00*
U.S. Cl. 260—239.6 **13 Claims**

The compounds having the following formula:



wherein R is lower alkyl having six or less carbon atoms, or aryl having less than ten carbon atoms unsubstituted or substituted by one to three substituents selected from a group consisting of lower alkyl having six or less carbon atoms, lower alkoxy having six or less carbon atoms, acylamido having six or less carbon atoms, and halogen; are prepared in accordance with the following equation:

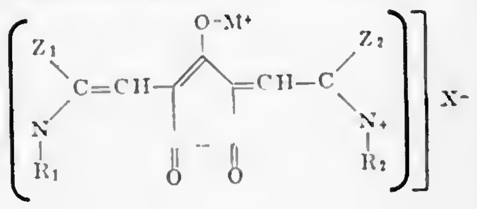


wherein X is halogen, M is alkali or alkaline earth metal and *n* is an integer of 1 or 2; and the novel compounds have broad fungicidal and bactericide activity and very low mammalian toxicity.

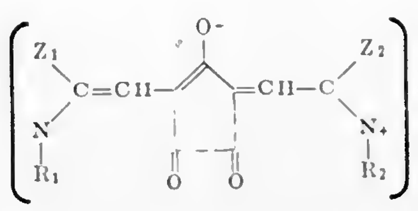
3,793,313
NOVEL CYANINE DYES CONTAINING A 1-OXY-3,4 - DIOXOCYCLOPENTENE-1 RING IN THE CONJUGATED METHINE CHAIN LINKING TWO NITROGEN CONTAINING HETEROCYCLIC NUCLEI

Guy Alfred Rillaers, Kontich, and Henri Depoorter, Mortsel, Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium
No Drawing. Original application June 17, 1969, Ser. No. 834,169, now Patent No. 3,615,417, dated Oct. 26, 1971. Divided and this application Mar. 4, 1971, Ser. No. 121,142
Int. Cl. C09b *23/00*
U.S. Cl. 260—240 R **8 Claims**

A cyanine dye having one of the formulae:



and



wherein:

each of R_1 and R_2 is selected from the class consisting of lower alkyl, allyl, aralkyl, and aryl,

each of Z_1 and Z_2 represents the atoms necessary to complete a heterocyclic nucleus,

X^- is an anion but is not present when R_1 and/or R_2 contains an anionic group, and

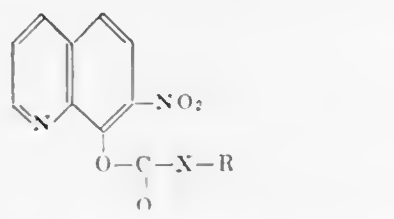
M^+ is a cation,

is described. These dyes are useful optical sensitizing agents for the sensitization of light-sensitive elements.

3,793,314
CINNAMIC ACID ESTERS OF 7-NITRO-8-HYDROXY-QUINOLINE

Dante Nardi, Elena Massarani, and Ludwig Degen, Milan, Italy, assignors to Recordati S.A. Chemical and Pharmaceutical Company, Lugano, Switzerland
No Drawing. Filed Jan. 19, 1970, Ser. No. 4,065
Claims priority, application Italy, Feb. 10, 1969, 12,676/69
Int. Cl. C07d *33/48*
U.S. Cl. 260—240 J **2 Claims**

Therapeutically active esters having the formula



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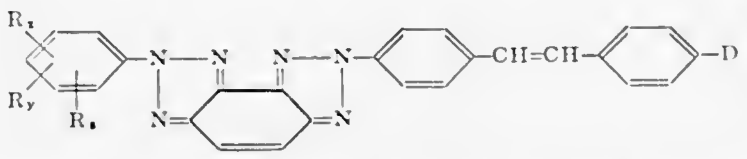
and processes for their preparation and for preparing intermediates thereof.

3,793,315
TRIAZOLE DERIVATIVES

Adolf Emil Siegrist, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland
No Drawing. Filed Sept. 30, 1971, Ser. No. 185,424
Claims priority, application Switzerland, Oct. 1, 1970, 14,514/70
Int. Cl. C07d *55/02*
U.S. Cl. 260—240 C **15 Claims**

The invention deals with new triazole derivatives of the formula



wherein D denotes a radical from the group of benzoxazol-2-yl, 1,3,4 - oxadiazol-2-yl, benztriazol-2-yl, naphth-[1,2-d] - triazol - 2 - yl and benzo[1,2-d:3,4 d']-bis-triazol-2-yl, and these radicals can contain 1 to 3 substituents from the group of halogen, alkyl with at least 2 carbon atoms or methyl in the case of benzoxazol-2-yl radical, alkoxy, phenoxy, phenyl, phenylalkyl, cycloalkyl or a methylenedioxy group and R_x, R_y and R_z are identical or different and denote hydrogen, halogen, alkyl with at least 2 carbon atoms or alkoxy, and furthermore R_x can represent phenyl or phenylalkyl and R_x together with R_y can form a methylenedioxy group.

Furthermore the invention concerns a process for preparation by means of the "anile-synthesis." The compounds are valuable fluorescent whitening agents.

3,793,316
5-NITROFURYL DERIVATIVES

William Hoyle, Bramhall, and Gorden Peter Roberts, Altrincham, England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Continuation of abandoned application Ser. No. 784,240, Dec. 16, 1968. This application Dec. 23, 1970, Ser. No. 101,157
Int. Cl. C07d *85/28*
U.S. Cl. 260—240 A **11 Claims**

5-nitro-2-furfurylideneamino-oxazolidinones are useful antimicrobial agents; compositions containing these compounds and methods for the treatment of microbial infections, particularly urinary tract infections, and for the protection of organic material susceptible to microbial attack, employing these compounds; an illusrative embodiment is 5-butyryloxymethyl-3-(5-nitrofurfurylideneamino)-2-oxazolidinone.

3,793,317
2-NITROIMIDAZOLES

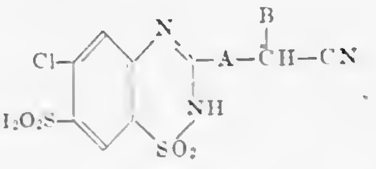
Alden Gamaliel Beaman, North Caldwell, N.J., and William Paul Tautz, New York, N.Y., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
No Drawing. Original application Apr. 6, 1969, Ser. No. 816,838, now Patent No. 3,646,057, dated Feb. 29, 1972. Divided and this application Sept. 2, 1971, Ser. No. 177,900
Int. Cl. C07d *87/40*
U.S. Cl. 260—247.5 R **4 Claims**

2-nitroimidazoles substituted in the 1-position with a lower alkyl amide or a lower alkyl amine which are useful as germicides and anti-protozoal agents.

3,793,318
1,2,4-BENZOTHIADIAZINE-1,1-DIOXIDE DERIVATIVES

Victor Lafon, Paris, France, assignor to Societe Anonyme dite: Laboratoire L. Lafon, Maisens-Alfort, France
No Drawing. Filed Sept. 27, 1971, Ser. No. 184,279
Claims priority, application Great Britain, Oct. 2, 1970, 47,052/70
Int. Cl. C07d *93/34*
U.S. Cl. 260—243 D **5 Claims**

Novel compounds of formula:



in which A represents a single bond or an alkylene group with a straight or branched chain of 1 to 5 carbon atoms, B represents a hydrogen atom or an alkyl, aryl or nitrile group, and the dotted bond indicates that the 1,2,4-benzothiadiazine nucleus can be saturated or unsaturated in the 3,4-position, are provided having good diuretic activity.

3,793,319
MANUFACTURE OF 1,1'-DISUBSTITUTED-4,4'-BIPYRIDYLIUM SALTS

John Gerard Carey and John Reginald Case, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Oct. 8, 1970, Ser. No. 79,356
Claims priority, application Great Britain, Oct. 21, 1969, 51,557/69
Int. Cl. C07d *31/22, 31/44*
U.S. Cl. 260—246 B **14 Claims**

A process for the manufacture of a 1,1'-disubstituted-4,4'-bipyridylium salt which comprises reacting an N-substituted pyridinium salt having a —COOH group in the 4-position or a salt derivative thereof with cyanide ions and subsequently oxidizing the resulting interaction product.

3,793,320

3,793,321

wherein R is hydrogen, a straight or branched chain saturated or partially unsaturated substituted or unsub-

wherein X and Y are each selected from the group consisting of H, halogen, R, and OR; and R, R_1, R_2 and R_5

3,793,320

BASICALLY SUBSTITUTED (1H,3H)-QUINAZOLINE-2-THION-4-ONE DERIVATIVES

Rudi Beyerle, Bruchkobel, and Adolf Stachel, deceased, late of Frankfurt am Main-Fechenheim, Germany, by Ingeburg Lydia Katharina Stachel, heiress, Frankfurt am Main-Fechenheim, Rolf-Eberhard Nitz, Bergen-Enkheim, and Josef Scholtholt, Frankfurt am Main-Fechenheim, Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt am Main-Fechenheim, Germany

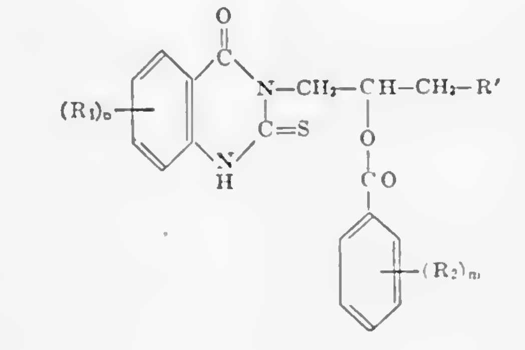
No Drawing. Filed Oct. 7, 1971, Ser. No. 187,562

Claims priority, application Germany, Oct. 15, 1970, P 20 50 640.5

Int. Cl. C07d *87/46*

U.S. Cl. 260—247.1 **8 Claims**

The present invention relates to new, pharmacologically valuable, basically substituted (1H,3H) - quinazoline-2-thion-4-one derivatives having the general formula



wherein:

R' means a radical selected from the group consisting o. secondary aliphatic, cycloliphatic and araliphatic amines having 2–10 carbon atoms and 5, 6 or 7-membered heterocyclic nitrogen bases containing, in addition to the nitrogen atom, a corresponding number of methylene groups as well as an additional nitrogen atom, a 0 or an S atom, said radical being bound via a nitrogen atom;

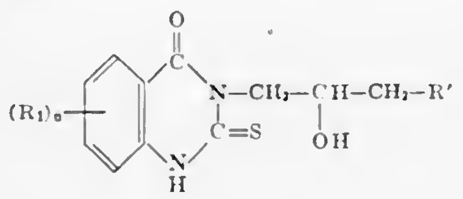
R_1 stands for a lower alkoxy group having 1–4 carbon atoms which are preferably in the 6,7 or 6,7,8-position;

R_2 stands for alkoxy groups having 1–4 carbon atoms;

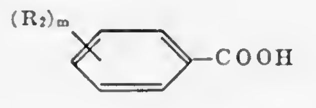
m stands for an integer selected from the group 1, 2 and 3; and

n stands for an integer selected from the group 2 and 3;

and to a process of producing said derivatives by acylating, optionally in the presence of an acid-binding agent, (1H,3H)-quinazoline-2-thion-4-one derivatives of the general formula



wherein R', R_1 and n have the above given meanings, with an alkoxy benzoic acid of the general formula



wherein R_2 and m have the meanings set out hereinbefore, or a functional derivative thereof.

3,793,321

PROCESS FOR THE MANUFACTURE OF TRIGLYCIDYLISOCYANURATE

Juergen Habermeier, Pfeffingen, Hans Batzer, Arlesheim, and Daniel Porret, Binningen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed June 29, 1971, Ser. No. 158,110

Claims priority, application Switzerland, July 2, 1970, 10,043/70

Int. Cl. C07d *55/38*

U.S. Cl. 260—248 NS **8 Claims**

Manufacture of triglycidylisocyanurate (TGIC) by epoxidation of triallylisocyanurate with H_2O_2+nitrile, such as benzonitrile. The TGIC manufactured according to the new process has the advantage over conventional TGIC, obtained by reaction of epichlorohydrin with cyanuric acid, of substantially improved storage stability.

Triglycidylisocyanurate is a known compound. It can be cured by means of the customary curing agents for epoxide resins, such as polycarboxylic anhydrides or polyamines to give mouldings which find diverse uses in commerce and industry.

3,793,322

1,4-DISUBSTITUTED PIPERAZINES

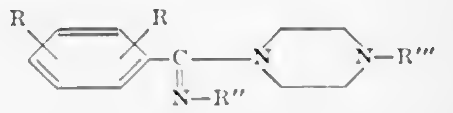
James R. Shroff, Bronx, N.Y., and Victor Bandurco, Sommerville, N.J., assignors to USV Pharmaceutical Corporation, Tuckahoe, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 129,940, Mar. 31, 1972. This application Dec. 15, 1972, Ser. No. 315,488

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 C **11 Claims**

Piperazine derivatives of the formula



wherein R and R' are hydrogen, hydroxy, lower alkyl, lower alkoxy, halogen or trifluoromethyl, R'' is lower alkyl, lower alkenyl, cycloalkyl or phenyl and R''' is hydrogen, lower alkyl, lower alkenyl, carboalkoxy, formyl, benzyl, or cinnamyl have potent hypoglycemic activity.

3,793,323

AMINO-SUBSTITUTED BENZO(g) PTERIDINE-di-N-OXIDES

Florin Seng, Cologne, Kurt Ley, Odenthal-Globusch, and Karl Georg Metzger, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

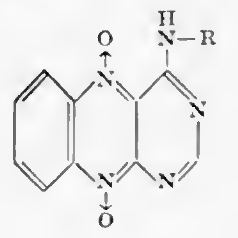
No Drawing. Filed July 7, 1971, Ser. No. 160,542

Claims priority, application Germany, July 11, 1970, P 20 34 467.7

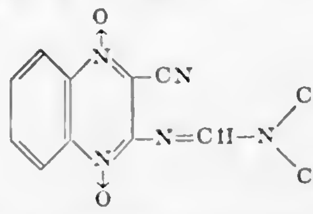
Int. Cl. C07d *57/28*

U.S. Cl. 260—251.5 **14 Claims**

4-amino - pyrimido - (4,5,b) - quinoxaline - 5,10-dioxides of the formula:



wherein R is hydrogen, a straight or branched chain saturated or partially unsaturated substituted or unsubstituted aliphatic moiety or a substituted or unsubstituted cycloaliphatic moiety, are produced by reacting quinoxaline-di-N-oxide of the formula:



with an amine of the general formula R—NH_2, wherein R is as defined, above, in a diluent, at a temperature in the range of 20° to 100° C. These compounds are useful for their antimicrobial activity. They exhibit activity against both gram positive and gram negative bacteria.

3,793,324

PREPARATION OF 1,4-DISUBSTITUTED-2(1H)-QUINAZOLINONES

Max Denzer, 288 Kingston Road,
Lake Parsippany, N.J.

No Drawing. Filed Nov. 18, 1971, Ser. No. 200,141

Int. Cl. C07d *51/48*

U.S. Cl. 260—251 QB **7 Claims**

The preparation of 1-substituted-4-aryl-2(1H)-quinazolinones, e.g. 1-isopropyl-7-methyl-4-phenyl-2(1H)-quinazolinone, by reaction of 2-substituted aminobenzophenone with urea in the presence of a lower carboxylic acid. The quinazolinones are useful as pharmaceutical agents, e.g. as anti-inflammatory and analgesic agents.

3,793,325

11-BASICALLY SUBSTITUTED DIBENZ[b,f][1,4] THIAZEPINE AND DIBENZ[b,e][1,4]DIAZEPINES

Jean Schmutz, Muri, near Bern, and Fritz Hunziker, Bern, Switzerland, assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of application Ser. No. 60,976, July 6, 1970, which is a division of application Ser. No. 769,373, Oct. 21, 1968, now Patent No. 3,539,573, which in turn is a continuation-in-part of abandoned application Ser. No. 712,956, Mar. 14, 1968. This application Feb. 23, 1972, Ser. No. 228,747

Claims priority, application Switzerland, Mar. 22, 1967, 4,103/67; May 9, 1967, 6,557/67; July 14, 1967, 10,115/67; Nov. 3, 1967, 15,453/67; Feb. 14, 1968, 2,201/68

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 TR **6 Claims**

Dibenz [b,f][1,4] thiazepines and dibenz [b,e][1,4] diazepines, basically substituted at the 11-position and substituted at the 2-position with alkylsulphinyl or alkylsulphonyl are useful as neuroleptics and anti-emetics.

3,793,326

3,4-DIHYDRO - 6,7 - SUBSTITUTED - 2,2,3-LOWER ALKYL - 4-OXO-(2H)-QUINAZOLECARBOXYLIC ACID DERIVATIVES USEFUL AS ANALGESIC AND TRANQUILIZER AGENTS

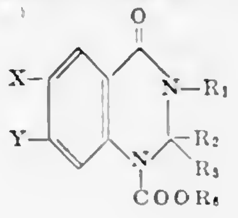
James F. Muren, Norwalk, Conn., assignor to
Pfizer Inc., New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 26,406, Apr. 7, 1970. This application Jan. 3, 1972, Ser. No. 215,117

Int. Cl. C07d *51/48*

U.S. Cl. 260—251 QA **10 Claims**

6,7-disubstituted-quinazolinones useful as analgesic and tranquilizer agents having the formula:



wherein X and Y are each selected from the group consisting of H, halogen, R, and OR; and R, R_1, R_2 and R_5 are hydrogen or lower alkyl and R_6 is lower alkyl. Preferred compounds are 3,4-dihydro-6,7-dimethoxy-2,3-dimethyl, 3-ethyl-2-methyl, 2-methyl-3-propyl, 2,2,3-trimethyl, and 3-methyl-4-oxo-1(2H)-quinazoline-carboxylic acid, ethyl esters; and 3,4-dihydro-6-ethoxy-7-methoxy-2,3-dimethyl, 3,4-dihydro-6-methoxy-7-ethoxy-2-methyl-3-ethyl, and 3,4 - dihydro-6-methoxy-7-isopropoxy-2,3-dimethyl-4-oxo-1(2H)-quinazoline, carboxylic acid, ethyl ester.

3,793,327

α-2,9-DIFLUOROQUINACRIDONE

Edward E. Jaffe, Union, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 4, 1972, Ser. No. 223,757

Int. Cl. C07d *39/00*

U.S. Cl. 260—279 **2 Claims**

The compound 2,9-difluoroquinacridone is prepared in a novel polymorphic form (referred to herein as the "α" crystal form) characterized by an X-ray diffraction pattern exhibiting: lines of strong intensity with interplanar spacings of 5.90 A. and 3.24 A.; lines of intermediate intensity with interplanar spacings of 15.77 A., 6.46 A., 3.74 A.; and lines of weak intensity with interplanar spacings of 7.96 A., 5.27 A., 4.25 A., 3.97 A., 3.52 A. The compound is further characterized by a brilliant violet hue; hence, is well suited for pigmentary uses.

3,793,328

8 BENZOYL 1,2,3,4 TETRAHYDROQUINOLINE

Jackson B. Hester, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Original application Nov. 3, 1969, Ser. No. 873,719, now Patent No. 3,714,149, dated Jan. 30, 1973. Divided and this application Feb. 8, 1971, Ser. No. 113,760

Int. Cl. C07d *33/10*

U.S. Cl. 260—286 R **1 Claim**

1,2 - dihydro - 8 - phenyl - 3H - pyrido[3,2,1-jk][1,4]-benzodiazepin-5(6H)-ones, processes for preparing the same and intermediates prepared by said processes. The novel compounds of this invention exhibit tranquilizing and anticonvulsant activity in animals.

3,793,329

N-(FURYL-METHYL)-3-OXY-MORPHINANS AND SALTS THEREOF

Herbert Merz, Rheinstr. 170; Adolf Langbein, Theodor-Fliedner Str. 45; Helmut Wick, Gehauweg 10; and Klaus Stockhaus, Tannenweg 11, all of Ingelheim am Rhein, Germany

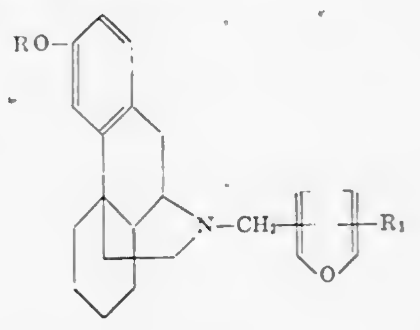
No Drawing. Filed Feb. 9, 1972, Ser. No. 224,973

Claims priority, application Germany, Feb. 19, 1971, P 21 07 989.0

Int. Cl. C07d *43/28*

U.S. Cl. 260—285 **5 Claims**

Compounds of the formula



wherein

R is hydrogen, methyl or acetyl, and
R_1 is hydrogen, methyl or ethyl,

(wherein R_7 and R_8 are each as defined above and X is

3,793,335

and non-toxic, pharmacologically acceptable acid addition salts thereof; the compounds as well as their salts are useful as opiate antagonists non-narcotic analgesics and antitussives.

3,793,330

3-HYDROXY-QUINOPHTHALONE DYESTUFFS

Dietmar Kalz, Cologne, Rütger Neeff, Leverkusen, and Gerhard Wolfrum, Opladen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

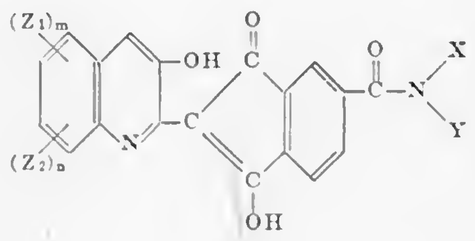
No Drawing. Filed Nov. 16, 1970, Ser. No. 90,157

Claims priority, application Germany, Nov. 22, 1969, P 19 58 664.2

Int. Cl. C07d *33/56*

U.S. Cl. 260—289 QP **4 Claims**

3′ - hydroxy-quinophthalone dyestuffs which are free from sulphonic acid groups and correspond to the formula



in which X stands for an optionally substituted cyclohexyl radical; Y denotes a C_1–C_{17}-, preferably a C_2–C_6-alkyl radical or an optionally substituted cyclohexyl radical; Z_1 stands for a halogen atom, a nitro. C_1–C_4-alkyl, C_1–C_4-alkoxy or an acylamino group; *m* is a number from 0 to 3; Z_2 is a fused benzene ring; and *n* is 1 or 0, and a process for their production. The dyestuffs are especially suitable for dyeing synthetic fibre materials.

3,793,331

3-HYDROXY-QUINOPHTHALONE DYESTUFFS

Dietmar Kalz, Cologne, Rütger Neeff, Leverkusen, and Gerhard Wolfrum, Opladen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

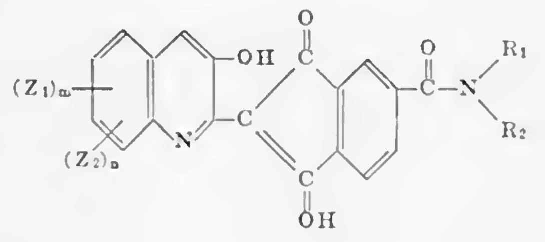
No Drawing. Filed Oct. 22, 1970, Ser. No. 83,238

Claims priority, application Germany, Nov. 19, 1969, P 19 58 097.3

Int. Cl. C07d *33/56*

U.S. Cl. 260—289 QP **6 Claims**

3′ - hydroxy - quinophthalone dyestuffs which are free from sulphonic acid groups and correspond to the formula



(I)

in which

R_1 and R_2, independently of one another, stand for a C_1–C_{17}-alkyl radical, with the proviso that the sum total of carbon atoms contained in R_1 and R_2 amounts to at least 16. preferably to 16 to 25;

Z_1 stands for a halogen atom, a nitro, C_1–C_4-alkyl, C_1–C_4-alkoxy or an acylamino group;

m is a number from 0 to 3;

Z_2 is a fused benzene ring; and

n is 1 or, preferably, 0, and

a process for their production. The dyestuffs are especially suitable for the dyeing of synthetic fiber materials from organic solvents.

3,793,332

2-CYANO ALKYLBENZOMORPHAN DERIVATIVES AND SALTS THEREOF

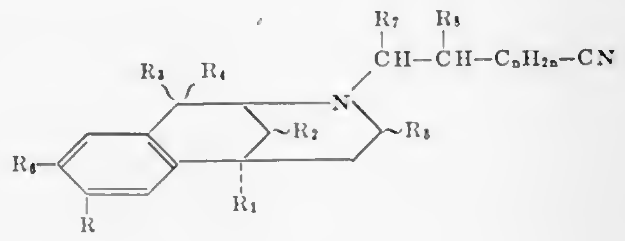
Toshio Atsumi, Saitama-ken, Kenji Kobayashi and Yoshiaki Takebayashi, Takarazuka, and Hisao Yamamoto, Nishinomiya, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka-shi, Japan

No Drawing. Filed May 22, 1972, Ser. No. 255,805

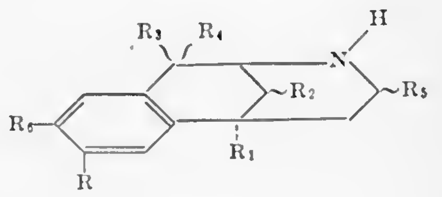
Int. Cl. C07d *39/00*

U.S. Cl. 260—293.54 **9 Claims**

Benzomorphan derivatives of the formula:



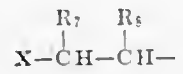
wherein R is a hydrogen atom, a hydroxyl group, an alkoxy group or an acyloxy group; R_1 is a hydrogen atom, an alkyl group, a phenyl group, a halophenyl group, an alkylphenyl group, an alkoxyphenyl group, a trifluoromethylphenyl group, an alkylthiophenyl group or a group of the formula: (C_mH_{2m-p+1})–$(R_9)_p$ (wherein *m* is an integer of 1–6, *p* is an integer of 1–2 and R_9 is an alkoxy group); R_2 is a hydrogen atom or an alkyl group; R_3 is a hydrogen atom, an alkyl group, a phenyl group or an alkoxyphenyl group; R_4 is a hydrogen atom or a hydroxyl group, or R_3 and R_4 may form an alkylidene group or a carbonyl group together with a carbon atom to which these substituents are bonded; R_5 is a hydrogen atom or an alkyl group; R_6 is a hydrogen atom or a methyl group; R_7 and R_8 are independently a hydrogen atom or an alkyl group; and *n* is an integer of 0–2, and acid addition salts thereof, which are useful as non-addicting, analgesic and pain-relieving agents. These benzomorphan derivatives are prepared by reacting a 6,7-benzomorphan derivative of the formula:



wherein R, R_1, R_2, R_3, R_4, R_5 and R_6 are each as defined above with a cyanide derivative of the formula:

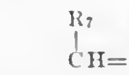
$$A—C_nH_{2n}—CN$$

wherein *n* is as defined above and A is a group of the formula:



$$X—\overset{R_7}{\overset{|}{C}}H—\overset{R_8}{\overset{|}{C}}H—$$

(wherein R_7 and R_8 are each as defined above and X is a halogen atom), or *n* is 0 and A is a group of the formula



$$\overset{R_7}{\overset{|}{C}}H=\overset{R_8}{\overset{|}{C}}—$$

(wherein R_7 and R_8 are each as defined above).

3,793,333

2-(1-BENZYL-4-PIPERIDYL)ACID HYDRAZIDES

Mario G. Buzzolini, Morristown, and Faizulla G. Kathawala, West Orange, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation of abandoned application Ser. No. 62,662, Aug. 10, 1970. This application Nov. 20, 1972, Ser. No. 308,301

Int. Cl. C07d *31/44*

U.S. Cl. 260—293.69 **3 Claims**

2-(1-benzyl - 4 - piperidyl)acid hydrazides, e.g., 2-(1-4-piperidyl)benzoic acid hydrazide are prepared by reducing 2-(1-benzyl-4-piperidylidene) acid hydrazides. The compounds are useful as hypolipidemic agents.

3,793,334

4-BENZOYL-4-HYDROXY-3-PHENYL-1-SUBSTITUTED PIPERIDINES

Anton Ebnoether, Arlesheim, and Erwin Rissi, Basel, Switzerland, assignors to Sandoz Ltd., doing business as Sandoz AG, Basel, Switzerland

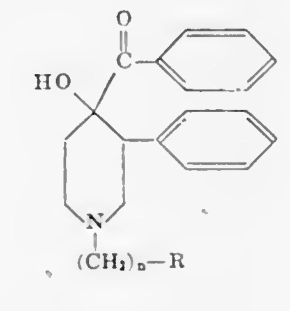
No Drawing. Continuation-in-part of abandoned application Ser. No. 129,997, Mar. 31, 1971. This application Sept. 1, 1972, Ser. No. 285,747

Claims priority, application Switzerland, Apr. 8, 1970, 5,167/70, 5,168/70, 5,169/70; Dec. 4, 1970, 17,939/70

Int. Cl. C07d *29/36*

U.S. Cl. 260—293.73 **37 Claims**

The invention concerns novel compounds of the formula:



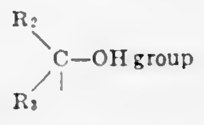
wherein

n is an integer from 1 to 4, and

R is a group —CO—R_1,

wherein R_1 is hydroxy, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, amino, alkylamino, dialkylamino, phenyl, chloro-phenyl, bromophenyl, fluoro-phenyl, alkyl-phenyl in which the alkyl radical is of 1 to 4 carbon atoms, methoxyphenyl or methylthio-phenyl,

or a



$$\overset{R_2}{\diagdown}C—OH\text{ group}\atop{\diagup|}\atop R_3$$

wherein each of R_2 and R_3 is hydrogen or alkyl of 1 to 4 carbon atoms,

and pharmaceutically acceptable acid addition salts thereof.

The compounds are hypolipemics, particularly hypocholesteremics, useful in the prophylaxis or treatment of arteriosclerosis.

3,793,335

MANUFACTURE OF 1,1′ - DISUBSTITUTED-4,4′-BIPYRIDYLIUM SALTS AND RELATED COMPOUNDS

John Beacham and John Gerard Carey, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Jan. 18, 1971, Ser. No. 107,412

Claims priority, application Great Britain, Jan. 23, 1970, 3,433/70

Int. Cl. C07d *31/42, 31/44*

U.S. Cl. 260—295 AM **9 Claims**

A process for the manufacture of a 1,1′-disubstituted-4,4′-bipyridylium cation radical which comprises mixing a solution of a 1,1′-disubstituted-1,1′-dihydro-4,4′-bipyridyl with a 1,1′-disubstituted-4,4′-bipyridylium salt to form the 1,1′-disubstituted-4,4′-bipyridylium cation radical.

3,793,336

PROCESS FOR THE PREPARATION OF 2-AMINO-PYRIDINES

Paul Aviron Violet, Lyon, and André Blind, Villeurbanne, France, assignors to Rhone-Poulenc S.A., Paris, France

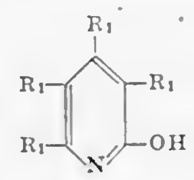
No Drawing. Filed June 26, 1970, Ser. No. 50,317

Claims priority, application France, June 30, 1969, 6922016

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 R **5 Claims**

A new process for the preparation of primary and secondary 2-amino-pyridines, which can be used as starting materials for therapeutically active substances (e.g. anti-histamines), comprises reacting at a temperature below 200° to 500° C. a 2-hydroxypyridine of the formula:



with an amine, H_2N—R, wherein the symbols R_1 represent hydrogen, alkyl, cycloalkyl, aryl or aralkyl, or the symbols R_1 on adjacent carbon atoms form a divalent saturated or unsaturated radical, and R has the same significance as R_1 or represents a monovalent heterocyclic aromatic radical.

3,793,337

1,3,2-OXAZABORINIDES AND METHOD FOR PREPARING THE SAME

Thurairajah Padmanathan, Highland Park, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 732,045, May 27, 1968, now Patent No. 3,621,023. This application Apr. 19, 1971, Ser. No. 135,387

Int. Cl. C07d *49/10, 51/33, 51/46*

U.S. Cl. 260—309 **7 Claims**

Condensed difluoro or diacetoxy 1,3,2-oxazaborinides are prepared by treating (a) a condensation product of a naphthostyril with an active ketomethylene compound, such as barbituric acid or its N,N-dialkyl derivatives, an indandione, an oxindole or a pyrazolone, (b) a condensation product of an o-hydroxybenzaldehyde with an aromatic amine, or (c) an ortho-(benz-azol-2-yl)-naphthol or phenol, the azole being oxazole, thiazole or imidazole, with either (1) boron trifluoride dissolved in ether, or (2) orthoboric acid, benzeneboronic acid or esters thereof, in acetic acid in the presence of acetic anhydride, at reflux. The difluoro and diacetoxy-1,3,2-oxazaborinides are characterized by affinity for polyesters when applied by disperse dyeing methods and fluoresce on the fiber. Similar effects are obtained on nylon and acetate and to some extent on modified polyacrylonitrile.

3,793,338

IMIDAZOLINE DERIVATIVES OF BENZONORBORNANE AND TETRAHYDRONAPHTHALENE COMPOUNDS

Francesco Lauria, Milan, Vittorio Vecchietti, Pavia, and Raffaele Tommasinl and Roberto Ceserani, Milan, Italy, assignors to Carlo Erba S.p.A., Milan, Italy

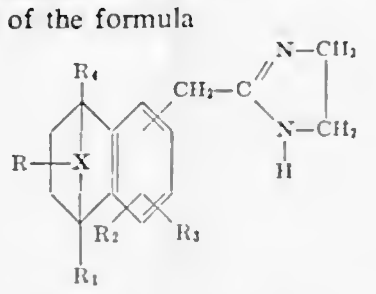
No Drawing. Filed Nov. 26, 1971, Ser. No. 202,638

Claims priority, application Italy, Nov. 30, 1970, 32,393/70

Int. Cl. C07d *49/34*

U.S. Cl. 260—309.6 **21 Claims**

Compounds of the formula



are disclosed, wherein X is saturated or unsaturated lower alkylene and R, R_1, R_2, R_3 and R_4 are independently selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, lower alkoxy and hydroxy.

These compounds are therapeutically useful, having vasoconstrictor activity.

3,793,339

1-HYDROCARBON-SUBSTITUTED 2 - HALO-4,5-DICYANOIMIDAZOLES AND THEIR PREPARATION

Owen Wright Webster, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 7, 1972, Ser. No. 242,199

Int. Cl. C07d *49/36*

U.S. Cl. 260—309 **8 Claims**

Pyrolysis of 2-diazo-4,5-dicyano-2H-imidazole in the presence of certain halohydrocarbons yields 1-hydrocarbon substituted-2-halo-4,5-dicyanoimidazoles.

Pyrolysis of the same starting material in the presence of hydrocarbons, certain other halohydrocarbons, or certain Group I metal salts, yields 2-substituted-4,5-dicyanoimidazoles.

3,793,340

NOVEL 1,2,4-OXADIAZOLE DERIVATIVES

Asim Kumar Sarkar, Vlaardigen, Netherlands, assignor to Hickson & Welch Limited, Castleford, Yorkshire, England

No Drawing. Filed Sept. 21, 1970, Ser. No. 74,175

Claims priority, application Great Britain, Sept. 23, 1969, 46,891/69

Int. Cl. C07d *85/48*

U.S. Cl. 260—307 D **8 Claims**

A novel series of 1,2,4-oxadiazole derivatives useful in the whitening, brightening and/or bleaching of various synthetic materials, such as textile fibers.

3,793,341

INDIGOID DYESTUFFS AND COLORED SYNTHETIC MATERIALS THEREFROM

Guido Genta, Snyder, N.Y., assignor to American Aniline Products, Inc., Lock Haven, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 78,980, Oct. 7, 1970. This application Apr. 19, 1972, Ser. No. 245,566

Int. Cl. C09b *7/00*

U.S. Cl. 260—323 **7 Claims**

Synthetic materials are colored with a novel class of compounds which are prepared in substantially quantitative yields by the reaction of an indigoid compound, such as indigotin, with a benzene sulfonyl halide in a thin fluid melt consisting essentially of anhydrous aluminum halide in admixture with a compound that gives a fluid melt at low temperatures. The compounds are dyestuffs for synthetic textile materials such as polyethylene terephthalate, and provide dyeings of improved substantivity, particularly on polyethylene terephthalate. The compounds are also useful as pigments for rigid plastic substrates.

3,793,342

N-(3,4-DIHYDROXYPHENETHYL)-5-OXO-2-PYRROLIDINECARBOXAMIDE

Ado Kaiser, Neu-Frenkendorf, Wolfgang Koch, Riehen, Marcel Scheer, Basel, and Uwe Wolcke, Bottmingen, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Oct. 6, 1971, Ser. No. 187,118

Int. Cl. C07d *27/08*

U.S. Cl. 260—326.47 **3 Claims**

Phenethylamide derivatives which are n-substituted with t-alkoxycarbonyl, 5-oxo-2-pyrrolidine carbonyl, phenylsulfonyl or nitrophenylthio and are useful as hypotensive, antipyretic and anti-Parkinson agents.

3,793,343

5-AMINO-3,5-DIPHENYL-3-PYRROLIN-2-ONES

Laurence I. Peterson, Framlngham, Mass., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Jan. 6, 1969, Ser. No. 789,378, now Patent No. 3,679,671. Divided and this application May 18, 1972, Ser. No. 254,654

Int. Cl. C07d *27/16*

U.S. Cl. 260—326.5 FL **2 Claims**

A new method of oxidizing various phenylacetonitrile derivatives employing a copper (II)-amine catalyst system; and the new 3-(amine substituted)-2-phenylacrylonitriles and 5-substituted derivatives of 3,5-diphenyl-3-pyrrolin-2-one prepared by this new method.

3,793,344

PROCESS FOR MAKING 2,3-DIHYDRO-p-OXATHIINS AND THEIR SULFOXIDES AND SULFONES

Friedrich Asinger, Aachen, Paul Scherberich, Neu-Isenburg, and Heribert Offermanns, Grossauheim, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Filed Nov. 17, 1970, Ser. No. 97,403

Claims priority, application Germany, Nov. 18, 1969, P 19 57 859.7

Int. Cl. C07d *89/14*

U.S. Cl. 260—327 P **10 Claims**

2,3-dihydro-p-oxathiins are made by reacting an α-mercaptooxo compound or a dimer thereof with an equimolar amount of an oxirane in the presence of an inert organic solvent and in the presence of a base at a temperature between about 0 and 100° C. so as to form the corresponding alkoxylated α-mercaptooxo compound and then subjecting the latter compound to cyclization in the presence of an inert solvent and an acid catalyst or by reaction with an equimolar amount of anhydrous zinc chloride or phosphorus pentoxide. The thus-obtained 2,3-dihydro-p-oxathiin may then be oxidized to the sulfone or sulfoxide.

The compounds of the invention are valuable as antioxidants for use in synthetic materials and elastomers. The process permits obtaining of the product at high yields and at a high rate of purity.

3,793,345

5,11-DIHYDRODIBENZ[b,e][1,4]OXAZEPINE-5-ALKYLAMIDOXIMES

Harry Louis Yale, New Brunswick, and Ramesh B. Petigara, Somerset, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Aug. 2, 1972, Ser. No. 277,430

Int. Cl. C07d *9/00*

U.S. Cl. 260—333 **5 Claims**

5,11-dihydrodibenz[b,e][1,4]oxazepine and 5,11-dihydrodibenzo[b,e][1,4]thiazepine - 5 - alkylamidoximes and their methods of preparation are disclosed. In addition, pharmaceutical compositions containing said compounds and methods for using said compositions as central nervous system stimulates and muscle relaxants are reported.

3,793,346

INTERMEDIATE IN THE TOTAL SYNTHESIS OF ELENOLIC ACID

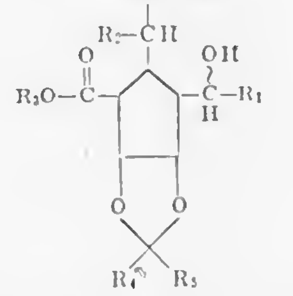
Robert C. Kelly, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Original application Aug. 24, 1970, Ser. No. 66,557, now Patent No. 3,703,530, dated Nov. 21, 1972. Divided and this application Apr. 12, 1972, Ser. No. 243,491

Int. Cl. C07d *13/10*

U.S. Cl. 260—340.5 **1 Claim**

A compound of the formula



wherein R and R_3 are alkyl of 1 to 3 carbon atoms, inclusive, R_1 is alkyl of 1 to 4 carbon atoms R_2 is hydrogen or alkyl of 1 to 4 carbon atoms, and R_4 and R_5 are hydrogen, alkyl of 1 to 4 carbon atoms, inclusive, or phenyl, with the proviso that only one of R_4 and R_5 is phenyl, is produced in a multistep reaction.

The compound is an intermediate for elenolic acid.

3,793,347

PROCESS FOR THE SYNTHETIC PRODUCTION OF 2(4,5-DIHYDRO - 5-PROPYL-2(3H)-FURYLIDENE)-1,3-CYCLOPENTANEDIONE

Masaji Ohno, Masaru Okamoto, and Norlo Kawabe, Kamakura, Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

No Drawing. Filed June 10, 1971, Ser. No. 151,968

Claims priority, application Japan, June 22, 1970, 45/53,465; Aug. 21, 1970, 45/72,764

Int. Cl. C07c *5/16*

U.S. Cl. 260—347.8 **5 Claims**

A process for the production of 2-(4.5-dihydro-5-propyl-2(3H)-furylidene)-1,3-cyclopentanedione which comprises reducing 2-[3-(2-furyl)-acryloyl]-1.3-cyclopentanedione with hydrogen in the presence of a base and in the presence of a hydrogenation catalyst, and then reacting the hydrogenation products with an acid.

3,793,348

EPOXIDES OF TRICYCLIC OLEFINIC $C_{15}H_{24}$ HYDROCARBONS

Alan R. Hochstetler, Bloomfield, and Gary C. Kitchens, Wayne, N.J., assignors to Givaudan Corporation, Clifton, N.J.

No Drawing. Filed Mar. 20, 1972, Ser. No. 236,336

Int. Cl. C07d *1/12*

U.S. Cl. 260—348 C **4 Claims**

Certain tricyclic, olefinic $C_{15}H_{24}$ hydrocarbons derived from the strong acid isomerization of thujopsene are epoxidized to yield epoxides having valuable, amberlike odor, which are valuable in perfumery.

3,793,349

QUINIZARIN-4-AMINOPHENOXY ACETAMIDES

Grannls S. Johnson, Thornton, Pa., and John H. Shown, Castleton on Hudson, N.Y., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed June 1, 1972, Ser. No. 258,670

Int. Cl. C09b *1/50*

U.S. Cl. 260—377 **8 Claims**

Blue color dyes particularly useful for dyeing polyester fibers comprising quinizarin-4-aminophenoxy acetamides, methods of preparing and using the same.

3,793,350

PROCESS FOR PREPARING 17α,21-DIHYDROXY-20 - KETO-PREGNANES, DERIVATIVES AND INTERMEDIATES THEREOF

Pierre Crabbé, Mexico City, Mexico, assignor to Syntex Corporation, Panama, Panama

No Drawing. Filed Oct. 1, 1971, Ser. No. 185,911

Int. Cl. C07c *169/20, 169/32*

U.S. Cl. 260—397.45 **20 Claims**

New process for preparing 17α,21 - dihydroxy-20-keto steroids of the pregnane series, useful as anti-inflammatory agents, starting from 17-(2′α-acyloxyvinylidene) androstane compounds, and the novel 17α,21-diacyloxy-20-keto-pregnanes and 21,21-diacyloxy-17α-hydroxy-20-keto-pregnanes obtained as intermediates in this process.

3,793,351

PROCESS FOR SOLUBILIZING ALKOXYLATED FATTY SUBSTRATES

Frederic C. McCoy, ℅ Texaco Inc., P.O. Box 509, Beacon, N.Y. 12508

No Drawing. Filed Dec. 13, 1971, Ser. No. 207,550

Int. Cl. C10m *1/32*

U.S. Cl. 260—404 **17 Claims**

This invention concerns a process for converting alkoxylated fatty substrates normally insoluble in petroleum oils to soluble complexes by treatment with alkylated phenol-type solubilizing agents, and the oil soluble complexes resulting therein.

3,793,352

POLYAMIDE AMMONIUM COMPOUNDS, THEIR PRODUCTION AND USE

Richard Hochreuter, Basel, Switzerland, assignor to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland

No Drawing. Filed Oct. 4, 1971, Ser. No. 186,507

Claims priority, application Switzerland, Oct. 9, 1970, 14,902/70

Int. Cl. C07c *103/30*

U.S. Cl. 260—404.5 **8 Claims**

New polyamide-ammonium compounds for the antistatic, bacteriostatic and/or fungistatic finishing of high polymers.

3,793,353

4-SUBSTITUTED-2-UNSATURATED ESTERS

Clive A. Henrick, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 201,195, Nov. 22, 1971. This application June 30, 1972, Ser. No. 267,861

Int. Cl. A01n *9/24;* **C07c** *69/62, 69/66*

U.S. Cl. 260—405 **20 Claims**

Syntheses of diene esters which comprises the reaction of a β-formyl-α,β-unsaturated ester with a Grignard followed by dehydration of the resulting hydroxy compound, intermediates therefor and the control of insects.

3,793,354
DEHYDROGENATION OF ALCOHOLS TO KETONES

Irving Schwager, Hopewell Junction, Robert J. Leak, Wappingers Falls, and Edward L. Cole, Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Original application July 3, 1969, Ser. No. 839,082, now Patent No. 3,671,591. Divided and this application Feb. 23, 1972, Ser. No. 228,750

Int. Cl. C07f *15/00, 15/04*

U.S. Cl. 260—429 R **6 Claims**

A Group VIII metal containing pyrolyzed polyacrylonitrile polymer catalyst and hydrocarbon conversion process for the dehydrogenation of alcohols to ketones particularly isopropyl alcohol to acetone and the dehydrogenation of nitro compounds to amines, particularly 2-nitropropane to isopropylamine by the use of said catalyst.

3,793,355
COMPOUNDS OF RUTHENIUM

Geoffrey Wilkinson, London, England, assignor to Johnson, Matthey & Co. Limited, London, England

No Drawing. Filed Aug. 8, 1972, Ser. No. 278,804

Claims priority, application Great Britain, Aug. 11, 1971, 37,705/71

Int. Cl. C07f *15/00*

U.S. Cl. 260—429 R **7 Claims**

This invention relates to a composition of matter having the general formula

$$M^1M^2M^3XAn_6L^1L^2L^3$$

where M^1, M^2 and M^3 are the same or different transition metals selected from the second or third series of the Periodic Table; X is oxygen, sulphur, nitrogen, phosphorus or boron; An is anionic element or group and L^1, L^2 or L^3 are neutral or anionic ligands.

3,793,356
DIHYDROCARBYLTIN BIS(HYDROCARBYLOXY HYDROCARBYL MERCAPTIDE)

Ralph P. Williams, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Apr. 26, 1972, Ser. No. 247,585

Int. Cl. C07f *7/22*

U.S. Cl. 260—429.7 **5 Claims**

Organotin mercaptides having the formula

$$R_2Sn(SR'OR'')_2,$$

wherein each R and each R″ is individually selected from the group consisting of monovalent hydrocarbon radicals and each R′ is individually selected from the group consisting of divalent hydrocarbon radicals. The title compounds are useful stabilizing agents for polymeric materials.

3,793,357
PROCESS FOR THE REDISTRIBUTION OF ALKYLSILANES AND ALKYLHYDROSILANES

Harry R. McEntee, Waterford, N.Y., assignor to General Electric Company

No Drawing. Filed Oct. 20, 1972, Ser. No. 299,602

Int. Cl. C07f *7/08, 7/12*

U.S. Cl. 260—448.2 P **14 Claims**

A process for the efficient redistribution of alkylsilanes comprising contacting an alkylhalosilane with an alkylsilane in the presence of 1 to 15% by weight of the reaction ingredients of the catalyst aluminum chloride and a catalytic amount of a catalytic promoter of the formula

$$R_k'''R_c''SiX_{4-c-k}$$

wherein the above formula R″ is an aromatic radical of 6 to 15 carbon atoms selected from mononuclear aryl, binuclear aryl, aralkyl and alkaryl radicals, *c* varies from 1 to 4 and *k* varies from 0 to 2 and the sum of $c+k$ may be equal to 4, and X is halogen.

In the foregoing process, the presence of the aromatic silane enhances the yield obtained of the desired alkylsilane as well as shortens the reaction time for obtaining the maximum yield of the alkylsilane.

3,793,358
PROCESS FOR MANUFACTURE OF ALKENYLSILANES

Ignaz Bauer, Siegfried Nitzsche, Norbert Zeller, and Werner Graf, Burghausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

No Drawing. Filed June 22, 1972, Ser. No. 265,116

Claims priority, application Germany, June 25, 1971, P 21 31 742.0

Int. Cl. C07f *7/08, 7/18*

U.S. Cl. 260—448.2 E **20 Claims**

A process for preparing alkenylsilanes by reacting acetylene or substituted acetylene with a silane having at least 1 silicon bonded hydrogen atom in the presence of an addition catalyst and disilylethane at a temperature of from about 120° C. to about 220° C. at a pressure of from about 0.1 to about 5 atmospheres gauge.

3,793,359
COBALT II HALIDES KETAZINE AND ALDEZINE COMPLEXES

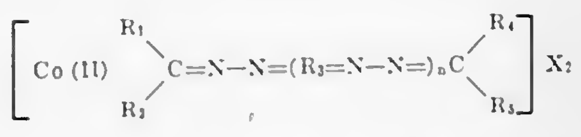
Christian H. Stapfer and Richard W. D'Andrea, Washington, Pa., assignors to Cincinnati Milacron Chemicals Inc., Reading, Ohio

No Drawing. Original application Mar. 31, 1970, Ser. No. 24,379, now Patent No. 3,649,663. Divided and this application Sept. 3, 1971, Ser. No. 177,832

Int. Cl. C07f *15/06*

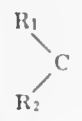
U.S. Cl. 260—439 R **13 Claims**

Cobalt (II) halides complexes of the formula

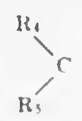


$$\left[\mathrm{Co\,(II)}\ (R_1)(R_2)C{=}N{-}N{=}(R_3{=}N{-}N{=})_nC(R_4)(R_5)\right]X_2$$

are prepared where R_1 and R_4 are hydrogen, alkyl, aryl, haloaryl, haloalkyl, aralkyl, furyl, tetrahydrofuryl and R_2 and R_5 are alkyl, aryl, haloaryl, haloalkyl, aralkyl, furyl, tetrahydrofuryl or



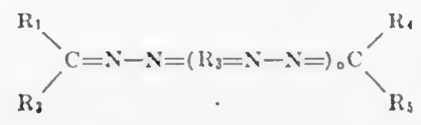
together is cycloalkyl of at least 3 carbon atoms and



together is cycloalkyl of at least 3 carbon atoms, R_3 is alkylene or arylene, *n* is 0 or 1 and X is halogen. The compounds are useful as driers for alkyd resins and to accelerate the oxidative polymerization of olefinic polymer systems, particularly unsaturated polyesters, in conjunction with organic peroxides. The compounds can also be used to form mixed bidentate ligand chelates as well as mixed bidentate unidentate ligand chelates of the formula

$$[Co(II)(Az)(Y)_m(Z)_{4-2m}]X_2$$

where Az is



$$(R_1)(R_2)C{=}N{-}N{=}(R_3{=}N{-}N{=})_nC(R_4)(R_5)$$

which have the same uses.

3,793,360
ORGANOSILICONE POLYMERS

Bela Prokai, Mahopac, and Bernard Kanner, West Nyack, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Apr. 8, 1971, Ser. No. 132,534

Int. Cl. C07f *7/08*

U.S. Cl. 260—448.2 B **33 Claims**

Organosilicone polymers are provided containing monomeric units A, B and C where A is $SiO_{4/2}$, B is a polyfunctional siloxy unit in which silicon is bonded to at least one organic moiety bearing a poly(oxyalkylene) chain, and C is a monofunctional triorganosiloxy unit, and in which there are from about 0.4 to about 2 moles of A, and from about 0.2 to about 2 moles of C, per mole of B. The polymers are useful as surfactants and find particular application in the manufacture of flexible polyester urethane cellular products, including flame-retarded foams.

3,793,361
SILYL MALEATES AND POLYSILOXANE MALEATES

Abe Berger and Terry G. Selin, Schenectady, N.Y., assignors to General Electric Company, Waterford, N.Y.

No Drawing. Original application May 17, 1971, Ser. No. 144,306. Divided and this application Dec. 18, 1972, Ser. No. 316,062

Int. Cl. C07f *7/10, 7/18*

U.S. Cl. 260—448.2 N **10 Claims**

Silyl maleates and fumarates and polysiloxane maleates and fumarates useful as glass sizing agents are prepared in accordance with the present invention. The silyl maleates and polysiloxane maleates and fumarates are formed by reacting either the cis- or trans-1,2-biscarbalkoxyethylenes having an unsaturated alkenyl group therein with a hydrogen silane or hydrogen polysiloxane in the presence of a platinum catalyst.

3,793,362
REDUCTION OF ACIDIC IMPURITIES IN POLYMETHYLENE POLYPHENYLISOCYANATES

Richard A. Kolakowski, North Brandford, and Alexander McLaughlin, Meriden, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Oct. 18, 1971, Ser. No. 190,379

Int. Cl. C07c *119/04*

U.S. Cl. 260—453 SP **9 Claims**

A process is disclosed, for reducing acidity and hydrolyzable chloride levels in polymethylene polyphenylisocyanates. The process comprises treating the polymeric isocyanate with from 0.25 to 1.0 epoxy equivalents of a monomeric epoxide compound for each equivalent of acid present in the isocyanate. The process is particularly advantageous in that reduction of acid and hydrolyzable chloride levels is obtained without appreciable increases in polymer viscosity. Polymethylene polyphenylisocyanates treated by the process of the invention show improved reactivity rates in the preparation of polyurethane and polyisocyanurate foams, and result in forms of improved structure.

3,793,363
BENZOATES OF THE 2-(LOWER ALKYL)-3-(LOWER ALKYL) - 4 - ARYL - 3 OR 4 - CYCLOHEXENCARBINOLS

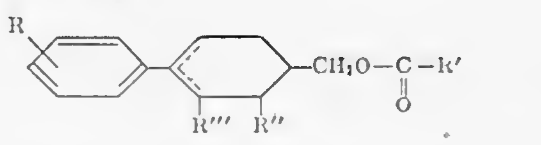
George Karmas, Bound Brook, N.J., assignor to Ortho Pharmaceutical Corporation

No Drawing. Original application May 14, 1968, Ser. No. 728,900, now Patent No. 3,557,129. Divided and this application Sept. 14, 1970, Ser. No. 72,221

Int. Cl. C07c *69/78*

U.S. Cl. 260—476 R **1 Claim**

Compounds of the general formula



are disclosed wherein —R is selected from the group consisting of hydrogen, hydroxy, lower alkoxy of up to 8 carbon atoms, lower alkyl of up to 8 carbon atoms, and lower alkyl anilino of up to 4 carbon atoms; —R′ is selected from the group consisting of alkyl and alkenyl of up to 20 carbon atoms, cycloalkyl lower alkyl of up to 3 carbon atoms in the alkyl portion, adamantyl, pyridyl, furyl, lower alkyl carboxylic acids and their alkali metal salts, esters and carbamates; and R″ and R‴ are selected from the group consisting of lower alkyl of up to 3 carbon atoms. These compounds exhibit estrogenic properties and when given in a single subcutaneous dose have long acting effects in the suppression of animal reproduction.

3,793,364
CARBOXYLATION OF ARYLACETONITRILES

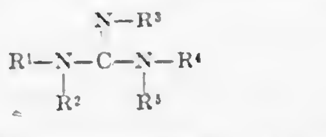
Edwin L. Patmore, Fishkill, N.Y., assignor to Texaco Inc., New York, N.Y.

No Drawing. Original application Dec. 18, 1968, Ser. No. 784,945, now Patent No. 3,591,628. Divided and this application Feb. 3, 1971, Ser. No. 119,429

Int. Cl. C07c *121/66*

U.S. Cl. 260—465 D **4 Claims**

A method of carboxylating indene, cyclopentadiene, fluorene and hydrocarbyl cyanide by contacting said compounds with carbon dioxide under substantially anhydrous conditions in the presence of a guanidine of the formula:



$$R^1{-}N(R^2){-}C({=}N{-}R^3){-}N(R^5){-}R^4$$

where R^1 through R^5 are hydrogen or alkyl of from 1 to 5 carbons and acidifying the resultant reaction mixture to form the carboxylic acid derivative and recovering said derivative therefrom.

3,793,365
AMINO ACID DERIVATIVES

Werner Winter, Viernheim, Hesse, Max Thiel, Mannheim, Kurt Stach and Karl Dietmann, Mannheim-Waldhof, and Wolfgang Bartsch, Mannheim, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

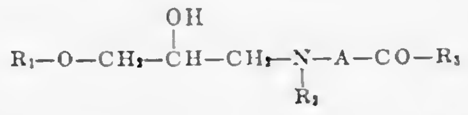
No Drawing. Filed Apr. 10, 1970, Ser. No. 27,447

Claims priority, application Germany, Apr. 30, 1969, P 19 22 003.2

Int. Cl. C07c *101/08*

U.S. Cl. 260—471 A **9 Claims**

New amino acid derivatives of the formula



$$R_1{-}O{-}CH_2{-}CH(OH){-}CH_2{-}N(R_2){-}A{-}CO{-}R_3$$

wherein R_1 is aryl, such as naphthyl or phenyl, which may be substituted by halogen or hydroxyl, alkoxy, alkenyl, alkenyloxy, alkyl, alkoxyalkyl, trifluoroalkyl, alkylmercapto, alkenylmercapto, amino, alkylsulfonylamino, or acylamino; R_1 may also be indenyl or hydrogenated indenyl or hydrogenated naphthyl; R_2 is hydrogen or lower alkyl or aralkyl; R_3 is hydroxyl or amino or alkoxy, alkylamino or dialkylamino, or an N-piperazyl radical, which may be N′-substituted; and A is an alkylated, or arylated lower alkylene chain, which can carry a further carboxyl or carbalkoxy radical; and the physiologically compatible salts thereof; are outstandingly effective as β-adrenergic agents.

3,793,366
ESTERS OF AMINOALKOXYPHENOL AND RELATED COMPOUNDS

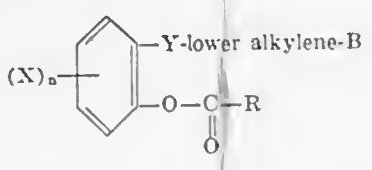
John Krapcho, Somerset, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 760,083, Sept. 16, 1968. This application May 27, 1971, Ser. No. 147,262

Int. Cl. C07c *93/26*

U.S. Cl. 260—477 **7 Claims**

This invention relates to new esters of the general formula



and salts of these compounds, which are useful as disinfectants, central depressants and immunosuppressive agents.

3,793,367
TRIALKYLTRIDECATETRAENDIOIC ACIDS AND ESTERS

John D. Diekman, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Filed Nov. 8, 1972, Ser. No. 304,704

Int. Cl. C07c *69/52*

U.S. Cl. 260—485 R **9 Claims**

Aliphatic hydrocarbon substituted tetra-olefinic terminal dicarboxylic esters and acids, useful for the control of insects.

3,793,368
16,17-SECO-B-NOR STEROIDS

Pierre Crabbe, Mexico City, Mexico, and John H. Fried, Palo Alto, Calif., assignors to Syntex Corporation, Panama, Panama

No Drawing. Filed July 1, 1971, Ser. No. 159,009

Int. Cl. C07c *69/12*

U.S. Cl. 260—488 B **11 Claims**

Novel 16,17-seco steroidal compounds of the B-norandrostane and B-norestrane series, useful as antiandrogenic agents and methods for their preparation.

3,793,369
PROCESS FOR PRODUCTION OF CARBOXYLIC ESTERS

Michio Hara, Kiyotaka Ohno, Jiro Tsuji, Tsunesuke Kajimoto, Shigeru Wakamatsu, and Ryoji Nakanishi, Kamakura, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

No Drawing. Filed Oct. 22, 1971, Ser. No. 191,775

Int. Cl. C07c *67/00, 69/24*

U.S. Cl. 260—497 A **3 Claims**

Process for the production of carboxylic esters which comprises reacting an olefinically unsaturated hydrocarbon with carbon monoxide and alcohol in the presence of palladium chloride or a palladium chloride complex of an aromatic tertiary phosphine in an amount of 4–20 moles per mole palladium.

3,793,370
β-AMINOETHYLSULFONIUM COMPOUNDS AND PROCESS FOR THE MANUFACTURE THEREOF

Rolf Fikentscher and Felix Miksovsky, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Mar. 18, 1971, Ser. No. 125,899

Int. Cl. C07c *87/04*

U.S. Cl. 260—501.1 **5 Claims**

Manufacture of β-aminoethylsulfonium compounds by reacting a thioether with an aziridine and an acid, and the novel β-aminoethylsulfonium compounds themselves. The compounds of the invention are curing agents, crosslinking agents, antistatic agents, emulsifiers, fungicides and valuable intermediates in the preparation of such agents.

3,793,371
METHOD FOR THE PREPARATION OF PYROMELLITIC ACID

Kiyoshi Takagi, Hiroshi Miyamori, Tomiya Isshiki, Tetsuo Tomita, and Harushige Ohki, Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 703,269, Feb. 6, 1968. This application June 16, 1971, Ser. No. 153,803

Claims priority, application Japan, Feb. 24, 1967, 42/11,489

Int. Cl. C07c *63/02*

U.S. Cl. 260—524 R **18 Claims**

A method of catalytically oxidizing a 1,2,4,5- substituted benzene having at least one chloromethyl substituent in the presence of a V_2O_5 containing catalyst at a temperature of 360–650° C., by introducing a molecular oxygen containing gas in which the oxygen quantity employed is 2–50 times as high as that of the stoichiometrical amount, at a space velocity of 1,000–100,000, to prepare pyromellitic acid, wherein a minor proportion of 1,2,3,4- or 1,2,4,6- substituted benzenes with at least one chloromethyl group increases yields.

3,793,372
N-CYANOHALOALKANESULFONANILIDES

John F. Gerster, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed July 28, 1971, Ser. No. 166,992

Int. Cl. G07c *143/74*

U.S. Cl. 260—556 F **9 Claims**

N-cyanohaloalkanesulfonanilides wherein the phenyl ring is optionally substituted by a substituent containing no cyclic groups and processes for their preparation are disclosed. These compounds and their compositions are effective herbicides.

3,793,373
RECOVERY OF COMPONENTS FROM THE ALKALINE WASH WATER OF OXIDATION TAILINGS

Horst Grasemann, Marl, and Hermann Rose, Essen, Germany, assignors to Chemische Werke Huels A.G., Marl, Germany

No Drawing. Filed Apr. 29, 1970, Ser. No. 33,093

Claims priority, application West Germany, Apr. 30, 1969, P 19 22 095.2

Int. Cl. C07c *29/24, 45/24*

U.S. Cl. 260—586 A **10 Claims**

The invention relates to the recovery of unreacted and desired reaction products contained in alkaline wash water which was used to treat oxidation tailings in a process for the oxidation of aliphatic and cycloaliphatic hydrocarbons to alcohols and ketones. The alkaline wash water is cooled to a temperature below about 40° C., preferably between about 20–40° C., and the unreacted hydrocarbon, alcohols and ketones are thereby separated from the wash water and subsequently recovered therefrom.

3,793,374
INTERMEDIATES USEFUL IN STEROID TOTAL SYNTHESIS AND PROCESSES THEREFOR

Robert Angelo Micheli, Passaic, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Mar. 8, 1971, Ser. No. 122,128

Int. Cl. C07c *49/44*

U.S. Cl. 260—586 H **1 Claim**

A series of novel 5-ketalized-4,5-seco-19-norandrostanes are useful intermediates for the preparation of medicinally valuable 19-norsteroids. These compounds are prepared from 3-ketalized-5-oxo-4,5-seco - 9 - dehydro - 19 - norandrostanes.

3,793,375
PROCESS FOR PRODUCING POLYENE COMPOUNDS

Ulrich Schwieter, Reinach, Basel-Land, and Norbert Rigassi, Arlesheim, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed June 18, 1970, Ser. No. 47,572

Claims priority, application Switzerland, July 4, 1969, 10,221/69

Int. Cl. C07c *49/61*

U.S. Cl. 260—587 **4 Claims**

A process for producing 3 - methyl - 5 - (1-hydroxy-2,6,6 - trimethyl - 4 - oxo - cyclohex-2-en-1-yl)-penta-2,4-dien-1-oic acid, derivatives thereof and related compounds which are useful as plant growth regulators, from 4-(1,2-epoxy-2,6,6 - trimethyl - cyclohex - 3 - en-1-yl)-but-3-en-2-one or 3 - methyl - 5 - (1,2 - epoxy-2,6,6-trimethyl-cyclohex-3-en-1-yl)-penta-2,4-dienyl derivatives including intermediates in this process.

3,793,376
PROCESS FOR PRODUCING 3-PHENYL PENTENALS

John B. Hall, Rumson, and Manfred Vock, West Orange, N.J., assignors to International Flavors & Fragrances, Inc., New York, N.Y.

No Drawing. Original application June 4, 1970, Ser. No. 43,555, now Patent No. 3,694,232, dated Sept. 26, 1972. Divided and this application Mar. 20, 1972, Ser. No. 236,442

Int. Cl. C07c *45/00*

U.S. Cl. 260—599 **4 Claims**

Process for preparing 3-phenyl pentenals comprising reacting alkyl vinyl ethers with 3-phenyl-propen-2-ol-1's in the presence of a protonic acid catalyst.

3,793,377
SULFURIC ACID CATALYZED CHLORINATION OF DIPHENYL OXIDE

Henry E. Hennis, Coleman, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Jan. 3, 1972, Ser. No. 215,212

Int. Cl. C07c *43/28*

U.S. Cl. 260—612 R **5 Claims**

The use of catalytic quantities of sulfuric acid enhances para-chlorination of diphenyl oxide with low tar formation. Para-chlorinated diphenyl oxides are desirable linear precursors for polymers and detergents.

3,793,378
CATALYTIC PROCESS FOR PREPARING META-CRESOL

Luigi Cassar, Marco Foa, and Gian Paolo Chiusoli, Novara, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed Apr. 15, 1971, Ser. No. 134,506

Claims priority, application Italy, Apr. 16, 1970, 23,392/70

Int. Cl. C07c *37/00*

U.S. Cl. 260—621 R **3 Claims**

A new catalytic process for preparing m-cresol from methallyl chloride, acetylene and carbon oxide is disclosed. The catalyst used is a system prepared from nickeltetracarbonyl, an alkaline iodide and/or an alkaline bromide, iron powder and thiourea. A neutralizing agent is also present.

Due to the various purposes for which it is useful, meta-cresol has considerable industrial importance. It can be used in the preparation of phenol/formaldehyde type resins, in the preparation of plasticizers (tricresylphosphates), and in the preparation of antioxidants, etc.

3,793,379
PROCESS FOR THE PRODUCTION OF ALCOHOLS

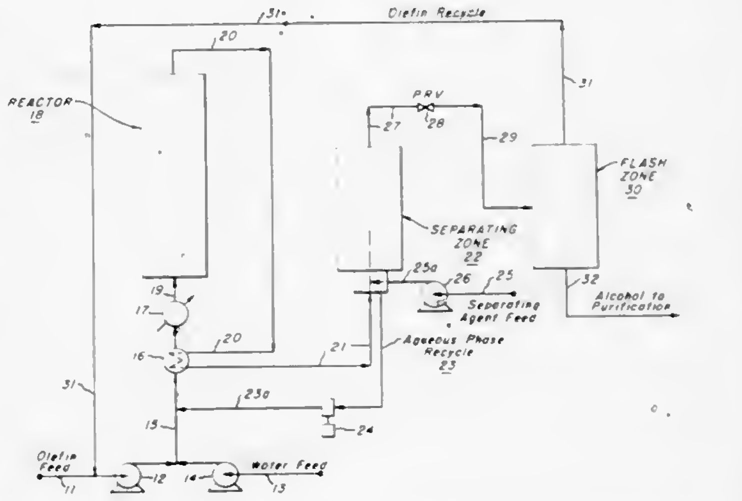
Robert J. Rosscup, Valparaiso, Ind., and Alex Zletz, Chicago Heights, and Luke A. Schaap, South Holland, Ill., assignors to Standard Oil Company, Chicago, Ill.

Continuation-in-part of abandoned application Ser. No. 561,776, June 30, 1966. This application Apr. 24, 1970, Ser. No. 31,599

The portion of the term of the patent subsequent to Dec. 15, 1987, has been disclaimed

Int. Cl. C07c *29/04*

U.S. Cl. 260—641 **5 Claims**



Production of C_2 and C_3 alcohols from corresponding olefins is effected by liquid-phase high-pressure hydration with recovery of the reaction product by introducing a separating agent in order to form a water-rich phase and an organic-rich phase. The water-rich phase is recycled under high pressure conditions.

3,793,380
PREPARATION OF DIHALO COMPOUNDS

Pierre Marie Joseph Ghislain de Radzitzky d'Ostrowick and Alain Joseph Guillaume de Roocker, Brussels, Belgium, assignors to Labofina Soc. An., Brussels, Belgium

No Drawing. Original application Mar. 23, 1970, Ser. No. 22,031, now Patent No. 3,714,215. Divided and this application May 22, 1972, Ser. No. 255,581

Int. Cl. C07c *17/00, 29/00, 67/00*

U.S. Cl. 260—648 R **1 Claim**

N,N-dialkyl (2-halo-1-substituted ethoxymethylene) immonium halides are formed by halogenation of olefines in the presence of N,N-dilower alkyl formamide to form new compounds and derivatives. The compounds are decomposed to valuable 1,2-dihalo compounds, 1-halo-2-formates and halohydrins by thermal decomposition, hydrolysis or alcoholysis.

3,793,381
PROCESS FOR PURIFYING CYCLOPENTENE

Hans-Dieter Kohler, Dormagen, Herbert Benda, Cologne, and Helmut Scherb, Dormagen, Germany, assignors to Erdolchemie Gesellschaft mit beschrankter Haftung, Cologne, Germany

No Drawing. Filed June 14, 1972, Ser. No. 262,838

Claims priority, application Germany, June 26, 1971, P 21 31 791.9; Jan. 26, 1972, P 22 03 459.9

Int. Cl. C07c *7/04*

U.S. Cl. 260—666 A **5 Claims**

Cyclopentene containing olefinic and diolefinic C_5-hydrocarbons as impurities is purified by contacting the

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impure cyclopentene with a macro porous cation exchanger in the H-form. The purified cyclopentene can be subsequently separated and recovered by distillation.

3,793,382
PROCESS FOR PREPARING 5-ALKYLIDENE-2-NORBORNENE

Masaru Higuchi and Ryoshu Suzuki, Ohimachi, Japan, assignors to Daicel Ltd., Osaka, Japan
No Drawing. Filed Dec. 16, 1971, Ser. No. 208,910
Claims priority, application Japan, Dec. 22, 1970, 45/116,481
Int. Cl. C07c *5/24*
U.S. Cl. 260—666 PY **6 Claims**

A process for preparing 5-alkylidene-2-norbornene which is characterized by treating 5-(1-alkenyl)-2-norbornene in the gas phase using a catalyst which comprises an alkali metal supported on alumina from which molecular oxygen and water have been removed.

3,793,383
SELECTIVE HYDROGENATION OF AROMATICS

Marvin M. Johnson and Gerhard P. Nowack, Bartlesville, Okla., assignors to Phillips Petroleum Company
No Drawing. Continuation-in-part of abandoned application Ser. No. 177,131, Sept. 1, 1971. This application July 13, 1972, Ser. No. 271,577
Int. Cl. C07c *5/10*
U.S. Cl. 260—667 **11 Claims**

Aromatics are hydrogenated by contacting same with hydrogen and a ruthenium catalyst under hydrogenation conditions in the presence of an organic nitrogen-containing compound which functions as a reaction modifier.

3,793,384
HYDROCARBON CONVERSION PROCESSES AND CATALYSTS

John Garfield Chenoweth, Ivan James Samuel Lake, Roy John Sampson, and Paul Osmond, Norton, Stockton-on-Tees, England, and Douglas Shooter, Cambridge, Mass., assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Mar. 3, 1972, Ser. No. 231,745
Claims priority, application Great Britain, Mar. 12, 1971, 6,674/71; May 3, 1971, 12,738/71
Int. Cl. C07c *5/24, 15/08*
U.S. Cl. 260—668 A **9 Claims**

Specified amounts of alumina are removed from certain silica/alumina catalysts. The products are improved xylenes isomerization catalysts.

3,793,385
HYDROCARBON SEPARATION PROCESS

Adrian Edward Bond, Camberley, Christopher George Venning Burgess, Weybridge, and David Eric Martin, Camberley, England, assignors to BP Chemicals International Limited, London, England
No Drawing. Filed Apr. 18, 1972, Ser. No. 245,184
Claims priority, application Great Britain, Apr. 20, 1971, 10,048/71
Int. Cl. C07c *7/12, 15/08*
U.S. Cl. 260—674 SA **17 Claims**

Zeolite beta is used to separate C_8 alkyl benzenes. In an example from a blend of 47.8% m-xylene, 22.0% p-xylene, 19.4% ethylbenzene and 7.6% o-xylene a desorbate containing 98% p-xylene and ethylbenzene was obtained in a yield of 3.1% sieve wt.

3,793,386
SEPARATION OF XYLENES BY ADSORPTION ON PARTIALLY DEHYDRATED COPPER ZEOLITES

Ronald I. Davis, Wilmington, Del., assignor to Sun Research and Development Co., Philadelphia, Pa.
No Drawing. Filed June 6, 1972, Ser. No. 263,370
Int. Cl. C07c *7/12;* **C10g** *25/04*
U.S. Cl. 260—674 SA **11 Claims**

Selective adsorption of p-xylene from a fluid mixture containing m-xylene can be obtained with copper-exchanged molecular sieves (crystalline alumino-silicate zeolites) which have a water loss on ignition at 800° C. in the range of 8–20 wt. percent and preferably, have been partially dehydrated at a temperature in the range of 50–300° C. Preferably the Al/Si ratio in the zeolite framework is in the range of 0.2–0.65. For example, p-xylene can be separated from m-xylene by selective adsorption at 100° C. of the p-xylene on CuY zeolite which was partially dehydrated at 82° C. and contained about 15 wt. percent water by ignition analysis.

3,793,387
PROCESS FOR SEPARATION OF PHENANTHRENE

Yun-Chung Sun, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Apr. 6, 1973, Ser. No. 348,777
Int. Cl. C07c *7/02, 15/28, 15/30*
U.S. Cl. 260—675 **6 Claims**

Separation of phenanthrene from a solution of a mixture of anthracene and phenanthrene in lower alcohol or ketone, up to 30% aqueous mixture thereof, or mixtures thereof, by selectively precipitating the phenanthrene by the addition of water.

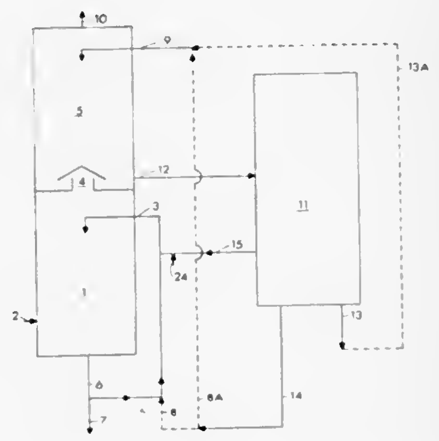
3,793,388
SELECTIVE HYDROGENATION OF ACETYLENE FROM OLEFINS WITH A NICKEL ON ALUMINA CATALYST

Emory W. Pitzer, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed May 30, 1972, Ser. No. 257,796
Int. Cl. C07c *11/12*
U.S. Cl. 260—677 A **8 Claims**

A method for the selective hydrogenation of acetylene is described comprising contact of acetylene and an olefinic mixture with hydrogen in the presence of a catalyst consisting of nickel supported on alumina, wherein at least a substantial portion of the pores in the alumina have a diameter of at least 120 A.

3,793,389
QUENCHING PROCESS FOR PYROLYTICALLY CRACKED HYDROCARBONS

Thaddeus J. Oleszko, Burghausen, Germany, and Lynn P. Walker, Robinson, Ill., assignors to Marathon Oil Company, Findlay, Ohio
Continuation-in-part of application Ser. No. 16,443, Mar. 4, 1970, now Patent No. 3,674,890. This application June 14, 1972, Ser. No. 262,818
The portion of the term of the patent subsequent to July 4, 1989, has been disclaimed
Int. Cl. C07c *3/00;* **C10g** *9/12*
U.S. Cl. 260—679 R **19 Claims**



Improved quenching of pyrolytically cracked gas is effected by separating the hydrocarbon-water emulsion produced in a quenching zone of a plurality of multistage quenching process and then transferring the emulsion to the initial stage of the quenching zone wherein incoming gases vaporize the water from the emulsion. Also, a slurry containing particulate carbon, e.g. produced by scrubbing exhaust gases from a Wulff process, can be transferred to the initial stage of the quenching zone to recover hydrocarbon and particulate carbon.

3,793,390
METHOD FOR PRODUCING ISOPRENE

Kazumi Takagi, Teruo Matsuda, and Masahiro Murakami, Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka-fu, Japan
No Drawing. Filed Jan. 20, 1971, Ser. No. 108,197
Claims priority, application Japan, Jan. 20, 1970, 45/5,571
Int. Cl. C07c *1/24, 11/18*
U.S. Cl. 260—681 **6 Claims**

A method for producing isoprene which comprises reacting isobutene and 4,4-dimethyl-1,3-dioxane in a liquid phase in the presence of a catalyst at a temperature from 110° to 180° C. to give isoprene in an excellent yield.

3,793,391
CATALYSTS AND PROCESS FOR OXIDATIVE DEHYDROGENATION

Brent J. Bertus, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed Feb. 10, 1972, Ser. No. 225,284
Int. Cl. C07c *3/28*
U.S. Cl. 260—683.3 **11 Claims**

Catalyst compositions prepared from (I) a transition metal compound, such as nickel oxide, (II) a tin compound, and (III) a Group II–A metal compound, such as magnesium oxide, are effective in a process to convert paraffins or monoolefins to a greater degree of unsaturation.

3,793,392
DEHYDROGENATION OF ALKANES AND CATALYST THEREFOR

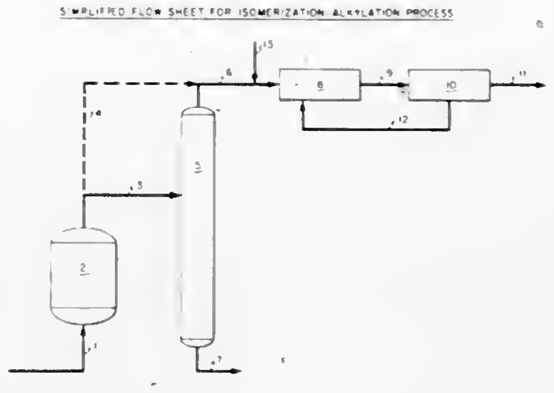
George Robert Martin, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Original application July 19, 1971, Ser. No. 164,150, now Patent No. 3,718,607, dated Feb. 27, 1973. Divided and this application Oct. 2, 1972, Ser. No. 293,789
Int. Cl. C07c *5/18*
U.S. Cl. 260—683.3 **6 Claims**

A process for dehydrogenating an alkane to form an olefin by passing it over a catalyst comprising nickel or cobalt sulfide and cerium oxide alone or in combination with barium oxide, preferably on an alumina support, at a temperature of from about 550° to 625° C. and recovering the olefin.

3,793,393
ISOMERIZATION PROCESS WITH SUPPORTED NICKEL OXIDE CATALYST

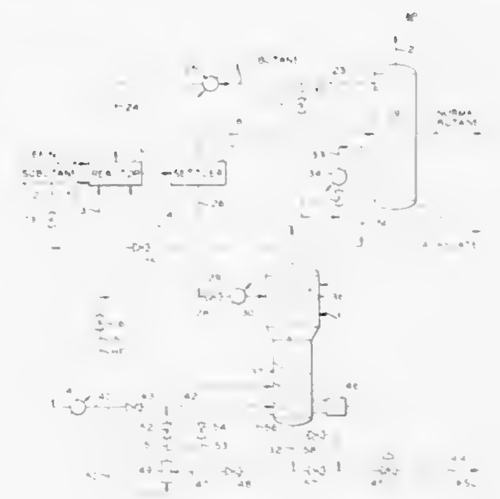
Arthur H. Neal, 1673 Mohawk Lane, Scotch Plains, N.J. 07076
Filed Feb. 2, 1972, Ser. No. 222,758
Int. Cl. C07c *5/24, 3/54*
U.S. Cl. 260—683.47 **16 Claims**

An olefin-containing stream comprising isomerizable olefins is contacted with a catalyst comprising nickel oxide, at isomerization conditions thereby forming a double bond isomer of the isomerizable olefins. At least a portion of the product from the isomerization step may then be contacted with a paraffin and an alkylation catalyst at conditions sufficient to form alkylate of high octane number.



3,793,394
PURIFICATION OF HF CATALYST IN ALKYLATION PROCESS

Charles C. Chapman, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed May 8, 1972, Ser. No. 251,171
Int. Cl. C07c *3/54*
U.S. Cl. 260—683.48 **4 Claims**



Olefins and isoparaffins are alkylated in the presence of an HF catalyst. Reactor effluent is passed to a settling zone. The hydrocarbon phase is fractionated to recover an alkylate product. The acid phase is recycled to the reactor. A portion of the recycled acid is passed to a purification column for removal of acid soluble oil. Stripping vapor and reflux liquid are passed to the purification column to remove substantially all of the HF from the acid soluble oil. A substantial portion of the acid soluble oil removed from the purification column is contacted externally with stripping vapor and reintroduced into the purification column.

3,793,395

CATALYTIC HYDROISOMERIZATION OF PARAFFIN HYDROCARBONS IN THE ABSENCE OF MOLECULAR OR GASEOUS OXYGEN

John W. Myers and Reagan T. Wilson, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed May 3, 1971, Ser. No. 139,893

Int. Cl. C07c *5/24*

U.S. Cl. 260—683.68 **1 Claim**

An improvement in the isomerization of paraffin hydrocarbons which comprises passing the hydrocarbon feedstream in contact with an isomerization catalyst, the feedstream being substantially free of molecular or gaseous oxygen.

3,793,396

HYDROCARBON ISOMERIZATION WITH ALUMINA CATALYST PREPARED WITH AN ACTIVATOR SYSTEM OF CHLORINE OR BROMINE AND AN INORGANIC SULFUR COMPOUND

Robert M. Suggitt and John H. Estes, Wappingers Falls, and Stanley Kravitz, Wiccopee, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Original application July 29, 1968, Ser. No. 748,197, now Patent No. 3,689,434. Divided and this application Jan. 21, 1972, Ser. No. 219,838

Int. Cl. C07c *5/30*

U.S. Cl. 260—683.68 **8 Claims**

A method for preparing a hydrocarbon conversion catalyst composed of alumina and chlorine or bromine by contacting alumina with an activator system comprising chlorine or bromine and an inorganic sulfur compound selected from the group hydrogen sulfide and compounds corresponding to the formula S_mX_2. The catalyst may additionally include a metal such as platinum, palladium, ruthenium or rhodium. The catalysts so prepared are useful in such hydrocarbon conversion processes as isomerization, cracking, hydrocracking, reforming, alkylation, dehydrogenation, disproportionation and polymerization.

3,793,397

PROCESS FOR THE PRODUCTION OF AMINOETHYLPIPERAZINE

Myrl Lichtenwalter, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Continuation-in-part of abandoned application Ser. No. 17,963, Mar. 9, 1970. This application July 12, 1972, Ser. No. 270,964

Claims priority, application Great Britain, Jan. 19, 1971, 2,491/71

Int. Cl. C07d *51/70*

U.S. Cl. 260—288 SY **13 Claims**

Aminoethylpiperazine (AEP) is produced by heating monoethanolamine (MEA) in the presence of ammonia and hydrogen in an aqueous medium over a hydrogenation catalyst. My invention is an improvement over this process wherein the production of AEP is maximized by recycling a portion of the product stream containing piperazine to the starting mixture. Aminoethylpiperazine is an epoxy resin curing agent; an intermediate in the preparation of corrosion inhibitors, asphalt additives, emulsion breakers, emulsifying agents, pharmaceuticals, dyes, textile chemicals, and surfactants.

3,793,398

ADHESIVE COMPOSITION OF UNSATURATED POLYESTER, EPOXY-ESTER AND THERMOPLASTIC RESIN

Sadakazu Hokamura, Yamato, Japan, assignor to Showa High Polymer Co., Ltd., Tokyo, Japan

No Drawing. Filed Jan. 26, 1972, Ser. No. 221,100

Int. Cl. C08g *45/04, 45/14*

U.S. Cl. 260—835 **2 Claims**

This invention is intended to provide improved adhesive unsaturated polyester resinous compositions comprising an unsaturated polyester resin, which is synthetized by using a poly-hydric alcohol and a polycarboxylic acid, an unsaturated epoxy-ester resin, which is synthetized by using an epoxy compound and a carboxylic acid, and a thermoplastic resin which is compatible with the unsaturated epoxy-ester resin.

3,793,399

ANIONIC POLYMERIZATION OF LACTAMS IN THE PRESENCE OF A POLYETHER AND A COMPOUND CONTAINING A UREA, THIOUREA, OR GUANIDINE RADICAL

Jozef L. M. van der Loos, Rijksweg Z 146, and Peter J. M. W. Claassen, Eisenhowerstraat 373, both of Sittard, Netherlands

No Drawing. Filed Sept. 21, 1971, Ser. No. 182,520

Claims priority, application Netherlands, Sept. 23, 1970, 7014022

Int. Cl. C08g *41/04*

U.S. Cl. 260—857 PG **2 Claims**

A process for the preparation of polylactam polymers of improved notch impact strength is described, the process of the anionic catalytic polymerization reaction in the presence of certain promoters being carried out in the further presence of a quantity of a polyether which is soluble in the molten lactam being polymerized.

3,793,400

POLYESTER-1,2 POLYBUTADIENE HIGH IMPACT MOLDING COMPOUND

Omer Eugene Curtis, Jr., Morristown, and Charles Driscoll Mason, Florham Park, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Oct. 13, 1971, Ser. No. 189,005

Int. Cl. C08g *39Y10, 51/04, 51/18*

U.S. Cl. 260—862 **14 Claims**

The addition of certain 1,2-polybutadiene resins to unsaturated polyesters improves impact resistance and toughness with no loss of heat distortion temperature.

3,793,401

STABILIZED POLYMER BLENDS

Eric Nield and Philip Anthony Staniland, Welwyn Garden City, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Nov. 27, 1970, Ser. No. 93,390

Claims priority, application Great Britain, Nov. 27, 1969, 58,156/69

Int. Cl. C08f *45/58*

U.S. Cl. 260—876 R **10 Claims**

The use of up to 20% by weight of organic anhydrides as stabilizers in polymer compositions containing at least 50 mole percent of polymerized unsaturated nitriles such as acrylonitrile and methacrylonitrile, and at least 5% by weight of a diene rubber. The anhydrides are selected from anhydrides of cyclic dicarboxylic acids, polymeric anhydrides and polymeric acids which lose water on heating to form polymeric anhyfdrides.

3,793,402

LOW HAZE IMPACT RESISTANT COMPOSITIONS CONTAINING A MULTI-STAGE, SEQUENTIALLY PRODUCED POLYMER

Frederick H. Owens, 68 Hewlet Lane, Willingboro, N.J. 08046

No Drawing. Continuation-in-part of abandoned application Ser. No. 27,996, Apr. 13, 1970. This application Nov. 5, 1971, Ser. No. 196,194

Int. Cl. C08f *15/18, 19/08*

U.S. Cl. 260—876 R **23 Claims**

An impact resistant thermoformable composition having improved stress whitening behavior comprising a blend of a thermoplastic polymer and a multi-stage, sequentially produced polymer characterized by: (A) a non-elastomeric, hard first stage; (B) an intermediate elastomeric stage; and (C) a final, relatively hard stage.

3,793,403

METHOD OF PRODUCING ABS TYPE POLYBLEND UTILIZING AGGLOMERATED RUBBER SUBSTRATE OF RELATIVELY MONODISPERSE PARTICLE SIZE AND POLY-BLENDS PRODUCED THEREBY

William O. Dalton, Hampden, and Quirino A. Trementozzi, Springfield, Mass., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of abandoned application Ser. No. 48,564, June 22, 1970. This application Nov. 3, 1971, Ser. No. 195,444

Int. Cl. C08f *37/18, 41/12*

U.S. Cl. 260—876 R **12 Claims**

A polyblend contains a matrix interpolymer of monovinylidene aromatic hydrocarbon and an ethyleneically unsaturated nitrile, and a graft copolymer having a superstrate of an interpolymer of monovinylidene aromatic hydrocarbon and an ethylenically unsaturated nitrile. In the graft copolymer, the substrate comprises an agglomerated rubbery polymer having a monodisperse particle size, and both the molecular weight of the superstrate and also the ratio of superstrate to substrate are carefully controlled to provide an optimum balance of properties in the polyblend.

3,793,404

SMOKE-RETARDANT STYRENE POLYMER COMPOSITIONS CONTAINING TETRAPHENYL LEAD

Leo P. Parts, Dayton, and John T. Miller, Jr., West Carrollton, Ohio, assignors to Monsanto Research Corporation, St. Louis, Mo.

No Drawing. Filed Dec. 29, 1972, Ser. No. 319,962

Int. Cl. C08f *45/62*

U.S. Cl. 260—880 R **3 Claims**

Smoke-retardant polymer compositions comprising a styrene polymer and at least a sufficient amount of tetraphenyl lead to reduce smoking.

3,793,405

IMPACT RESISTANT ACRYLATE RESIN COMPOSITIONS HAVING IMPROVED AGING RESISTANCE

Manfred Munzer, Bensheim, and Adolf Wohnhas, Darmstadt-Arheilgen, Germany, assignors to Rohm G.m.b.H., Darmstadt, Germany

No Drawing. Filed Sept. 27, 1971, Ser. No. 184,233

Claims priority, application Germany, Oct. 7, 1970, P 20 49 267.5

Int. Cl. C08f *1/80, 29/38*

U.S. Cl. 260—881 **8 Claims**

Impact resistant acrylate resin compositions which are graft copolymers comprising a backbone copolymer of (1) acrylonitrile and/or methacrylonitrile and (2) methyl acrylate and/or ethyl acrylate, and a grafted copolymer phase comprising (1) an acrylate of a C_1–C_4 alcohol and (2) acrylonitrile and/or methacrylonitrile. Method of making the same.

3,793,406

VINYL HALIDE POLYMER IMPACT MODIFIERS

Newman M. Bortnick, Oreland, Warren D. Niederhauser, Meadowbrook, and Leonard H. Smiley, Jenkintown, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 91,223, Nov. 19, 1970. This application Nov. 22, 1971, Ser. No. 201,205

Int. Cl. C08f *29/24*

U.S. Cl. 260—884 **5 Claims**

A four stage, sequentially produced polymer comprises (A) a rubbery, first stage polymer formed by emulsion polymerization of a monomer charge to 70 to 99.9 weight percent of an alkylacrylate compound, 0 to 30 weight percent of a vinylaromatic monomer interpolymerizable therewith, and 0.1 to 10 weight percent of a polyfunctional cross-linking monomer based on the weight of the monomer charge;

(B) a second stage polymer formed by emulsion polymerizing in the presence of the polymer stage (A), a second monomer charge of 70 to 99.9 weight percent of a vinylaromatic monomer from 0 to 30 weight percent of alkyl acrylate, wherein the alkyl group of the alkyl acrylate has about 2 to 8 carbon atoms, interpolymerizable therewith, and 0.1 to 10 weight percent of a second polyfunctional cross-linking agent;

(C) a third stage polymer formed by emulsion polymerization in the presence of the Stage (A) and Stage (B) polymer product, and comprising 80 to 100 weight percent of an alkyl methacrylate, wherein the alkyl group has about 1 to 4 carbon atoms; and

(D) a fourth stage polymer formed by the emulsion polymerization in the presence of the Stage (A), Stage (B) and Stage (C) polymer product, and comprising from 80 to 100 weight percent of a vinyl halide.

Preferably the polymer is used as a modifier for vinyl halide polymers. When so used, the refractive index of Stage (A)+(B)+(D) is substantially equal to the refractive index of the modified vinyl halide polymer+Stage (C) of the modifier.

3,793,407

O,S,N-TRI-ALIPHATIC HYDROCARBON-THIONOTHIOLPHOSPHORIC ACID ESTER AMIDES

Claus Stolzer, Wuppertal-Vohwinkel, Bernhard Homeyer, Opladen, Ingeborg Hammann, Cologne, and Gunter Unterstenhofer, Opladen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

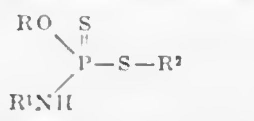
No Drawing. Filed July 6, 1971, Ser. No. 160,185

Claims priority, application Germany, July 11, 1970, P 20 34 475.6

Int. Cl. A01n *9/36;* **C07f** *9/24*

U.S. Cl. 260—948 **4 Claims**

O,S,N-tri-aliphatic hydrocarbon-thionothiolphospohric acid ester amides of the general formula



$$(RO)(R^1NH)P(=S){-}S{-}R^2$$

(I)

in which R, R^1 and R^2, which may be the same or different, each is an alkyl, alkenyl or alkynyl radical with up to 6 carbon atoms, optionally substituted with at least one halo, phenyl, cyano, alkoxy, alkylmercapto, phenylmercapto or naphthylmercapto radical, the marcapto radicals being optionally chloro- or cyano-substituted, which possess nematocidal, insecticidal, acaridical, fungicidal and mammalian-repellent properties.

3,793,408

METHOD FOR THE PURIFICATION OF BIS (2-ETHYL-HEXYL) PHOSPHORIC ACID

Wallace W. Schulz, Richland, Wash., assignor to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Jan. 28, 1972, Ser. No. 221,795

Int. Cl. C07f *9/08*

U.S. Cl. 260—990 **7 Claims**

Foreign products including the neutral organophosphorous compounds and the iron salts normally present in commercial bis(2-ethyl-hexyl)phosphoric acid (HDEHP), and the radiolytic degradation products of HDEHP on exposure HDEHP to beta and gamma irradiation are removed from HDEHP containing one or more of such products by contacting the said foreign product containing HDEHP with a macroreticular anion exchange resin in base form whereby the DEHP$^-$ ion of HDEHP exchanges with the anion of the resin and is thus adsorbed on the resin and the said foreign products are not adsorbed and will pass through a bed of particles of the resin. The adsorbed DEHP$^-$ ion is then eluted from the resin and acidified to form and recover the purified HDEHP.

completed. Preferably, a pressure operated shuttle valve

to cool and break it up into particles which fall into a

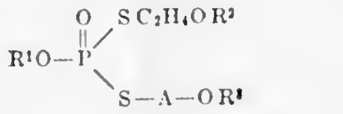
without foaming and retracting movable inserts in a mould

3,793,409

O-ALKYL - S - (β-ALKOXYETHYL)-S-(ALKOXY OR PHENOXY-ALKYL) PHOSPHORODITHIOLATES

Shigeo Kishino, Tokyo, and Akio Kudamatsu and Kozo Shiokawa, Kanagawa, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Nov. 8, 1971, Ser. No. 196,748
Claims priority, application Japan, Nov. 18, 1970, 45/100,996
Int. Cl. C07f *9/16;* **A01n** *9/36*
U.S. Cl. 260—951 9 Claims

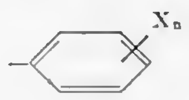
O-alkyl-S-(β-alkoxyethyl)-S-(alkoxy or phenoxyalkyl)-phosphoro dithiolates of the general formula



$$R^1O-\overset{\overset{\displaystyle O}{\|}}{P}\begin{matrix}\diagup SC_2H_4OR^2\\ \diagdown S-A-OR^3\end{matrix} \qquad (I)$$

in which

R¹ is methyl or ethyl, R² is lower alkyl,
R³ is lower alkyl or



wherein
n is 0 to 3 and
X is halogen, lower alkyl or nitro, and
A is lower alkylene,

which possess insecticidal, acaricidal and nematocidal properties.

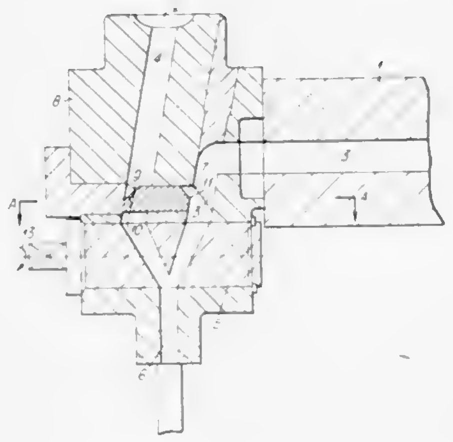
ERRATUM

For Class 264—26 see:
Patent No. 3,792,847

3,793,410

INJECTION MOULDING PROCESS

Paul Johnson Garner, Thorpe Bay, England, assignor to Imperial Chemical Industries Limited, London, England
Original application Feb. 2, 1970, Ser. No. 7,865. Divided and this application Sept. 7, 1972, Ser. No. 286,945
Claims priority, application Great Britain, Feb. 2, 1969, 8,714/69
Int. Cl. B29d *27/02*
U.S. Cl. 264—45 9 Claims

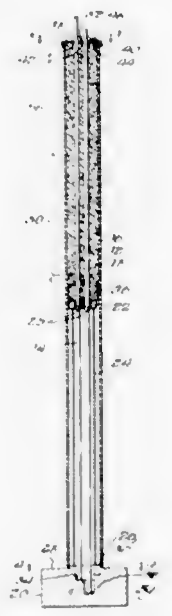


Injection moulding process wherein a skin material and then a core material are sequentially injected into a mould cavity and then a tap operated to prevent further injection to give an article having a skin of one material enclosing a core of a dissimilar material. In order to avoid hesitation marks on the moulding, injection of the core material is commenced before injection of skin material is completed. Preferably, a pressure operated shuttle valve controlled by the relative pressures in the two polymer streams is used to select which composition is injected.

3,793,411

METHOD FOR MAKING INSULATED PIPE

Lawrence J. Stonitsch, Plainfield, and Richard W. Stonitsch, Crest Hill, Ill., assignors to Rovanco, Inc., Joliet, Ill.
Filed Apr. 20, 1971, Ser. No. 135,616
Int. Cl. B29d *27/04;* **F16l** *9/14, 9/22*
U.S. Cl. 264—45 8 Claims

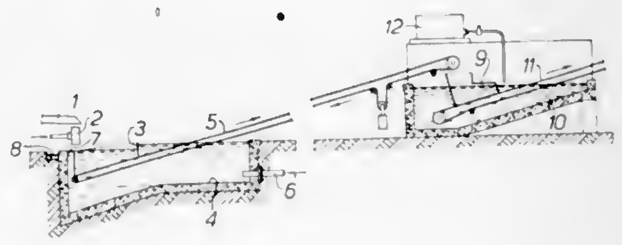


An insulated flow conduit construction having one or more flow conduits centered within a tubular outer casing with unitary monolithic insulating urethane foam means disposed between the conduits and the outer casing. A centering fixture is employed to initially center the flow conduits within the outer casing and urethane foam is then introduced into the casing in a controlled manner, the centering fixture being removed prior to completion of filling with urethane foam.

3,793,412

SODIUM CHROMATE TREATMENT OF GRANULATED PIG IRON

Cyril Edmund Arthur Shanahan, Market Harborough, and Ronald Wilfred Scott, Blandford Forumb, Dorset, England, assignors to British Steel Corporation, London, England
Filed Sept. 14, 1971, Ser. No. 180,346
Claims priority, application Great Britain, Sept. 16, 1970, 44,221/70
Int. Cl. B01j *2/06*
U.S. Cl. 264—7 2 Claims



The production of granulated iron in which a ribbon of molten iron is allowed to fall through the atmosphere. The falling ribbon is subjected to the action of water jets to cool and break it up into particles which fall into a water filled receiving vessel where the particles are further cooled and complete their solidification into granules. The granules are then removed from the vessel and collected. At some point during this process the granules are treated with sodium chromate to form a protective coating thereon.

3,793,413

PROCESS FOR FORMING MICROPOROUS SHEET

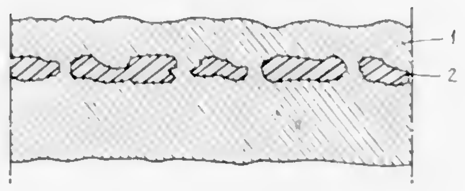
Stanley I. Hayes, Jr., Hamilton, Mass., assignor to USM Corporation, Boston, Mass.
Original application Apr. 8, 1970, Ser. No. 26,591. Divided and this application May 11, 1972, Ser. No. 252,491
Int. Cl. B29d *27/00*
U.S. Cl. 264—41 11 Claims

Process of making microporous sheet having pores of controlled size and arrangement in which temperature and composition are coordinated to control growth of size of non-solvent liquid droplets constituting the discontinuous phase of an emulsion of which the continuous phase is a heated liquid polymeric reactive material which sets through reaction to solid condition and in which process the droplets are removed after setting of the reactive material to leave spaces constituting openings or pores in the solidified material. Pores of smaller size relative to the size of pores in the body of the sheet are provided in the sheet by control of the temperature of a casting surface.

3,793,414

PROCESS OF PREPARING LEATHER SUBSTITUTE FROM POLYURETHANE FOAM SHEET

Fred Buff, Paramus, Joseph Isadore Gross, Short Hills, and Lawrence William Healy, Glen Rock, N.J., assignors to Tenneco Chemicals, Inc., New York, N.Y.
Continuation of abandoned application Ser. No. 793,019, Jan. 22, 1969. This application Dec. 9, 1971, Ser. No. 206,563
The portion of the term of the patent subsequent to Nov. 11, 1986, has been disclaimed
Int. Cl. B29d *27/00;* **B29h** *7/20;* **B32b** *5/28*
U.S. Cl. 264—48 5 Claims



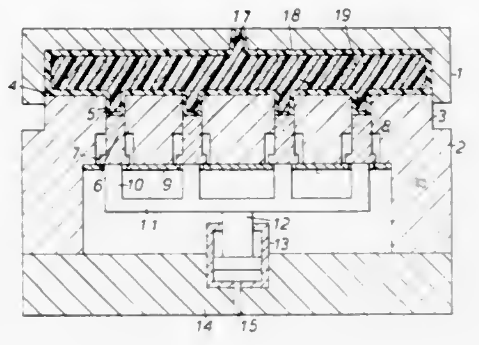
Leather substitute composition comprising a fibrous mat adjacent a polyurethane foam sheet with a number of the fibers of the mat penetrating the foam sheet and a thin, flexible polymer coating on the foam side of the composition.

3,793,415

INJECTION MOLDED RESIN ARTICLES HAVING A FOAMED RESIN CORE

Alan George Smith, Harrow, England, assignor to Imperial Chemical Industries Limited, London, England
Continuation-in-part of abandoned application Ser. No. 109,470, Jan. 25, 1971. This application Nov. 16, 1971, Ser. No. 199,152
Int. Cl. B29d *27/00;* **B29f** *1/06*
U.S. Cl. 264—45 6 Claims

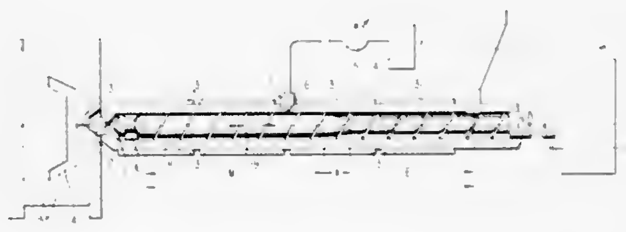
Providing articles having a foamed core by injecting a foamable composition into a mould to fill the mould without foaming and retracting movable inserts in a mould wall or extending into a mould, either so as to allow areas of the moulding to foam or so that the space vacated by the inserts becomes filled without the moulding foaming, and then enlarging the volume of the mould cavity to allow the core of the moulding to foam.



3,793,416

PROCESS FOR INJECTION MOLDING FOAM SYNTHETIC RESIN MATERIALS INVOLVING INTRODUCTION OF THE EXPANSION AGENT INTO THE METERING ZONE BETWEEN INJECTION MOLDING STEPS

Hans-Ulrich Finkmann, Hans Felger, and Peter Zingsheim, Marl, Germany, assignors to Chemische Werke Huls AG, Marl, Germany
Filed Dec. 24, 1970, Ser. No. 101,249
Claims priority, application Germany, Dec. 24, 1969, P 19 64 748.4
Int. Cl. B29d *27/00;* **B29f** *1/04*
U.S. Cl. 264—53 12 Claims



The present disclosure is directed to a method for the production of foamed molded articles by injection molding a heat-plasticated mixture of a thermoplastic synthetic material with a low-boiling liquid or gaseous expanding agent in an injection device containing a feed zone, a zone of increasing pressure and a metering zone, wherein a fluid premix of a thermoplastic synthetic material is introduced into the feed zone of the screw barrel chamber of an injection molding device where it is subjected to the effects of heat and pressure and subsequently mixed with an expanding agent introduced into the metering zone of the screw barrel chamber of the injection molding device, said mixture being ejected under high pressure into an injection mold where the mixture expands and foams up in a pressure-expanded fashion forming said foamed molded articles. In this method the expanding agent is introduced after the compression zone of increasing pressure into the metering zone of essentially uniform-remaining pressure of the screw barrel chamber in such a manner that the expanding agent is fed into the screw barrel chamber only during the time interval of plasticating between two successive injection molding steps.

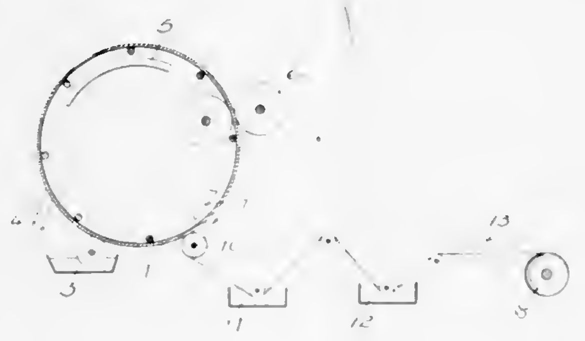
3,793,417
NOVEL KETIMINE-CONTAINING COATING COMPOSITIONS

J. Alden Erikson, Gibsonia, and William J. Birkmeyer, Oakmont, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
No Drawing. Filed June 12, 1972, Ser. No. 261,870
Int. Cl. C08g *22/18*
U.S. Cl. 264—77.5 AM **19 Claims**

Useful adducts can be prepared by reacting a diisocyanate with a diketimine or dialdimine. These adducts can be employed to provide polyketimines or polyaldimines by reacting the adduct with an organic active hydrogen-containing material. The polyketimines or polyaldimines provided may be employed as curing agents or may be cured with crosslinking agents to produce compositions that can be employed as coatings which have excellent appearance, tensile strength and extensibility.

3,793,418
METHOD OF MANUFACTURING PARTLY COLORED AND PATTERNED LACE WORKS OF SYNTHETIC RESIN

Tsuguya Mori, % Meiwa Gravure Chemical Co., Ltd., 1–22–1 Fujimi-cho, Gyoda, Japan
Filed Jan. 26, 1972, Ser. No. 220,750
Claims priority, application Japan, Jan. 29, 1971, 46/3,421
Int. Cl. B29c *13/00;* **B29d** *7/20*
U.S. Cl. 264—78 **5 Claims**



A method of manufacturing partly colored and patterned lace works of thermoplastic resin, comprising (1) feeding the resin on the surface of a metallic pattern constituted of different metals such as copper, chromium, cadmium, selenium and the like, then heating the resin to effect its gelation, (2) forcing a molten resin into a pattern and cooling the same, (3) heating and pressing a resin film in the intaglioed surface of a metallic pattern constituted of at least two different metals or (4) heating and pressing said film by means of a high frequency welder provided with said metallic pattern, then immersing the resulting film in a particular dyeing solution thereby producing a product partially dyed at least in two different colors.

3,793,419
PROCESS FOR THE MANUFACTURE OF VISCOSE FIBRES WITH NOVEL DYEING PROPERTIES

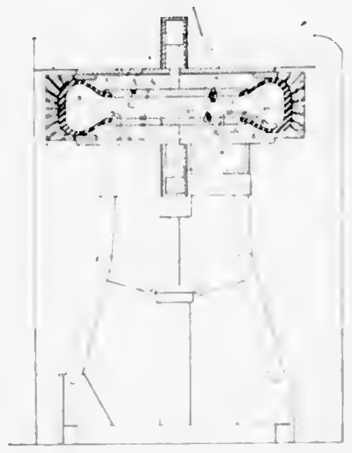
Felix Steinlin, Dornach, Soleure, and Horst Nobs, Magden, Aargou, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
No Drawing. Continuation of abandoned application Ser. No. 858,138, Sept. 15, 1969. This application Jan. 31, 1972, Ser. No. 222,319
Claims priority, application Switzerland, Oct. 1, 1968, 14,660/68
Int. Cl. D01f *3/12*
U.S. Cl. 264—78 **8 Claims**

A process is provided for the manufacture of viscose fibres with improved dyeing properties. In this process a polyamine-amide from (a) a higher unsaturated fatty acid or its dimer or polymer and (b) a polyalkylene-polyamine and a further reaction product of (c) a polyepoxide compound and (d) a stoichiometric excess of a polyalkylene-polyamine are incorporated into the viscose spinning solution in a finely divided form from which spinning solution the viscose being thereafter precipitated and shaped.

The fibres obtained show a good receptivity for dyestuffs suitable for dyeing cellulose materials and also for acid wool dyestuffs and dispersion dyestuffs.

3,793,420
AUTOMATIC INFINITELY ADJUSTABLE SIDE PLATE FOR TIRE CURING MACHINE

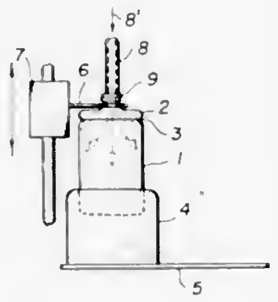
Jon R. Fredricks and Stewart T. Smythe, Louisville, Ky., assignors to International Rubber Industries, Inc., Jeffersontown, Ky.
Filed Sept. 17, 1971, Ser. No. 181,328
Int. Cl. B29h *17/00*
U.S. Cl. 264—89 **12 Claims**



In the process of retreading pneumatic tires, a method for supporting a portion of the exterior of a pneumatic tire during vulcanization with fluid pressure, such that the tire is held in exactly the correct position within the mold or matrix so that fluid pressure in the interior of the tire exerts the proper force against the mold or matrix.

3,793,421
SEPARATING METHOD FOR PRODUCING HOLLOW BODIES

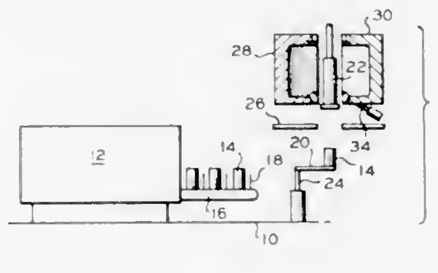
Karl-Wilhelm Paubandt, Witten, Germany, assignor to Schmalbach-Lubeca-Werke Aktiengesellschaft, Braunschweig, Federal Republic of Germany
Filed June 28, 1971, Ser. No. 157,592
Claims priority, application Germany, July 3, 1970, P 20 32 976.4
Int. Cl. B29c *17/07, 17/08, 17/14*
U.S. Cl. 264—89 **7 Claims**



According to the present method, blanks for producing hollow bodies, such as containers, are provided with a finished opening by severing from a blank a lost head or two hollow bodies from each other or from a common lost head, by means of gauge pressure to which the blanks are subjected after they have been provided with rupture means, such as grooves, in the injection- or blow-molding step prior to the pressurizing step whereby the severing takes place with a clean rupture along said grooves.

3,793,422
ANGLED CUT-OFF IN BOTTOM OF BLOW MOLD

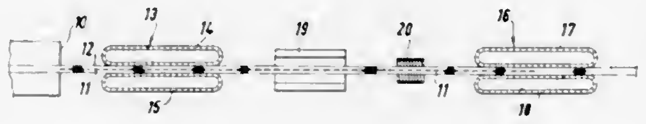
Richard D. Johnston, Bartlesville, Okla., assignor to Phillips Petroleum Company
Original application Sept. 12, 1969, Ser. No. 857,420, now Patent No. 3,632,262, dated Jan. 4, 1972. Divided and this application Sept. 7, 1971, Ser. No. 178,214
Int. Cl. B29c *17/07, 17/10*
U.S. Cl. 264—99 **6 Claims**



Mold parts are closed about a preformed parison pinching it shut at one end preparatory to blow molding it to a hollow article. A cut-off blade slides within one mold part at an angle so as to enable it to sever the parison at a point adjacent the seal line of the article being formed. This arrangement allows pinching shut parisons made of crystalline materials such as 1-olefin polymers, which parisons have been heated to a temperature just below the crystalline melting point, in such a manner that a good seal is obtained with the seal line being in an indented portion of the bottom; thus the bottle will sit flat on a surface.

3,793,423
METHOD OF MAKING CORRUGATED FLEXIBLE TUBING

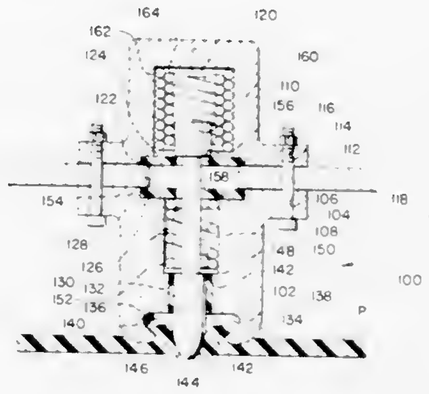
Patrick William O'Brien, Springhead, near Oldham, England, assignor to Compoflex Company Limited, near Oldham, Lancashire, England
Filed Nov. 6, 1968, Ser. No. 773,859
Claims priority, application Great Britain, Nov. 6, 1967, 50,382/67; Dec. 20, 1967, 57,933/67
Int. Cl. B29f *3/00*
U.S. Cl. 264—103 **17 Claims**



Process for the manufacture of corrugated flexible tubing which is formed of plastic material extruded with annular corrugations disposed longitudinally thereof wherein the annular corrugations as compressed longitudinally after extrusion into a close pitched condition.

3,793,424
MELT-CAPTIVATING APPARATUS AND METHOD

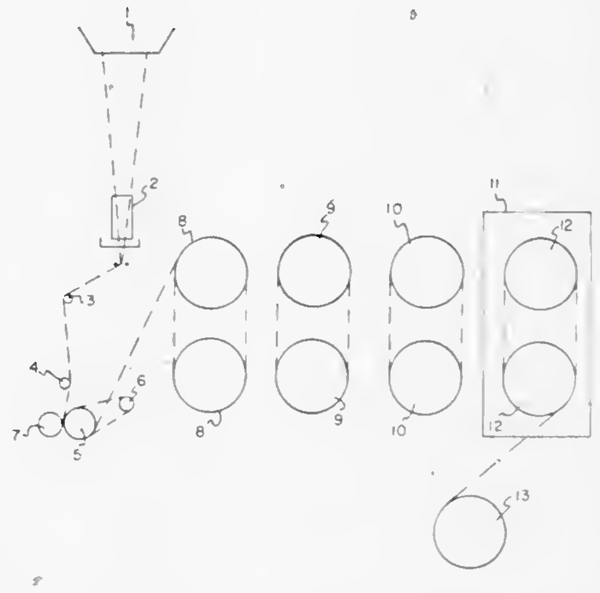
Clarence A. Haga, 9459 Arlington Blvd., Fairfax, Va. 22030
Filed Mar. 8, 1972, Ser. No. 232,686
Int. Cl. B29c *29/00*
U.S. Cl. 264—154 **3 Claims**



A method and apparatus for removing thermoplastic articles from solid waste. The apparatus has a high heat conductive core element surrounded by a ceramic member having a captivation chamber on its working end. The thermoplastic material is contacted and the heat from the core element causes it to flow and, as it flows, it forms a mechanical bond with the captivation chamber.

3,793,425
COATING PROCESS FOR POLYESTER SUBSTRATES

Robert J. Arrowsmith, 6214 Rose Valley Drive, Charlotte, N.C. 28210
Continuation-in-part of abandoned application Ser. No. 878,497, Nov. 20, 1969. This application Dec. 27, 1971, Ser. No. 212,043
Int. Cl. D01d *5/12*
U.S. Cl. 264—210 F **4 Claims**



A process for pre-treating polyester filamentary material for subsequent rubber adhesion, the process comprising extruding a polyester filamentary material capable of being drawn and before the extrudate is fully drawn, coating with a composition containing an epoxy resin.

3,793,426
METHOD FOR CURING ENDLESS ELASTOMERIC BELTS

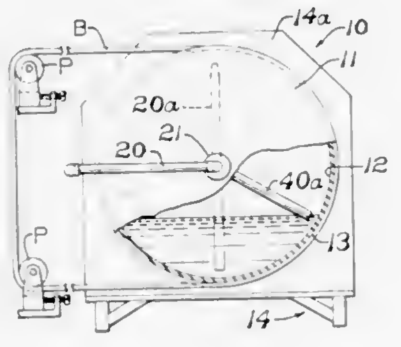
George D. V. Ritchie, 285 Melbourne Ave.,
Akron, Ohio 44313

Original application Nov. 30, 1971, Ser. No. 203,208. Divided and this application July 12, 1973, Ser. No. 378,557

Claims priority, application Canada, Nov. 28, 1972, 157,718; France, Nov. 30, 1972, 42,533; Germany, Nov. 29, 1972, P 22 58 293.0; Great Britain, Nov. 29, 1972, 55,219/72; Netherlands, Nov. 30, 1972, 7216239; Italy, Nov. 29, 1972, 7,074/72; Japan, Nov. 30, 1972, 47/119,463

Int. Cl. B29h *5/01, 5/24*

U.S. Cl. 264—231 **3 Claims**



The belts to be cured are tensioned over the periphery of a drum which is steam heated and rotated in a vertical plane. The drum is partially filled with water to provide a chilled zone in the region where the belts leave the drum upon initiation of drum rotation. A rotatable liquid outlet is clutch-coupled to rotate with the drum for lowering the liquid level at a rate corresponding with the rate of movement of a point fixed on the rotating drum. The drum rotates at a rate such that an uncured portion of belting initially contacting the top of the drum is completely cured as it leaves the bottom of the drum.

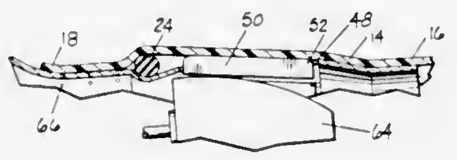
3,793,427
METHOD OF FORMING THE BELL END OF A BELL AND SPIGOT JOINT

Robert Walter Heisler, Somerville, N.J., assignor to Johns-Manville Corporation, New York, N.Y.

Filed Apr. 3, 1972, Ser. No. 240,401

Int. Cl. B29d *3/02;* **B29c** *17/02*

U.S. Cl. 264—249 **5 Claims**



A method of forming the bell end of a bell and spigot joint connecting two pipes together is disclosed herein and utilizes a mandrel assembly including an elongated core and a retractable ramp arrangement. A sealing gasket is positioned around the core and to one side of the ramp arrangement. Thereafter, an end section of a heat deformable pipe, heated to its deformable state, is moved concentrically over the core, retractable ramp arrangement and sealing gasket to form an enlarged sleeve or bell having an inner circumferential groove within which the sealing gasket is located. During this movement, as the heated end section approaches the sealing gasket, the ramp arrangement causes the end section to deform outwardly and over the gasket, whereupon the ramp arrangement retracts inwardly for allowing the outwardly deformed end section to shrink back to the core and around the gasket.

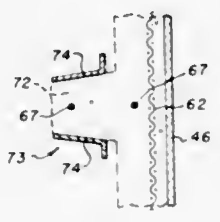
3,793,428
BUILDING CONSTRUCTION

Harry Gordon, 535 Thurlow St., Vancouver,
British Columbia, Canada

Filed Oct. 29, 1971, Ser. No. 193,668

Int. Cl. B28b *1/32*

U.S. Cl. 264—250 **8 Claims**



A method of constructing a standardized room module capable of being assembled with other units of the same or varying design to erect a multistory apartment building. A box-like form is partially enclosed by a gridwork of metal reinforcement and the assembly is sprayed with concrete to provide a relatively lightweight, transportable module which later can be substantially completed ready for transport to the building site.

3,793,429
NITRIC ACID PROCESS FOR RECOVERING METAL VALUES FROM SULFIDE ORE MATERIALS CONTAINING IRON SULFIDES

Paul B. Queneau and John D. Prater, Salt Lake City, Utah, assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Feb. 18, 1972, Ser. No. 227,588

Int. Cl. C22b *3/00*

U.S. Cl. 423—34 **16 Claims**

A sulfide ore material containing sulfide iron and values of one or more metals in the group consisting of copper, nickel, cobalt and silver, is subjected to leaching with an aqueous solution of nitric acid under conditions controlled to insure the formation of easily filterable hydrogen jarosite ($3Fe_2O_3.SO_3.4SO_3.9H_2O$), or a similar but less desirable iron compound ($2Fe_2O_3.SO_3.5H_2O$), which is precipitated. Elemental sulfur is formed and leaves the leach system, along with the precipitated iron values and unreacted sulfide minerals, in the filter cake. Unreacted sulfide minerals are easily separated from the other solids by conventional froth flotation after removal of the elemental sulfur, and are recycled to the leach system.

3,793,430
HYDROMETALLURGICAL TREATMENT OF NICKEL, COBALT AND COPPER CONTAINING MATERIALS

David Weston, 34 Parkwood Ave.,
Toronto, Ontario, Canada

No Drawing. Continuation-in-part of application Ser. No. 260,991, June 8, 1972, which is a continuation-in-part of application Ser. No. 221,437, Jan. 27, 1972, which in turn is a continuation-in-part of application Ser. No. 869,376, Oct. 24, 1969, now abandoned. This application May 31, 1973, Ser. No. 365,626

Int. Cl. C22b *3/00*

U.S. Cl. 423—36 **18 Claims**

A process for the recovery by leaching of nickel, cobalt and copper using sulphuric acid and employing agents capable of introducing alkali metal ion or ammonium ion to the pulp whereby the dissolution of desired metals is controlled and the iron content of the solution is reduced to a low level. The leaching may be carried out at temperatures and pressures below or above atmospheric pressure and the atmospheric boiling point of the pulp.

3,793,431
HIGH TEMPERATURE PROCESS FOR ANTIMONY TRICHLORIDE PRODUCTION

Richard M. Gundzik, Placentia, Calif., assignor to Occidental Petroleum Corporation, Los Angeles, Calif.

Filed Sept. 28, 1971, Ser. No. 184,452

Int. Cl. C01b *9/02, 29/00*

U.S. Cl. 423—88 **51 Claims**

There is provided a high temperature chlorination process for the production of metal chlorides from their sulfide derivatives in particular for the production of antimony trichloride from stibnite-bearing ores. In this process a portion of the sulfur formed in the reaction is recovered at an early stage. A crude liquid mixture of metal chloride particularly antimony chloride and sulfur is then condensed. A portion of the condensate is preferably recycled as a quench for the reactor, for the high temperature streams emanating from the reactor and to condense a mixture of crude antimony trichloride and sulfur. A portion of the crude condensate is passed on for purification of the metal chloride or antimony trichloride. In this process, ultimately all of the sulfur and antimony trichloride produced in the chlorination process is recovered as a product. The antimony trichloride recovered is of a product in excess of 99 percent and there is not formed the oxides of sulfur.

3,793,432
HYDROMETALLURGICAL TREATMENT OF NICKEL GROUP ORES

David Weston, 32 Parkwood Ave.,
Toronto, Ontario, Canada

No Drawing. Continuation of application Ser. No. 869,376, Oct. 24, 1969. This application Jan. 27, 1972, Ser. No. 221,437

Int. Cl. C01g *53/00;* **C22b** *3/00*

U.S. Cl. 423—143 **22 Claims**

A process for the leaching of nickel bearing laterites, beneficiated laterites or other nickel bearing products wherein the leach is conducted at a temperature below the atmospheric boiling point of the pulp and nickel and cobalt are effectively dissolved while iron is prevented from remaining in solution through the use of precipitating agents capable of introducing alkali metal ion or ammonia ion to the pulp.

3,793,433
EXTRACTION OF LITHIUM FROM NEUTRAL BRINES USING A BETA DIKETONE AND TRIOCTYLPHOSPHINE OXIDE

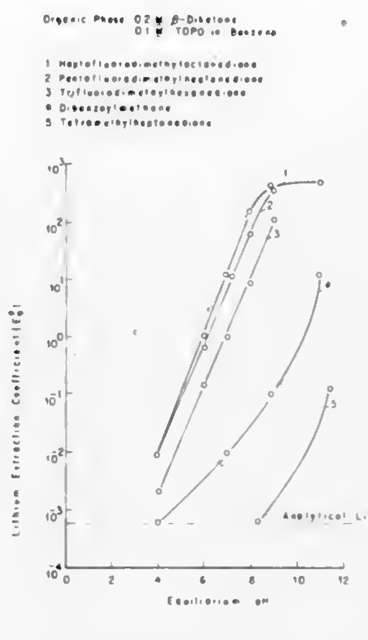
Forest G. Seeley and Willis H. Baldwin, Oak Ridge, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed July 23, 1971, Ser. No. 165,601

Int. Cl. B01d *11/04;* **C01d** *11/02*

U.S. Cl. 423—181 **1 Claim**

The present invention relates to a method of extracting lithium values from neutral or near-neutral aqueous brines by the use of a solvent extraction scheme where the effective extractant is provided by the synergistic action of (1) β-ketone and analogues thereof in which the β carbon atom of said β-ketone or analogue is joined to at least two halogen atoms, and (2) a Lewis-base solvating ligand more basic than water.



3,793,434
PROMOTER FOR GAS ABSORPTION

Frederic Leder, Elizabeth, N.J., assignor to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 825,444, May 16, 1969, now Patent No. 3,637,345. This application Oct. 1, 1971, Ser. No. 185,841

The portion of the term of the patent subsequent to Jan. 25, 1989, has been disclaimed

Int. Cl. C01b *31/20*

U.S. Cl. 423—223 **24 Claims**

When using potash or other alkali metal salts such as borates, carbonates, hydroxides, phosphates or bicarbonates in solution to remove acid gases such as H_2S and CO_2, SO_2 and COS from gaseous mixtures, unexpectedly high absorption and desorption rates are obtained by adding to the solution piperidine and derivatives thereof and/or 1,6-hexanediamine or derivatives thereof under designated conditions. These amines are capable of forming regions of liquid-liquid-gas immiscibility in the process solution; the mixture is, however, maintained in a single phase during the absorption and desorption of the gases. The single phase is maintained by keeping the acid gas, e.g., CO_2 level in the solution above about 25% of the solutions total capacity for CO_2.

3,793,435
SEPARATION OF HYDROGEN FROM OTHER GASES

James J. Reilly, Bellport, and Richard H. Wiswall, Jr., Brookhaven, N.Y., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed May 10, 1972, Ser. No. 251,874

Int. Cl. B01d *53/34;* **C01b** *6/24*

U.S. Cl. 423—248 **1 Claim**

A method of absorbing hydrogen in the presence of CO_2, whereby an alloy of the approximate composition

$LaNn_5$ is employed; and, in the presence of CO, copper replaces some of the nickel in such an alloy.

3,793,436

CLOSED POND SYSTEM FOR WET PROCESS PHOSPHATE PLANTS

Rufus G. Hartig, 2909 Bay to Bay Blvd., Dover, Fla. 33609

Continuation-in-part of application Ser. No. 60,226, Aug. 3, 1970, now Patent No. 3,720,757. This application Nov. 24, 1971, Ser. No. 201,891

Int. Cl. C01b *33/08, 15/16*

U.S. Cl. 423—341 **3 Claims**

Closed pond system or process for eliminating the conventional pond systems of wet process phosphoric acid complexes, and to remove fluorine from process gas streams, wherein liquid effluents from wet process phosphoric acid complexes, including scrubber liquor from gas scrubbing operations of the complex, are cooled and clarified, and the liquid from the clarifier, neutralized with ammonia, is recycled to the phosphate complex, the sludge or slurry being filtered to remove solids, the solids being calcined to drive off fluorine-containing gases. The calcined solids consist principally of sodium fluoride (NaF) which is recycled to the clarifier overflow to be mixed with the liquid returned to the phosphate complex. In the phosphate the ammoniated liquid from the clarifier is used to scrub plant gases, and is mixed with other scrubber liquors from the plant, and recycled again to the cooling tower and clarifier. The HF in the effluent plant liquids is converted to SiF_4 by maintaining an excess of SiO_2, and the NaF reacts with the SiF_4 to form Na_2SiF_6. The Na_2SiF_6 is calcined to produce NaF and gaseous SiF_4, the latter being scrubbed with water to form H_2SiF_6 of commercial quality.

3,793,437

PROCESS FOR RECOVERING COBALT CARBONYL

Itaru Takasu, Arai, and Masaru Higuchi, Yoshito Hijioka, and Kyozo Arimoto, Saitama, Japan, assignors to Daicel Ltd., Higashi-ku, Osaka, Japan

No Drawing. Filed Sept. 13, 1971, Ser. No. 180,130

Claims priority, application Japan, Sept. 14, 1970, 45/80,809

Int. Cl. C01g *51/02*

U.S. Cl. 423—417 **7 Claims**

A process for recovering cobalt characterized by contacting a metallic extracting reagent with an organic liquid containing cobalt carbonyl in the presence of water, carbon monoxide and hydrogen, subsequently heating the obtained aqueous solution of cobalt carbonyl metallic salt in the presence of a mineral acid or an organic acid, an organic solvent which is sparingly soluble in water and carbon monoxide, and extracting cobalt present in the aqueous solution by said organic solvent in the form of dicobalt octacarbonyl.

3,793,438

METHOD FOR PRODUCTION OF CARBON BLACK

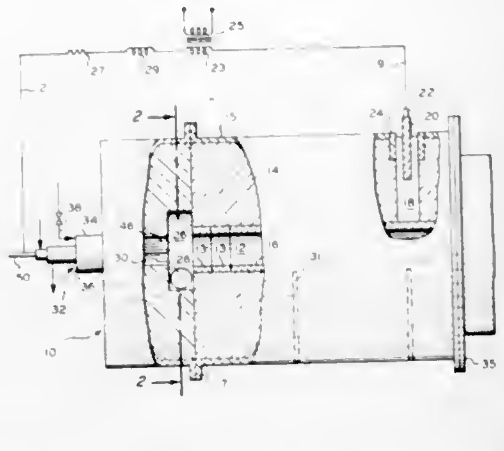
Thomas J. Gunnell, Bartlesville, Okla., and Albert F. Stegelman, Greenville, S.C., assignors to Phillips Petroleum Company

Continuation-in-part of application Ser. No. 795,323, Jan. 30, 1969, which is a continuation-in-part of application Ser. No. 518,332, Jan. 3, 1966, now Patent No. 3,468,632. This application Nov. 1, 1971, Ser. No. 194,442

Int. Cl. C09c *1/48, 1/50*

U.S. Cl. 423—449 **5 Claims**

A method of producing carbon black in which a portion of the heat for the pyrolytic decomposition of the hydrocarbon is supplied by imposing a distributed electrical discharge on the mass of hot combustion gases in which the carbon black is formed.



3,793,439

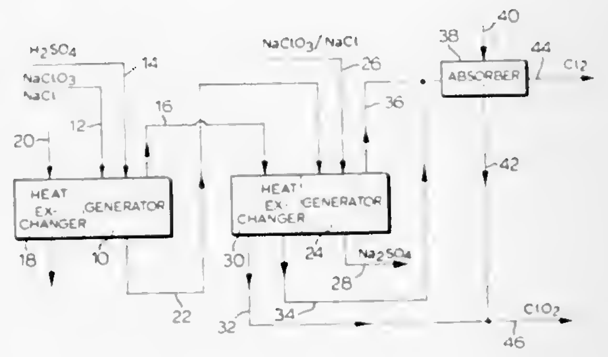
PRODUCTION OF CHLORINE DIOXIDE

William H. Rapson, Scarborough, Ontario, Canada, assignor to Erco Industries Limited, Islington, Ontario, Canada

Filed Feb. 17, 1971, Ser. No. 116,090

Int. Cl. C01b *7/02, 11/02;* **C01d** *5/00*

U.S. Cl. 423—478 **21 Claims**



An alkali metal chlorate is reduced in an acid medium in a multiplicty of reaction zones at least one of which operates to evaporate water from the reaction medium to produce chlorine dioxide The steam is used to provide at least part of the heat requirement of at least one further zone. In this way thermal economy is effected.

3,793,440

REACTION OF HYDROGEN SULPHIDE AND SULPHUR DIOXIDE TO FORM ELEMENTARY SULPHUR

Gerhard Schulze, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Feb. 17, 1972, Ser. No. 227,232

Claims priority, application Germany, Feb. 20, 1971, P 21 08 284.8

Int. Cl. C01b *17/04*

U.S. Cl. 423—573 **3 Claims**

Hydrogen sulfide is reacted with sulfur dioxide or oxygen to form sulfur in the presence of certain solvents. These solvents are sulfoxides of the general formula:

$$R^1—SO—R^2$$

or inert polar aprotic solvents containing dissolved therein phosphine oxides of the general formula: $(R^2)_3P{=}O$.

3,793,441

COPPER-CHROMATE-ARSENATE COMPOUND AND A PROCESS FOR MAKING THE COMPOUND

Sten Tycho Henriksson and Stig Osten Lindstrom, Skelleftehamn, Sweden, assignors to Boliden Aktiebolag, Stockholm, Sweden

Filed Dec. 18, 1968, Ser. No. 784,838

Claims priority, application Sweden, Dec. 29, 1967, 18,073/67

Int. Cl. C01b *27/02, 27/00*

U.S. Cl. 423—595 **1 Claim**

A novel compound comprising copper, chromium, arsenic, hydrogen and oxygen, in which chromium is present in hexavalent form and arsenic in pentavalent form. There is also provided a process for producing the compound, in which a copper compound is added to a concentrated solution of chromic acid and arsenic acid.

3,793,442

PROCESS OF MAKING AMORPHOUS HIGHLY DISPERSED GERMANIUM DIOXIDE AND PRODUCT OBTAINED THEREBY

Eugen Meyer-Simon, Frankfurt am Main, Emil Heckel, Hanau am Main, Gerhard Duesing, Wolfgang, near Banau am Main, and Franziska Renngardt, Neu-Isenburg, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Continuation-in-part of application Ser. No. 860,057, Sept. 22, 1969. This application Oct. 27, 1972, Ser. No. 301,604

Claims priority, application Germany, Sept. 20, 1968, P 17 92 567.6

Int. Cl. C01g *17/02*

U.S. Cl. 423—618 **8 Claims**

A germanium (IV) compound is subjected to hydrolyzing or oxidizing conditions in the gaseous phase or in the form of an aerosol at a temperature above 1300° C. The formed germanium dioxide is permitted to coagulate at between 200 and 1000° C. and is then separated from the gaseous reaction products.

3,793,443

METHOD OF PREPARING FERRITES

Ronald H. Arendt, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 91,141, Nov. 19, 1970. This application Nov. 29, 1972, Ser. No. 310,354

Int. Cl. C01g *49/00*

U.S. Cl. 423—594 **3 Claims**

A magnetoplumbite ferrite in the form of micron- and submicron-size particles having unique magnetic properties is prepared by reacting cation oxides of the ferrite in a solvent of NaCl-KCl in the presence of a source of water.

3,793,444

MULTISTAGE IRON CHLORIDE OXIDATION PROCESS

James William Reeves, Wilmington, Del., and David Francis Wells, Avondale, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 9, 1972, Ser. No. 224,743

Int. Cl. C01g *49/06*

U.S. Cl. 423—633 **10 Claims**

A process is provided for the oxidation of an iron chloride wherein vapors of the chloride and an oxygen-containing gas are caused to pass upwardly through a vertical reaction area provided with a series of communicating reaction zones, each separated from the next adjacent one by a foraminous member. There is maintained upward with the flow of gases a flow of inert solid particles through and out of the reaction area in an amount at least equal to the gas flow rate on a weight basis. High conversions of the iron chloride can be attained in this manner without the unwanted build-up of iron oxide scale on the reactor walls or associated parts.

3,793,445

REAGENT FOR RADIOIMMUNOASSAY

Stuart J. Updike and Theodore L. Goodfriend, Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

No Drawing. Filed Apr. 29, 1970, Ser. No. 33,098

Int. Cl. A61k *27/04;* **G01n** *31/06, 33/16*

U.S. Cl. 424—12 **3 Claims**

A wettable polymer gel containing at least one binding protein physically and essentially permanently entrapped in the gel matrix, the gel having a pore size which will essentially prevent the diffusion of the binding protein through the gel but will not prevent the diffusion of smaller molecules to the sites of the binding protein within the gel matrix. The gel is prepared by polymerizing the gel monomer while admixed with antiserum. It is useful in assaying for antigens or haptenes.

3,793,446

ORAL, NASAL AND LABIAL COMPOSITIONS CONTAINING MENTHYL KETO ESTERS

Alfred H. Moeller, Tenafly, Michel Demont, River Vale, and Albert G. Nickstadt, Ridgewood, N.J., assignors to Nickstadt-Moeller, Inc., Ridgefield, N.J.

No Drawing. Original application May 14, 1969, Ser. No. 824,664, now Patent No. 3,644,613. Divided and this application Nov. 26, 1971, Ser. No. 202,687

Int. Cl. A61k *9/00*

U.S. Cl. 424—48 **6 Claims**

Compositions for application to the oral and nasal areas of the body are disclosed which contain alpha,beta, gamma, delta, epsilon, zeta and eta keto esters of menthol. These compositions impart a long-lasting cooling sensation to tissues of the lips and the mucous membranes of the oral cavity and nasal passages.

3,793,447

COMPOSITIONS AND METHOD FOR REMOVING AND RETARDING DENTAL PLAQUE AND CALCULUS WITH 8 - HYDROXYQUINOLINE SULFATE

Peter D. De Palma, Philadelphia, Pa., and Joseph J. Loux, Morris Plains, N.J., assignors to Menley & James Laboratories, Ltd., Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 205,308, Dec. 6, 1971. This application Oct. 24, 1972, Ser. No. 299,982

Int. Cl. A61k *7/16*

U.S. Cl. 424—54 **4 Claims**

Dentifrice compositions for retarding and removing dental calculus and plaque containing 8-hydroxyquinoline sulfate and a method of removing and retarding dental calculus and plaque by administering the compositions to the oral cavity of animal organisms.

3,793,448

METHOD FOR REDUCING TRIGLYCERIDES

Carl P. Schaffner, Trenton, N.J., and Harry W. Gordon, Bronx, N.Y., assignors to Julius Schmid Inc., New York, N.Y.

No Drawing. Original application Apr. 1, 1970, Ser. No. 24,797, now abandoned, which is a division of application Ser. No. 627,313, Mar. 31, 1967, now Patent No. 3,627,879. Divided and this application May 28, 1971, Ser. No. 148,223

Int. Cl. A61k *21/00*

U.S. Cl. 424—117 **9 Claims**

The method of reducing triglycerides is described herein, which comprises orally administering compositions containing an effective dose of a polyenic macrolide selected from the group consisting of candicidin, amphotericin B, fungimycin, hamycin and trichomycin.

3,793,449

ANTIBIOTIC COMPLEX AS AN INSECTICIDAL AND MOTHPROOFING AGENT

Martin Cole, Dorking, and George Newbolt Rolinson, Newdigate, England, assignors to Beecham Group Limited, Brentford, Middlesex, England

No Drawing. Original application Aug. 25, 1971, Ser. No. 175,010. Divided and this application Aug. 11, 1972, Ser. No. 279,856

Claims priority, application Great Britain, Aug. 29, 1970, 41,694/70

Int. Cl. A61k *21/00*

U.S. Cl. 424—122 **8 Claims**

Antibiotic complex MM4462 is obtained from *Fusarium lateritium*, or a suitable mutant strain thereof. This antibiotic complex exhibits insecticidal activity, particularly larvicidal activity. Wool and woolen materials can be mothproofed by contacting such materials with a solution of the antibiotic complex. Insecticidal compositions are prepared by combining the antibiotic complex with a suitable inert carrier.

3,793,450

STABLE, NON-PYROGENETIC, INTRAVENOUSLY ADMINISTRABLE AQUEOUS FAT EMULSIONS CONTAINING AMINO ACIDS

Joachim Schnell, Melsungen, Germany, assignor to B. Braun Melsungen Aktiengesellschaft, Melsungen, Germany

No Drawing. Continuation-in-part of application Ser. No. 284,998, Aug. 22, 1972, which is a continuation of application Ser. No. 847,396, Aug. 4, 1969, both now abandoned. This application Dec. 1, 1972, Ser. No. 311,102

Claims priority, application Germany, Aug. 16, 1968, P 17 92 294.0; July 7, 1969, P 19 34 317.0

Int. Cl. A61k *27/00*

U.S. Cl. 424—195 **7 Claims**

Stable infusion compositions for intravenous administration in which essential amino acids are present in the form of free bases in a fat emulsion, such as of soya bean oil. The emulsified compositions also contain soya phosphatide or egg yolk phosphatide as stabilizers. Methods for making such compositions.

3,793,451

INSECTICIDAL PYRIDYLAMINIDINOUREAS

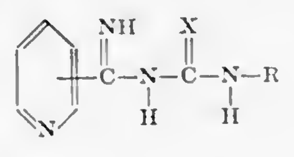
William D. Dixon, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Original application Nov. 5, 1970, Ser. No. 87,332, now Patent No. 3,699,110. Divided and this application June 9, 1972, Ser. No. 261,179

Int. Cl. A01n *9/22*

U.S. Cl. 424—263 **20 Claims**

This invention relates to new and useful pyridylaminidinoureas and to insecticidal compositions containing at least one of them and also to insecticidal methods employing at least one of these new pyridine derivatives. The compounds of this invention are to be represented by the formula



wherein X is oxygen or sulfur and R is alkyl having from 1 through 8 carbon atoms, alkenyl having from 3 through 6 carbon atoms, cycloalkyl having from 3 through 6 carbon atoms, phenyl or benzyl.

3,793,452

USE OF ALKYL-SUBSTITUTED 4-BENZO[b] THIENYL N-ALKYLCARBAMATES AS SYSTEMIC INSECTICIDES

Jerry G. Strong, Fanwood, Harold A. Kaufman, Piscataway Township, and Roger P. Napier, Bridgewater Township, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 11,897, Feb. 16, 1970. This application Jan. 18, 1972, Ser. No. 218,819

Int. Cl. A01n *9/12*

U.S. Cl. 424—275 **5 Claims**

Lower alkyl-substituted 4-benzo[b]thienyl N-alkylcarbamates and their 2,3-dihydro derivatives are systemic insecticides. Other compounds, such as unsubstituted 4-benzo[b]thienyl N-alkylcarbamates do not show systemic activity.

3,793,453

FUNGICIDAL AND BACTERICIDAL COMPOSITION AND METHOD CONTAINING 1-(β-ARYL) ETHYL-IMIDAZOLE KETALS

Erik Fred Godefroi and Jan Heeres, Turnhout, Belgium, assignors to Janssen Pharmaceutica N.V.

No Drawing. Original application Aug. 19, 1968, Ser. No. 753,746, now Patent No. 3,575,999. Divided and this application June 18, 1970, Ser. No. 57,897

Int. Cl. A01n *9/22*

U.S. Cl. 424—273 **8 Claims**

A composition and method for combatting bacteria and fungi with 1-(β-aryl) ethyl-imidazole ketals.

3,793,454

HARRINGTONINE AND ISOPHARRINGTONINE FOR TREATING L1210 OR P388 LEUKEMIC TUMORS IN MICE

Richard G. Powell, Peoria, and Cecil R. Smith, Jr., Dunlap, Ill., assignors to the United States of America as represented by the Secretary of Agriculture

Original application Apr. 9, 1970, Ser. No. 26,995. Divided and this application Nov. 12, 1971, Ser. No. 198,443

Int. Cl. A61k *27/00*

U.S. Cl. 424—274 **3 Claims**

Alkaloids found to be chemotherapeutically active against leukemic strains L1210 and P388 in mice are produced from *Cephalotaxus harringtonia*. The process includes extraction of plant parts with a polar solvent, partitioning the plant extracts between nonpolar and acidic aqueous solvents, making the aqueous portion basic, and removing the crude alkaloids from the basic aqueous solution. The crude alkaloids are purified and used in the treatment of mice implanted with leukemic strains L1210 and P388.

3,793,455

TREATING HYPERTENSION WITH GERMANIUM SESQUIOXIDE DERIVATIVES

Kazubiko Asai and Norihiro Kakimoto, Tokyo, Japan; said Kakimoto assignor to said Asai

Filed June 9, 1972, Ser. No. 261,430

Int. Cl. A61k *27/00*

U.S. Cl. 424—287 **5 Claims**

Hypertension is treated with organogermanium sesquioxide compounds of the formula:

$$[\mathrm{Ge—CH_2CHZCOY}]_2\mathrm{O_3}$$

wherein Y represents OH, ONa, OK, ONH_4, O-alkyl or NH_2, and Z represents H or NH_2.

3,793,456

INSECTICIDAL COMPOSITIONS AND METHODS OF KILLING INSECTS USING α,β-DIOXOHYDROCINNAMONITRILES

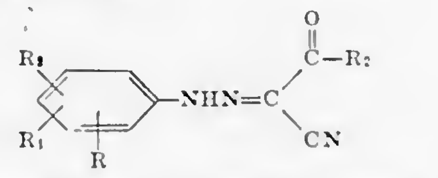
Donald Perry Wright, Jr., Pennington, Donald Frederic Barringer, Jr., Trenton, and Donald Edward McKay, Highland Park, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 141,444, May 7, 1971. This application May 4, 1972, Ser. No. 250,338

Int. Cl. A01n *9/20*

U.S. Cl. 424—304 **7 Claims**

The present invention relates to insecticidal methods and compositions employing α,β-dioxohydrocinnamonitriles having the formula:



where R, R_1, R_2 and R_3 are defined as follows: R is halo, lower alkyl (C_1–C_4), loweralkoxy (C_1–C_4), cyano, nitrotrifluoromethyl, phenylazo or p-chlorophenoxy; R_1 is hydrogen, halo, trifluoromethyl or loweralkyl (C_1–C_4); R_3 is hydrogen or halo; and R_2 is phenyl, halophenyl, dihalophenyl, alkyl (C_1–C_4) phenyl, loweralkoxy (C_1–C_4) phenyl, 1-naphthyl, 2-furyl, or 2-thienyl.

3,793,457

THERAPEUTICALLY ACTIVE PHENYLALKANE DERIVATIVES

Stewart Sanders Adams, Bernard John Armitage, and John Stuart Nicholson, all of 1 Thame Road W., Nottingham, England, and Antonio Ribera Blancafort, Joaquim Costa 47–8° Izqda, Madrid, Spain

No Drawing. Application July 25, 1969, Ser. No. 845,033, which is a continuation-in-part of application Ser. No. 425,624, Jan. 14, 1965, now abandoned. Divided and this application Nov. 21, 1972, Ser. No. 308,558

Int. Cl. A61k *27/00*

U.S. Cl. 424—317 **10 Claims**

2-(2-fluoro-4-biphenylyl)propionic acid, 2-(2′-fluoro-4-biphenylyl)propionic acid and 2-(2,2′-difluoro-4-biphenylyl)propionic acid possessing great anti-inflammatory, analgesic, and antipyretic activities.

3,793,458

METHODS FOR TREATING DUODENAL ULCERS

Camille Georges Wermuth, Strasbourg, and Jean Cahn, Paris, France, and Eugene Rottenberg, Saint Gallen, Switzerland, assignors to Socibre, Nanterre, France

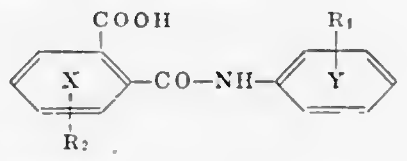
No Drawing. Filed Aug. 14, 1970, Ser. No. 63,929

Claims priority, application France, Aug. 14, 1969, 6928098

Int. Cl. A61k *27/00*

U.S. Cl. 424—317 **4 Claims**

The substances belong to the family of monoamides of cyclic diacids of the formula:



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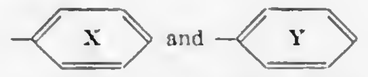


each represent a phenyl or pyridinyl nucleus; R_1 and R_2 each represent at least one halogen, lower alkyl, halogenyl alkyl, acyl, hydroxyl, alkoxyl, acyloxy, thioalkoxy, sulfone, amino or nitro substituent at any positions on the corresponding nuclei. They are produced by reacting the internal anhydride of phthalic or quinolinic acid with aniline or the corresponding substituted aniline.

3,793,459

DIURETIC COMPOSITION AND METHOD

Peter Werner Feit, Gentofte, and Ole Bent Tvaermose Nielsen, Vanlose, Denmark, assignors to Lovens Kemiske Fabrik Produktionsaktieselskab, Ballerup, Denmark

No Drawing. Filed June 16, 1971, Ser. No. 153,880

Claims priority, application Great Britain, June 8, 1970, 29,792/70

Int. Cl. H61k *27/00*

U.S. Cl. 424—319 **10 Claims**

The invention relates to diuretic and saluretic preparations in dosage unit form, containing the hitherto unknown 4-benzyl-3-n-butylamino-5-sulfamylbenzoic acid or a salt thereof with a pharmaceutically acceptable base as the active component, if desired together with a hypotensor, the dose of the diuretic being between 0.2 and 20 mg., calculated as the free acid.

3,793,460

ALPHA-AMINOALKYL-4-HYDROXY-3-SULFAMOYLAMINOBENZYL ALCOHOLS

Carl Kaiser, Haddon Heights, N.J., and Stephen T. Ross, Berwyn, Pa., assignors to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Original application Feb. 23, 1971, Ser. No. 118,156, now Patent No. 3,711,545. Divided and this application Sept. 26, 1972, Ser. No. 292,380

Int. Cl. A61k *27/00*

U.S. Cl. 424—321 **15 Claims**

α-Aminoalkyl-4-hydroxy-3-sulfamoylaminobenzyl alcohols having β-adrenergic stimulant activity, particularly as selective bronchodilators, are prepared generally from 3-amino-4-benzyloxyphenones by, for example, reaction with a sulfamoyl chloride to give 3-sulfamoylaminophenones, bromination of these phenones and treatment of the resulting α-bromo derivatives with an N-benzyl secondary amine, followed by catalytic hydrogenation to remove the benzyl groups and reduce the ketone moiety.

3,793,461

INTRAVENOUS ADMINISTRATION OF MALTOSE TO DIABETICS

Shokichi Yuen, Okayama, Japan, assignor to Hayashibara Company, Okayama, Japan

Filed Aug. 11, 1971, Ser. No. 170,919

Claims priority, application Japan, Aug. 11, 1970, 45/70,525

Int. Cl. A61k *27/00*

U.S. Cl. 424—180 **6 Claims**

The production of intravenous injections for sugar supplement in which a maltose product consisting of over 95% of maltose and the remainder being maltotriose is used and which are characterized in that said injections possess concentrations of maltose equal to two times that of the glucose in the corresponding injections using glucose as the supplement sugar.

3,793,462

TREATMENT OF SCLEROSES

Martin Kludas, 22 Herastr., 1 Berlin 33, Germany

No Drawing. Filed Oct. 16, 1970, Ser. No. 81,626

Int. Cl. A61k *27/00*

U.S. Cl. 424—319 **15 Claims**

Scleroses conditions are treated by administering to a subject requiring the same an effective dose of penicillamine. The preferred penicillamine because of its low toxicity is D-penicillamine. All types of administration are suitable, including oral administration and administration by injection. The actual dosage depends upon the condition treated and the extent of the condition and orally it may be as little as 0.6 g. per day and as high as 2.4 g. per day, and even higher for short periods. By injection the dose may be as little as 0.5 g. and as high as 1.5 g.

3,793,463

ORAL, NASAL AND LABIAL COMPOSITIONS CONTAINING MENTHYL KETO ESTERS

Alfred H. Moeller, Tenafly, Michel Demont, River Vale, and Albert G. Nickstadt, Ridgewood, N.J., assignors to Nickstadt-Moeller, Inc., Ridgefield, N.J.

No Drawing. Original application May 14, 1969, Ser. No. 824,664. Divided and this application Nov. 26, 1971, Ser. No. 202,689

Int. Cl. A61k *27/00*

U.S. Cl. 424—308 **5 Claims**

Compositions for application to the oral and nasal areas of the body are disclosed which contain alpha, beta, gamma, delta, epsilon, zeta and eta keto esters of menthol. These compositions impart a long-lasting cooling sensation to tissues of the lips and the mucous membranes of the oral cavity and nasal passages.

3,793,464

PROCESS FOR PREPARING AQUEOUS EMULSION OF PROTEINACEOUS FOOD PRODUCTS

David T. Rusch, Wilmington, Del., assignor to ICI America Inc., Wilmington, Del.

No Drawing. Filed Apr. 26, 1971, Ser. No. 137,603

Int. Cl. A23l *1/00, 3/00*

U.S. Cl. 426—89 **3 Claims**

Finely-divided high protein concentrate derived from such sources as casein, alkali caseinates, soy protein, fish protein, etc., are made more palatable for human consumption by encapsulating the material with lipids derived from tallow, lard, soybean, cottonseed, and corn oils, etc., having iodine values of 1–90, and melting points above 70° F.

3,793,465

PREPARATION OF AN ACIDIFIED MILK PRODUCT IN POWDER FORM

Hans-Ueli Bohren, La Tour-de-Peilz, Switzerland, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

No Drawing. Filed Jan. 25, 1972, Ser. No. 220,718

Claims priority, application Switzerland, Feb. 10, 1971, 1,944/71

Int. Cl. A23c *9/12*

U.S. Cl. 426—187 **13 Claims**

Method of manufacture of an acidified milk product in powder form in which a fraction of a milk product in powder form biologically acidified to a pH of 4.2 to 4.4 is combined with another fraction of a nonacidified milk product in powder form in order to obtain a pH above 5.2 immediately after reconstitution with water, the weight of the water being 5 to 10 times the weight of the powder, and an acid compound with controlled release is combined with the two said fractions of milk product.

3,793,466

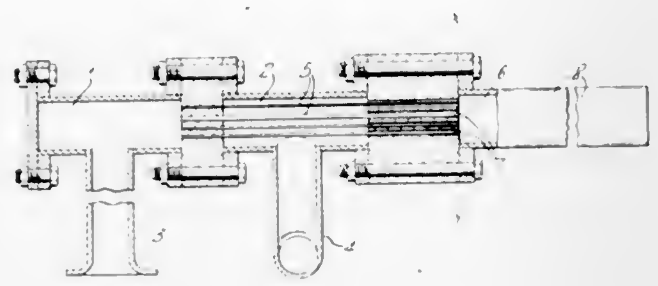
PROCESS FOR PREPARING A RESTRUCTURED MEAT PRODUCT

Arthur Ernest Hawkins, Bedford, and Jeremy Reginald Evans, Wollaston, England, assignors to Lever Brothers Company, New York, N.Y.

Filed June 11, 1971, Ser. No. 152,311

Int. Cl. A22c *18/00*

U.S. Cl. 426—274 **1 Claim**



Meat of low quality is restructured by converting it to a fibrous comminute and extruding the comminute under shearing conditions as multiple streams concurrently with other edible material. The extrudate formed by concurrent extrusion, which comprises meat comminute streams distributed in a matrix of the edible material, is laterally compacted to form a coherent product. In the cooked state, the matrix-forming material simulates the appearance of the connective tissue, and optionally the fat as well, of cooked natural meat.

3,793,467

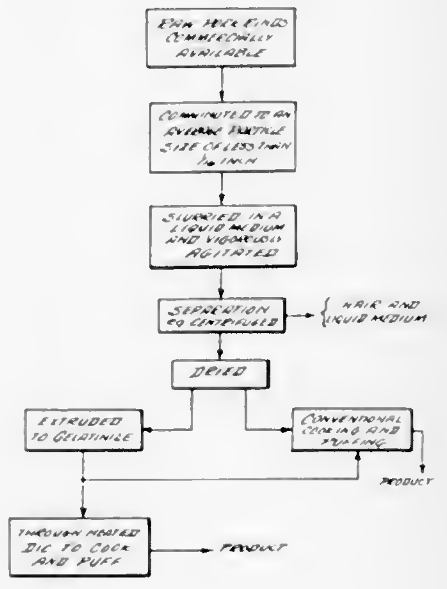
PRODUCTION OF PUFFED PORK RINDS SNACK FOOD

Robert H. Bundus, Tulsa, Okla., and Peter P. Noznick, Evanston, Ill., assignors to Beatrice Foods Co., Chicago, Ill.

Filed Mar. 10, 1972, Ser. No. 233,531

Int. Cl. A22c *18/00*

U.S. Cl. 426—445 **10 Claims**


RAW PORK RINDS COMMERCIALLY AVAILABLE
COMMINUTED TO AN AVERAGE PARTICLE SIZE OF LESS THAN ¼ INCH
SLURRIED IN A LIQUID MEDIUM AND VIGOROUSLY AGITATED
SEPARATION eg CENTRIFUGED
HAIR AND LIQUID MEDIUM
DRIED
EXTRUDED TO GELATINIZE
CONVENTIONAL COOKING AND PUFFING
PRODUCT
THROUGH HEATED DIE TO COOK AND PUFF
PRODUCT

There is provided a process for producing cooked pork rinds by comminuting raw pork rinds to a small particle size, vigorously agitating a slurry of the comminuted rinds in a liquid medium and centrifuging the slurry to remove hair from the rinds. The rinds are then cooked. In the preferred embodiment, the rinds, after centrifuging, are dried and then gelatinized in an extruder; the extrudate is cooked and puffed to produce puffed pork rinds as the extrudate passes through a heated extruder die. Alternately, the extrudate may be cooked and puffed by deep fat frying.

ELECTRICAL

3,793,468

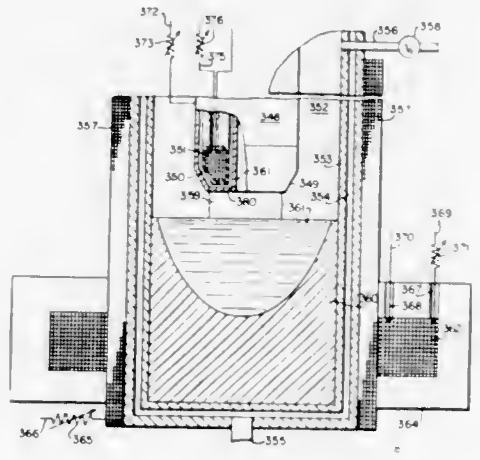
FURNACE APPARATUS UTILIZING A RESULTANT MAGNETIC FIELD OR FIELDS PRODUCED BY MUTUAL INTERACTION OF AT LEAST TWO INDEPENDENTLY GENERATED MAGNETIC FIELDS AND METHODS OF OPERATING AN ELECTRIC ARC FURNACE

Ronald R. Akers, Trafford, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 22, 1972, Ser. No. 291,433

Int. Cl. F27d *11/12;* **H05b** *7/08*

U.S. Cl. 13—9 **48 Claims**



In a furnace having an electric arc extending between an electrode and material to be melted which is composed at least partially of conductive material, a resultant magnetic field having a desired field configuration is produced by mutual interaction of two or more separately and independently generated magnetic fields and the resultant magnetic field is utilized to improve furnace operation in a number of ways. In some embodiments, two fields are generated, one by a field coil in the tip of the electrode and one by a coil at or near the wall of the furnace, which latter coil may be a solenoid having a length to diameter ratio equal to or greater than one or a concentrated coil having a length to diameter ratio substantially less than one, and the resultant field has a configuration which may increase or improve arc-moving forces on the arc provided to reduce erosion of material from the electrode by arc action thereon, or may improve focusing of the arc between electrode and melt, or may improve control of a diffused arc, or may improve stirring of the melt, or may control the portion of the surface of the melt to which the arc strikes, or may prevent arc flares to the wall of the furnace, or may prevent glow discharges, or may increase feed rate, or may improve grain structure in an ingot produced, or may include any combination of the aforementioned and other improvements. In another embodiment, three magnetic fields are separately generated, one by an electric tip field coil, one by a solenoid and one by a concentrated coil adjacent the solenoid and having an axially adjustable position thereon. In a further embodiment, two magnetic fields are separately generated by two field generating means external to the electrode and under some conditions no interacting magnetic field is generated within the electrode. In other embodiments, two electrodes are mounted in the furnace each with an arc extending therefrom to the melt, and three electrodes are mounted in the furnace each with an arc extending therefrom to the melt. New and improved processes and methods of furnace operation are also described.

3,793,469

GRAPHIC ANSWER INPUT DEVICE FOR A TEACHING MACHINE

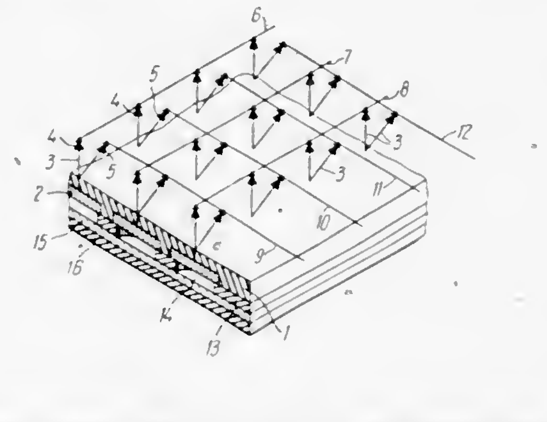
Igor Rafailovich Tarnopolsky, ulitsa Zavodskaya, 33, kv. 27, and Gennady Vasilievich Akimtsev, ulitsa Furmanova, 23, both of Frunze, U.S.S.R.

Continuation of Ser. No. 182,653, Sept. 22, 1971, abandoned. This application Dec. 22, 1972, Ser. No. 319,921

Claims priority, application U.S.S.R., Sept. 22, 1970, 1,472,777

Int. Cl. G09b *7/00*

U.S. Cl. 35—9 R **1 Claim**



A graphic answer input device for a teaching machine comprising successively superimposed parts: a contact-bearing board every contact of which is connected to the logical unit of the teaching machine via two diodes individually connected in the forward direction; a punched card; a current-carrying plate and a problem blank on which the student drafts the required drawing.

In the design the diodes belonging to the contacts forming one row are interconnected and form one line, while other diodes belonging to the same contacts of the same row are also interconnected and form another line.

3,793,470

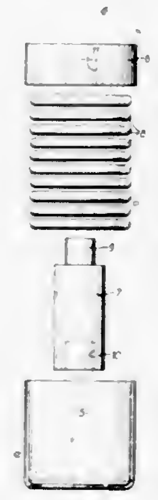
EDUCATIONAL DEVICE

Barbara J. Christy, and Vernon B. Christy, both of 150 Nottingham Rd., Belper, England

Filed Oct. 27, 1971, Ser. No. 192,968

Int. Cl. G09b *19/02*

U.S. Cl. 35—32 **6 Claims**



An educational device or toy consists of 10 units each made up of a transparent container in which is a post having a body portion of constant cross-section throughout its length and equal in height to the container, and 10 rings disposed one

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upon another to surround the body portion of the post

at least one copy so that the original can be detached from the

---

leads and bonding pads on a semiconductor chip, which are all

without retention of any residue from the other, and which upon another to surround the body portion of the post throughout its length, each container having a lid of the same colour as its post and rings, all 10 lids being of different colours and the posts being adapted to fit together end-to-end with their body portions in abutment to form a column having ten equal differently coloured sections and capable of accommodating exactly 100 rings. The 10 units can also be used singly if desired.

3,793,471

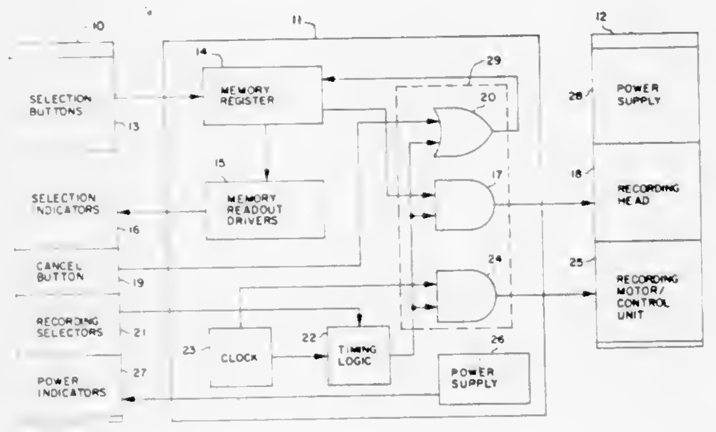
READING AID FOR HANDICAPPED PERSONS

Henry J. Mason, 1432 E. 6th St., Brooklyn, N.Y., and Geoffrey A. Jones, Box 148 A, RD No. 1, Emlemton, Pa.

Continuation-in-part of Ser. No. 143,356, May 14, 1971, abandoned. This application Dec. 8, 1972, Ser. No. 313,290

Int. Cl. G09b *21/00*

U.S. Cl. 35—35 A **9 Claims**



A learning aid for the language handicapped in which phonemic language sounds are programmed onto light-sensitive film by a recording system, and played back by a playback system which activates a plurality of vibrating bimorph pins which represent the specific phonemic language sounds and tactually stimulate the skin of the person using the learning aid. The recording system includes a plurality of individual light sources and fiber optic tubes, vertically spaced apart adjacent the film, and a recording motor which advances the film past the light sources and fiber optic tubes. Selected vertically spaced-apart channels are exposed in the film for predetermined periods of time, the patterns thus recorded on the tape being detected by a similar fiber optic-light source detection means for activating selected ones of the vibrating pins in the playback system.

3,793,472

SYSTEMS FOR CORRECTING OF PROCESSING SO-CALLED DIAGNOSTIC TESTS OF MULTIPLE CHOICE TYPE

Ingvar Per Mikael Sternberg, Staffanstorp; Lars Lennart Gustafsson, Lund; Henry Ebbe Arvid Samuelson, Linkoping, and Sven-Erik Wallin, Enskede, all of Sweden, assignors to Studentlitteratur AB, Lund, Sweden

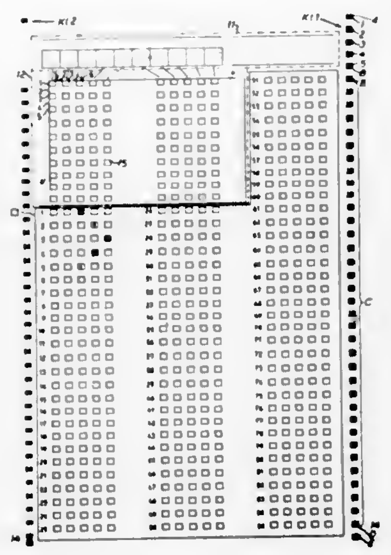
Filed Aug. 13, 1971, Ser. No. 171,557

Claims priority, application Sweden, Aug. 17, 1970, 11170/70

Int. Cl. G09b *1/00*

U.S. Cl. 35—48 A **1 Claim**

System for correcting multiple choice tests in which the students' answers are given on forms having different markings for alternatives to each question and including an original and at least one copy so that the original can be detached from the copy and fed to an optical reading and recording device for processing the information in a computer and the copy can be fed to an answer key for marking the correct answers on the copy.



3,793,473

INSULATED CONDUCTOR WITH ORGANOMETALLIC STABILIZER

Bruce Robert Owen Pointer, Wheathampstead, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Nov. 29, 1971, Ser. No. 202,980

Claims priority, application Great Britain, Dec. 1, 1970, 57059/70

Int. Cl. H02g *15/20;* **H01b** *3/18*

U.S. Cl. 174—23 C **4 Claims**

An electric conductor is insulated with a polyolefine, e.g., polypropylene, containing a phosphorus acid derivative such as nickel bis-(3,5-ditertiary-butyl-4-hydroxy benzyl phosphonic acid monoethylate) and the insulated conductor is immersed in a low molecular weight hydrocarbon such as petroleum jelly.

3,793,474

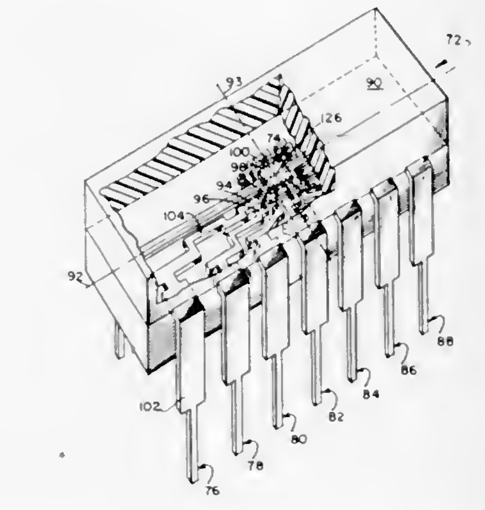
LEAD CONFIGURATIONS FOR PLASTIC ENCAPSULATED SEMICONDUCTOR DEVICES

Thomas A. Dunn, and Glenn E. Kirk, both of Mesa, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 9, 1971, Ser. No. 206,388

Int. Cl. H05k *5/00*

U.S. Cl. 174—52 PE **7 Claims**



The disclosed lead configurations protect fragile bonds associated with connecting wires extending between the ends of

leads and bonding pads on a semiconductor chip, which are all included in an encapulsated body, from the harmful stresses caused by thermally and mechanically generated forces. The encapsulated portions of each lead includes a transverse segment which is generally perpendicular to the axis of expansion and an integral longitudinal segment which lies generally along the axis. These two segments form a shoulder which is located near the chip to reduce movement of the lead end away from its pad in response to thermal expansion. Moreover, each lead also includes a further segment having a smaller cross-sectional area than an associated protruding portion. This further segment and the shoulder forming segments absorb externally applied forces to protect the fragile bonds.

3,793,475

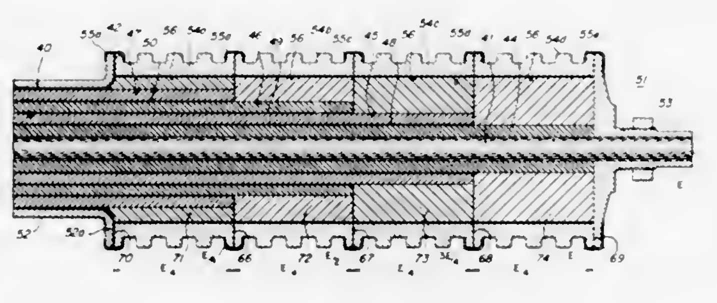
DIELECTRIC SYSTEM FOR A HIGH VOLTAGE POWER TRANSMISSION CABLE AND TERMINATION

Edward H. Yonkers, Wilmette, Ill., assignor to Nuclear-Chicago Corporation, Des Plaines, Ill.

Filed July 10, 1972, Ser. No. 270,045

Int. Cl. H02g *15/02;* **H01b** *7/02, 9/02*

U.S. Cl. 174—73 R **8 Claims**



A high voltage power transmission system includes a power transmission cable having an improved dielectric system. The dielectric system is formed of two or more concentric sections each separated by thin conductive layers and each section carrying predetermined precentages of the total applied potential. In addition there is provided an improved termination for the high voltage power transmission cable including a resistive system selected to divide the applied voltage into the preselected voltage levels.

3,793,476

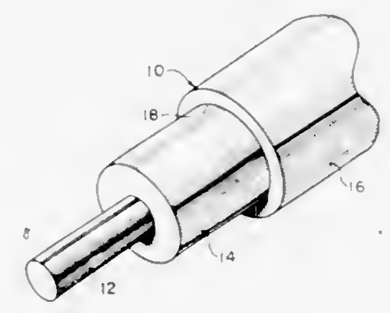
INSULATED CONDUCTOR WITH A STRIPPABLE LAYER

Thaddeus Dominick Misiura, Sandy Hook, and Joseph Edward Vostovich, Bridgeport, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Feb. 26, 1973, Ser. No. 336,146

Int. Cl. H01b *7/18*

U.S. Cl. 174—102 SC **12 Claims**



A composite of polymeric materials which are adheringly joined to each other and which can be easily and cleanly separated by stripping apart with a low pulling force whereupon the contacting surfaces of their interface separate cleanly without retention of any residue from the other, and which comprises the combination of a body of ethylene polymer adjoined to a body of an elastomeric blend of polymers comprising ethylene-propylene rubber admixed with a chlorine containing rubber. The combination of materials is especially advantageous when used in wire and cable constructions as a composite of an electrical insulation and an overlying strippable semiconductive layer.

3,793,477

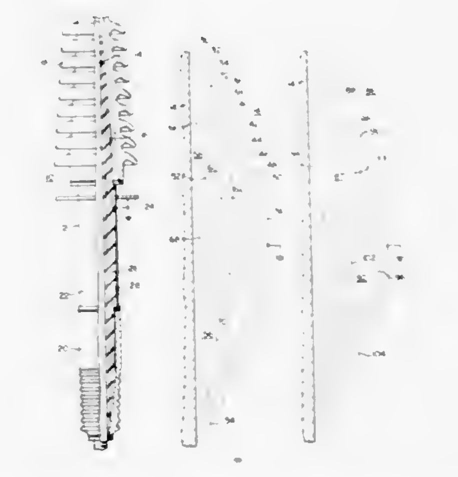
CONDENSER BUSHING HAVING DISPLACED GAPS BETWEEN CONDUCTING LAYERS

Loren B. Wagenaar, Muncie, Ind., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 19, 1973, Ser. No. 324,947

Int. Cl. H01b *17/28*

U.S. Cl. 174—143 **6 Claims**



An electrical bushing having condenser elements formed of two or more conducting layers. In one arrangement, a gap between conducting layers of one condenser element is completely surrounded by one of the conducting layers of the next adjacent condenser element. In another arrangement, gaps in condenser elements located on the same side of the displaced gap condenser element are substantially aligned with each other. With both arrangements, the points of equal potential stress are substantially uniform, thereby permitting the efficient use of bushing insulation.

3,793,478

LINE-SEQUENTIAL COLOUR TELEVISION TRANSMISSION SYSTEM AND SIGNAL GENERATOR AND SIGNAL RECEIVER FOR SAID SYSTEM

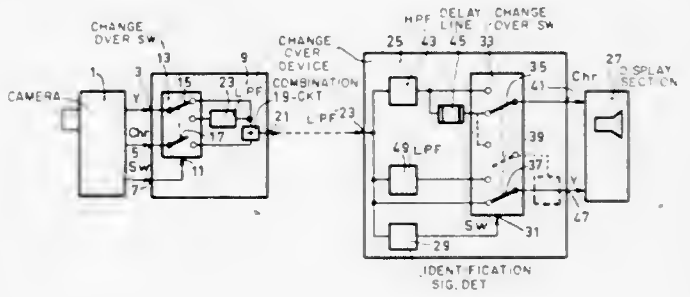
Leonardus Adrianus Johannes Verhoeven, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 19, 1972, Ser. No. 273,345

Claims priority, application Netherlands, July 31, 1971, 71'0625

Int. Cl. H04r *9/40*

U.S. Cl. 178—5.2 R **9 Claims**



A line-sequential color television system in which a luminance signal and the low-frequency part of the luminance

3,793,482

3,793,484

signal combined with a chrominance signal modulated on a subcarrier in angle and amplitude are alternately transmitted so as to improve the vertical definition and to obtain a favorable ratio of the information capacity of the system utilized by different signals.

3,793,479
ARRANGEMENT FOR ADDITIVELY MIXING COLOR TELEVISION SIGNALS

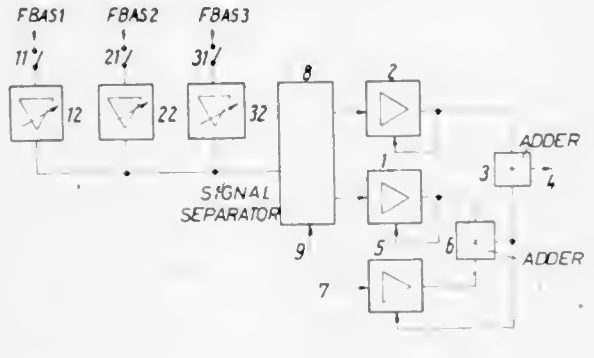
Ernst Legler, Seeheim, Germany, assignor to Robert Bosch Fernsehanlagen Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Continuation of Ser. No. 37,269, May 14, 1970, abandoned. This application June 13, 1972, Ser. No. 262,324

Claims priority, application Germany, May 16, 1969, 1924912

Int. Cl. H04n *9/00, 5/22*

U.S. Cl. 178—5.4 R **18 Claims**



A first and second input composite television signal have, respectively, a first and second video portion and first and second blanking intervals including synchronizing signals. First circuit means furnish a plurality of first signals, each corresponding to the sum of one of said first synchronizing signals added to one of said second synchronizing signals. Second circuit means vary the level of the first and second video portions and furnish a second signal corresponding to the sum of the first and second video portions having the varied levels. A first automatic gain control amplifier is connected to the output of the first circuit means, while a second automatic gain control amplifier is connected to the output of the second circuit means. First adder means have inputs connected to the outputs of said first and second automatic gain control amplifier means and furnish an output composite television signal having synchronizing signals corresponding to the amplitude controlled first signals and a video portion corresponding to the amplitude controlled second signals.

3,793,480
EXPONENTIAL TRANSCONDUCTANCE MULTIPLIER AND INTEGRATED VIDEO PROCESSOR

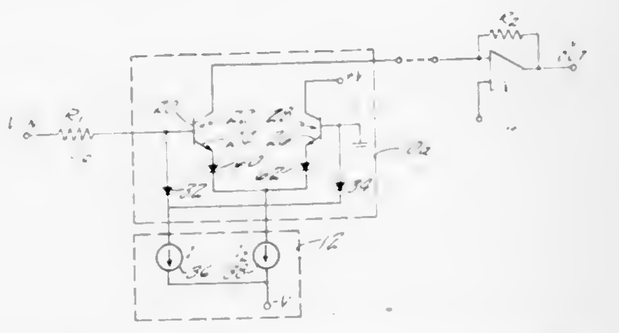
Glenn C. Waehner, Riverside, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 29, 1971, Ser. No. 213,509

Int. Cl. H04n *5/20, 5/58;* **G06g** *7/12*

U.S. Cl. 178—7.3 R **8 Claims**

A linear transconductance multiplier of the type having a pair of transistors connected in common emitter configuration to a source of tail current, and having each base of the transistors connected through respective diodes to another current source, is modified so as to provide an output (voltage or current) which is a function of a fractional exponent of the input (voltage or current) by placing a diode in series between each emitter and the tail current source. The diodes may be shunted by a switch so as to provide selectivity between linear and exponential functions, or the diodes may be partially shunted so as to adjust the exponential function between unity (linear) and the minimum exponent obtainable. Providing additional diodes in series with the transistor emitters decreases the exponent further. An integrated video processor comprises an exponential transconductance multiplier having differential inputs with contrast control provided by adjustment of the tail current, gamma correction being achieved automatically by the nonlinear function of the multiplier; the multiplier output is fed to a brightness-controlled, final amplifier.



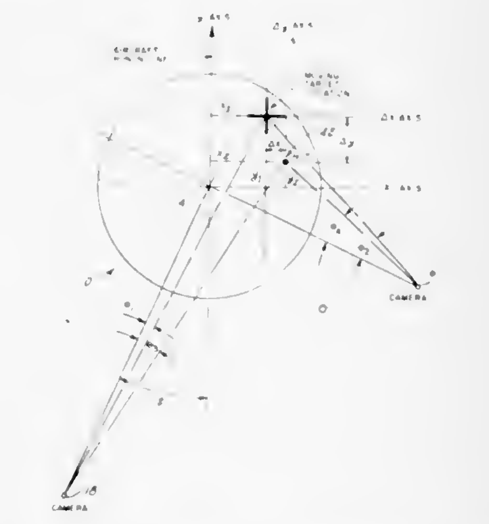
3,793,481
RANGE SCORING SYSTEM

John A. Ripley, Newport Beach, and Homer B. Davis, Long Beach, both of Calif., assignors to Celesco Industries Inc., Costa Mesa, Calif.

Filed Nov. 20, 1972, Ser. No. 307,877

Int. Cl. A63b *63/00;* **G06g** *7/80;* **H04n** *7/18*

U.S. Cl. 178—6.8 **12 Claims**



There is disclosed a preferred embodiment of a semi-automatic range scoring system which utilizes a closed-circuit television system in combination with a light pen unit and computer. The observer uses the light pen to mark the point of weapon impact on a T.V. monitor screen for each of the camera displays. Each marking causes the light pen unit to transfer digital positional information of the point of impact to the computer. Once the impact has been marked twice, the computer immediately processes the positional data to determine miss-distance and display same. The system is also adaptable for scoring miss-distance with regard to a moving target. In both cases, miss-distance information is obtained on an almost simultaneous basis with the impact of the weapon.

3,793,482
TELEVISION LINE OSCILLATOR AND LINE DRIVER CIRCUIT ARRANGEMENTS

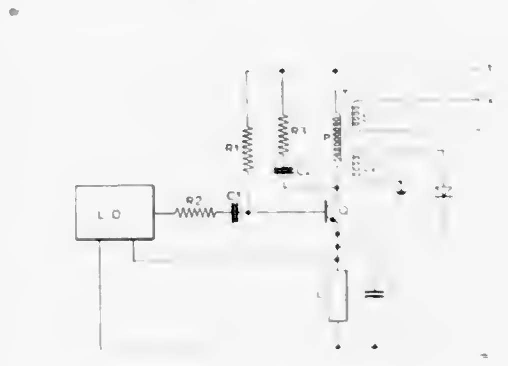
Donald George Thompson, London, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 10, 1972, Ser. No. 270,468

Claims priority, application Great Britain, July 8, 1971, 32170/71

Int. Cl. H04n *5/44*

U.S. Cl. 178—7.3 R **4 Claims**



A power supply for a low voltage television line oscillator is derived from a D.C. load to the line dirver stage, a winding coupled to the driver transformer providing an additional supply coupled to the D.C. load.

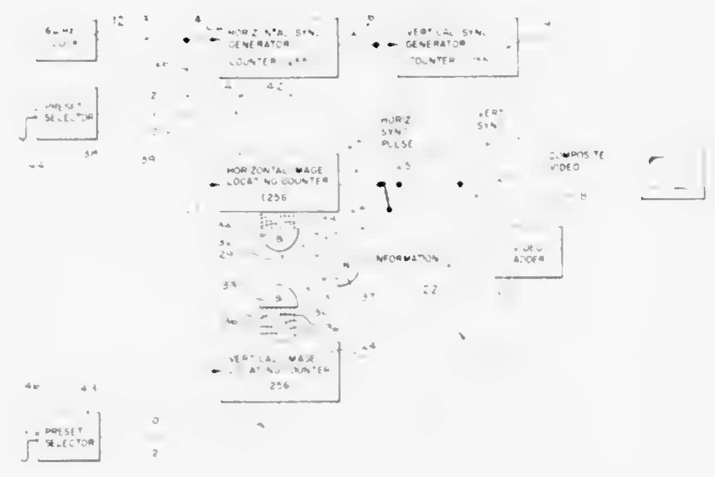
3,793,483
VIDEO IMAGE POSITIONING CONTROL SYSTEM FOR AMUSEMENT DEVICE

Nolan K. Bushnell, 3572 Gibson, Santa Clara, Calif.

Filed Nov. 24, 1972, Ser. No. 309,268

Int. Cl. H04n *3/22, 5/68*

U.S. Cl. 178—69.5 TV **5 Claims**


HORIZONTAL SYNC GENERATOR COUNTER
VERTICAL SYNC GENERATOR COUNTER
PRESET SELECTOR
HORIZ SYNC PULSE
VERT SYNC
COMPOSITE VIDEO
HORIZONTAL IMAGE LOCATING COUNTER
256
INFORMATION
VIDEO ADDER
VERTICAL IMAGE LOCATING COUNTER
256
PRESET SELECTOR
12
42

For controlling the location of an image and to cause the image to move variously with respect to perpendicular coordinates, such as X, Y coordinates, on a video display tube, a first set of counters is arranged to generate artificial, horizontal and vertical sync pulses for use in conjunction with a video adder for controlling the image on a TV screen. A second set of counters driven from the same clock source as the first supplies information signals to the video adder for controlling the location at which the image will be displayed. Each of the two predetermined counters constituting the second set of counters is capable of being preset to any of a plurality of counts so as to cause a horizontal or vertical displacement of the image on the face of the display tube with respect to the locus defined by the count generated by the first set of counters.

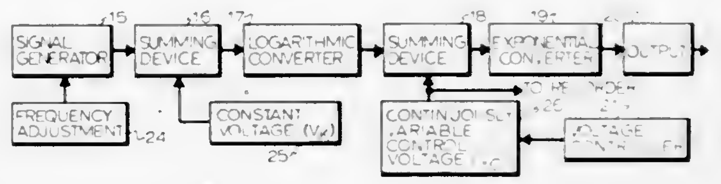
3,793,484
PROGRAMMABLE AUDIO LEVEL CONTROL USEFUL IN AUDIOMETRIC APPARATUS

Michael D. Feezor, Chapel Hill, N.C., assignor to Audiometric Teleprocessing, Inc., Chapel Hill, N.C.

Filed Nov. 13, 1972, Ser. No. 306,351

Int. Cl. H04r *29/00*

U.S. Cl. 179—1 N **30 Claims**



A programmable audio level control is adapted, through the utilization of solid state functional logging and exponentiating components and an additive amplitude determinant voltage quantity, to programmably control the output amplitude level of a selected input audio signal while maintaining precisely the same frequency and impedance as the original input signal.

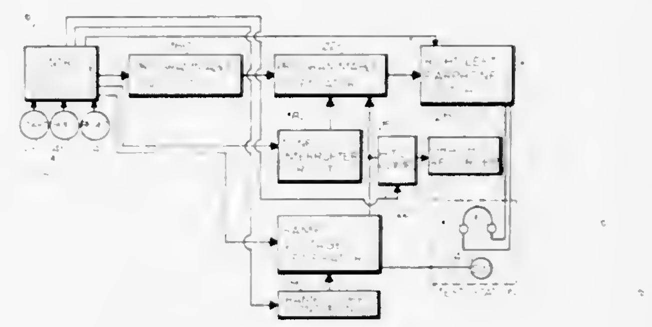
3,793,485
PRECISION AUTOMATIC AUDIOMETER

Michael D. Feezor, and Mack J. Preslar, both of Chapel Hill, N.C., assignors to Audiometric Teleprocessing, Inc., Chapel Hill, N.C.

Filed Dec. 14, 1972, Ser. No. 315,173

Int. Cl. H04r *29/00*

U.S. Cl. 179—1 N **20 Claims**



A precision automatic audiometer adapted to test the hearing of an individual utilizes a voltage programmable oscillator in combination with a preprogrammed logic circuit to generate a predetermined series of hearing test tones into a suitable earphone worn by the individual being tested. A novel solid state voltage proportional attenuator being controlled by examinee manually operated switch means enables an examinee being tested to regulate the level of sound pressure to which he is being exposed, while a chart recording instrument simultaneously graphs the audiogram of his test responses.

3,793,486
DATA SET SYSTEM EMPLOYING ACTIVE FILTERS AND MULTIVIBRATOR TIMING

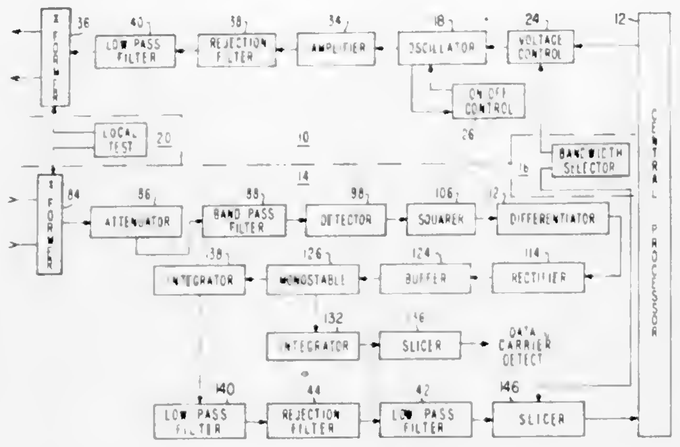
Leo B. Koziol, 9210 Adams, Livonia, Mich.

Continuation-in-part of Ser. Nos. 782,962, Dec. 11, 1968, abandoned, and Ser. No. 782,963, Dec. 11, 1968, abandoned. This application Jan. 22, 1971, Ser. No. 109,056

Int. Cl. H04m *11/06*

U.S. Cl. 179—2 DP **7 Claims**

A data set capable of converting binary encoded data signals into shift keying modulated signals for transmission over telephone lines. The timing element of the data set is a voltage controlled oscillator which is responsive to the binary encoded input information. The oscillator is adapted to operate at one frequency for the mark or binary one level of the input information and to operate at either one of two higher frequencies for the space or binary zero level of input information. An oscillator control means is responsive to the desired bandwidth and is operable to supply either one of two control voltages to the oscillator to generate either of said space frequencies. Operational amplifiers allow elimination of the conventional inductive components in both high and low pass filters thereby making each section an active filter section instead of being a passive filter. Each active filter section provides gain control which is not available in passive sections.



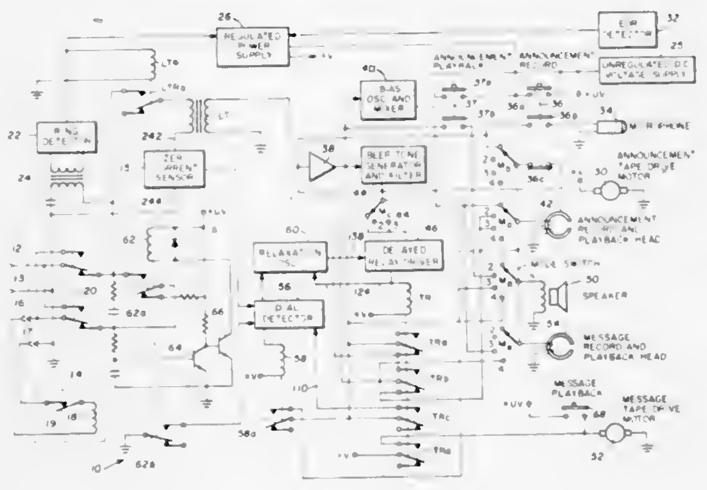
3,793,487
SYSTEM FOR SCREENING TELEPHONE CALLS

Jack S. Kilby, 7723 Midbury, Dallas, Tex.

Continuation-in-part of Ser. No. 200,804, Nov. 22, 1971. This application June 26, 1972, Ser. No. 266,490

Int. Cl. H04m *1/64*

U.S. Cl. 179—6 R **14 Claims**



A system for screening telephone calls is described which intercepts an incoming ring signal to prevent disturbing the called party. The system produces an off-hook condition and responds with a recorded announcement specifying the activity in which the called party is involved and indicating that he would prefer not to be interrupted, and also gives instructions as to how the calling party may nevertheless continue the call by initiating an additional dialed signal if he wishes. When the calling party initiates the additional signal specified by the instruction, preferably by dialing the digit "1," the called party is summoned to the telephone after a predetermined time delay. As an alternative to interrupting the called party, the calling party may record a message. The recorded announcement may be modified by the subscriber at any time to tailor the announcement to the occasion to enable the calling party to better use his judgment as to when to interrupt. The system distinguishes between a pulse generated by the calling party hanging up and a single pulse signal dialed by the calling party to summon the called party by detecting a zero current condition on the line within a short interval after the pulse is received. The zero current condition indicates that the calling party elected to terminate the call rather than complete the call and is used to inhibit completion of the call.

3,793,488
DATA COMMUNICATION SYSTEM WITH ADDRESSABLE TERMINALS

Claude F. King, Rolling Hills, Calif., assignor to Receptors, Redondo Beach, Calif.

Filed June 3, 1971, Ser. No. 149,513

Int. Cl. H04j *3/00*

U.S. Cl. 179—15 BA **11 Claims**

A system for communicating addressed data over a single channel amongst a plurality of dispersed stations. The channel can comprise any of a variety of communication media such as twisted pair wire, telephone line, radio frequency, etc., singly or in combination. An address generator is coupled to the channel for applying a sequence of address bit signals thereto to successively define a plurality of different multi-bit addresses. Each station monitors the address information on the channel and, will either apply a data word to or extract a data word from the channel for each address appropriate to that station. Each address bit will be maintained on the channel for one address bit period. During each address bit period, one multi-bit data word can be placed on the channel. An address bit format is employed which enables each station to extract both data bit and address bit synchronization from the channel as well as the address and data information.

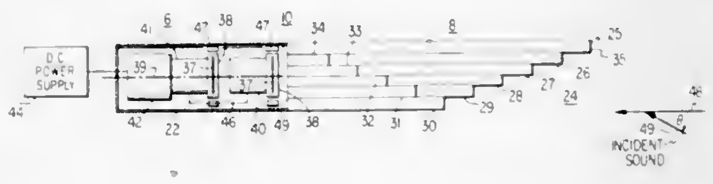
3,793,489
ULTRADIRECTIONAL MICROPHONE

Jon Rinaldo Sank, Haddonfield, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 834,347, June 18, 1969, abandoned. This application May 22, 1972, Ser. No. 255,206

Int. Cl. H04r *1/40*

U.S. Cl. 179—121 D **1 Claim**



A directional microphone includes a microphone unit responsive to waves in the audio frequency range and means for causing the microphone unit to operate as a second order microphone in a lower portion of that frequency range. Further means for imparting highly directional characteristics to waves in the remaining upper portion of the audio frequency range are coupled to the microphone unit for transmitting these waves thereto, the microphone unit responding as a highly directional unit to waves in that upper portion.

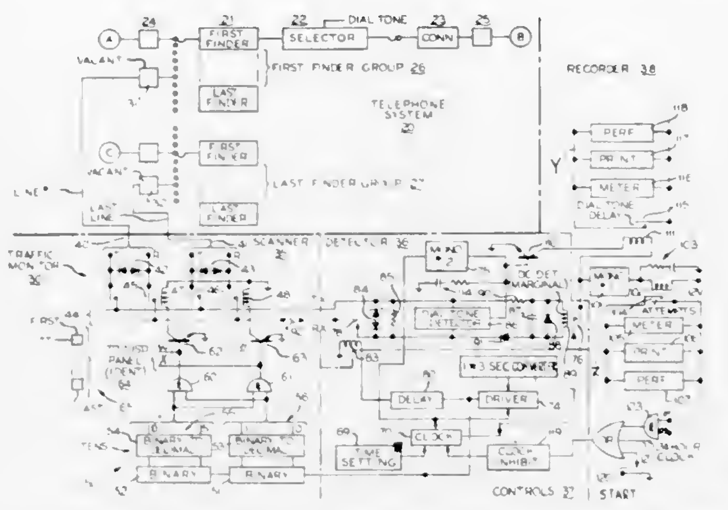
3,793,490
DIAL TONE DELAY MONITOR AND RECORDER

Ernest C. Karras, 1643 N. Natoma Ave., Chicago, Ill.

Continuation-in-part of Ser. No. 188,757, Oct. 13, 1971, abandoned. This application Dec. 18, 1972, Ser. No. 316,352

Int. Cl. H04m *3/22*

U.S. Cl. 179—175.2 R **20 Claims**



An electronic scanner is connected to a vacant line in each linefinder group of a telephone exchange. The scanner sequentially and individually places a call in each group. If dial tone fails to appear within a given time period, a suitable data record is made to indicate that a dial tone delay has occurred. The data may be analyzed by group or for an individual linefinder group, and electronic accumulators may automatically feed such data into a central processor.

3,793,491
STEERING COLUMN MOUNTED, MULTIPLE CIRCUIT CONTROLLER OPERATING MEANS WITH SLIDE-TYPE MULTI-SWITCH ASSEMBLY

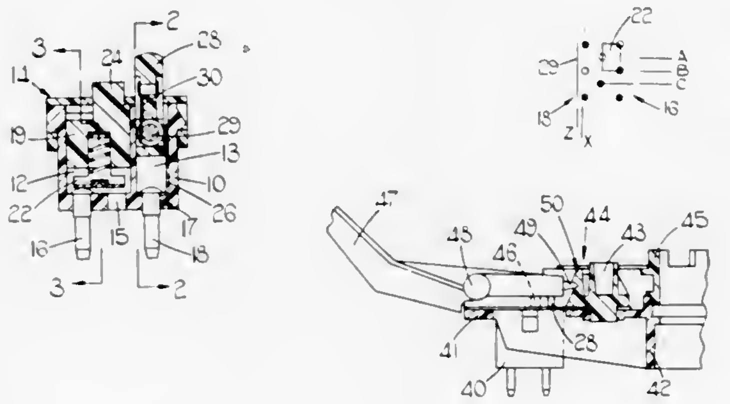
Edward Cryer, Higham near Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed June 5, 1972, Ser. No. 259,801

Claims priority, application Great Britain, Aug. 3, 1972, 36535/72

Int. Cl. H01h *3/18*

U.S. Cl. 200—18 **5 Claims**



An electrical switch comprising a housing having a pair of recesses therein opening onto one surface of the housing which is closed by a cap, a set of terminals mounted at the bottom of each recess and a movable contact member for selective engagement with the terminals of each group. The contact members are movable in mutually perpendicular directions. Each contact member is mounted in a carrier which projects beyond the cover to be operable by an actuating mechanism including a lever pivotal about two mutually perpendicular axes to effect movement of the two contact members.

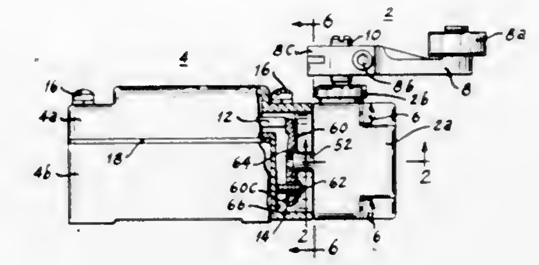
3,793,492
LIMIT SWITCH OPERATING MECHANISM

Eugene F. Duncan, and Robert Pearson, both of Milwaukee, Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Feb. 26, 1973, Ser. No. 335,905

Int. Cl. H01h *3/16*

U.S. Cl. 200—47 **12 Claims**



A limit switch operating head subassembly mountable at its mating surface onto a switch subassembly in any one of a number of different angular positions and may be detached without any parts falling out. The operating head subassembly has an operating arm pivotable in opposite directions for switch actuation. This operating arm is secured to a shaft that operates cams, rockers and slide members to operate an actuating plunger through a presettable mechanism allowing bypass in one direction. The slide members are internally compression spring biased threaded members allowing stepless length adjustment. The presettable by-pass mechanism has a flanged plunger on a square pin and a notch in the flange to allow presetting the plunger notch at 90° intervals for switch operation in both directions or by-pass in one direction of operating arm movement. The operating shaft has a seal design that enhances sealing effect under fluid pressure and is smaller so as to use less material. An adjustable coupling mechanism transmits the plunger motion to the contact actuator. The stepless length adjustment of the slide members and the adjustment of the coupling mechanism afford adjustment of the plunger motion relative to the mating faces of the operating head and switch subassemblies, respectively, to afford presetting of switch tripping at five degrees of arm movement.

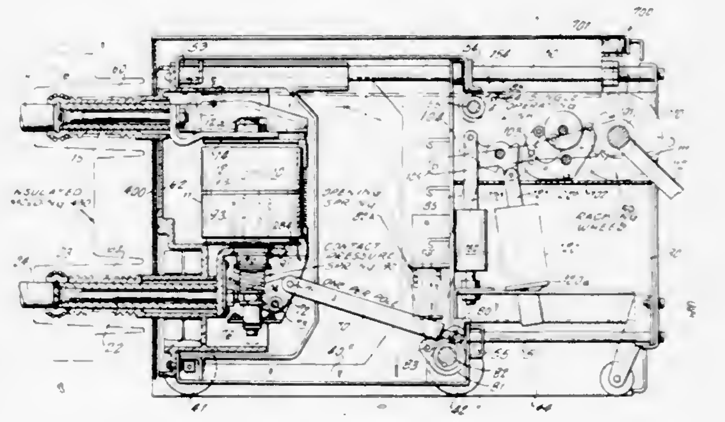
3,793,493
DRAW OUT CIRCUIT BREAKER AND COMPARTMENT INTERLOCK AND SECONDARY CONTACT ACTUATION

George A. Wilson, Pineville, Pa., assignor to ITE Imperial Corporation, Philadelphia, Pa.

Filed Aug. 21, 1972, Ser. No. 282,330

Int. Cl. H01h *33/46*

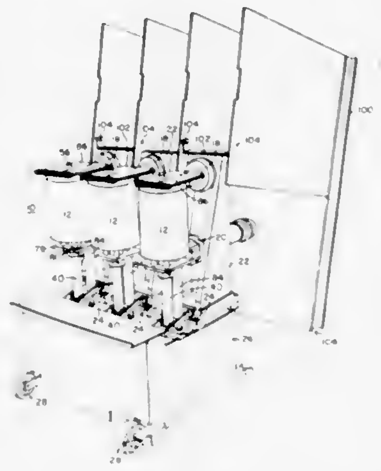
U.S. Cl. 200—50 AA **6 Claims**



Drawout switchgear having a truck insertable in a switchboard compartment and a circuit interrupter carrying frame carried by the truck frame and movable toward and away from the back wall of the compartment. Interlock means between the truck frame and the compartment including a hook carried by the truck frame; said interlock means also prevents full insertion of the truck into the compartment when the frame carrying the circuit interrupter is in any position other than a fully withdrawn or test position with respect to the truck frame; and secondary or auxiliary contacts; said interlock means prevent withdrawal of the truck from the compartment when the secondary contacts are engaged; and additional interlock means preventing separation of selected secondary contacts while the circuit interrupter carrying frame is in fully racked in or operative position with respect to stationary disconnect contacts in the compartment.

3,793,494
DRAW OUT TYPE VACUUM CIRCUIT BREAKER ASSEMBLY WITH HINGED BARRIER

Charles M. Cleaveland, Irwin, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 15, 1972, Ser. No. 306,669
Int. Cl. H01h *9/22*
U.S. Cl. 200—50 AA **12 Claims**

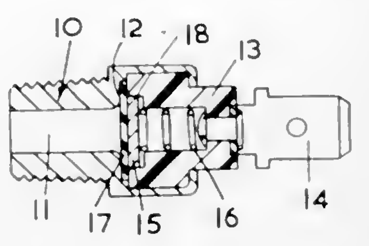


A circuit breaker for metal clad switchgear is provided using vacuum-interrupter elements rather than the usually provided air type circuit interrupter. A rigid mounting for one end of the vacuum-type interrupter elements is provided, together with a connector plate structure for the other end of the vacuum interrupter which permits resilient movement of the interrupter end cap in one direction only. A hinged barrier is provided to facilitate access to the vacuum interrupters without removing the barrier. A porcelain push rod is connected directly between the movable operating rod, coming from the vacuum interrupter, and the breaker operating mechanism, thus providing a porcelain-to-ground insulation path and electrically isolating the operating mechanism from the vacuum interrupter.

3,793,495
PRESSURE SWITCH WITH DIAPHRAGM FORMED OF FLEXIBLE COMPRESSIBLE MATERIAL CONTAINING DISCRETE ELECTRICALLY CONDUCTIVE PARTICLES WHICH MAKE AND BREAK THE CIRCUIT

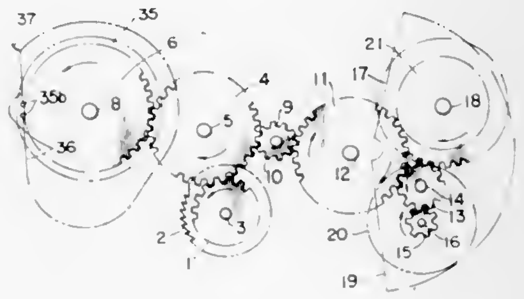
Alec John Heap, Burnley, England, assignor to The Lucas Electrical Company, Limited, Birmingham, England
Filed Feb. 5, 1973, Ser. No. 329,346
Claims priority, application Great Britain, Feb. 5, 1972, 5476/72
Int. Cl. H01h *35/34;* **H01c** *9/06*
U.S. Cl. 200—83 B **5 Claims**

A fluid pressure operated switch comprises an electrically conductive body having a passage therethrough, a diaphragm engaging a shoulder on the body around the passage and lying across the latter, and a contact plate spring biassed into engagement with the diaphragm. The diaphragm is formed of a flexible, compressible material which becomes electrically conductive when compressed. The pressure applied by the spring acts on a portion of the diaphragm lying against the shoulder and is normally sufficient to render that portion electrically conductive so that the contact plate is normally electrically connected with the body. When a sufficient pressure exists in the passage, the pressure applied by the spring on the said portion of the diaphragm is reduced to an extent such that the diaphragm is no longer electrically conductive and the contact plate is electrically isolated from the body.



3,793,496
GEAR AND CLUTCH OPERATING MECHANISM FOR MULTI-CHANNEL TELEVISION TUNER

Sachio Kimura, and Yoshiaki Aoki, both of Tokyo, Japan, assignors to Kabushiki Kaisha Koparu, Tokyo-to, Japan
Filed Aug. 9, 1972, Ser. No. 279,059
Claims priority, application Japan, Aug. 25, 1971, 46-76534
Int. Cl. H01h *3/54*
U.S. Cl. 200—18 **2 Claims**



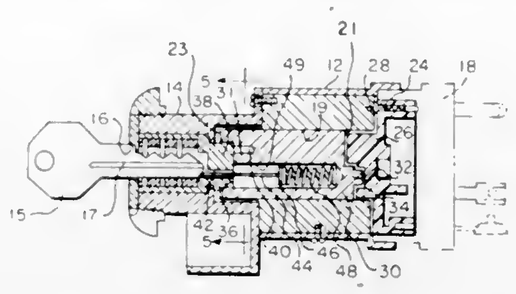
A tuner for television broadcast receiver comprising a plurality of annular patterns made with a conductive material and arranged concentrically in groups, and grouped contact strips arranged to face said annular patterns and to be able to contact these annular patterns, respectively, and being operative so that either one of the grouped annular patterns and the grouped contact strips is rotated in accordance with the broadcast channel selecting operation and that all of said channels may be selected automatically in accordance with a binary code formed by the combinations of contact and noncontact state between the respective annular patterns and the respective contact strips. This tuner for television broadcast receiver is simple in structure and easy to construct.

3,793,497
KEY EJECTING VEHICLE IGNITION SWITCH

Dante Di Gaetano, 1021 Old Lane St., Drexel Hill, Pa.
Filed Nov. 8, 1972, Ser. No. 304,795
Int. Cl. H01h *9/28, 27/6*
U.S. Cl. 200—44 **1 Claim**

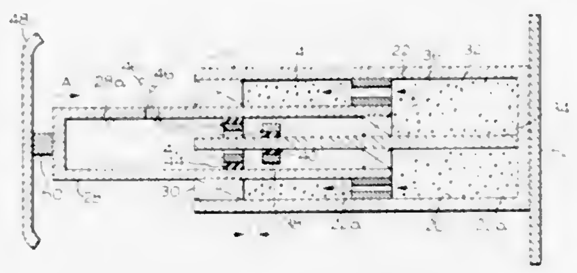
An ignition starter switch assembly including a housing and a concentric cylinder which is rotatable within the housing in response to rotary forces imposed by a key operated tumbler lock. The cylinder terminates inwardly in an eccentric drive lug which seats within an eccentric socket provided in a cooperating switch cap to transmit rotary forces from the key

to the switch cap for ignition contact purposes. The cylinder is provided with an eccentric bore which rotates into alignment with the key slot when the switch contact is opened. A spring biased plunger is seated within the eccentric bore and serves to automatically eject the key when the eccentric bore aligns with the key slot.



3,793,498
AUTOMOTIVE INERTIA SWITCH WITH DASHPOT TYPE ACTUATOR

Shunji Matsui, Yokohama; Yoshikazu Hayakawa, Yokosuka, and Kenzo Hirashima, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan
Filed Apr. 27, 1972, Ser. No. 248,241
Claims priority, application Japan, Apr. 27, 1971, 46-32794; May 21, 1971, 46-40660; Nov. 6, 1971, 46-10370
Int. Cl. H01h *35/02*
U.S. Cl. 200—61.45 R **15 Claims**

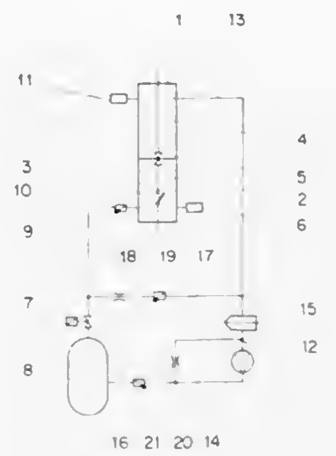


Herein disclosed is a mechanical pressure switch device which serves not only as a support mechanism for a bumper of a motor vehicle but as a combination impact detector and switch which is actuated in response to a frontal or rear-end collision encountered by the motor vehicle, comprising in one preferred form a cylinder, a piston axially slidable in the cylinder bore and dividing the cylinder bore into two chambers which are in communication with each other through an orifice formed in the piston, pressure absorptive means such as liquid filling the chambers in the cylinder, and switch means which is actuated in response to the axial movement of the plunger relative to the cylinder through a predetermined distance. The pressure absorptive means may include an incompressible or compressible fluid or an elastic or resilient material in the chamber or chambers in the cylinder. The switch device is connected at one end to the bumper and at the other to a suitable structural member of the vehicle body.

3,793,499
ELECTRICAL SWITCHGEAR APPARATUS OPERATING WITH PRESSURIZED GASEOUS ARC-QUENCHING MEDIUM

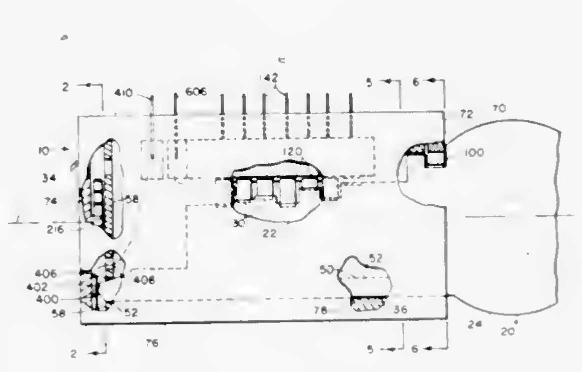
Karl Heinz Wagner, Mannheim; Reiner Muellerpoths, Schwetzingen, and Rudolf Hammel, Mannheim, all of Germany, assignors to Brown Boveri & Company Limited, Baden, Switzerland
Filed Oct. 30, 1972, Ser. No. 301,723
Claims priority, application Germany, Nov. 2, 1971, 2154374
Int. Cl. H01h *33/57*
U.S. Cl. 200—148 E **3 Claims**

Electrical switchgear apparatus using a pressurized arc-quenching and insulating gaseous medium particularly SF_6 wherein the gas is maintained at high pressure in a switching chamber and is transferred to an adjacent low-pressure chamber during a switching operation, and wherein the gas is supplied to the switching chamber from a storage container via a high-pressure supply line, then returned via a low-pressure return line from the low-pressure chamber to a compressor for re-compression and feed back via a feed line into the storage container. To prevent condensation of gas in its high-pressure state which may become trapped in the gas supply line between the storage container and the switching chamber, and also similarly trapped in the gas feedback line between the compressor and the storage container, vent lines are provided. A first vent line including a flow restrictor and non-return valve interconnects the gas supply line and the low-pressure return line, and a second vent line including a flow restrictor interconnects the gas feedback line with the low-pressure return line.



3,793,500
ELECTRIC LOCK AND KEY ASSEMBLY

Richard W. Gerber, Box 88, Webster City, Iowa
Filed Jan. 3, 1972, Ser. No. 214,675
Int. Cl. H01h *27/00*
U.S. Cl. 200—44 **20 Claims**



An electric lock and key assembly for energizing a target circuit, such as for controlling automobile ignition or door unlocking, in response to the engagement of the protrusions of a moving key with a plurality of conductive circuit closing means, which latter deliver current to a plurality of certain electronic switching means such as transistors, which latter will not cause said target circuit to be energized unless all of the certain transistors are energized by the proper key.

3,793,501

3,793,503
TERMINAL MACHINE AND METHOD OF

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nitudes of environmental characteristics. After exposure to the environment, the detector is sensed and the number of its

3,793,507
INTEGRATED PARAMETER DISPLAY

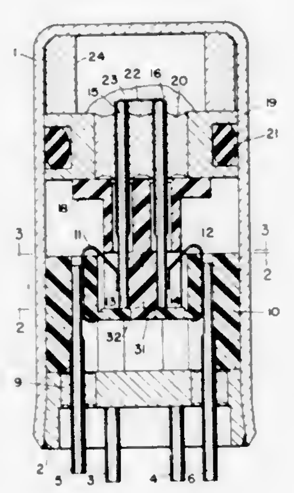
3,793,501
EXPLOSIVE SWITCH

Donald M. Stonestrom, West Chester, Pa., assignor to ICI America Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 145,608, May 12, 1971, abandoned. This application Dec. 4, 1972, Ser. No. 311,494

Int. Cl. H01h *39/00*

U.S. Cl. 200—61.08 **8 Claims**



An explosive switch capable of opening or closing one or more poles. An explosive charge moves a piston to which are fixed one or more plungers, each plunger acting as part of a separate pole. Each plunger has a wide portion and a narrow portion. Metal contacts are provided which fit over the wide portion, making the pole normally opened, or over the narrow portion, making the pole normally closed. The piston can also disconnect a connection to the bridgewire.

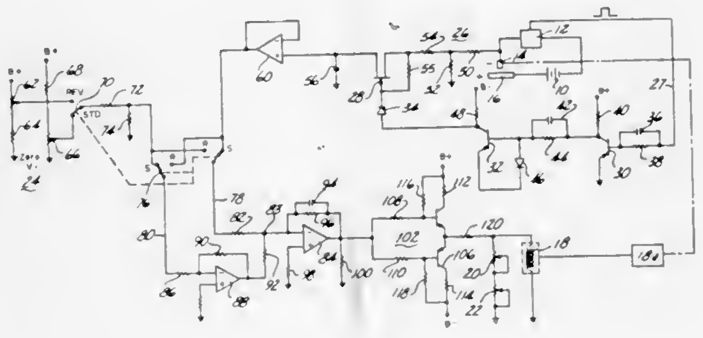
3,793,502
SERVO FEED CONTROL CIRCUIT FOR ELECTRICAL DISCHARGE MACHINING APPARATUS

Oliver A. Bell, Jr., Mooresville, N.C., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed Oct. 6, 1972, Ser. No. 295,533

Int. Cl. B23k *9/16*

U.S. Cl. 219—69 G **13 Claims**



The servo feed system is controlled by machining gap voltage level to provide servo upfeed and downfeed at appropriate times according to gap. The servo circuit includes a pair of reference voltage potentiometers and a plurality of operational amplifiers which are switched selectively into series with a summing means and with a third operational amplifier in accordance with the gap polarity being used. A final current amplifier stage of push-pull configuration is connected between the output of the third operational amplifier and a control input terminal of a servo control coil.

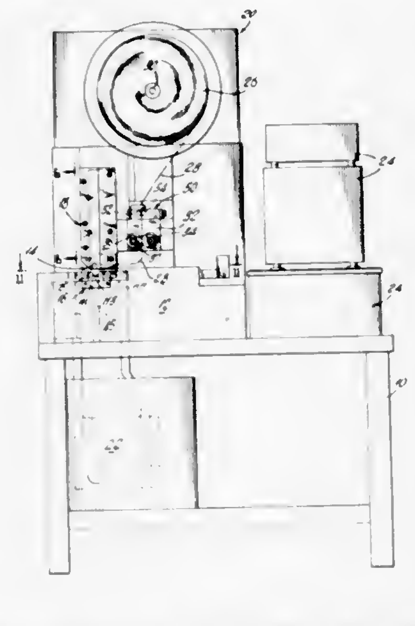
3,793,503
TERMINAL MACHINE AND METHOD OF TERMINATING LEAD WIRES

Samuel Warner, P.O. Box 529, Clark, N.J.

Filed Sept. 19, 1972, Ser. No. 290,344

Int. Cl. B23k *11/10*

U.S. Cl. 219—106 **9 Claims**



A system for electrically terminating two or more insulated or uninsulated wires comprising forming a terminal about the wires with a ram and die cavity, withdrawing the ram and die and engaging the terminal with a pair of electrodes to fuse the same under pressure and heat.

ERRATUM

For Class 235—61.12 N see:
Patent No. 3,793,600

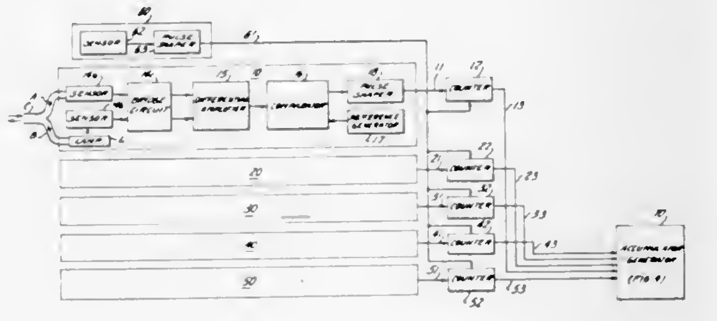
3,793,504
METHOD AND SYSTEM FOR GENERATING DATA SIGNALS

Berel Weinstein, New York, N.Y.; Henry T. Goldbach, Little Ferry, and Mark J. Kolby, Maywood, both of N.J., assignors to Bio Medical Sciences, Inc., Fairfield, N.J.

Filed July 13, 1971, Ser. No. 162,133

Int. Cl. G06m *1/272*

U.S. Cl. 235—92 MT **10 Claims**



A method and system for generating signals indicative of data concerning environmental characteristics. A detector is provided incorporating a plurality of detecting elements, each having a predetermined threshold level and thus selectively capable of providing a sensible indication of the presence of an environmental characteristic of magnitude equal to or greater than such threshold level. The detecting elements are correlated in respect of their threshold levels with a preselected numerical scale whose digits define discrete magnitudes of environmental characteristics. After exposure to the environment, the detector is sensed and the number of its sensible indicia is counted. A signal indicative of such sensible indicia count and hence correlated with the numerical scale is provided.

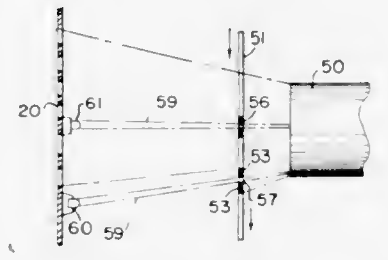
3,793,505
ELECTRONIC VOTING MACHINE

Richard H. McKay, Wheaton; Paul G. Ziebold, Chicago; James D. Kirby, Palos Park; Douglas R. Hetzel, Chicago, and James U. Snydacker, Whea.on, all of Ill., assignors to Frank Thornber Co.

Filed Nov. 16, 1972, Ser. No. 307,121

Int. Cl. G07c *13/00*

U.S. Cl. 235—54 F **17 Claims**



An electronic voting machine including a video screen containing the projected names of candidates or propositions being voted, utilizing a film strip containing individual frames having images projected onto the video screen by a light source, wherein photo-optical information transmittal circuits are actuated by the light source projecting the voting image and, by means of controlled light sensitive areas on the film strip, energizing phototransistor units in the system to activate voting buttons, check film alignment, operate vote counters and identify the vote, whether it be cumulative, a proposition or an ordinary vote, with the information furnished by the phototransistor units being read by photosensitive logic units which transmit information to the projector and counter units.

3,793,506
NAVIGATIONAL PROCESS AND DEVICE FOR PATH CONTROL

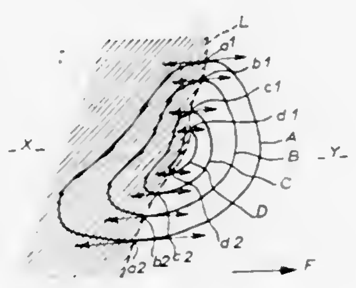
Jacques Desire Deschamps, Saint-Cloud, and Jacques Henri Emile Durand, Paris, both of France, assignors to Societe Nationale D'Etude Et De Construction De Moteur D'Aviation, Paris, France

Filed July 21, 1965, Ser. No. 474,539

Claims priority, application France, July 30, 1964, 64.983689

Int. Cl. G06k *1/18*

U.S. Cl. 235—61.6 B **7 Claims**



A contour map reading and recording process wherein different colors, voltages, design characteristics or other physical features are imparted to increasing and decreasing altitude sections of the map as discriminated along a selected reading direction across it, said different physical features being sensed while moving across said map along said reading direction and translated into binary-coded data to be stored in a memory.

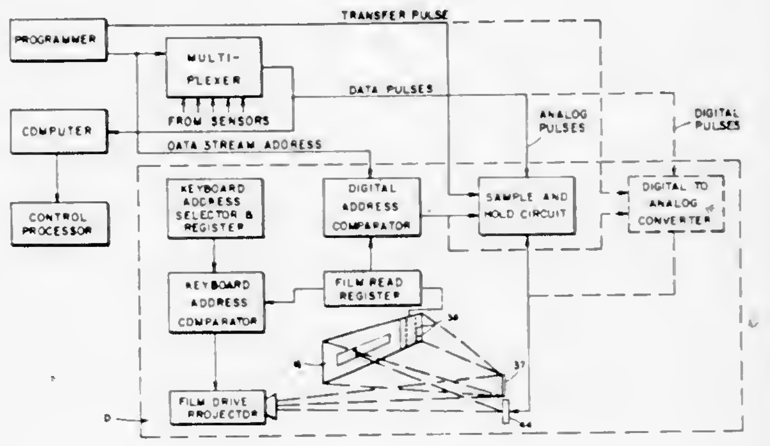
3,793,507
INTEGRATED PARAMETER DISPLAY

Robert B. Blizard; Christ W. Pederson, both of Littleton, and John T. Polhemus, Englewood, all of Colo., assignors to Martin-Marietta Corporation, New York, N.Y.

Division of Ser. No. 524,911, Feb. 3, 1966, Pat. No. 3,548,378. This application Aug. 4, 1970, Ser. No. 60,953

Int. Cl. G06k *7/015*

U.S. Cl. 235—61.7 R **16 Claims**



The integrated parameter display operates with a programmer and multiplexer to display an unlimited number of meters. The meter faces are provided on a film strip which are selectively projected onto a screen. The meter reading is superimposed on the selected meter face by a galvanometer in accordance with the value of a parameter being measured. The meter faces are placed on a film strip with a coded address adjacent thereto. The desired address is punched into a keyboard and compared with the film strip being driven until the selected address matches the address adjacent the meter face to be displayed.

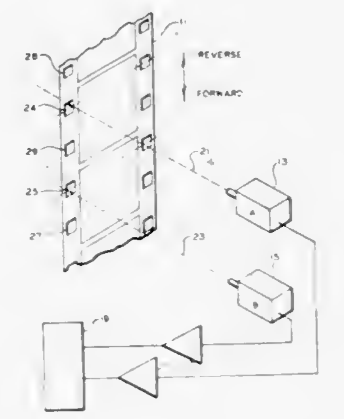
3,793,508
FILM FRAME COUNTER

Charles Robert Maggi, Endicott, N.Y., assignor to The Singer Company, Binghampton, N.Y.

Filed Dec. 21, 1971, Ser. No. 210,444

Int. Cl. H03k *21/06*

U.S. Cl. 235—92 V **8 Claims**



A film frame counter in which a first optical scanner is arranged to intersect the top half of one sprocket hole when a second scanner intersects the bottom half of another sprocket hole providing signals at a first level when intersecting a sprocket hole and at a second level when not. Because of this arrangement, a unique series of logic transitions occurs in each direction which is detected and the frame count updated only when all transitions have occurred in proper sequence avoiding false counts due to jitter or hunting.

3,793,509
METHOD AND APPARATUS FOR COUNTING WORK CYCLES OF ELECTRICALLY DRIVEN DEVICES

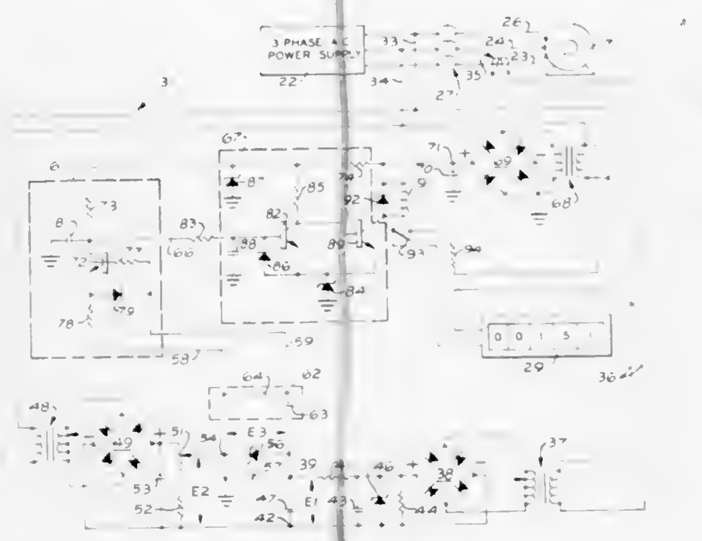
Theophile Isnard, Pont de Claix, France, assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 23, 1971, Ser. No. 211,247

Claims priority, application France, Feb. 17, 1971, 71.05427

Int. Cl. G06m *1/27*

U.S. Cl. 235—92 EL **9 Claims**



An accurate count of the number of workpieces processed on an electrically driven machine tool is maintained by a counter controlled by a circuit which responds to the changes of drive motor current in the course of each work cycle. As the counting system is not dependent upon detection of any mechanical movement, critical elements of the system may be inaccessibly located to avoid possible tampering with the count. The system can be adapted to counting work operations which involve more than one motor current peak in connection with processing of a single workpiece and is insensitive to supply current fluctuations arising from other causes such as motor starting surges and the like.

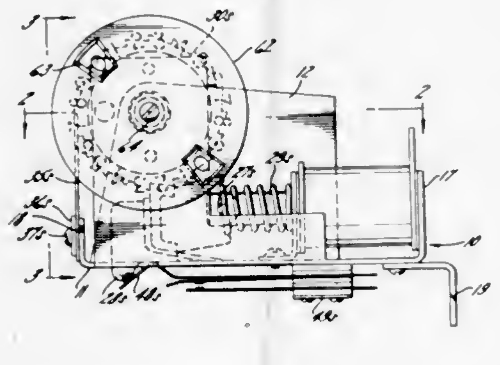
3,793,510
ADD AND SUBTRACT RELAY

Roman F. Garbark, Westchester, Ill., assignor to D. Gottlieb & Company, Northlake, Ill.

Filed Feb. 28, 1973, Ser. No. 336,488

Int. Cl. G06m *3/14, 3/02*

U.S. Cl. 235—92 EV **14 Claims**



An add and subtract relay for a pinball machine or the like having an add solenoid and a subtract solenoid mounted side by side with respective drive pawls and associated ratchet wheels, the teeth of both of the ratchet wheels being faced in the same direction. The wheels are axially detented together with one of them being axially shiftable with respect to the frame for operating a switch when the wheels are rotated out of, and into, a relative reference phase position. As an added feature the wheels have telescoping concentric shafts with cooperating discs at the ends of the shafts with indicia to provide constant indication of offset in terms of the number of steps of phase position. Each solenoid has a return spring so that the drive pawl advances the engaged ratchet wheel forwardly one step upon deenergization of the solenoid. A cam is provided adjacent each drive pawl for crowding the pawl inwardly against the ratchet wheel as it approaches the end of its forward stroke to block the ratchet wheel against unwanted rotation in either direction.

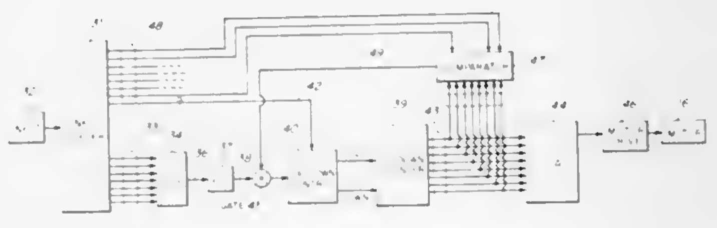
3,793,511
DIGITAL MOTOR CONTROL CIRCUIT

John L. Bala, Stow, and Peter W. Ford, Winchester, both of Mass., assignors to Itek Corporation, Lexington, Mass.

Filed July 3, 1972, Ser. No. 268,387

Int. Cl. G06f *15/46*

U.S. Cl. 235—151.11 **9 Claims**



A circuit for controlling the velocity and acceleration of a motor. The circuit includes a pulse source for producing pulses each of which represent an increment of velocity and for producing said pulses at a pulse rate proportional to the desired acceleration rate of said motor. The pulse rate controls the acceleration rate of the motor while, at the same time, the number of pulses are received by an up-down counter which stores a count proportional to the actual velocity of the motor. The counter counts the received pulses and either increases its count for acceleration or decreases its count for deceleration. The count within the counter is continuously compared with a count proportional to the desired velocity of the motor and when the counts are equal, indicating that the motor has reached its desired velocity, further acceleration is prevented.

The circuit is particularly designed to enable complete binary control of machine tool systems and to permit the generation of a wide variety of curved shapes in cutting or profiling operations.

3,793,512
METHOD AND APPARATUS FOR MONITORING THE OPERATION OF TOBACCO PROCESSING MACHINES OR THE LIKE

Heinz-Christen Lorenzen, Hamburg, Germany, assignor to Hauni-Werke Korber & Co. KG, Hamburg, Germany

Filed Mar. 17, 1971, Ser. No. 125,266

Claims priority, application Germany, Mar. 19, 1970, P 20 13 078.3

Int. Cl. G06f *15/36, 15/46*

U.S. Cl. 235—151.13 **25 Claims**

The operation of parts or groups of parts in discrete machines or groups of cooperating machines for the treatment, processing and/or transport of plain or filter-tipped smokers' products and/or their components is monitored by discrete detectors. The detectors produce signals in response to detection of malfunctions of the respective parts or groups of parts. Such signals are utilized to stop one or more machines as well as to operate circuits or devices which count and record the number of malfunctions of each part or group of parts within a selected period of time, and which also record the length of intervals of idleness of one or more machines as a result of malfunctioning of each part or group of parts as well as the ratio of intervals of idleness to the length of a selected period, such as a day's shift or a week.

3,793,513
CIRCUITS AND METHODS FOR PROCESSING DELTA-MODULATED SIGNALS

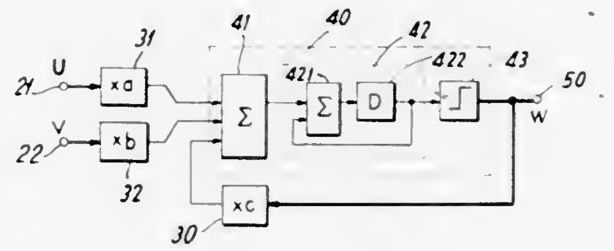
Hisashi Kaneko, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed May 15, 1972, Ser. No. 253,592

Claims priority, application Japan, May 19, 1971, 46/33859

Int. Cl. G06f *7/38*

U.S. Cl. 235—152 **5 Claims**



A delta-modulated signal processing circuit includes one or more first multipliers for multiplying one or more delta-modulated input signals by preselected constants, thus producing a first code signal corresponding to each first multiplier. A second multiplier is provided for multiplying a delta-modulated output signal by a second constant having a sign opposite to that of the first constants to provide a second code signal. A digital adder takes the algebraic sum of the first and second code signals. The output of the digital adder is applied to an integrator to produce an output signal including sign-indicating bits. Also included in the circuit is a sign-bit extractor for extracting the sign-indicating bits from the output of the integrator. This provides the delta-modulated signal supplied to the second multiplier. Modifications of this circuit for various uses are disclosed.

3,793,514
PANEL LAMP ASSEMBLY

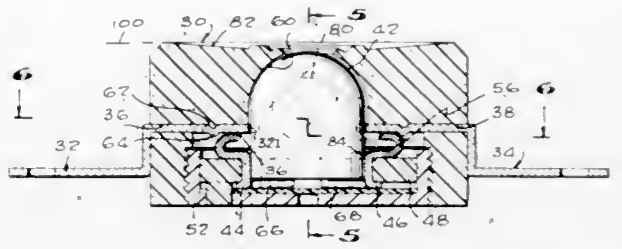
Gerald Ardin Curl, Redmond, Wash., assignor to Bell Industries, Inc., Los Angeles, Calif.

Filed Apr. 5, 1972, Ser. No. 241,295

Int. Cl. B60g *3/04*

U.S. Cl. 240—8.16 **5 Claims**

A lamp assembly for illuminating an instrument panel, which facilitates replacement of lamps and increases the amount of useful light from them, including a transparent housing located in a panel recess, a lamp assembly in the housing, and a cap that can be screwed into the housing to hold the lamp assembly in place. The lamp assembly includes a lamp and a pair of spring-like terminal members permanently attached to the lamp leads and having folded-over portions that are pressed together as the cap is screwed into the housing, to assure good electrical contact between the terminals and a pair of contacts mounted on the housing. The housing has a series of ring-shaped regions that are beveled, so they refract and reflect light sidewardly to better illuminate adjacent regions of the panel.



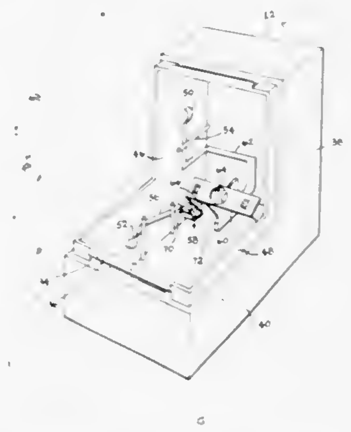
3,793,515
LAMP

Jeun-Young Park, 55 Naugler Ave., Marlboro, Mass.

Filed Apr. 17, 1972, Ser. No. 244,467

Int. Cl. F21p *1/02*

U.S. Cl. 240—10 R **5 Claims**



A battery-operated lamp is provided with an L-shaped base and an offset translucent globe or cover housing. The bulb is actuated by a position-responsive switch whereby the lamp may be turned on or off by tilting the lamp onto one of two faces of the base. The configuration is such that cover housing remains elevated and the lamp has the same appearance in either the on or the off position.

3,793,516
CLAMP-TYPE LIGHT FOR SWIMMING POOL

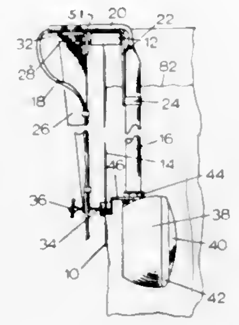
Harold C. Cassey, 136 Main St., Salunga, Pa.

Filed Jan. 24, 1973, Ser. No. 326,498

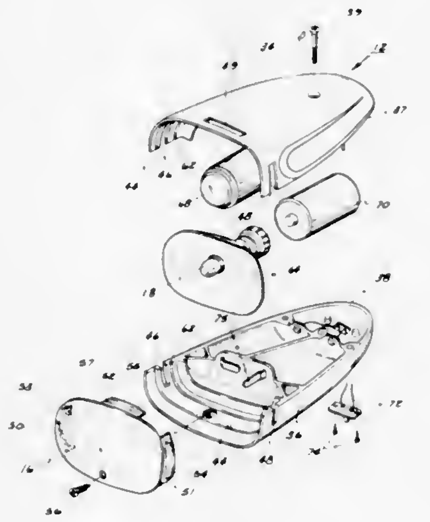
Int. Cl. F21v *31/00*

U.S. Cl. 240—26 **7 Claims**

A light unit attachable to a swimming pool tank having sidewalls above the ground level and terminating in an upper rim, the light having a substantially U-shaped supporting member of which one leg extends from the rim of the tank downwardly along the inner surface of the sidewall thereof and has an electric light within a light shield supported by the lower end of said leg, while the opposite leg of the member is disposed along the outer surface of the sidewall of the pool tank and engages the same in opposition to the first-mentioned leg so as to stabilize the support of the light within the tank. Several embodiments of adjustable bracket means are included and the light is furnished with electric current by a conduit extending up the leg of the U-shaped member which extends along the inner surface of the tank, said conduit being connectable to a source of surrent, preferably low voltage, supplied either by a transformer or by rechargeable batteries.



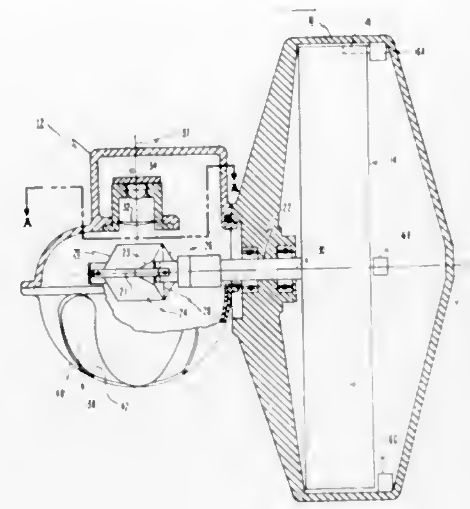
3,793,517
LIGHTING DEVICE FOR A HELMET OR THE LIKE
Anthony M. Carlini, 24340 Cherry Hill Rd., Dearborn, Mich.
Filed Sept. 20, 1971, Ser. No. 181,851
Int. Cl. A42b *1/24*
U.S. Cl. 240—60 **12 Claims**



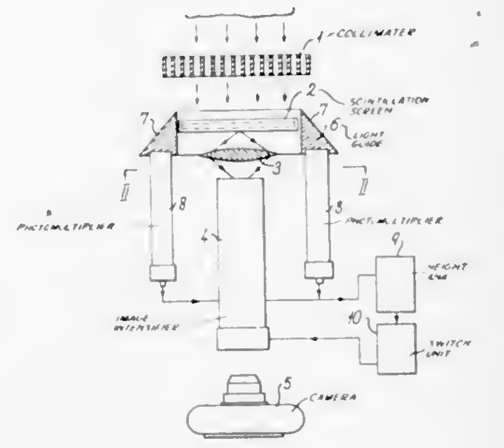
A safety helmet for an operator of a motorcycle or the like having a lighting device with a self contained light projecting means disposed within a housing carried on the top portion of the helmet. The housing is of a substantially triangular shape forming a streamline contour with a lens disposed at the rear end of the housing to direct light rearwardly of the helmet body. The lighting device housing has a bottom contour complementary to the shape of the helmet and may be attached thereto by suitable fasteners or may be formed integrally with the helmet body. Radially extending lenses strategically located on the housing of the lighting device direct light from the sides and front portion thereof.

3,793,518
OPTICAL SCANNING SYSTEM WITH A CROSSED SCANNING PATTERN
Kennard W. Harper, Endwell, N.Y., assignor to Ithaco Inc., Ithaca, N.Y.
Filed Mar. 17, 1972, Ser. No. 235,687
Int. Cl. G01j *1/02*
U.S. Cl. 250—83.3 H **28 Claims**

An optical scanning system for horizon scanners, and the like, which provides a dual-lobe crossed scanning pattern. A detector arrangement receiving radiation from the scanner provides sufficient signals for determining the attitude of a space vehicle with reference to a planet about which the space vehicle is orbiting.

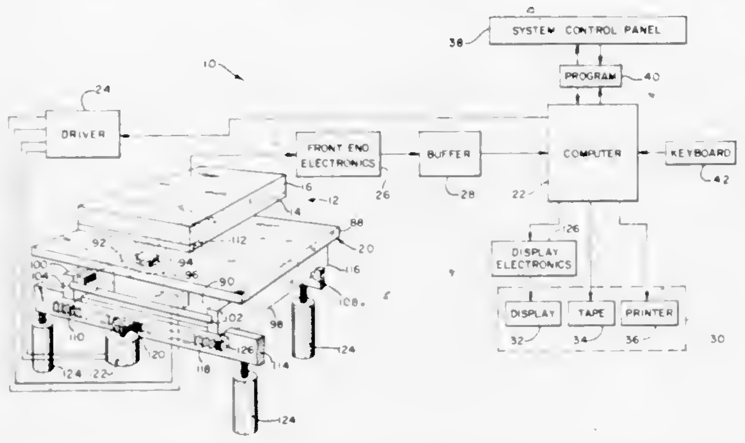


3,793,519
GAMMA CAMERA ACTIVATED TO BE RESPONSIVE TO SELECTED LEVELS OF LIGHT EMISSION
John Rowland Mallard; James Gault Mitchell, both of Aberdeen, Scotland, and Robin John Wilks, Exeter, England, assignors to National Research Development Corporation, London, England
Filed Apr. 13, 1972, Ser. No. 243,663
Claims priority, application Great Britain, Apr. 21, 1971, 10,447/71
Int. Cl. G01n *21/16*
U.S. Cl. 250—71.5 R **12 Claims**



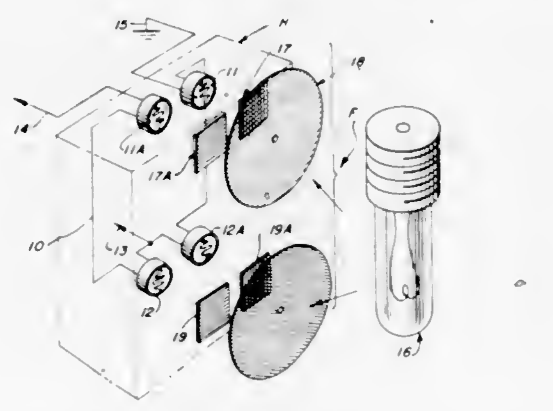
The invention concerns apparatus for use in investigating the distribution of radiation from an extended source of ionising rays and is particularly concerned with gamma cameras for sensing Gamma radiation. In normal Gamma cameras, due to the long exposure time, the sensitivity of the camera is reduced by spurious light emission from the scintillation screen. In the present invention the effect of this spurious emission is reduced by only triggering the image intensifier in response to predetermined values of light emission. This predetermined triggering is achieved by collecting the unwanted light emitted at the edges of the scintillation screen and directing this into one or more photomultipliers, the outputs of which are taken to a pulse height analyser which is used to trigger the image intensifier.

3,793,520
COLLIMATOR PARTICULARLY FOR HIGH RESOLUTION RADIOACTIVITY DISTRIBUTION DETECTION SYSTEMS
Raymond P. Grenier, Wilmington, Mass., assignor to Baird-Atomic, Inc., Bedford, Mass.
Filed Jan. 27, 1972, Ser. No. 221,162
Int. Cl. G21f *5/02*
U.S. Cl. 250—105 **5 Claims**



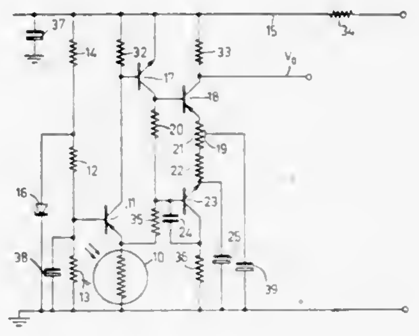
Radiation emitted from a subject positioned on a programmable X,Y platform is directed through a multi-plane focused collimator and is detected by means of an array of sensing devices. The collimator comprises a registered stack of photoetched plates, each plate formed with a series of hole sets and each stack of hole sets defines downwardly converging collimator bores. One hole set is distinguished from another hole set by different hole profiles, each hole profile defining a specific focal length. The platform, which is in spaced relationship with the collimator, is moved incrementally along its X and Y axes in steps defining a programmed scanning pattern, each step being an integral multiple of the distance between adjacent sensing devices. The number of radioactive events detected at each step is temporarily held in a buffer memory and then applied to a digital data storage unit in a computer. Upon completion of the programmed scanning sequence, the stored data, which represents the radioactivity detected at various depth of the subject, is applied to a display for presentation as a composite half tone pictorial representation of the detected radioactive events.

3,793,521
LIGHT MODULATED VOLTAGE DIVIDER CONTROL
William L. Fulton, Roselle, Ill., assignor to Stancomp, Inc., Elk Groove Village, Ill.
Filed Nov. 13, 1972, Ser. No. 305,816
Int. Cl. H04b *9/00*
U.S. Cl. 250—199 **26 Claims**



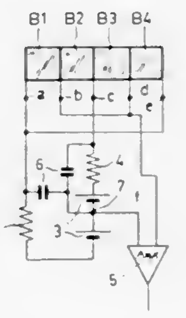
A light modulated voltage divider control for tuning voltage responsive television tuners utilizes a separate polarized light filter means corresponding to each channel to be tuned. The polarity orientation of the separate filtering means are individually adjustable. All channel UHF, VHF and VHF-UHF combinations are provided.

3,793,522
TEMPERATURE COMPENSATING CIRCUITS FOR PHOTO-CONDUCTIVE CELLS
Peter Rodney David Coleby, Totton, and Ian Joseph Kampel, Southbourne, both of England, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Sept. 27, 1971, Ser. No. 183,784
Claims priority, application Great Britain, Sept. 30, 1970, 4,657/70
Int. Cl. H01j *39/12*
U.S. Cl. 250—206 **8 Claims**



A temperature compensating circuit for a photoconductive cell whose resistance R varies with temperature and whose responsivity is a function of cell resistance. The circuit includes a transistor connected to the cell to provide a constant bias voltage thereacross so as to provide compensation for an R^2 resistance dependence of cell responsivity. A positive feedback circuit for the transistor controls the transistor conduction as a function of cell resistance to cause the transistor to change the level of the cell bias voltage to provide compensation for a resistance dependence of cell responsivity in excess of R^2, and more specifically between R^2 and R^3.

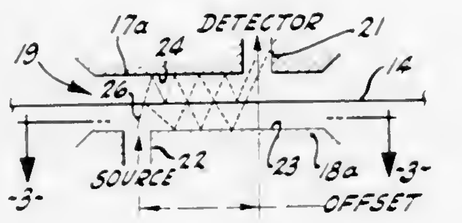
3,793,523
DEVICE FOR THE DETECTION OF MOVING OBJECTS
Francois Desvignes, Bourg-La-Reine, and Marcel-Georges Herbert, Paris, both of France, assignors to U. S. Philips Corporation, New York, N.Y.
Filed May 25, 1973, Ser. No. 363,839
Int. Cl. H01j *39/12*
U.S. Cl. 250—209 **5 Claims**



A device is described for the detection of moving objects, comprising an optical imaging system, a radiation-sensitive detection system for converting radiation emerging from the imaging system into electrical signals, and an electronic circuit for processing the signals. By composing the detection system of four separate detection elements which are arranged in line in the direction in which an image of an object travels, a time-differentiated signal can be obtained.

3,793,524
APPARATUS FOR MEASURING A CHARACTERISTIC OF SHEET MATERIALS

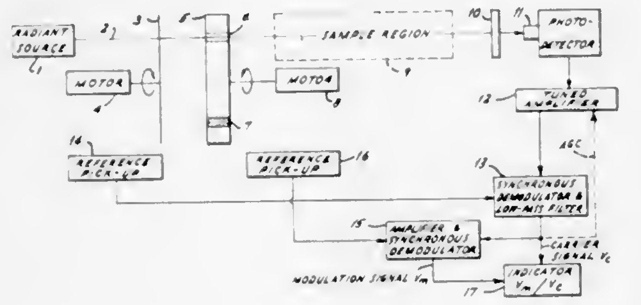
John J. Howarth, San Jose, Calif., assignor to Measurex Corporation, Cupertino, Calif.
Continuation-in-part of Ser. No. 140,762, May 6, 1971, abandoned. This application Sept. 5, 1972, Ser. No. 286,053
Int. Cl. G01n *21/26*
U.S. Cl. 250—339 **27 Claims**



Apparatus for measuring the moisture content of sheet material such as paper includes an infrared radiation source and detector. These are coupled to apertures in opposed paperguide plates through which the paper material flows. The apertures may be offset from one another and in conjunction with reflective coatings, of both the specular and nonspecular type, on the paperguides provides simultaneous random multiple paper contacts for a typical infrared ray in its travel between the source and detector. This has the effect of increasing the effective thickness of paper, especially fine or tissue paper. For heavy paper, the foregoing technique causes radiation to be driven through to provide more accurate measurements. Diffusing windows at the radiation source and detector in addition to providing multiple radiation paths provide other advantages.

3,793,525
DUAL CELL NON-DISPERSIVE GAS ANALYZER

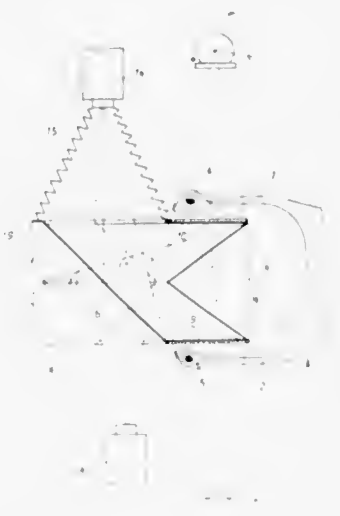
Darrell E. Burch; David A. Gryvnak, both of Orange City, and John D. Pembrook, Costa Mesa, all of Calif., assignors to Philco-Ford Corporation, Blue Bell, Pa.
Filed Jan. 2, 1973, Ser. No. 320,137
Int. Cl. G01n *21/34*
U.S. Cl. 250—343 **5 Claims**



In a gas analyzer a beam of radiant energy, chopped at a suitable frequency, and limited by filter means to a suitable portion of the spectrum, is passed through a sample region containing an unknown quantity of gas to be analyzed. Selector cells are alternately inserted into the beam at a rate substantially lower than the chopping frequency. One selector cell contains a quantity of the gas species to be analyzed at high pressure and the other contains a quantity of the same gas at low pressure. A photo detector converts the radiant energy variations to electrical signals which can be analyzed to indicate the quantity of gas in the sample region.

3,793,526
APPARATUS FOR THE SIMULTANEOUS X-RAY EXAMINATION OF BOTH SIDE WALLS OF A MOTOR VEHICLE TIRE

Wilhelm Collmann, and Udo Guldner, both of Lubeck, Germany, assignors to Collmann GmbH & Co. Spezialmaschinenbau KG
Filed Dec. 12, 1972, Ser. No. 314,323
Claims priority, application Germany, Sept. 21, 1972, 2246290
Int. Cl. G01t *1/00, 1/16*
U.S. Cl. 250—360 **8 Claims**



This invention relates to apparatus for the simultaneous, continuous X-ray examination of both sidewalls of a drivably mounted expanded motor vehicle tire, of the kind comprising two X-ray tubes and two fluorescent screens with mirrors arranged subsequent to them to reflect the pictures on said fluorescent screens to a sensing-camera arrangement with reproduction on monitors. In the invention, the fluorescent screens arranged for location at least partly within the airspace of the tire, together with said mirrors. Each X-ray tube is situated opposite the side-wall of the tire facing it, and which is to be irradiated. The fluorescent screens are generally flat and are situated parallel or approximately parallel to each other and to the two side-walls of the tire within its air space.

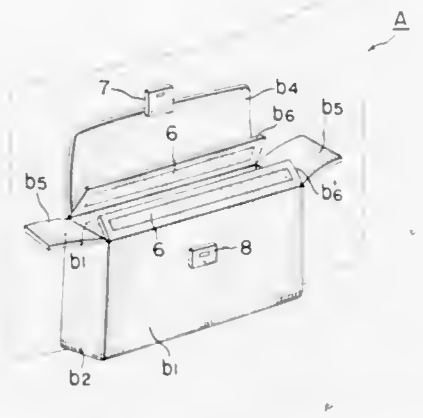
3,793,527
METHOD FOR ANALYZING RARE EARTH-ACTIVATED RARE EARTH OXIDE AND OXYSULFIDE PHOSPHORS

Harvey Forest, Skokie, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Nov. 2, 1972, Ser. No. 303,298
Int. Cl. G01n *21/38*
U.S. Cl. 250—459 **22 Claims**

This disclosure depicts a method for quickly and accurately determining the emission color and activator content of rare earth-activated rare earth oxide and oxysulfide phosphors such as Y_2O_2S:Eu. The method involves exciting the tested phosphor by ultra-violet irradiation or other suitable stimulation, detecting the intensities of predetermined spectral lines in the emission spectrum of the excited phosphor, and comparing the related intensities of the detected lines to derive an indication of the emission color and activator content of the phosphor.

3,793,528
A GADGET CASE FOR A CAMERA

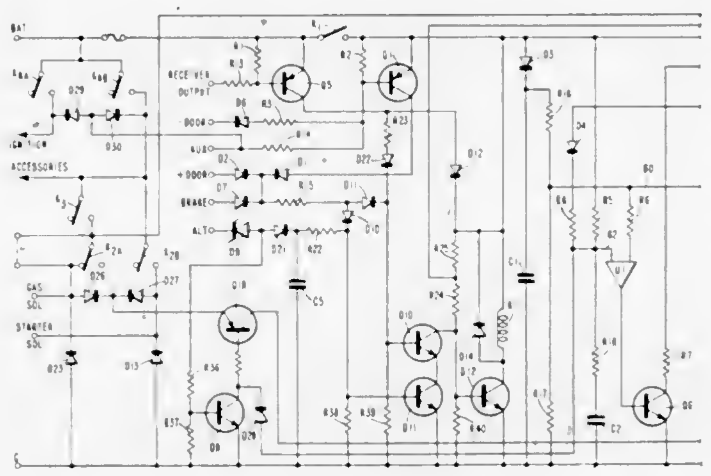
Tsuneichiro Takeda, 769, Nishi Koiso, Oiso, Japan
Filed Aug. 7, 1972, Ser. No. 278,393
Claims priority, application Japan, June 27, 1972, 47-75093[U]
Int. Cl. G21f *1/00;* **B65d** *85/00*
U.S. Cl. 250—482 **4 Claims**



A gadget case for a camera which comprises providing a protection chamber from X-ray and heat for accomodating a camera and film surrounded by a protection layer obtained by laminating adiabatic material on a thin layer of a metal not transmitting X-ray such as lead in all or a part of said case.

3,793,529
REMOTE STARTING SYSTEM FOR COMBUSTION ENGINES

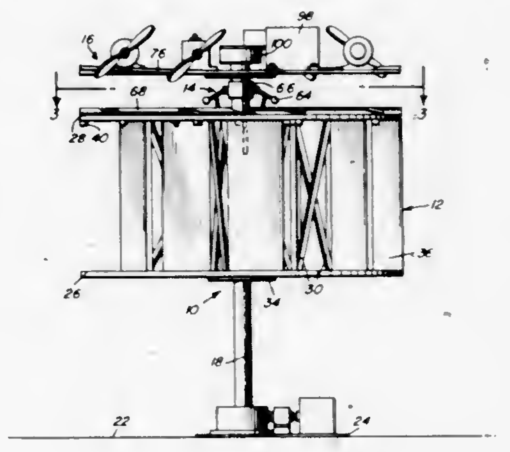
Jeffrey C. Bucher, R.D. No. 1, Aspers, Pa.
Filed Dec. 21, 1972, Ser. No. 317,190
Int. Cl. H02p
U.S. Cl. 290—38 **10 Claims**



A system is disclosed for starting an engine from a remote location utilizing a receiver for receiving a command signal from a remote location and generating an engine start signal in response thereto. The start signal actuates an energizing circuit which connects a potential source to the ignition system of the engine, and which, in response to control signals from a two-stage time delay start mechanism, connects the potential source to the starter motor for the engine. A protection mechanism is coupled to the energizing circuit and disconnects the potential source from the ignition system, thereby stopping the engine, upon the occurrence of any one of a number of predetermined events including, "racing" of the engine; "grinding" of the engine without starting; or idling of the engine for a predetermined period of time. The system may further include a mechanism coupled to the energizing circuit for detecting that an operator is preparing to assume control of the engine following remote starting thereof, including means for establishing a time period within which the operator must assume proper manual control of the engine and in the absence of such control, disconnecting the potential source from the ignition system, thereby stopping the engine.

3,793,530
WIND TURBINE GENERATOR

Frank H. Carter, 428 North St., Taft, Calif.
Filed Apr. 19, 1972, Ser. No. 245,341
Int. Cl. F03d *9/00*
U.S. Cl. 290—55 **6 Claims**



An electric energy generator driven by a wind actuated turbine rotor rotatably supported on a vertically disposed sleeve telescoped over and journaled on a rigid upright supporting post. The rotor includes a plurality of vertically disposed louvers capable of independent pivotal movement about a vertical axis at the inner edge thereof for orientation in radial relation to the rotational axis of the rotor or substantially tangential thereto so that wind will effectively drive the rotor. The rotor is also provided with lift wings on the upper surface thereof which may include stabilizers and shock absorbers fastened to the edge of the wings and the outer edge of the louver support to support part of the load as the rotor whirls in the air thereby providing a floating power device. A wing assembly, which may be hollow and filled with helium gas to reduce the load, is supported on the sleeve above the rotor and includes propeller assemblies mounted thereon to operate the rotor during periods of no wind or only a very slight wind. Governor control means is provided for selectively latching the louvers in tangential relation to the path of movement thereof to prevent the rotor from over-speeding during periods of high wind. Gear assemblies are provided for rotating generators to provide an electrical output that can be used for various purposes thereby utilizing the wind power to produce electrical energy that can be used for various purposes.

ERRATUM

For Class 302—60 see:
Patent No. 3,793,156

3,793,531
ELECTRONIC TREE LIGHT CONTROLLER

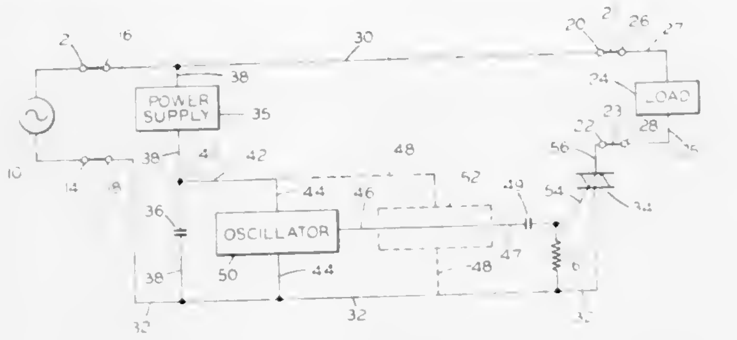
William L. Ferrigno, Peacedale, R.I., assignor to General Electric Company, Providence, R.I.
Filed Dec. 9, 1971, Ser. No. 206,360
Int. Cl. A47g *33/16;* **G05f** *3/04*
U.S. Cl. 307—41 **6 Claims**

An electronic power supply control mechanism is provided to regulate flow of electric power to lights or other loads in

ously, each push button permitting discharge of a capacitor

off the incoming transient voltage so that the line-side protector initiates the clipping action before the load-side protector

gate of the rectifier and a firing circuit, and incorporating means for assuring that a firing pulse is applied to the gate pulses where the intensity of the pulse varies with time in a cammed fashion. The control simultaneously permits control of the period or duration of the cammed power pulses to increase and decrease their length as they also undergo their change in intensity with time. This cammed intensity change coupled with change of the duration of the power pulses is achieved by electronic circuitry including a solid state switch, the trigger actuation of which is made responsive to the difference frequency or an oscillator frequency beating against line frequency.



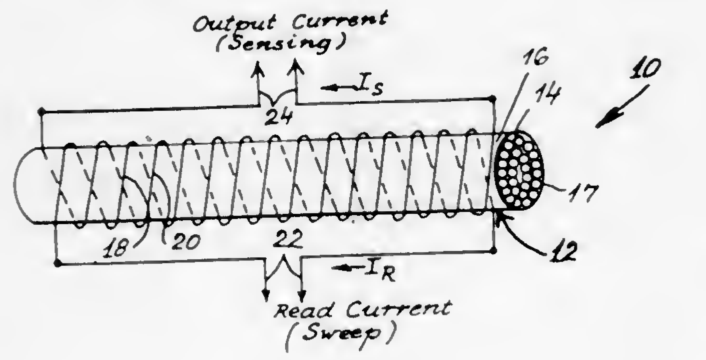
3,793,532
MULTIPLE PULSE GENERATOR

John Richard Wiegand, Valley Stream, Long Island, N.Y., assignor to Milton Vilinsky, Plainfield, N.J. and John R. Wiegand, Valley Stream, N.Y.

Continuation-in-part of Ser. No. 5,631, Jan. 26, 1970, Pat. No. 3,602,906, and a continuation-in-part of Ser. No. 86,169, Nov. 2, 1970, abandoned, and a continuation-in-part of Ser. No. 137,567, April 26, 1971, abandoned. This application Aug. 19, 1971, Ser. No. 173,262. The portion of the term of this patent subsequent to Aug. 31, 1988, has been disclaimed.

Int. Cl. H03k *3/78*

U.S. Cl. 307—88 MP **12 Claims**



A mulitple pulse generator comprises a plurality of axially straight, prestretched wire segments uniformly twisted helically and enclosed in a dielectric body to form a cylindrical core. A wire coil is wound around the core. When a magnetic field of variable intensity impinges on the wires a series of pulses are generated in the coil. The magnetic field can be created by passing an electric current of varying magnitude through another coil wound on the core, or by moving laterally a permanent magnet disposed adjacent to the core.

3,793,533
ELECTRICAL SAFETY CONTROL CIRCUIT

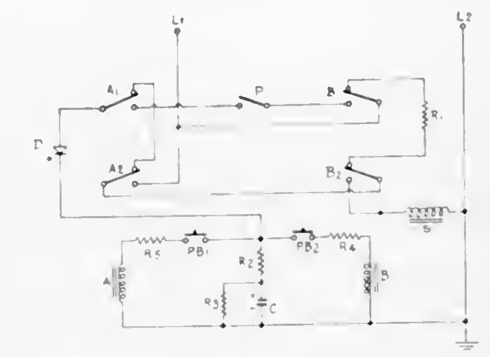
Leon Ginsberg, Toronto, Ontario, Canada, assignor to Precision Electronic Components (1971) Ltd., Toronto, Ontario, Canada

Filed Mar. 16, 1973, Ser. No. 342,312

Int. Cl. H01h *47/00*

U.S. Cl. 307—113 **7 Claims**

A safety control circuit for punch presses and the like has two push buttons which must be pressed almost simultaneously, each push button permitting discharge of a capacitor through a different relay coil. The relay coils move switches from first to second positions to connect to a power supply an electrical device which controls the punch press or the like. To ensure that the circuit fails safe, each relay coil has at least a pair of switches, and in their first positions the switches of these pairs are all connected in series between one side of the capacitor and the power supply. The other side of the capacitor may be grounded.



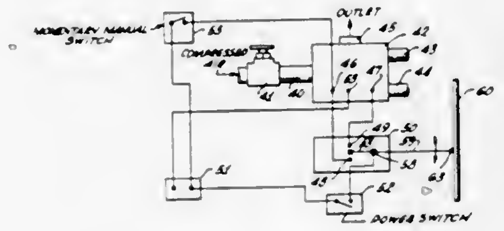
3,793,534
METHOD OF SURF GENERATION

George E. Richard, 207 42nd St., Manhattan Beach, Calif., and Eugene D. Richard, 11570 Victory Blvd., North Hollywood, Calif.

Division of Ser. No. 56,314, July 20, 1970. This application Mar. 27, 1972, Ser. No. 238,245

Int. Cl. H01h *35/24*

U.S. Cl. 307—118 **4 Claims**



A tapered enclosure for a body of water has a wave generator positioned in a relatively narrow and deeper end. In one form, the wave generator is a buoyant plunger mounted for vertical reciprocation within a chamber having a shorewardly facing opening. Through a cyclic control system, the plunger is driven in phase with the forces of gravity and buoyancy acting thereon, starting from a rest position through strokes of increasing amplitude until a desired steady state is attained to sequentially produce waves of a desired energy. Provision is made for varying the mass of the plunger and varying the input from a prime mover as a means of adjusting wave energy and frequency.

3,793,535
CIRCUIT FOR PROTECTING SEMICONDUCTORS AGAINST TRANSIENT VOLTAGES

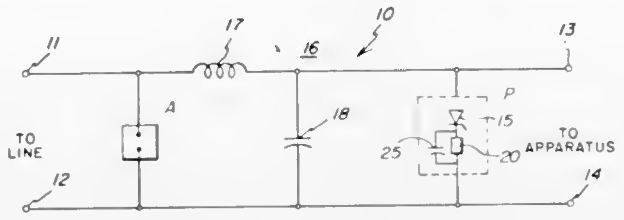
Pritindra Chowdhuri, North East, Pa., assignor to General Electric Company, Erie, Pa.

Filed Dec. 6, 1972, Ser. No. 312,742

Int. Cl. H03k *17/00*

U.S. Cl. 307—202 **4 Claims**

A surge protector is connected in parallel across each of the line-side and load-side circuits, that on the line-side having a relatively high clipping voltage and relatively high energy handling capability, and that at the load-side having a lower clipping voltage and lower energy handling capability. An LC-network is connected between the surge protectors to slope off the incoming transient voltage so that the line-side protector initiates the clipping action before the load-side protector starts to clip the voltage. The line-side protector dissipates most of the transient energy and the load-side protector clips the voltage to the required level.



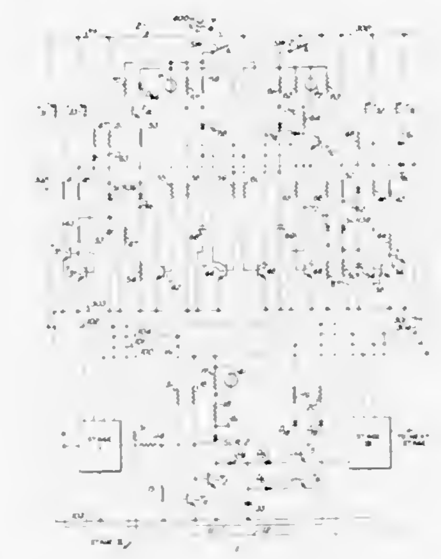
3,793,536
SHIFTERS FOR SHIFT REGISTER

Walter H. Vogelsberg, Carversville, Pa., assignor to Wheaton Industries, Millville, N.J.

Continuation of Ser. No. 105,027, Jan. 8, 1971, abandoned. This application Apr. 26, 1972, Ser. No. 247,525

Int. Cl. G11c *19/00;* **H03k** *17/00, 17/72*

U.S. Cl. 307—221 R **17 Claims**



Electronic shifter circuits for shift registers are disclosed. The shifter circuits are transistorized circuits and provide the proper sequence of signals to operate a shift register.

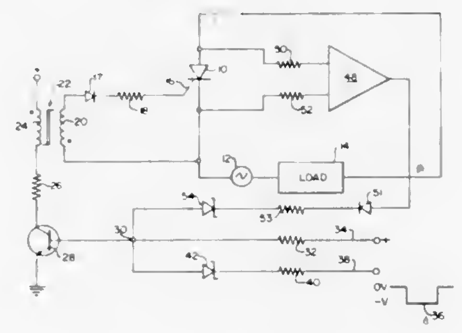
3,793,537
FIRING CIRCUITRY FOR SEMICONDUCTIVE CONTROLLED RECTIFIERS

Loren F. Stringer, Clarence, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 25, 1972, Ser. No. 292,214

Int. Cl. H03k *17/60*

U.S. Cl. 307—252 N **2 Claims**



Firing circuitry for semiconductive controlled rectifiers and the like wherein transformer isolation is required between the gate of the rectifier and a firing circuit, and incorporating means for assuring that a firing pulse is applied to the gate electrode only when the rectifier is in condition for firing with its cathode negative with respect to its anode. This is accomplished by sensing the voltage across the rectifier and enabling the firing circuitry only when the voltage is of the correct polarity.

3,793,538
CIRCUIT FOR PERIODICALLY ENERGIZING AN ELECTRICAL LOAD

Wesley A. Rogers, Grosse Pte. Park, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 30, 1972, Ser. No. 310,716

Int. Cl. H03k *17/00*

U.S. Cl. 307—252 M **5 Claims**

A silicon controlled rectifier is connected in series with an electrical load to be periodically energized across a direct current potential source. The emitter-collector electrodes of a type PNP transistor are connected in shunt across the anode-cathode electrodes of the silicon controlled rectifier and the base electrode is connected to ground through the collector-emitter electrodes of a type NPN transistor. The output signals of a square wave output type oscillator circuit trigger the silicon controlled rectifier conductive to complete an energizing circuit for the electrical load and another oscillator circuit, responsive to the potential appearing across the electrical load, produces an output signal which triggers the type NPN transistor conductive through the collector-emitter electrodes to ground the base electrode of the type PNP transistor to trigger this device conductive through the emitter-collector electrodes, a condition which drains holding current from the silicon controlled rectifier.

3,793,539
CIRCUIT FOR OPERATING AN AVALANCHE DIODE IN THE ANOMALOUS MODE

Alvin Seymour Clorfeine, Cranbury, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 18, 1972, Ser. No. 289,781

Int. Cl. H03k *17/00*

U.S. Cl. 307—287 **6 Claims**

The operaton of an avalanche diode in the anomalous mode is improved by coupling the diode to a circuit designed to provide an impedance match to the diode at the desired operating

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frequency and a substantially zero resistance and zero

low power levels. The guiding structure typically includes an

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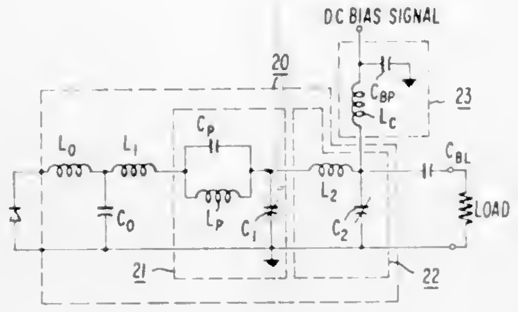
least a minimum dimension so that oil droplets will not be thrown from a knife edge. Oil feeding surfaces are generally

3,793,545
SPEED SENSING APPARATUS

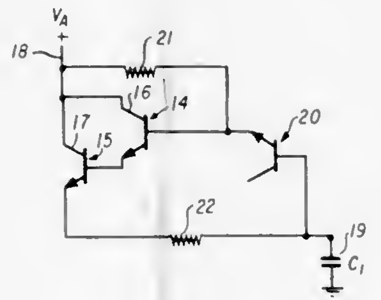
frequency and a substantially zero resistance and zero reactance at the second harmonic of the desired operating frequency. The circuit provides a substantially reactive termination to diode generated energy at all other harmonic frequencies.



3,793,540
CONSTANT CURRENT SOURCE FOR TIME DELAY DEVICE

Donald P. DeVale, Sycamore, Ill., assignor to AFE Industries, Inc., Lake Zurich, Ill.

Filed Dec. 4, 1972, Ser. No. 311,802
Int. Cl. H03k *3/26, 19/08*
U.S. Cl. 307—315 7 Claims



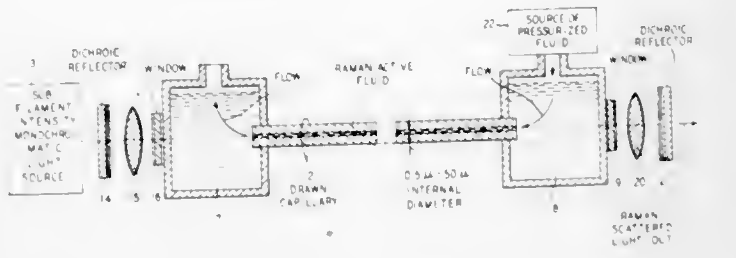
Disclosed is an electronic delay-producing device using an electrolytic condenser and a constant current source, for charging the condenser. With a constant current source, the voltage vs time curve is linear rather than logarithmic and hence switching may be done at a lower voltage level without sacrificing the length of the time delay. Also, leakage currents and their effects on time delays are reduced. The constant current source is derived from a Darlington pair using a transistor as a non-linear resistor to feed the condenser voltage back to the base of the Darlington pair. The output of the pair remains constant over the desired range of condenser voltage values.

3,793,541
OPTICAL STIMULATED EMISSION DEVICES EMPLOYING OPTICAL GUIDING

Arthur Ashkin, Rumson, and Erich Peter Ippen, Middletown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Continuation-in-part of Ser. No. 5,713, Jan. 26, 1970. This application Dec. 21, 1970, Ser. No. 99,990
Int. Cl. H01s *3/00*
U.S. Cl. 307—88.3 36 Claims

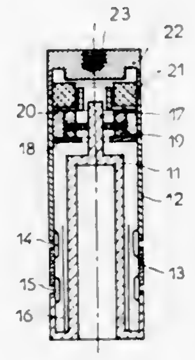
There is disclosed a coherent optical device in which a fluid active medium is included in a guiding structure and stimulated emission of coherent radiation is achieved by monochromatic light launched into the guiding structure with a power level several orders of magnitude less than that necessary for any previous such device or by a substantially less concentrated fluid active medium than previously used at prior art low power levels. The guiding structure typically includes an active fluid contained in a drawn capillary tube of internal diameter in the range from about 0.5 micron to about 50 microns or disposed about an optical fiber of comparable transverse dimension. The active fluid can be flowed in a direction either along or transverse to the axis of the guiding structure. The disclosed species include stimulated Raman emission devices and dye lasers.


DICHROIC REFLECTOR
WINDOW
FLOW
RAMAN ACTIVE FLUID
22
SOURCE OF PRESSURIZED FLUID
DICHROIC REFLECTOR
WINDOW
SUB FILAMENT INTENSITY MONOCHROMATIC LIGHT SOURCE
3
14
5
16
2
DRAWN CAPILLARY
0.5 μ - 50 μ INTERNAL DIAMETER
8
9
20
RAMAN SCATTERED LIGHT OUT

3,793,542
THERMOIONIC CONVERTER

Philippe Defranould; Jean Lalaurie, and Arvind Shroff, all of Paris, France, assignors to Thomson-CSF, Paris, France

Continuation of Ser. No. 84,261, Oct. 27, 1970, abandoned. This application Sept. 8, 1972, Ser. No. 287,235
Int. Cl. H01j *45/00*
U.S. Cl. 310—4 2 Claims



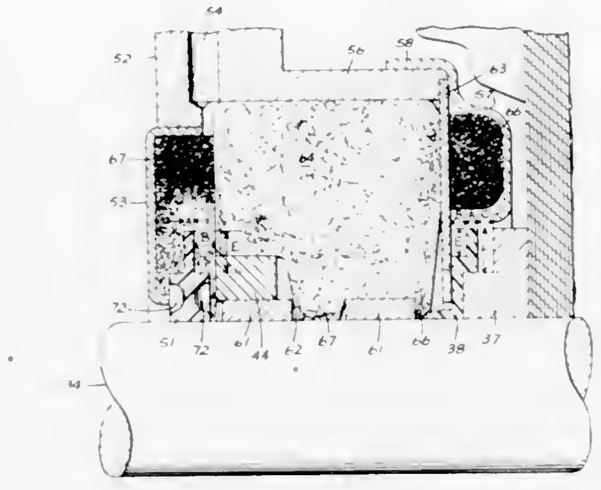
A thermoelectric converter diode in which the thermal energy required for the heating of the ionisable fluid which fills the space between the emitter and the collector is taken from the collector by conduction and from the emitter by radiation. To this end the ionizable substance is stored in a block having a large surface-to-volume ratio, which block is supported by the collector within the diode.

3,793,543
DYNAMOELECTRIC MACHINE

James A Stokke, Springfield, Mo., and Robert S. Langdon, Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.

Filed Jan. 19, 1973, Ser. No. 324,954
Int. Cl. H02k *5/16;* **F16c** *33/74*
U.S. Cl. 310—90 8 Claims

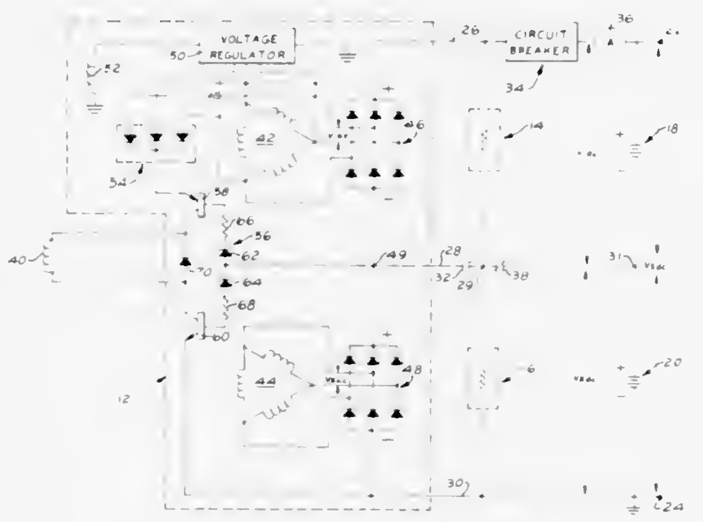
Lubrication retention system includes oil throwing member. Features of improved oil thrower may be included in a thrust member. Particular benefits may be realized for vertical shaft motor applications which require frequent start-stop cycling and low speed operation. Oil throwers have oil feeding surfaces and departure surfaces or edges particularly oriented relative to one another and dimensioned to be within preselected ranges of sizes. Oil throwers can prevent oil from escaping down the motor shaft or past the lip of an oil well cover or end cap. Oil throwers are provided with departure surfaces (or slinging edges) specifically designed to have at least a minimum dimension so that oil droplets will not be thrown from a knife edge. Oil feeding surfaces are generally planar and lie in a plane normal to the axis of shaft rotation. The feeding surface and the slinging edge are oriented to define relatively square corners. Oil slinging edges are on a diameter sufficiently large to move at an angular velocity of a predetermined minimum speed. Clearances are provided between active oil thrower surfaces and adjacent surfaces.



3,793,544
MULTIPLE WINDING, MULTIPLE VOLTAGE, ALTERNATOR SYSTEM

Kenneth A. Baumgartner, Peoria, Ill.; Jimmie J. Cathey, Bryan, Tex., and Norbert L. Schmitz, Middleton, Wis., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 10, 1972, Ser. No. 225,068
Int. Cl. H02j *7/14*
U.S. Cl. 320—17 6 Claims

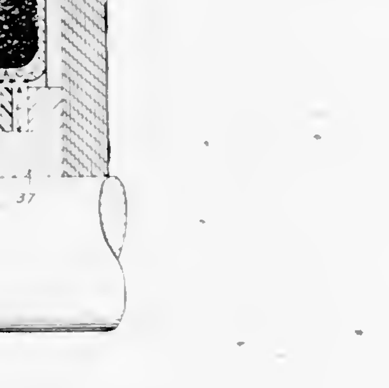


A plurality of AC windings are disposed to share a common magnetic field circuit, to define a like plurality of electrically isolated, multiple-phase, stator windings on the same mechanical structure of an alternator. The plurality of multiple phase windings feed full wave rectifiers to supply a like plurality of outputs of selected voltage levels. Relay switching provides controlled output levels to loads of differing voltage requirements, regardless of unbalance in the loading of the plurality of stator windings.

3,793,545
SPEED SENSING APPARATUS

Heinz Leiber, Leimen; Dieter-Helmut Thom, Heidelberg, and Anton Frenznick, Rauenberg, all of Germany, assignors to Teldix G.m.b.H., Heidelberg, Germany

Filed Mar. 10, 1972, Ser. No. 233,683
Claims priority, application Germany, Mar. 10, 1971, 2111499; Sept. 3, 1971, 2144162
Int. Cl. H02k *19/24*
U.S. Cl. 310—168 27 Claims

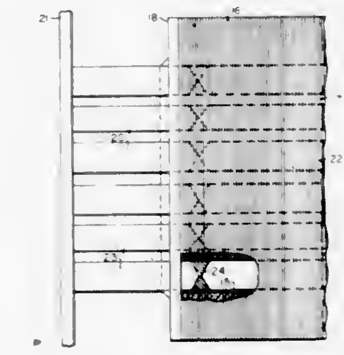


An electromagnetic rotational speed sensing apparatus includes a magnetic circuit formed by a rotor, a stator and an air gap between the rotor and the stator. The rotor has a surface provided with recesses or teeth. The stator is provided with an electromagnetic sensor. The air gap is changeable in size during rotation of the rotor by the teeth or recesses. A stationary support is provided which movably supports the stator to permit movement towards and away from the rotor. Support members are provided (e.g. spreading or clamping members) which permit such movement only upon overcoming substantial static friction. The oppositely disposed surface portions of the stator and the rotor are developed to permit possible contact between them without damage.

3,793,546
ROTOR FOR DYNAMOELECTRIC MACHINES

Edward I. King, Jr., Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 176,596, Aug. 31, 1971, abandoned. This application Feb. 5, 1973, Ser. No. 329,916
Int. Cl. H02k *3/18*
U.S. Cl. 310—183 7 Claims



A synchronous dynamoelectric machine having a salient pole rotor with a damper winding including bars of magnetic material such as steel. In order to minimize losses and heating in the stator winding end regions due to radial leakage flux, the end portions of the damper bars and the short-circuiting end rings, and preferably also the pole end plates, are made of non-magnetic material.

3,793,551

photocathode having a spherically-shaped metal crystalline

3,793,547
COMMUTATOR ASSEMBLIES

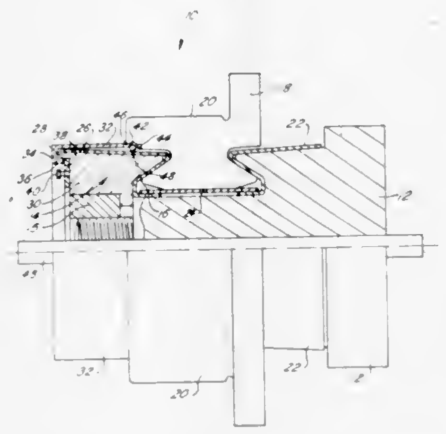
Marcel Etter, Bryanston, South Africa, assignor to Marc Etter (Proprietary) Limited, Bryanston, Transvaal Province, South Africa

Filed Oct. 4, 1972, Ser. No. 295,071

Claims priority, application South Africa, Oct. 25, 1971, 71/7115

Int. Cl. H02k *13/04*

U.S. Cl. 310—236 **6 Claims**



The invention concerns a commutator assembly comprising a commutator support in which a plurality of commutator segments having an outer working surface are mounted. A preformed insulating shield is positioned at least partly over the commutator support and is keyed into the commutator segments below the outer working surface thereof. The preformed insulating shield is of hollow cylindrical shape open at one end, and closed at the other end by a plate having an axial hole therein.

3,793,548
WINDING FOR ELECTROMECHANICAL TRANSDUCERS WITH CORELESS ROTOR

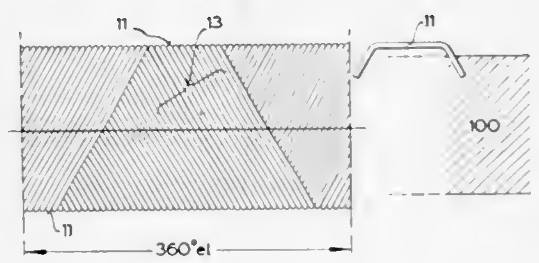
Fritz Faulhaber, Schonaich(Wurttemberg), Germany, assignor to Refobobina Handelsanstalt

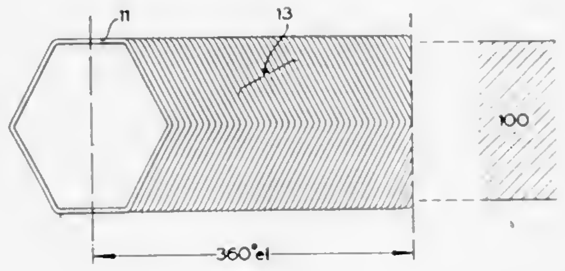
Filed Feb. 7, 1973, Ser. No. 330,231

Claims priority, application Austria, Feb. 9, 1972, 31034

Int. Cl. H02k *23/30, 23/32*

U.S. Cl. 310—266 **10 Claims**





An electromechanical transducer has a coreless rotor winding formed of a series of loops, each of the loops having an active portion inclined to both the axial and tangential directions of the rotor and an inactive head portion oriented perpendicular to the axial direction. The relative length of the head portion of each loop affects the electrical characteristics of the transducer, such as starting torque, time constant and efficiency. By selecting the proper relative length for the head portion, the performance characteristics of the transducer may be optimized.

3,793,549
X-RAY TUBE

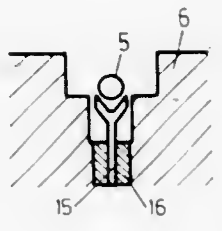
Rudolf Friedel, and Herbert Schnitger, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Dec. 7, 1972, Ser. No. 313,093

Claims priority, application Germany, Dec. 27, 1971, P 21 64 811.3

Int. Cl. H01j *35/06*

U.S. Cl. 313—57 **4 Claims**



An X-ray tube having a glow cathode which is surrounded by a focussing device (Wehnelt cylinder), is particularly characterized by the provision of supports which restrain oscillations and which are located close to the glow cathode.

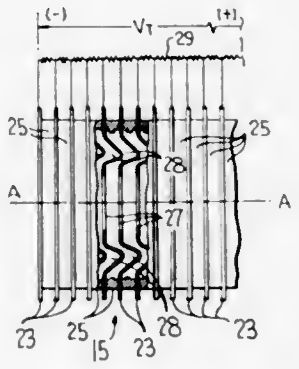
3,793,550
ELECTRODE CONFIGURATION FOR PARTICLE ACCELERATION TUBE

Chester C. Thompson, Jr., Roslyn Heights, N.Y., assignor to Radiation Dynamics, Inc., Westbury, N.Y.

Filed Mar. 17, 1972, Ser. No. 235,763

Int. Cl. H05h *5/06*

U.S. Cl. 313—63 **9 Claims**



In a high vacuum particle acceleration tube of the type in which a series of spaced apertured electrodes define the acceleration path, the apertured electrodes are provided with circular depressions of asymmetric V-shaped cross-section. The asymmetry is such that adjacent electrodes are closer to one another on the radially inward side of the V than on the radially outward side. Thus, arcing, if it occurs, is directed inwardly of the V and metal vapor is not deposited on the insulator. In addition, the V-configured recess acts to intercept high energy particles which are scattered out of the main beam, thereby protecting the glass insulators at the electrode periphery from radiation damage.

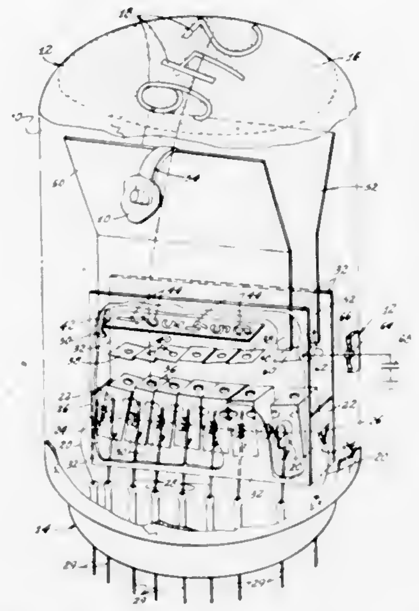
3,793,551
DISPLAY TUBE

Donald G. Gumpertz, North Hollywood, Calif., assignor to Industrial Electronic Engineers, Inc., Van Nuys, Calif.

Filed June 1, 1970, Ser. No. 41,844

Int. Cl. H01j *29/70, 31/16*

U.S. Cl. 313—70 **19 Claims**



In the present invention, a display tube for displaying a plurality of characters including a plurality of individual electron beam sources that are provided within the tube envelope. Each of the sources is mechanically directed toward a common point on a fluorescent display screen. A mask having a number of shaped apertures, wherein each aperture is associated with a different source, is interposed between the sources and the display screen. A pair of deflection means for deflecting the electron beam away from a common point on the display screen is located between the mask and the screen. A control means is provided interior to the tube for sequentially changing the voltage on a particular one of the deflection means so that the display of the plurality of characters will be displayed substantially an equal distance apart from each other on the fluorescent display screen.

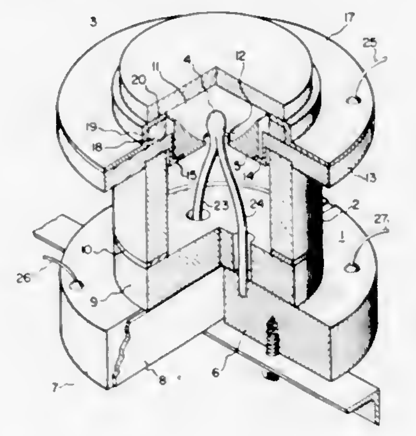
3,793,552
HIGH TEMPERATURE PHOTOELECTRIC GAS MULTIPLICATION ULTRAVIOLET RAY SENSOR

Homer H. Glascock, Jr., and Harold F. Webster, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 128,255, March 26, 1971, which is a continuation-in-part of Ser. No. 828,298, May 27, 1969, abandoned. This application July 19, 1972, Ser. No. 273,098

Int. Cl. H01j *39/00*

U.S. Cl. 313—101 **10 Claims**



An ultraviolet ray sensor for operating at high temperature includes a gas-filled sealed unit which encloses a photocathode having a spherically-shaped metal crystalline end and a ray collecting means for gathering and focussing incident rays on the photocathode. The sealed unit is made of a ceramic body with one end open to admit ultraviolet rays, that end being sealed by an ultraviolet ray transmissive window, the envelope of this sensor being capable of operating in air without oxidation or release of gas from the inner walls up to temperatures in excess of 600° C.

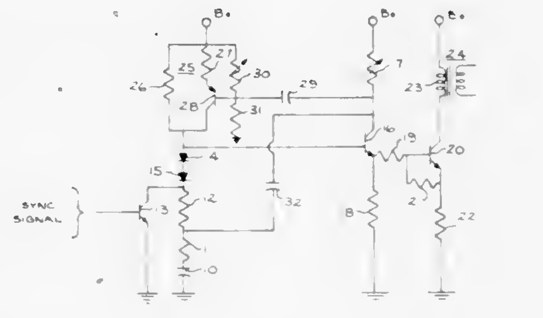
3,793,553
LINEARITY CORRECTION CIRCUIT USING NEGATIVE FEEDBACK

Charles W. Sexton, Jr., Virginia Beach, and John D. Jordan, Chesapeake, both of Va., assignors to General Electric Company, Portsmouth, Va.

Filed Aug. 31, 1971, Ser. No. 176,590

Int. Cl. H01j *29/70*

U.S. Cl. 315—27 TD **5 Claims**



A circuit for lessening the initial rate of change of a sweep signal in a deflection system. In a first embodiment, negative feedback from an intermediate stage is utilized in order to slow the rate at which the sweep signal increases. In another embodiment, voltage from an output stage is fed back to effectively expand the time constant of a sweep capacitor.

3,793,554
COLOUR TELEVISION DISPLAY APPARATUS PROVIDED WITH A CATHODE-RAY TUBE

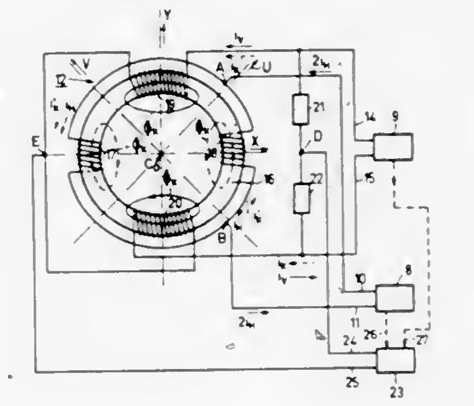
Edgard Emile Charles Rossaert, Brussels, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 4, 1972, Ser. No. 294,912

Claims priority, application Netherlands, Oct. 9, 1971, 7013889

Int. Cl. H01j *29/70*

U.S. Cl. 315—27 XY **8 Claims**



Colour television display apparatus in which for correction of astigmatic deflection errors a correction current flows through the coil halves of at least one deflection coil unit, which current induces a second correction current in the other deflection coils so that two correction quadripolar fields are produced. The voltage produced by the induced current across each deflection coil half is zero and the deflection coil parts are toroidally wound on the core. The apparatus may be provided with phase-shifting networks.

3,793,555
FLYBACK EHT AND SAWTOOTH CURRENT GENERATOR

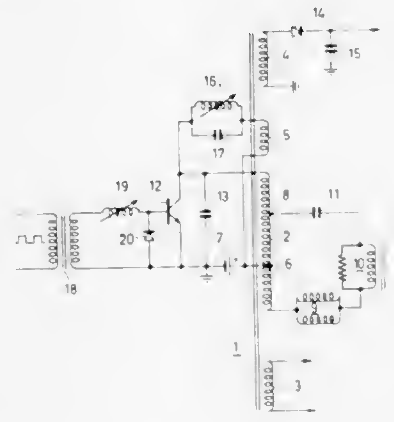
Cornelis Johannes Maria Van Gils, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 29, 1972, Ser. No. 310,346

Claims priority, application Netherlands, Dec. 17, 1971, 7117322

Int. Cl. H01j *29/70*

U.S. Cl. 315—29 **7 Claims**



A flyback EHT- and sawtoothcurrent-generator using a transformer and switching means connected thereto which conduct during a scan period and do not conduct during a flyback period, and partly parasitic reactances connected to the transformer. During the flyback period the generator has at least two resonant frequencies so chosen that a substantially oscillation-free scan is produced and during the scan it has at least one resonant frequency which is approximately equal to an integral multiple of the reciprocal value of the duration of the scan period.

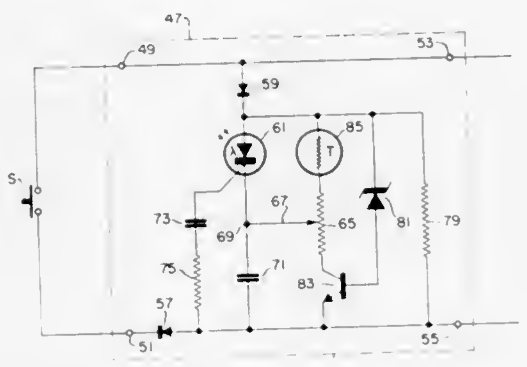
3,793,556
LIGHT SENSOR WITH FALSE QUENCH INHIBIT CIRCUIT AND TEMPERATURE COMPENSATION

Dennis J. Wilwerding, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 15, 1971, Ser. No. 134,214

Int. Cl. H05b *39/04*

U.S. Cl. 315—156 **8 Claims**



A light control system includes a first switching means, a light sensing means, and a flash device. The switching means is selectively operable for providing a contact closure to effect the production of light from the flash device for the illumination of a scene to be photographed. A quench signal to effect the termination of the light provided by the flash device is generated by the light sensing means when sufficient light is received from the scene. The light sensing means includes a false quench inhibit circuit which is responsive to voltage decreases in the voltage supplied to the light sensing means to prevent those voltage decreases from effecting the false generation of a quench signal. Temperature compensation means are also included for automatically compensating the light sensing circuit for variations in temperature, thereby thereby precluding the generation of premature or delayed quench signals which might otherwise be caused by such variations.

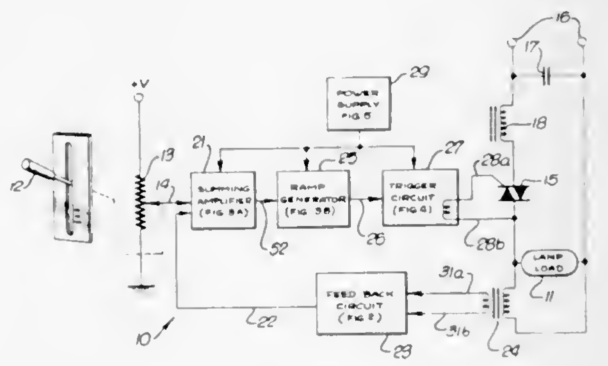
3,793,557
DIMMER CIRCUIT AND GAPPED CORE INDUCTOR USEFUL THEREWITH

Mert Cramer, Los Angeles, Calif., assignor to Berkey-Colortran, Inc., Burbank, Calif.

Filed July 17, 1972, Ser. No. 272,333

Int. Cl. H05b *39/04*

U.S. Cl. 315—199 **13 Claims**



In a dimmer circuit a summing amplifier combines a light intensity control voltage with a feedback voltage derived from the thyristor controlled ac power supplied to the lamp load. The summing amplifier output establishes the steepness of a ramp signal produced each ac half cycle by a ramp generator. A trigger circuit fires the thyristor device when the ramp signal reaches a certain level. In the feedback circuit a signal transformer coupled from the load is rectified, shaped by filter networks at the rectifier input and output, and used to charge a capacitor via an isolation amplifier. This capacitor provides a feedback voltage which, when summed with the control voltage, achieves a desired functional relationship between control voltage and light intensity, with compensation for load variation.

A gapped core inductor is series connected with the ac supply to minimize certain adverse effects associated with turn-on of the thyristor device. Thus, use of the inductor reduces lamp filament vibration and minimizes inductive coupling to adjacent audio and other low level circuits. The inductor core includes both small and large air gaps to provide maximum inductance over a wide range of load current.

3,793,558
CURVED STATIC ELIMINATOR

Thomas W. Lindsay, St. Anthony, and Donald M. Yenni, Jr., St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

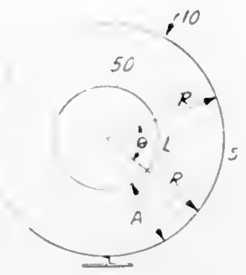
Continuation-in-part of Ser. No. 52,947, July 7, 1970, abandoned. This application Mar. 20, 1972, Ser. No. 236,117

Int. Cl. H05f *3/00*

U.S. Cl. 317—2 R **7 Claims**

A device for the removal of electrostatic charge from a charged body, the device comprising (a) a frame, and (b) a radioactive source positioned within the frame; the frame and

the radioactive source having a curvature in the long axis thereof and forming a structure adapted to coaxially encircle



at least part of the charged body, and said device being adapted to emit radiation in a direction toward the charged body.

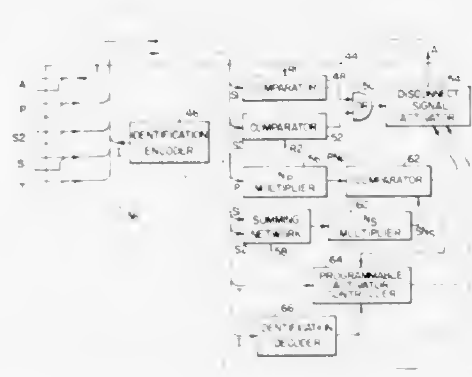
3,793,559
TRANSFORMER APPARATUS AND MONITORING SYSTEM

Donald J. Ristuccia, Athens, Ga., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 10, 1972, Ser. No. 279,565

Int. Cl. H02h *7/04*

U.S. Cl. 317—14 C **10 Claims**



A remote control system for transformers which monitors the critical parameters of transformer operation. Current transformers are coupled to currents flowing in primary and secondary windings of the transformer. A switch is connected in the circuit of the primary winding and a temperature sensing means is positioned within the structure of the core and coil assembly of the transformer. Signals from the current transformers and the temperature sensing means are transmitted to a remote monitor. The monitor compares the transformer secondary current and the temperature with reference values and compares the primary and secondary current and turns ratios for equivalence. When the comparisons are not acceptable according to a predetermined program, a disconnect signal is originated by the monitor to open the switch and deenergize the transformer.

3,793,560
RESISTIVE THERMAL PROTECTIVE DEVICE FOR INDUCTANCES

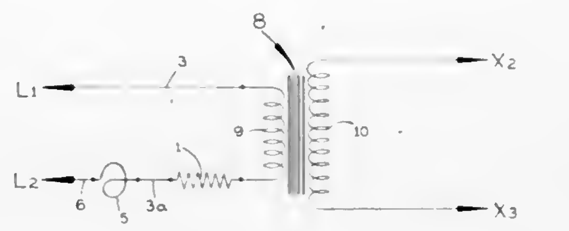
James R. Schultheis, 8345 S.W. 96th St., Miami, Fla.

Filed June 18, 1973, Ser. No. 370,664

Int. Cl. H02h *5/04*

U.S. Cl. 317—40 A **6 Claims**

A resistance device for connection in a power lead of an inductance such as electromagnets, choke coils and transformers. The device is intended to be positioned in close proximity to the inductance and consists of a resistor of predetermined value connected in series with a short eutectic wire having a predetermined melting point positioned in intimate contact with the resistor and terminating in one conductor



running to the source of electric energy. When the inductance is overloaded the temperature of the resistor will rise to a predetermined degree and melt the eutectic wire and open the circuit to the inductance.

3,793,561
PIEZOELECTRIC GAS LIGHTER

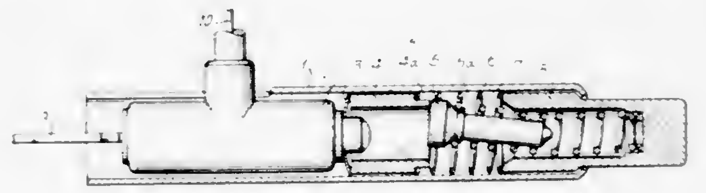
Stig Valdemar Lundh, Jakobsberg, Sweden, assignor to Aktiebolaget Swelex-Teknik, Bromma, Sweden

Filed Dec. 15, 1972, Ser. No. 315,419

Claims priority, application Sweden, Dec. 23, 1971, 16575/71

Int. Cl. F23q *3/00*

U.S. Cl. 317—81 **4 Claims**



A piezoelectric crystal or element is deformed to produce an electric spark which is employed to ignite a combustible gas. The piezoelectric element is deformed by a movable hammer which is spring-biased toward and arranged to strike the element.

3,793,562
WITH INSULATING BATTLE SUPPORTING TERMINAL CONDUCTORS

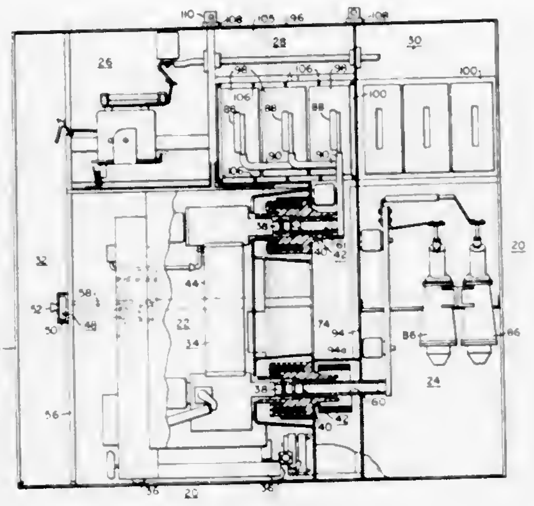
Charles M. Cleaveland, Irwin, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 22, 1973, Ser. No. 344,010

Int. Cl. H02b *1/20*

U.S. Cl. 317—103 **17 Claims**

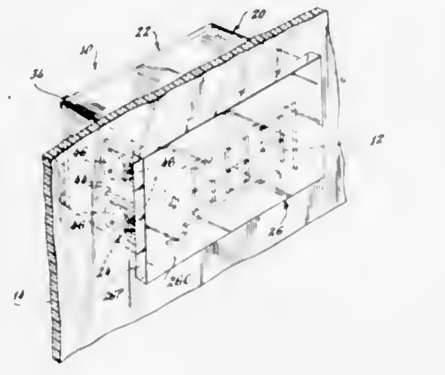
A metal-clad or metal enclosed switchgear cell in which an improved insulating bottle construction is provided for supporting the terminal conductors which a draw-out circuit interrupter engages during normal operation. An improved scheme for mounting necessary current transformers to the insulating bottles is also provided. The main conducting bus is constructed and arranged so that a 4,000 amp self-cooled rating is achieved, and main bus bracing supports are constructed so that the switchgear cell can withstand over 100,000 amps rms asymmetrical momentary current without damage. A simplified lifting scheme is provided, and an indoor switchgear cell can be quickly converted for outdoor use with the addition of a roof and gaskets only.



3,793,563
CASE FOR PANEL-MOUNTED ELECTRICAL INSTRUMENTS

Paul E. Brefka, Southboro, Mass., assignor to Analog Devices, Incorporated, Norwood, Mass.

Filed Nov. 8, 1972, Ser. No. 304,732
Int. Cl. H02b *9/00*
U.S. Cl. 317—107 **7 Claims**

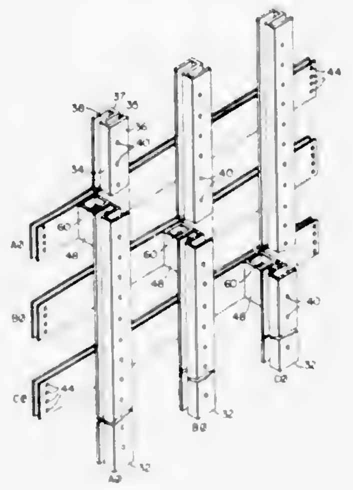


A protective case arranged to contain an electrical instrument and to mount it upon an instrument panel in an opening provided therein is characterized by a tubular extruded body cut to preselected length to match the instrument contained, and a panel mount secured to the tubular body at one open end and having a mounting flange opposing resilient stepped catches to engage therebetween instrument panels of arbitrary thickness with the flange in each case abutting the front face of the instrument panel. The flange has snap catches located in its outer periphery to removably engage a front cover so that its peripheral wall is in flush contact with the instrument panel.

3,793,564
METAL ENCLOSED SWITCHGEAR WITH S-SHAPED VERTICALLY DISPOSED CONDUCTORS

John G. Salvati, Beaver Falls, Pa., and Earl O. Krance, Sarasota, Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 14, 1973, Ser. No. 332,459
Int. Cl. H02b *1/20*
U.S. Cl. 317—120 **6 Claims**

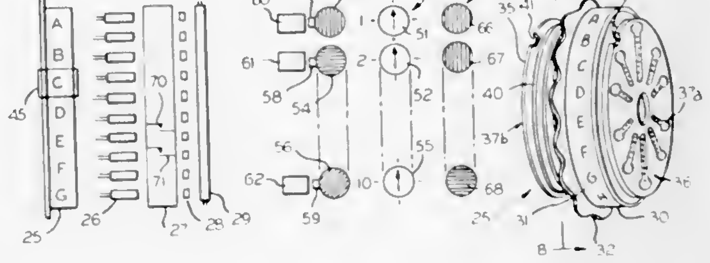


Each section of a three-phase metal-enclosed switchgear unit is provided with main through horizontal bus and generally S-shaped vertical risers or section bus. The S-shaped vertically extending risers are connected to the horizontal main through bus and feed circuit breakers or other branch bus circuit controlling devices, mounted in the switchgear unit. The S-shaped vertical section bus provides a flat surface facing the front of the switchgear unit to which circuit controlling devices can easily be mounted, and also provides a flat surface facing the rear of the switchboard section for easy connection to the main through horizontal bus.

3,793,565
POLARIZED LIGHT-CONTROLLED COMBINATION DOOR LOCK

Gordon Smith, 2804 N. 44th St., Milwaukee, Wis.

Filed Sept. 11, 1972, Ser. No. 287,769
Int. Cl. E05b *49/00*
U.S. Cl. 317—134 **9 Claims**

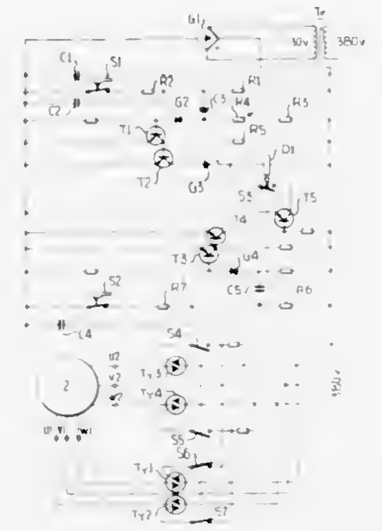


A plastic device somewhat similar to a credit card has a series of windows with polarized lens therein. Each lens is oriented in a unique manner according to a numerical code known to the card user. When the card is inserted into a door lock, the user sets one or more dials on a polarized reader. If the dial settings are in proper sequence and correspond to the polarized orientation of the credit card lens, a suitable signal enables a door to be opened for a predetermined time period. If the dials are set in a different sequence, a door is locked and an alarm is given.

3,793,566
ELECTRICAL CONTROL FOR SEWING MACHINES

Peter Mailaender, Plattenhardt, Germany, assignor to Union Special Maschinenfabrik GmbH, Stuttgart, Germany

Filed Nov. 2, 1971, Ser. No. 194,972
Claims priority, application Germany, Nov. 4, 1970, P 20 54 149.5
Int. Cl. H01h *47/32*
U.S. Cl. 317—148.5 R **15 Claims**

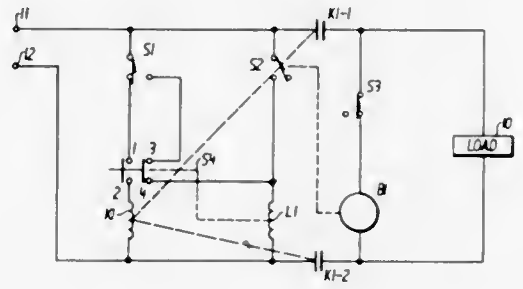


This disclosure relates to a control system for a sewing machine wherein timed controlling of the operation of the sewing machine is accomplished through the use of a relatively simple switching circuit which is economically feasible.

3,793,567
SAFETY INTERLOCK CIRCUIT

Gary D. Hotte, Harleysville, Pa., assignor to Sperry Rand Corporation, New York, N.Y.

Filed July 25, 1972, Ser. No. 275,057
Int. Cl. H01h *47/00*
U.S. Cl. 317—135 **4 Claims**

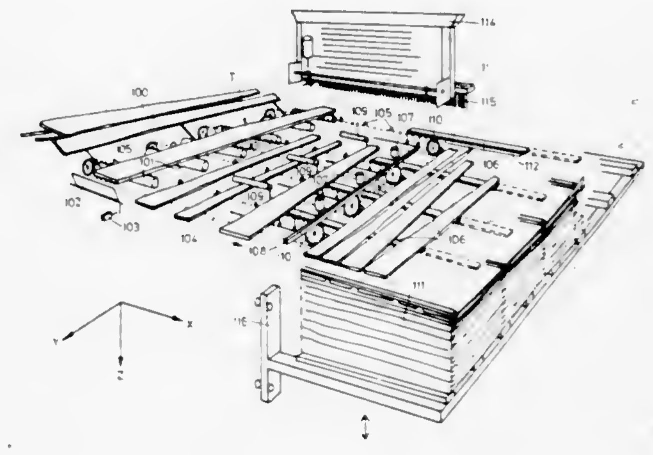


A safety interlock circuit suitable for preventing the operation of a machine with an interlock is described. The safety interlock circuit comprises an interlock switch connected to a start/stop manual/relay operated switch. When the interlock switch is in a non-interlock state, closure of the start/stop manual/relay switch allows the machine to operate normally. When the interlock switch is in an interlock state, the machine cannot be energized. Moreover, closure of the start/stop manual/relay switch when the interlock switch is in an interlock state merely energizes the relay portion of the start/stop manual/relay switch causing it to reopen.

3,793,568
CONTROL APPARATUS FOR A MACHINE FOR STACKING BOARDS OR THE LIKE

Rudolf Balz, Napfstrasse 33, 3550 Langnau, Switzerland

Filed Jan. 26, 1973, Ser. No. 327,131
Claims priority, application Switzerland, Feb. 1, 1972, 1439/72
Int. Cl. A01h *47/00*
U.S. Cl. 317—157 **1 Claim**



A control apparatus for a stacking machine for boards of regular and irregular shape, comprising (a) means which produce an electrical pulse for each unit of displacement path of the boards transversely with respect to their lengthwise direction; (b) two pre-selection pulse counters which can be reset to null; (c) scanning or feeler switch means which permit the infeed of the generated pulses to both pre-selection pulse counters during passage of the boards past a scanning location; (d) an operable connection between both pre-selection pulse counters so that during one working cycle one such pre-selection pulse counter functions as an adding counter mechanism and the other as a storage counter mechanism, in that after interrupting the infeed of the pulses — which is comparable to the throughpassage of the rear edge of a board past the scanning location — the other of such pre-selection pulse counters is reset to null, and specifically until the adding counter mechanism has attained a pre-selected pulse number, wherein at the moment of reaching such pre-selected pulse number (di) both pulse counters are switched so that from that moment on the storage counting mechanism functions as an adding counter mechanism and the adding counter mechanism functions as a storage counter mechanism, so that the combination of both such counters is prepared for the measurements in the next working cycle, (dii) a relay is actuated which at a follow-up or sequence control mechanism triggers a first operation of a logical sequence of working operations of the stacking machine.

3,793,569
ROLL CAPACITOR HAVING A HOLLOW PIN

Andries Cornelis Maijers, and Pieter Beekenkamp, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 29, 1972, Ser. No. 310,348
Claims priority, application Netherlands, Dec. 1, 1971, 7116477
Int. Cl. H01g *9/10*
U.S. Cl. 317—230 **8 Claims**

A roll capacitor having a cylindrical metal housing in which a pin is provided which is connected to the housing and

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through which at least one electrical connection wire is passed

ic of discrete domains, each of which forms a rectifying junction with the substrate, the target plate being provided with an

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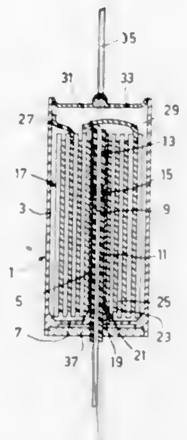
3,793,573
THYRISTOR MOTOR

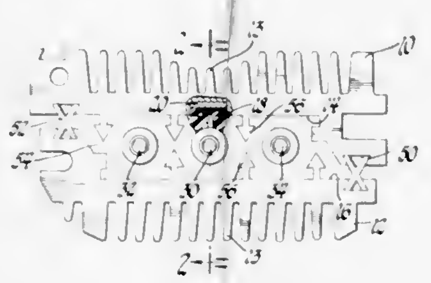
are functions of said difference and K_1 and K_2 are predetermined coefficients, said closed-loop circuit including multhrough which at least one electrical connection wire is passed which is enveloped by an insulating jacket. In the hollow pin at least one circumferential ridge is provided for sealing the capacitor.



3,793,570
COMPACT POWER SEMICONDUCTOR DEVICE AND METHOD OF MAKING SAME

David P. Crouch, and Frank X. Huber, Jr., both of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 26, 1968, Ser. No. 762,717
Int. Cl. H01l *1/18, 1/06, 1/12*
U.S. Cl. 317—234 R **1 Claim**



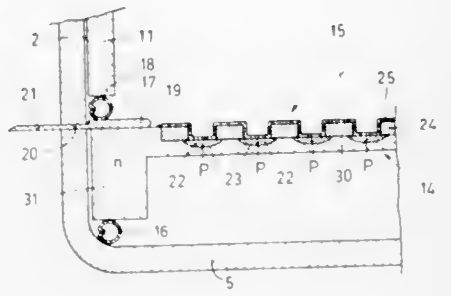
A compact power semiconductor device in which the semiconductive element of the device is supported on a copper layer impacted within a recess of a heat sink element. A three-phase, full wave rectifier assembly is disclosed, in which two facing heat sinks have three rectifying devices recessed therein. Facing rectifiers of opposite polarity are paired and connected to separate input terminals with attachments to each heat sink element serving to make connection to the output side of the rectifiers.

3,793,571
CAMERA TUBE COMPRISING INSULATED DIODES AND A RESISTANCE LAYER

Peter Johannes Michiel Janssen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 18,677, March 11, 1970, abandoned. This application Apr. 20, 1972, Ser. No. 245,782
Claims priority, application Netherlands, Mar. 15, 1969, 6904045
Int. Cl. H01l *15/00*
U.S. Cl. 317—235 R **1 Claim**

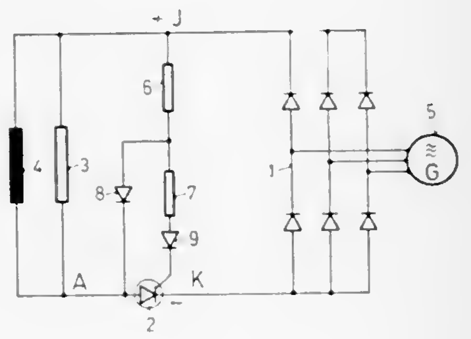
In a camera tube whose target plate consists of a semiconductor such as silicon, the target plate is provided with a mosaic of discrete domains, each of which forms a rectifying junction with the substrate. the target plate being provided with an insulating layer exposing the domains. A resistance layer of lead monoxide is provided in order to conduct away the electrons incident on the insulating layer.



3,793,572
ELECTRONIC CIRCUIT FOR EXCITING ASYNCHRONOUS-START SLIPRINGLESS SYNCHRONOUS MOTORS

Muzaffer Canay, Birr, Switzerland, assignor to Brown Boveri & Company Limited, Baden, Switzerland

Filed May 22, 1973, Ser. No. 362,775
Claims priority, application Switzerland, June 26, 1972, 9567/72
Int. Cl. H02p *1/50*
U.S. Cl. 318—174 **8 Claims**

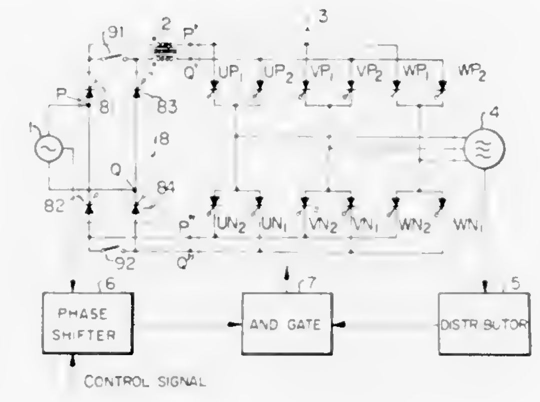


In order to excite the field winding on the rotor of an asynchronous-start synchronous motor which has a resistor connected in parallel with the winding, the alternating current output from an exciter winding mounted on the rotor shaft is converted in a rectifier bridge of the semiconductor type also mounted on the rotor shaft and fed to the field winding through a direct current circuit which includes a thyristor for interrupting the flow of direct current to the field winding when the motor is operating in its asynchronous state. For this purpose, a pair of series-connected resistors extend between the positive side of the rectifier bridge and the control electrode of the thyristor, and a diode has its anode side connected to the junction between the series-connected resistors and its cathode side connected to the negative side of the rectifier bridge. The thyristor for interrupting current flow from the rectifier bridge to the field winding can either be an auxiliary thyristor unit, in which case the semiconductor elements of the rectifier bridge can consist entirely of uncontrolled diodes, or the function of the thyristor in disconnecting flow of direct current to the field winding can be performed by so constructing the rectifier bridge that uncontrolled diodes make up the positive half of the bridge and thyristors the negative half.

3,793,573
THYRISTOR MOTOR

Takashi Tsuboi, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 28, 1972, Ser. No. 293,052
Int. Cl. H02p *7/62*
U.S. Cl. 318—227 **11 Claims**

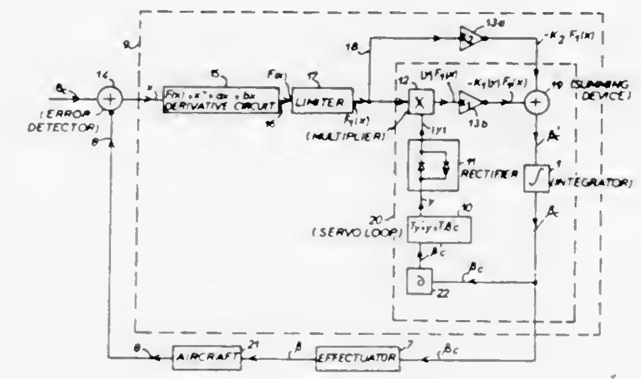


A thyristor motor including an AC motor, a thyristor converter and a controllable DC power source, the special feature of which resides in that there are included means which operate in effect to switch the power supply to the motor between the controllable DC power source and an AC power source, so that the power is supplied from the AC power source when the motor is rotating at a speed lower than a threshold value, but at a speed exceeding the threshold speed, the power is supplied from the DC power source. The advantage obtained is that the current capacity and the breakdown voltage required for the thyrister converter are reduced.

3,793,574
AIRCRAFT ADAPTIVE CONTROL SYSTEM

Bernard Hamel, Paris, France, assignor to Societe Francaise D'Equipements Pour La Navigation Aerienne S.F.E.N.A., Yvelines, France

Continuation-in-part of Ser. No. 246,539, April 24, 1972, abandoned, Continuation of Ser. No. 38,631, May 19, 1970, abandoned. This application Feb. 5, 1973, Ser. No. 329,475
Claims priority, application France, May 5, 1969, 69.16184
Int. Cl. G05b *13/00*
U.S. Cl. 318—561 **4 Claims**



A control system for providing automatic compensation of variations in the gain of the controlled member, such as an aircraft control surface, comprising a closed-loop circuit which operates in obedience to a law relating the value of the actuation quantity to the difference between the actual output quantity and the commanded quantity, said law taking the form :

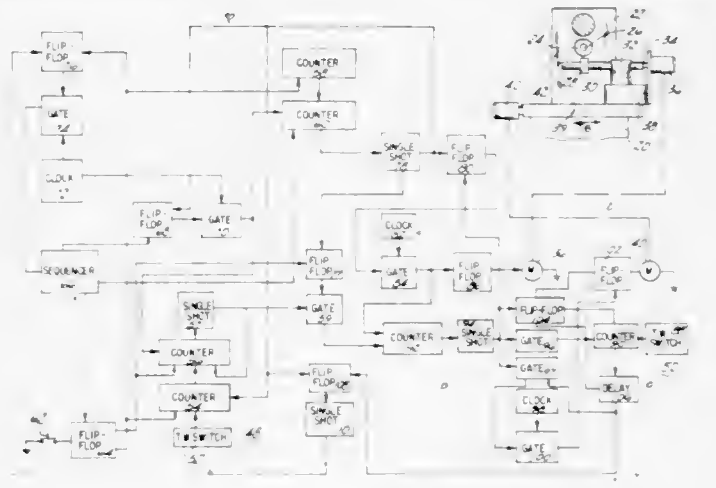
$$\beta'c = -K_1 \ y \ F(x) - K_2 G(x)$$

where $\beta'c$ is the derivative of the compensation signal ; y is such that $Ty' + y = T\beta'c$, T being a constant ; F(x) and G(x) are functions of said difference and K_1 and K_2 are predetermined coefficients, said closed-loop circuit including multipliar means, inverting amplifiers, summing means, integrator means, a differentiating circuit and a circuit delivering the absolute value of y, whereby said law is satisfied.

3,793,575
NUMERICALLY CONTROLLED SYSTEM FOR GEAR CUTTING MACHINE

Ryszard Sieradzki, Troy, and Daniel Goldman, Southfield, both of Mich., assignors to Electronic Indexing, Inc., West Bloomfield, Mich.

Filed Apr. 23, 1973, Ser. No. 353,554
Int. Cl. G05b *19/24*
U.S. Cl. 318—39 **26 Claims**

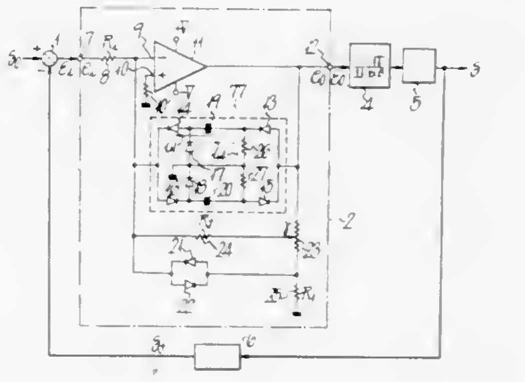


The machine is controlled by a selective digital input to provide gear indexing to determine the number of teeth and to provide table movement to control the extent of axial movement required to machine the gear from a gear blank. The numerical input information is provided by a cascaded decade arrangement of binary coded decimal switches to control each of the two necessary functions of head stepping and table stepping movement in both forward and return direction. It is possible to pre-program and to change the degree of accuracy to which the gear cutting is to be carried out by further presetting in the system a digital number representing the number of parts in which the 360° circle representing the gear blank circumference is to be divided.

3,793,576
SERVO APPARATUS

Isao Masuzawa, Tokyo; Shin-Ichi Kawada, Yokohama; Yoichi Hirokawa, Kamakura, and Masatoshi Sato, Tokyo, all of Japan, assignors to Kabushikikaisha Tokyo Keiki (Tokyo Keiki Co., Ltd.), Tokyo, Japan

Filed May 31, 1972, Ser. No. 258,388
Claims priority, application Japan, June 4, 1971, 46/39095
Int. Cl. G05b *6/02*
U.S. Cl. 318—621 **5 Claims**



A servo apparatus having a servo loop including in series and forwardly a power unit, a first device for achieving relay operation and for controlling the power unit, and a second device for controlling the first device. In this case, the second device is made to have lag characteristic when an input signal thereto increases, while is made to have characteristic stabilizing the servo loop when the input signal decreases to thereby decrease number of relay-like operations of the first device with keeping control accuracy of the servo loop.

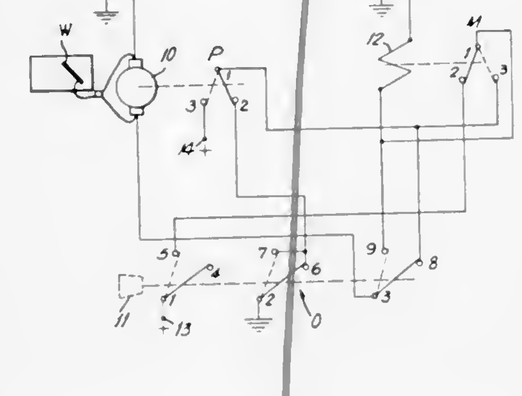
3,793,577
DEVICE FOR CONTROLLING THE INTERMITTENT OPERATION OF A WINDSHIELD WIPER MOTOR

Lars Gunnar Moren, Huddinge, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Sept. 19, 1972, Ser. No. 290,335

Int. Cl. B60s *1/08*

U.S. Cl. 318—DIG. 2 **6 Claims**



An arrangement for connection in an electric circuit of a vehicle windshield wiper that can be operated intermittently, and having at least one electric contact in the circuit which can be connected or disconnected to the voltage source at selected intervals. The circuit includes a bi-metallic strip which is provided with a heating winding that heats the strip and bends it in the direction of the electrical contact to thereby actuate the same. When the bi-metallic strip is cooled down, it bends in a direction away from the contact. A constant length of intervals between the connection of the windshield wiper motor and the disconnection of the same is achieved.

ERRATUM

For Class 320—17 see:
Patent No. 3,793,544

3,793,578
REGENERATIVE CHOPPER CIRCUITRY

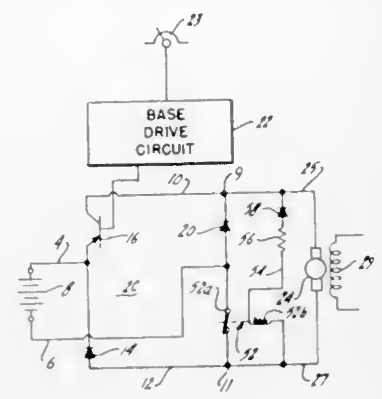
Charles E. Rettig, Brookfield, Wis., assignor to The Louis Allis Company, Milwaukee, Wis.

Continuation-in-part of Ser. Nos. 82,302, Oct. 20, 1970, and Ser. No. 83,922, Oct. 26, 1970. This application Mar. 13, 1972, Ser. No. 234,026

Int. Cl. H02m *7/72*; **H02p** *3/14*

U.S. Cl. 321—44 **3 Claims**

A chopper for converting fixed magnitude direct current voltage to adjustable magnitude direct current voltage is capable of regenerative operation. Two series connected current control device and diode pairs are connected between adjustable DC voltage output conductors. The fixed magnitude DC voltage input conductors are connected intermediate the elements of each pair. Control circuitry is connected to the current control devices for controlling the magnitude of the output voltage and for effecting power supplying or regenerative operation.



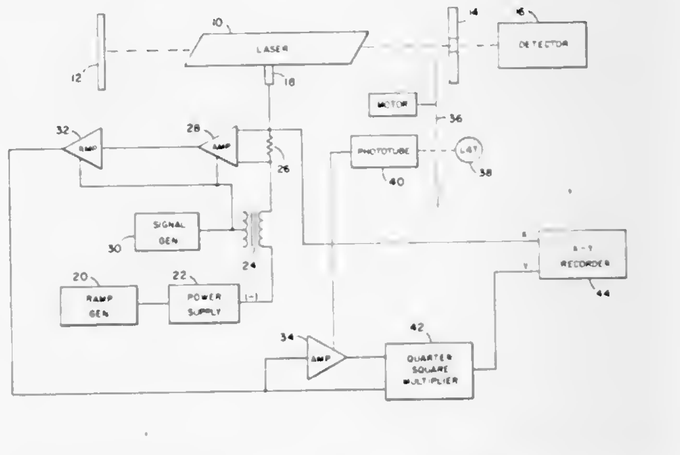
3,793,579
AUTOIONIZATION SPECTROMETER

Charles M. Cason, III, and James F. Perkins, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 2, 1972, Ser. No. 259,187

Int. Cl. H01s *3/22*

U.S. Cl. 331—94.5 **2 Claims**



A spectrometer is provided for directly obtaining the autoionization energy levels within a gas laser and for observing decay probabilities to lower stable energy levels. A laser cavity is periodically interrupted by a rotating chopper wheel. Simultaneously, a probe within the laser plasma is continuously scanned across a ramp potential for attracting or repelling electrons in the plasma ground state. The laser energy in the autoionization state which varies with the chopper wheel rate is sensed by the probe circuit, isolated, amplified, and ultimately recorded as a scalar function of the modulation voltage input. Thus, the population density of the autoionization energy levels for various laser energy levels is obtainable across the frequency range of the chopper wheel.

3,793,580
D.C. STATIC SWITCH CIRCUIT WITH A MAIN SWITCH DEVICE AND A POWER SHARING CIRCUIT PORTION

Donal E. Baker, Lima, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 23, 1972, Ser. No. 256,134

Int. Cl. G05f *1/58*

U.S. Cl. 323—9 **6 Claims**

In a static switch circuit with a power sharing circuit portion operable to dissipate power so the required dissipation is

shared with the main power switch in the circuit, the power sharing circuit portion has an NPN transistor and a PNP transistor connected in a white circuit configuration that is

provided with bias signals from the center tap of the primary winding of the transformer used in the oscillator of the driver circuit for the main power switch.

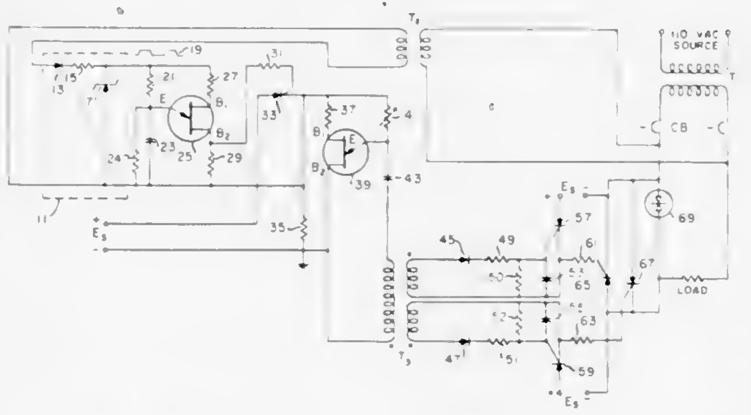
3,793,581
SOLID STATE PHASE CONTROLLED SWITCH

Howard S. Ortgies, Jr., Millersville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 19, 1972, Ser. No. 245,440

Int. Cl. G05f *3/04*; **H03k** *17/72*

U.S. Cl. 323—19 **9 Claims**



A phase controlled switch connects a load to an A.C. power source at a particular phase angle of the power source. A first trigger signal referenced to a zero crossing region of the wave form is obtained. This first signal starts a timer which in turn generates a second signal. The variable timer can be preset to produce a delayed signal over a full period of the A.C. wave form. A latching switch system responsive to the timing signal connects the load to the power supply and holds the load connected until the power supply is physically disconnected from the load.

3,793,582
BATTERYLESS POCKET SPARK PLUG TESTER

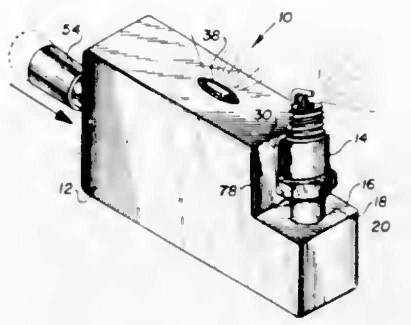
Paul Maria, 1618 Ridge Rd., Perkasie, Pa., and Albert Conard, Main St., Sellersville, Pa.

Filed July 21, 1972, Ser. No. 273,730

Int. Cl. G01m *19/02*; **G01r** *31/00*; **H01v** *7/00*

U.S. Cl. 324—15 **4 Claims**

A batteryless pocket spark plug detector operative with a piezo-electric crystal wherein the application of a compressive force to a piezo-electric crystal causes a high voltage signal to be applied across a spark plug so as to test whether there is an arc across the gap, and if not across the gap, across breaks in the insulation of the spark plug. If the latter occurs, the spark



plug is defective. A neon bulb is provided for sensing the operation of the coil and, further, to indicate the operativeness of the device.

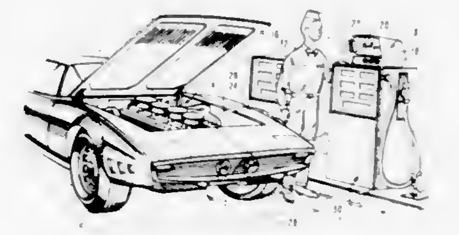
3,793,583
SECONDARY WAVEFORM ANALYZER

Arthur F. Glomski, Culver City, and Sol Baum, Canoga Park, both of Calif., assignor to The Allen Group Inc., Kalamazoo, Mich., by said Glomski

Continuation-in-part of Ser. No. 748,002, Sept. 8, 1970, abandoned. This application Sept. 8, 1970, Ser. No. 70,585

Int. Cl. G01m *15/00*

U.S. Cl. 324—15 **9 Claims**



An analyzer which detects and displays on a cathode ray tube secondary voltage waveforms of internal combustion engines and the like with no physical connections required to be made to the engine under test, the coupling being accomplished by a remote pick-up such as a directional antenna or a proximity probe. The analyzer is provided with an extraordinarily high input impedance in order to be able to detect the radiated signal, which has an extremely low current component.

3,793,584
IGNITION SYSTEM TEST INSTRUMENT AND METHOD

Leonard N. Liebermann, La Jolla, and Stanley H. Lai, San Diego, both of Calif., assignors to TIF Instruments, Inc., Miami, Fla.

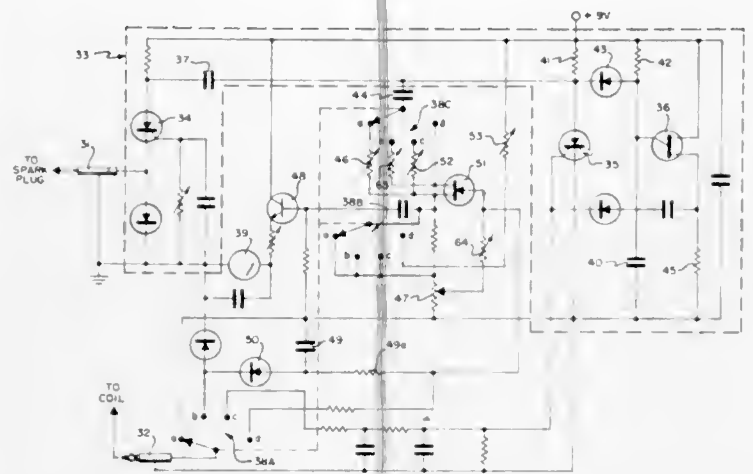
Filed Mar. 16, 1971, Ser. No. 124,677

Int. Cl. G01m *15/00*

U.S. Cl. 324—16 R **16 Claims**

An instrument and method are disclosed for testing an internal combustion engine ignition system to determine that the spark plugs, cables, coil, and other ignition system components are operating properly and for pinpointing sources of ignition system malfunction. The firing voltage, spark intensity and leakage are tested with respect to each spark plug, and the results indicated on an easily readable meter, without the

being of the same order of magnitude; and a vessel surround- simultaneous processes are developed in a vector waveform necessity for an oscillosocpe. In a preferred embodiment, a non-ohmic probe is employed to obtain the spark plug signals,



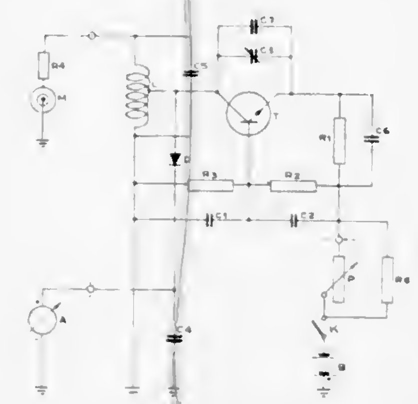
making it unnecessary to disconnect the spark plug leads for test purposes or to employ an ohmic ground connection.

3,793,585

MOISTURE MONITOR HAVING A RESISTOR BETWEEN SENSING CAPACITOR AND OSCILLATOR TUNED INPUT TO IMPROVE OSCILLATOR RESPONSE

Matti Gunnar Wilska, Ukonkivenpolku 2C 27, Helsinki, Finland

Filed Feb. 2, 1972, Ser. No. 222,790
Int. Cl. G01r *27/02*
U.S. Cl. 324—61 QS **13 Claims**



An electrical circuit provides a measurement or control in accordance with the moisture content of a specimen or sample, and includes: a capacitive cell comprising two spaced and insulated metal plates between which the specimen or sample can be placed to act as a part of a dielectric between the two plates; an oscillatory circuit to which said capacitive cell is coupled in such a manner that variations in the capacitance of the cell produces variations in the state of loading of said oscillatory circuit; and output means providing a measurement and/or a control in accordance with the said state of loading of said oscillatory circuit.

3,793,586

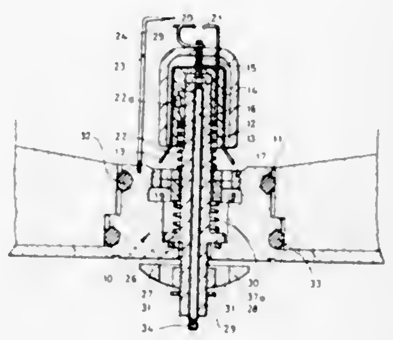
APPARATUS FOR DETECTING THE PRESENCE OF WATER IN AIRCRAFT FUEL TANKS

Brian Hamilton Heeps, Caulfield, Victoria, Australia, assignor to Micador Electronics Pty. Limited, Prahran, Victoria, Australia

Filed Dec. 8, 1971, Ser. No. 205,969
Int. Cl. G01r *27/02*
U.S. Cl. 324—65 R **12 Claims**

This invention relates to apparatus for detecting the presence of water in hydro-carbon fuels whether such water be present in the form of drops or pools or whether it is in suspension in the fuel.

In one form the invention resides in the combination of a valve plug unit comprising spaced sensing electrodes which are so arranged as to detect the presence of water whether it be in suspension or in large drops, and a Continuity Ohm Meter adapted to measure the conductivity or resistance differential of an electrical circuit which is completed by water bridging a gap between said spaced pairs of sensing electrodes.



In another form the invention resides in the provision of sensing electrodes in the Continuity Ohm Meter, said electrodes being so located in the fuel flow line of said meter whereby any water present in the fuel must pass said sensing electrodes, the electrical conductivity of such water being indicated on the meter scale. This embodiment enables the presence of water to be measured accurately without the necessity of employing the valve plug units of the first embodiment.

3,793,587

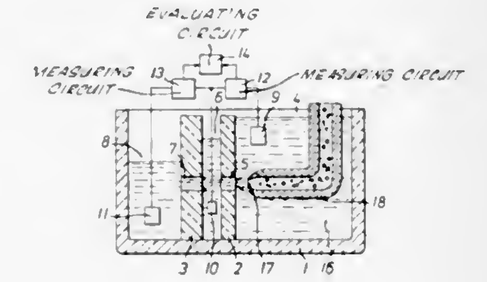
PARTICLE VOLUME AND CROSS-SECTION MEASUREMENT

Reinhard Thom, Berlin, and Jurgen Schulz, Ulm, Danube, both of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany

Filed Mar. 8, 1972, Ser. No. 232,741

Claims priority, application Germany, Mar. 10, 1971, P 21 11 356.4; Sept. 11, 1971, P 21 45 531.2; Jan. 15, 1972, P 22 01 894.6; Mar. 10, 1971, P 71 08 937.7

Int. Cl. G01n *27/00*
U.S. Cl. 324—71 CP **31 Claims**



An apparatus for counting and classifying particles suspended in a test liquid, wherein two measuring openings are aligned, are spaced from one another, and dimensioned differently, such that a particle volume measurement may be obtained at one of the measuring openings and a particle cross section measurement may be obtained at the other of the measuring openings; a tube outlet section aligned with the measuring openings and situated spaced from a first of the measuring openings on the side of the first measuring opening opposite to the side facing the second of the measuring openings, for conducting test liquid toward said first measuring opening; the diameters of the measuring openings, the spacing between the two measuring openings, and the spacing between the first measuring opening and the outlet of the tube outlet section being of the same order of magnitude; and a vessel surrounding the tube outlet section and the measuring openings for enabling the tube outlet section and the measuring openings to be immersed in an electrolyte.

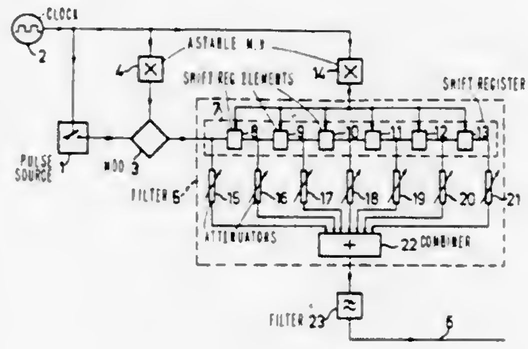
3,793,588

DEVICE FOR THE TRANSMISSION OF SYNCHRONOUS PULSE SIGNALS

Petrus J. V. Gerwen, and Willem Harmsen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 195,889, Nov. 4, 1971, Pat. No. 3,737,778, which is a division of Ser. No. 728,706, May 13, 1968, abandoned. This application Mar. 5, 1973, Ser. No. 338,076

Int. Cl. H04b *1/00*
U.S. Cl. 325—38 R **11 Claims**



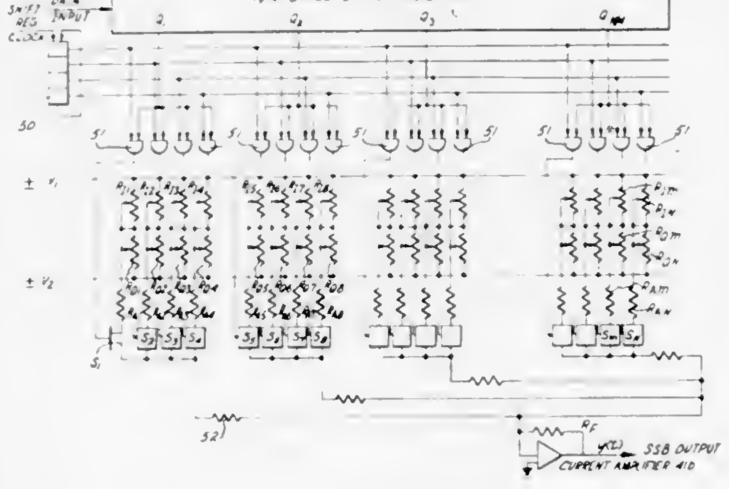
The invention relates to a device for the transmission of synchronous pulse signals comprising a source for pulses the instants of occurrence of which coincide with a series of equidistant clock pulses, a switching modulation device controlled by a carrier oscillator and an output filter.

3,793,589

DATA COMMUNICATION TRANSMITTER UTILIZING VECTOR WAVEFORM GENERATION

Charles McD. Puckette, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed June 28, 1972, Ser. No. 267,248
Int. Cl. H04b *1/68*
U.S. Cl. 325—137 **24 Claims**



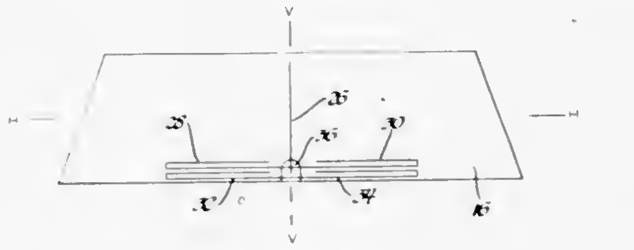
A digitally implemented single sideband (SSB) transmitter simultaneously generates a desired signaling waveform in response to a single data signal input, multiplies it by a carrier function, generates the Hilbert transform of the signaling waveform and multiplies it by a quadrature carrier function, and sums the two products to produce the SSB output. The simultaneous processes are developed in a vector waveform generator which includes a plurality of tapped first resistors connected across conductors selectively supplied with in-phase, quadrature and 180° out-of-phase carrier frequency voltage signals. Each resistor tap point is connected through a switch and second resistor to a current summing amplifier, and outputs of a single tapped shift register close the switches for fixed short time periods to thereby generate amplitude and phase controlled carrier current signal samples which form the signaling waveform as well as simultaneously performing the other processes to produce the SSB output.

3,793,590

WINDOW MOUNTED VEHICULAR RADIO ANTENNA

Lyle R. Etling, Wabash; Jerry M. Mason, and John W. Weber, both of Kokomo, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 1, 1972, Ser. No. 285,898
Int. Cl. H01q *1/32*
U.S. Cl. 325—312 **5 Claims**



An FM conductor and a pair of AM conductors are supported by a window mounted within an opening formed in a conductive body portion of a vehicle and defined by a major or generally horizontal axis and a minor or generally vertical axis. The FM conductor extends from a common terminal approximately coincident with the vertical axis of the opening relatively remote from the perimeter of the opening to minimize the capacitance between the FM conductor and the body portion. The FM conductor extends over an effective length approximately equal to one-quarter wavelength of the center frequency of the FM frequency band for maximizing the current developed at the common terminal in response to FM radio signals thereby to optimally receive such FM radio signals. The pair of AM conductors are symmetrically disposed with respect to the vertical axis of the opening. Specifically, the AM conductors extend from the common terminal approximately parallel to the horizontal axis of the opening relatively adjacent the perimeter of the opening thereby to minimize interference with vision through the window. The AM conductors each extend over an effective length approximately equal to one-half wavelength of the center frequency of the FM frequency band for maximizing the impedance developed at the common terminal in response to FM radio signals thereby to minimize interference with the reception of such FM radio signals by the FM conductor.

3,793,591

PULSE GENERATOR

Celio C. Trinca, Bregnano, Italy, assignor to Honeywell Information Systems Italia, Caluso, Italy

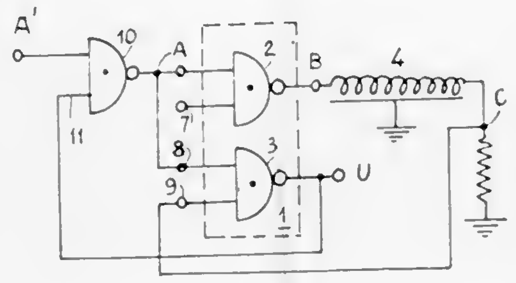
Filed July 13, 1972, Ser. No. 271,430

Claims priority, application Italy, Aug. 3, 1971, 27091-A/71

Int. Cl. H03k *5/08*
U.S. Cl. 328—34 **6 Claims**

A circuit is provided comprising of a minimum number of components which may operate as a pulse generator or a square wave generator by changing a single connection.

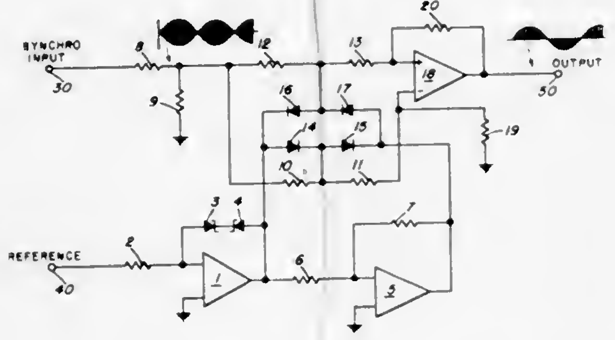
The circuit includes an integrated circuit unit having a pair of NAND or NOR gates. A delay line has an input terminal connected to an output lead of one of the gates and an output terminal connected to one input lead of the other gate. A command signal is applied to one input lead of the first gate and to a second input lead of the other gate. The second input lead of the one gate is connected either to a suitable external voltage source for generating a single square pulse in response to a command signal or to the output terminal of the delay line for generating a succession of square pulses in response to the command signal. The circuit may also include a third gate having an output lead connected to the first input lead of the one gate, a first input lead connected to receive the command signal, and a second input lead connected to an output lead from the second gate, which output terminal serves as the output terminal of the circuit.



3,793,592
PHASE SENSITIVE DEMODULATOR

Lawrence A. Matonak, Canoga Park, Calif., and Richard A. Huber, Tuscon, Ariz., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 20, 1972, Ser. No. 273,556
Int. Cl. H03d *3/18, 1/00*
U.S. Cl. 329—50 **5 Claims**



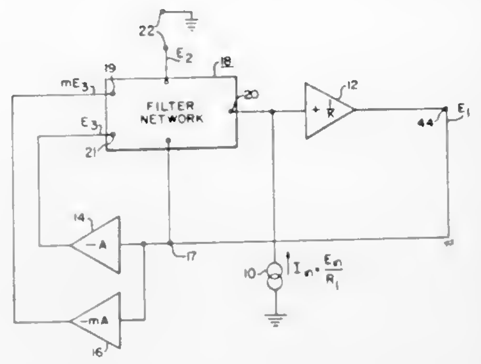
A phase sensitive demodulator achieves signal isolation without the use of a transformer or other frequency sensitive component. A diode bridge which shunts the input signal is driven by the outputs of operational amplifiers. Signals which are not shunted are applied to the inputs of another operational amplifier.

3,793,593
FREQUENCY SELECTIVE NETWORK

Paul G. Kennedy, Monroeville, Pa., and George C. Sziklai, Los Ahos Hills, Calif., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 18, 1971, Ser. No. 172,854
Int. Cl. H03f *1/36*
U.S. Cl. 330—103 **9 Claims**

A frequency selective network employing negative and positive feedback in conjunction with an inductorless bandpass or reject filter to provide a stable bandpass or reject characteristic. Sole adjustment of the negative feedback gain varies the center of frequency of the filter over a wide frequency range without appreciably affecting the bandwidth.

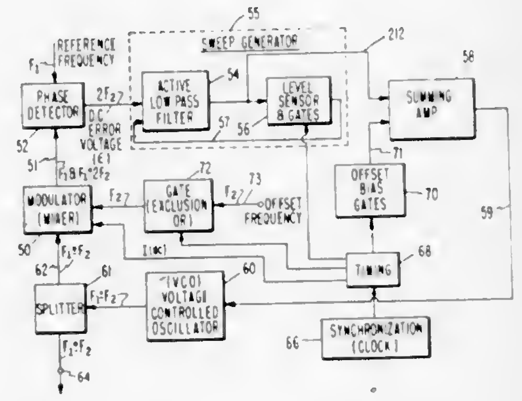


An all electronic frequency selective network is achieved by providing a voltage controlled variable gain stage as the means of adjusting the feedback gain.

3,793,594
WIDE BAND PHASE-COHERENT SELF-CALIBRATING TRANSLATION LOOP

Fred Bethel Griswold, Roosevelt, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 18, 1972, Ser. No. 227,389
Int. Cl. H03b *3/04*
U.S. Cl. 331—4 **8 Claims**



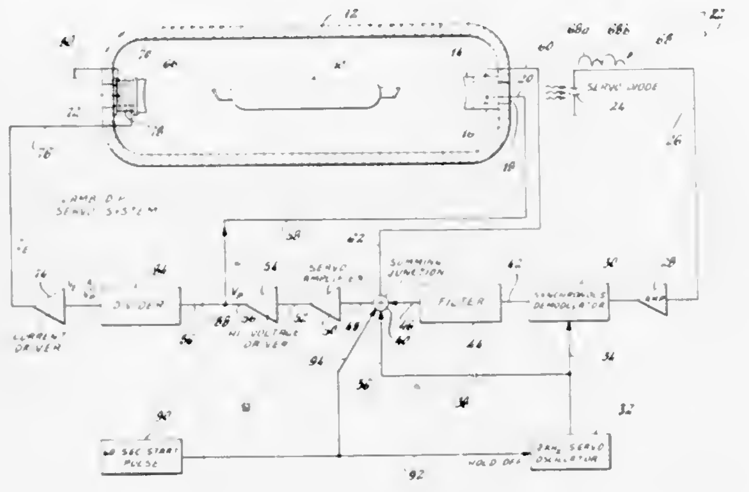
A translation loop with a voltage controlled oscillator (VCO) for generating a plurality of discrete frequencies that are unambiguously selected above or below a reference frequency by calibrating the VCO to the reference frequency without the presence of an offset frequency, a timed gate control subsequently gating the offset frequency for mixing in the loop. A phase detected error in the mixed signals controls the VCO to alter its frequency from the reference frequency to the frequency corresponding to the sum or difference frequency by a control sweep voltage positive or negative going to correspondingly increase or lower the VCO frequency.

3,793,595
SINGLE FREQUENCY STABILIZED LASER

John J. Russo, Norwalk, and William Reid Smith-Vaniz, Darien, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Dec. 27, 1971, Ser. No. 212,509
Int. Cl. H01s *3/10, 3/05*
U.S. Cl. 331—94.5 **6 Claims**

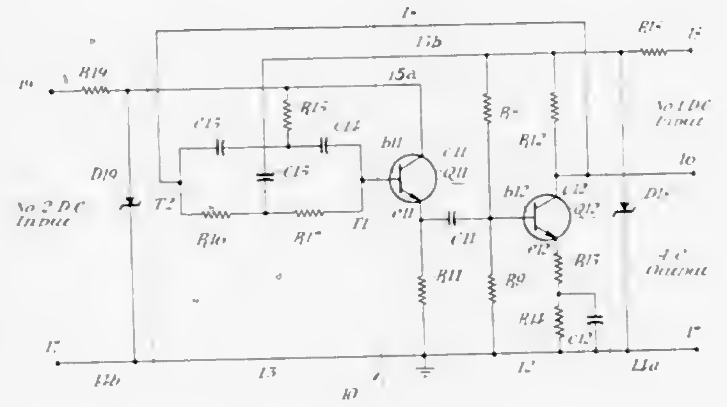
To increase the operating range of existing stabilized single frequency laser systems, such as the type in which the dumping mirror is supported by a piezo-electric "pusher" and a servo system monitoring the intensity of the external beam electrically controls its dimension to cause the cavity length to be locked to the center of the Lamb dip, the servo system is also made to control heating current supplied to a, say, aluminum "expander" support for the other mirror defining the laser cavity length. Prior to igniting the laser a maximum heating current is applied (for say one minute) to cause the "expander" to move the mirror toward the dumping mirror; the laser is then ignited, the heater current lowered, and the servo controls the heated expander and the piezo-electric pusher, acting respectively as a relatively slow coarse adjuster and a rapidly acting fine adjuster of the cavity length. By preheating and maintaining some heating current to the expander thereafter, cavity length stabilization is insured both during the rapid housing expansion soon after laser ignition, and for both later housing expansion and contraction caused, for example, by changing ambient temperature.



3,793,596
VITAL LEVEL DETECTOR AND "AND" GATE CIRCUIT ARRANGEMENT EMPLOYING A TWIN-TEE OSCILLATOR

Reed H. Grundy, Murrysville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed June 1, 1972, Ser. No. 258,879
Int. Cl. H03b *5/26*
U.S. Cl. 331—110 **10 Claims**

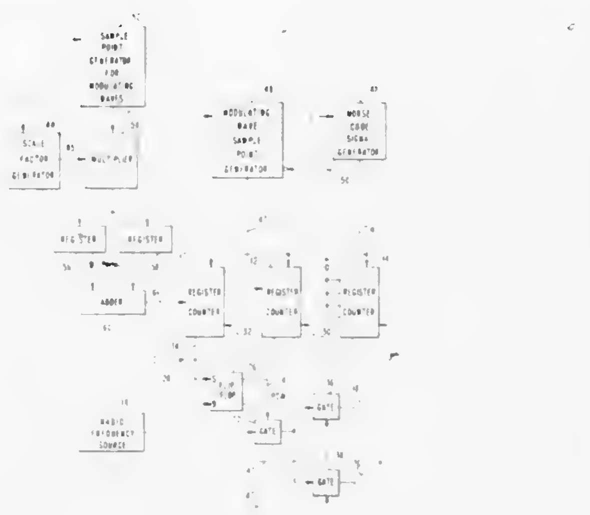


This disclosure relates to a fail-safe level detecting and AND gating circuit including a multistage solid state amplifier having a regenerative feedback loop. The regenerative feedback loop includes a frequency determining twin-tee network and a pair of voltage breakdown devices. The multistage amplifier produces a.c. oscillations when and only when the level of a d.c. voltage applied across each of the voltage breakdown devices exceeds its threshold value so that both of the breakdown devices become conductive and exhibit a low impedance condition.

3,793,597
MODULATION SYNTHESIS METHOD AND APPARATUS

Donald J. Toman, Pleasantville, N.Y., assignor to Tull Aviation Corporation, Armonk, N.Y.

Division of Ser. No. 196,288, Nov. 8, 1971. This application Nov. 15, 1971, Ser. No. 198,839
Int. Cl. H03k *7/08;* **G01s** *1/24;* **G01r** *23/16*
U.S. Cl. 332—9 R **23 Claims**

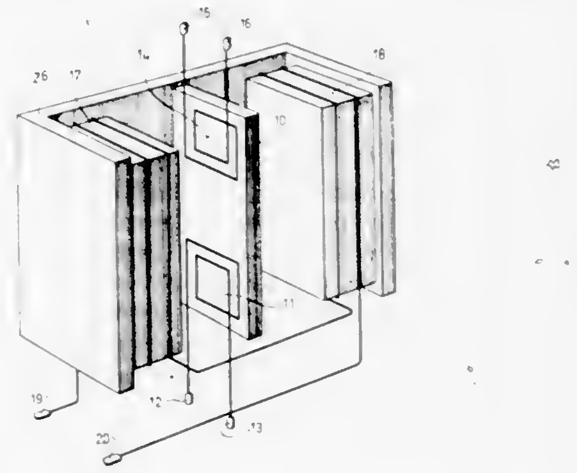


Digital sample point values signifying various modulation levels required at successive points in time are stored in a digital memory and read out in timed sequence and applied to modify a carrier wave in a manner such as to be recognized as modulation by a receiver.

3,793,598
DELAY LINE AND FILTER COMPRISING MAGNETIZABLE CRYSTALLINE MATERIAL HAVING PERIODIC STRUCTURE OF CYLINDRICAL MAGNETIC DOMAINS

Maarten Hector Hendrik Hofelt, and Willem Frederik Druyvesteyn, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 15, 1973, Ser. No. 341,465
Claims priority, application Netherlands, Apr. 7, 1972, 7204639
Int. Cl. H03h *9/22, 9/30, 9/34*
U.S. Cl. 333—30 M **8 Claims**



A device for the processing of signals, comprising a wafer of a magnetic material with a lattice of cylindrical magnetic domains located in a magnetic field, which wafer is provided with a transmitter and a sensor. Signals on the transmitter and on the sensor have a time delay relative to each other. The delay time is continuously variable by varying the strength of the magnetic field. An alternative application as a tunable frequency filter is possible.

3,793,599

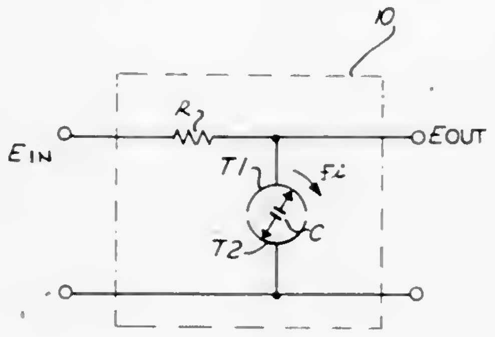
ROTATING CAPACITOR SQUARE WAVE FILTER AND APPLICATIONS THEREOF

Thomas Coor, Princeton, N.J., assignor to Princeton Applied Research Corporation, Princeton, N.J.

Filed Jan. 26, 1973, Ser. No. 327,146

Int. Cl. H03h *7/10;* **G01r** *19/02, 19/18*

U.S. Cl. 333—70 A **31 Claims**



Filtering a zero median value square wave signal having predetermined transitions out of a composite signal said including square wave signal and other signals, including applying said composite signal to the input of a rotating capacitor square wave signal filter including a rotating capacitor C connected between terminals T1 and T2 and an electrically associated resistor R, and repetitively reversing the connection of the capacitor C to the terminals T1 and T2 in synchronism with the transitions of the square wave signal whereby, upon the RC time constant of the resistor R and the capacitor C being much greater than the period of the square wave signal, substantially only the square wave signal is across the output of the rotating capacitor square wave signal filter; and applications thereof.

3,793,600

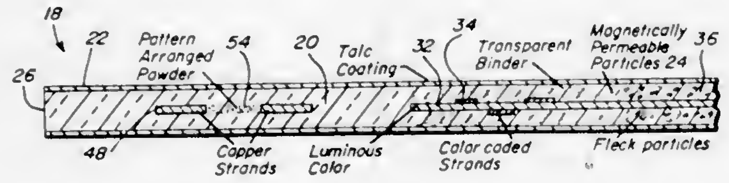
RECORD MEDIUM WITH VALIDATING AND CANCELLING FEATURE AND METHOD

Gregory Grosbard, New York, N.Y., assignor to Strategic Automated Systems, Inc., Salt Lake City, Utah

Filed Mar. 16, 1971, Ser. No. 124,869

Int. Cl. G06k *7/12*

U.S. Cl. 235—61.12 N **10 Claims**



A data processing card on which information is recorded magnetically, by punch hole coding, printing, color coding and by other means. By passing current through fusible strips embedded in the card adjacent one edge thereof, visible characters are formed to signify the card has been cancelled. Cancelling is effected after all desired data processing operations have been performed on a validated card.

3,793,601

REMANENT REED RELAY

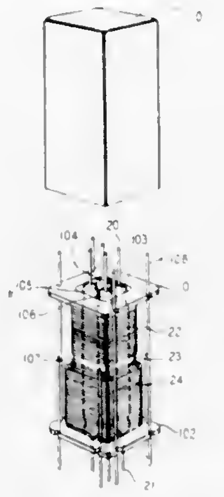
Ronald Joseph Angner, Freehold; Alexander Feiner, Rumson, and Merle Victor Olsen, Lincroft, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed July 12, 1973, Ser. No. 378,581

Int. Cl. H01h *51/27*

U.S. Cl. 335—153 **19 Claims**

By arranging a pair of magnetic flux-producing windings in conjunction with the contacts of a sealed remanent reed contact pair such that each winding is positioned around one of the contacts and such that each winding provides magnetic flux which is equal to but opposite that of the other winding, the reed contacts can be made to open in response to a single current pulse applied to the windings. A third winding is used to control the closing of the reed contacts. The relay can be made with a plurality of individual reed contacts and having the capability of single-pulse destructive marking. Advantages of this relay construction over existing remanent reed relays are the elimination of the magnetic shunt plate between the matched winding pair and the fact that the relay can either be operated or released by a single pulse.



3,793,602

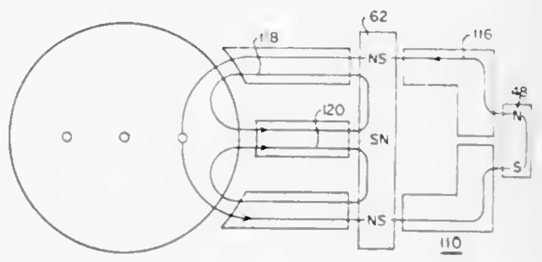
CONVERGENCE DEVICE FOR SHORT NECK IN-LINE CATHODE RAY TUBE

John W. Lister, Portsmouth, Va., assignor to General Electric Company, Portsmouth, Va.

Filed Apr. 13, 1973, Ser. No. 350,682

Int. Cl. H01f *1/00*

U.S. Cl. 335—212 **7 Claims**



A pair of convergence devices lying in a single plane generate and direct fluxes for imparting both horizontal and vertical motion to the outer electron beams in a planar array of three color beams to obtain convergence of the beams. The single magnetic device for each outer beam is a combination of the normal U-shaped device for controlling horizontal movement and the E-shaped device for controlling vertical movement. By the selection and placement of flux controlling means, such as air gaps, isolation between the fluxes is achieved.

3,793,603

FUSE CARTRIDGES

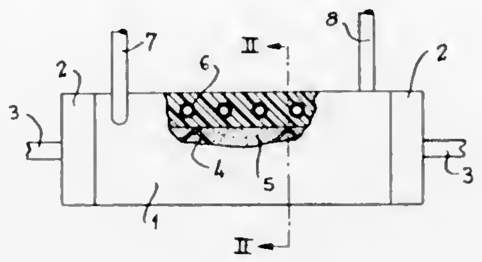
Jean Claude Fontaine, Ecuilly, France, assignor to Societe "Lucien Ferraz & Cle", Lyon/Rhone, France

Filed July 17, 1972, Ser. No. 272,160

Int. Cl. H01h *85/04*

U.S. Cl. 337—166 **2 Claims**

In an electrical fuse cartridge having a hollow insulating body enclosing the fusible element or elements and carrying the terminal heads of the cartridge, the said body is formed of a tubular mass of an insulating material in which a tube is embedded for circulation of a cooling fluid. The tube is preferably of non-metallic nature and it is coiled helically about the axis of the body. In a preferred embodiment the tubular mass is obtained by winding on a mandrel glass threads or ribbons impregnated with a uncured synthetic resin so as to form an inner layer on which the cooling tube may be coiled, then an intermediate layer which fills the helical space which separates the successive turns of the coiled tube, and an outer layer covering the intermediate layer and the tube, the unit thus obtained being thereafter treated to cure the resin in the three layers and to thus obtain a rigid one-piece body with the cooling tube embedded therein.



3,793,604

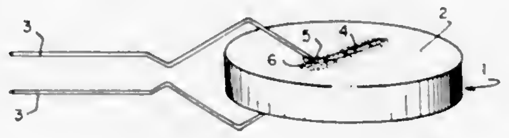
HIGH STRENGTH ELECTRICAL LEAD FOR DISK TYPE THERMISTORS

George L. Duggan, Bedford, and Judith A. Dow, Danvers, both of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Apr. 9, 1973, Ser. No. 348,946

Int. Cl. H01c *7/04*

U.S. Cl. 338—22 R **1 Claim**



A disk type thermistor has a conductive metallic coating bonded to each face thereof. A lead-in wire is soldered to each metallic coating, each lead-in wire extending beyond the edge of the thermistor in a plane generally parallel to the face thereof. Each lead-in wire is shaped so that the solder bond between the lead-in wire and the metallic coating does not extend to the periphery of the thermistor.

3,793,605

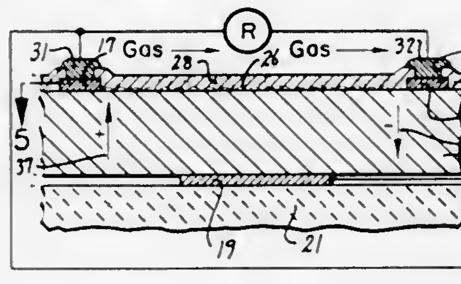
ION SENSITIVE SOLID STATE DEVICE AND METHOD

Francis P. Fehlner, Sunnyvale, Calif., assignor to Signetics Corporation, Sunnyvale, Calif. and Corning Glass Works, Corning, N.Y.

Filed July 16, 1971, Ser. No. 163,234

Int. Cl. H01c *13/00*

U.S. Cl. 338—34 **8 Claims**



Ion-sensitive solid-state device having a ferroelectric body with a discontinuous thin film on the same and electrodes for placing a voltage across the body to cause polarization to occur so that ions adsorbed by the ferroelectric will change the resistivity of the discontinuous film.

3,793,606

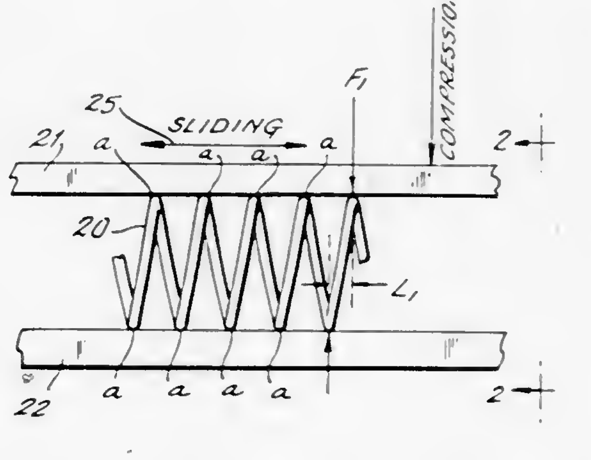
SQUEEZE COIL SPRING AND CURRENT TRANSFER MEANS

George A. Wilson, Pineville, Pa., assignor to ITE Imperial Corporation, Spring House, Pa.

Filed Jan. 2, 1973, Ser. No. 320,086

Int. Cl. H01r *39/00*

U.S. Cl. 339—8 R **12 Claims**



A resilient pressure device between the surfaces of two members comprising a coil spring the axis of which extends parallel to the surfaces of the members; the spring is thus compressed in a direction transverse to its axis. The turns of the spring provide a plurality of pressure points, at least one to a turn, against the adjacent surfaces. The members may slide with respect to each other, either rolling the spring or sliding with respect to the turns of the spring while pressure is maintained. Where the members and the spring are electrically conductive, a constant electrical current transfer is obtained. When current is to be transferred from a terminal to a current carrying member or shaft, the bearing for the shaft in the terminal, or the shaft, may carry such a spring with the axis of the spring spirally wound in the bearing or on the shaft, or a plurality of loops of spring may be used.

3,793,607

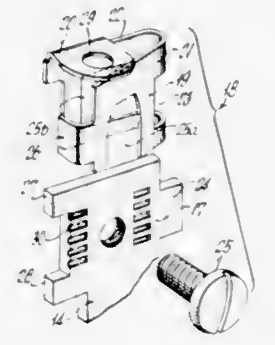
ELECTRICAL TERMINAL FOR CONNECTION TO A CONDUCTOR OF A CABLE

Christopher I. Smith, Woodside, and John M. Poliak, East Meadow, both of N.Y., assignors to Leviton Manufacturing Co., Inc., Brooklyn, N.Y.

Filed Sept. 29, 1972, Ser. No. 293,359

Int. Cl. H01r *9/08*

U.S. Cl. 339—217 R **10 Claims**



An electrical terminal connects each conductor of a multiconductor cable to spaced contacts of an electrical connector.

The cable contains a number of conductors and the connector has a corresponding number of contacts. Each of the con-

circuit board. A gate at the entrance to the slot normally bars entry of a printed circuit board. The gate may be opened by

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3,793,612

CONNECTOR WITH UNITARY HINGE

3,793,614

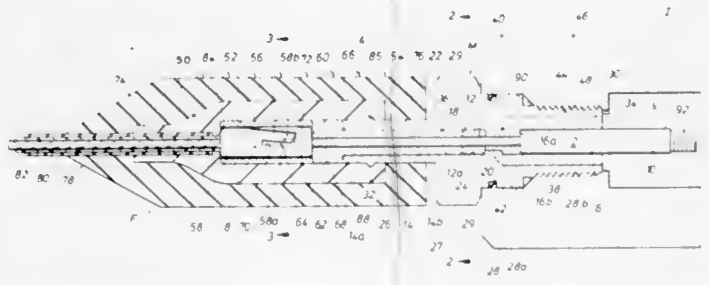
ELASTOMERIC SHIELD FOR AN ELECTRICAL

The cable contains a number of conductors and the connector has a corresponding number of contacts. Each of the contacts has a terminal which is connected to one of the conductors. Each of the terminals includes a clamp and a guide which are mounted on an end of the contact. The clamp is a U-shaped member formed of sheet metal and secures a bare end of the conductor in electrical engagement with the end of the contact.

The guide is formed with the clamp and directs the bare or stripped end of the conductor into position for engagement by the clamp. A terminal screw carried by the contact urges the clamp in engagement with the bare end of the conductor. A headed end of the terminal screw is accessible from one side of the connector.

3,793,608
ELECTRICAL CONNECTORS AND METHOD OF MAKING SAME

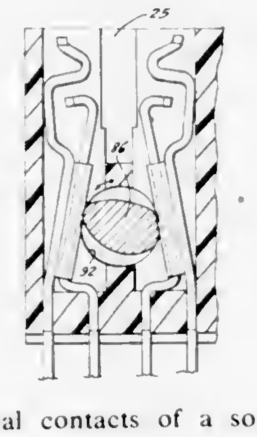
Sandiford Ring, and Russell K. Ring, both of P.O. Box 14666, Houston, Tex.
Filed May 1, 1972, Ser. No. 249,359
Int. Cl. H01r ***13/52***
U.S. Cl. 339—61 R **13 Claims**



An electrical connector for subsurface use under conditions of high temperature and pressure, said connector, comprising a male member and female member, said male member employing a sealing annulus disposed between adjacent refractory sleeves, the annulus being bonded to the metal jacket of the male member, to the refractory sleeves and to the conductive pin.

3,793,609
LOW INSERTION FORCE PRINTED BOARD CONNECTOR

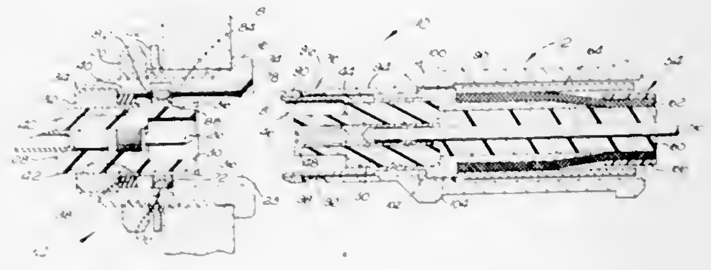
William McIver, Anaheim, Calif., assignor to Microdot Inc., South Pasadena, Calif.
Filed Dec. 13, 1971, Ser. No. 207,413
Int. Cl. H01r ***13/62***
U.S. Cl. 339—74 R **27 Claims**



Normally electrical contacts of a socket assembly are resiliently biased against complementary electrical terminals on a printed circuit board, which board seats in a slot of the socket assembly. An elongated actuator is insertable longitudinally of the socket assembly to temporarily retract the contacts by cam action to clear the slot for entrance of a printed circuit board. A gate at the entrance to the slot normally bars entry of a printed circuit board. The gate may be opened by the completely inserted actuator but only if the contacts are retracted.

3,793,610
AXIALLY MATING POSITIVE LOCKING CONNECTOR

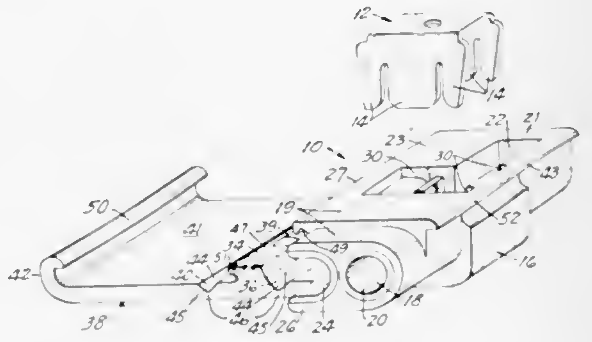
Alexander Ronald Brishka, Irvine, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Feb. 1, 1973, Ser. No. 328,776
Int. Cl. H01r ***13/54***
U.S. Cl. 339—74 R **10 Claims**



A quick connect-disconnect axially mating electrical connector comprising interengageable receptacle and plug members carrying electrical contacts which engage upon mating of the connector members. One connector member carries a split ring which engages in an annular groove formed in the other connector member when the two members are mated. A slidable sleeve is provided on one of the members for disengaging the split ring from the groove upon disengagement of the two connector members.

3,793,611
CONNECTOR

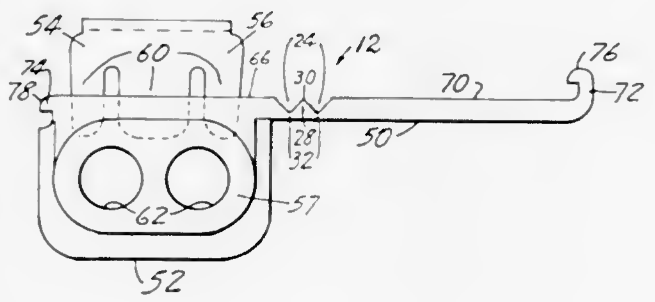
Ronald C. Johansson, Lake St. Croix Beach, and Norman P. Vogel, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Louis, Mo.
Filed Mar. 2, 1972, Ser. No. 231,229
Int. Cl. H01r ***9/08***
U.S. Cl. 339—98 **10 Claims**



A connector having a contact element for making an electrical connection between a continuing or run wire and a tap wire terminating in the connector. The walls of the connector define a channel with an open side to fit over a length of the run wire in a position for engagement by the contact element, and the connector includes a retaining wall mounted for movement to a latched position across the open side of the channel to retain the run wire therein in proper position for engagement by the contact element.

3,793,612
CONNECTOR WITH UNITARY HINGE

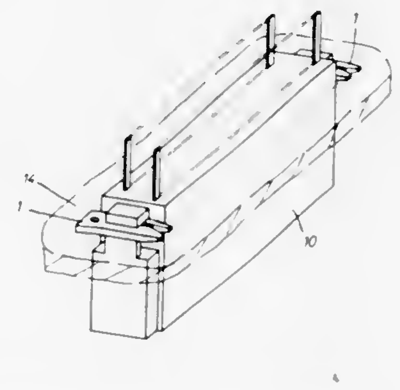
Aelred D. Driscoll, North St. Paul, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.
Filed Mar. 2, 1972, Ser. No. 231,230
Int. Cl. H01r ***13/38***
U.S. Cl. 339—98 **4 Claims**



A connector including a body having an integrally formed unitary hinge portion. The hinge portion connects a cover to a body member for relative movement to a closed position. As the cover is closed, material in the hinge portion deforms in at least two thin narrow strips of material at the bases of parallel grooves. Strain within each thin narrow strip is limited to a predetermined amount by the angle between walls defining the groove.

3,793,613
ARRANGEMENT FOR THE MOUNTING OF FEMALE CONNECTOR STRIPS

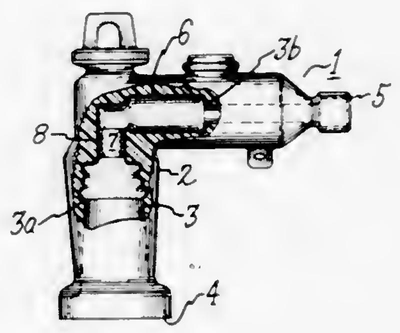
Gunther Reichert, Markgronigen, Germany, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Aug. 24, 1972, Ser. No. 283,588
Claims priority, application Germany, Sept. 9, 1971, 2145065
Int. Cl. H01r ***13/60***
U.S. Cl. 339—126 R **4 Claims**



An arrangement for mounting female connector strips, of the type which receive multi-contact printed circuit board terminals (for example), into a flat surface cut-out. The connector strip body is provided with end pieces each including a seating surface which engages but does not pass through the cut-out and integral loops (eyelets) which do pass through the cut-out opposite extremities. Relatively flat but slightly crowned bifurcated clips engage the integral loops (eyelets) so as to hold the strips in place within the cut-out. Assembly time and expense is minimized.

3,793,614
ELASTOMERIC SHIELD FOR AN ELECTRICAL CONDUCTOR CONNECTOR MODULE AND METHOD OF MAKING SAME

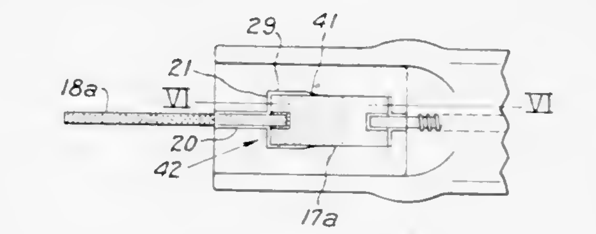
Henry N. Tachick, Pittsfield, and Richard H. Arndt, Lenox, both of Mass., assignors to General Electric Company, Pittsfield, Mass.
Filed Aug. 2, 1971, Ser. No. 168,170
Int. Cl. H01r ***11/28***
U.S. Cl. 339—143 R **1 Claim**



An electrical conductor connector module of the type having a passageway through it to receive one or more electrical cables, which are sealed in water-tight relationship by the module and electrically coupled therein, is provided with a thin electrostatic shield that surrounds a middle portion of the passageway. The electrostatic shield is in the form of a relatively thin coating of electrically conductive elastomeric material. The coating can be formed by either a dip-forming type of process or, by a transfer process in which the electrostatic shielding material is first coated on a mandrel and then transferred from the mandrel to the inner surface of the module passageway, when the module housing is molded around the mandrel.

3,793,615
OXIDATION-RESISTANT LEAD-IN CONDUCTORS FOR ELECTRICAL DEVICES

Elemer Homonnay, Cleveland Heights, and Richard H. Holcomb, South Euclid, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.
Filed Nov. 4, 1970, Ser. No. 86,904
Int. Cl. H01r ***13/40***
U.S. Cl. 339—144 R **5 Claims**



An electrical device, especially a tungsten halogen filament lamp, having a lead-in conductor comprising an oxidizable thin refractory metal foil portion connected to outer and inner lead wires hermetically sealed in a fused silica seal portion of the envelope, the outer half of the foil is covered with a film of oxidation-resistant material of varying thickness. The oxidation-resistant film prevents the oxidation of the foil, and forms an effective hermetic seal.

3,793,618

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calibrated scales for converting the vector distance informa-

tively, of a preceding vehicle. Means are described for deter-

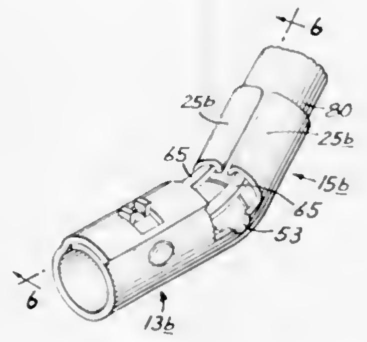
3,793,616
TERMINAL CONNECTOR

Guenther Moehrke, Aurora, Ill., assignor to Belden Corporation, Chicago, Ill.

Filed Feb. 23, 1972, Ser. No. 228,647

Int. Cl. H01r *15/12*

U.S. Cl. 339—223 S **6 Claims**



A terminal connector for connecting an electrical cable to the electrode of a spark plug or the like is disclosed wherein the connector has a first portion adapted to be firmly clamped to the cable, and a second portion interconnected to the first portion through a bendable web and adapted to be releasably electrically connected to the electrode.

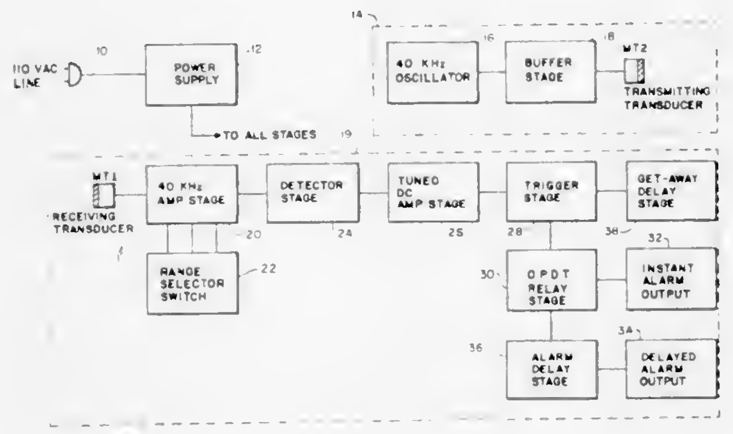
3,793,617
ULSTRASONIC AREA SURVEILLANCE SYSTEM

John Leonard Tolman, Northglenn, Colo., assignor to Bruce G. Klaas, Denver, Colo.

Filed June 26, 1972, Ser. No. 266,221

Int. Cl. G08b *13/16*

U.S. Cl. 340—1 R **15 Claims**



There is herein disclosed an ultrasonic surveillance system comprising transmitter means to establish constant frequency ultrasonic signals in an area under surveillance, receiver means to receive reflected ultrasonic signals and produce an AC control signal proportional to changes in the reflected ultrasonic signals caused by changes in the area under surveillance, amplifier means to amplify the AC control signal, rectifier means to change the AC control signal to a proportional DC control signal, level change detector means to detect changes in level of the DC control signal and provide a DC alarm condition signal proportional to changes in level of the DC control signal, tuned amplifier means to amplify the DC alarm condition control signals within a predetermined range, and signal duration responsive means and signal intensity responsive means operable to pass the alarm condition signal to alarm operating means only when the alarm condition signal is of predetermined duration and intensity.

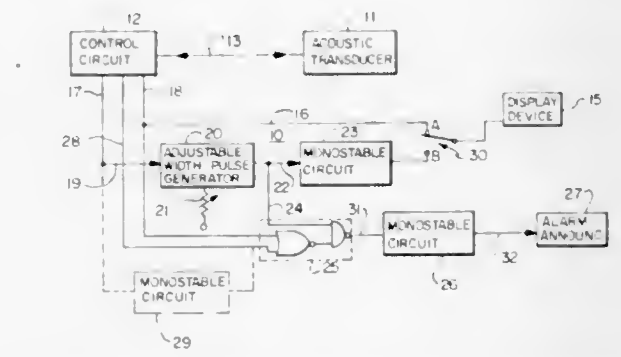
3,793,618
DEPTH ALARM SYSTEM

David L. Plangger, Buchanan, Mich., assignor to Heath Company, Benton Harbor, Mich.

Filed Oct. 30, 1972, Ser. No. 301,831

Int. Cl. G01s *9/68*

U.S. Cl. 340—3 R **8 Claims**



An electronic depth alarm circuit for use with a depth sounder generates an alarm signal when an underwater object located within a preset range depth from the depth sounder is detected. The circuit comprises a first monostable circuit which is triggered by the energy pulses transmitted by the depth sounder and provides pulses having a duration proportional to the preset range depth. The preset range depth pulses enable an AND-gate circuit which also receives the echo pulses detected by the depth sounder as well as inhibiting pulses provided by a second monostable circuit also triggered by the transmitted pulses. The echo pulses will pass through the AND-gate circuit and activate an alarm display only if they appear after the trailing edge of the inhibiting pulses and before the trailing edge of the preset range depth pulses. The inhibiting pulses prevent the alarm signal from being generated when false alarm signals such as ringing of the transmitted pulses in the transducer and air bubbles on the transducer are detected by the receiver. A third monostable circuit triggered by the trailing edge of the preset range depth pulses provides pulses which control the display device of the depth sounder so as to display the preset range depth.

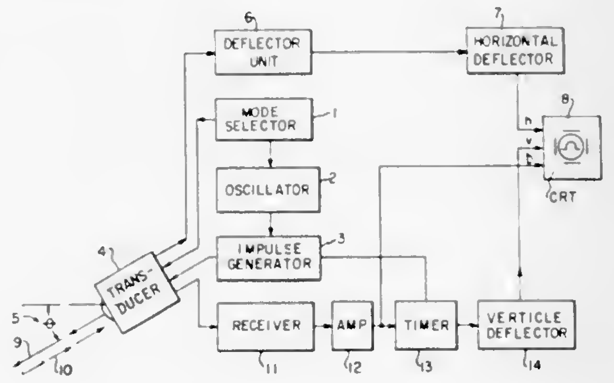
3,793,619
NAVIGATION AID AND DISPLAY SCREEN

Harry J. Regis, 85-24 Wareham Pl., Jamaica, N.Y.

Filed May 26, 1972, Ser. No. 257,310

Int. Cl. G01s *9/68*

U.S. Cl. 340—3 R **8 Claims**



A device for determining and simultaneously displaying the depth, range and bearing to points on the underlying terrain from a boat. A signal is transmitted at a known negative deflection angle and a known bearing angle and the time for the signal to reflect from an object on the underlying terrain is measured. At the proper bearing position the obtained distance is displayed directly on a display screen having calibrated scales for converting the vector distance information into its component parts. The bearing angle is then varied and another signal is transmitted and displayed. The profile or contour of the underlying terrain may then be readily viewed.

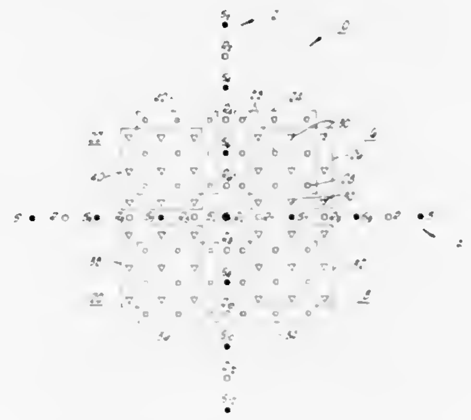
3,793,620
METHOD FOR GEOPHYSICAL PROSPECTING

Dale E. Miller, 108 Virginia, Ponca City, Okla.

Filed July 3, 1972, Ser. No. 268,395

Int. Cl. G01v *1/22, 1/28, 1/13*

U.S. Cl. 340—15.5 MC **20 Claims**



A method for deriving sub-surface seismic information from over a relatively large expanse of land to determine with increased accuracy the strike, dip, velocity and related information for selected strata. The method consists of utilizing one or more cross pattern source-receiver arrays wherein each cross leg is comprised of alternating source and receiver units or groups such that each cross pattern enables derivation of strike, dip, velocity (SDV) quadrant patterns as well as related in-line common depth point data, all data types and patterns then being considered in inter-relation. Use of the method in survey allows that spaced cross pattern arrays be utilized to obtain related data for each of the individual cross pattern arrays, both quadrant pattern and common depth point data, with further derivation of offset data, both quadrant pattern and common depth point data, as enabled by that energy proceeding from one cross pattern to another in accordance with predetermined source-receiver relationships.

3,793,621
AUTOMATIC VEHICLE BRAKE AND DIRECTIONAL LIGHTS INITIATOR

Duane E. McIntosh, Palmyra, Wis., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 24, 1972, Ser. No. 309,222

Int. Cl. B60q *1/44*

U.S. Cl. 340—53 **3 Claims**

A vehicle brake and directional lights initiator including two groups of sensors for viewing the left and right sides, respectively, of a preceding vehicle. Means are described for determining whether all of the red light sensed is a component of white light or whether at least a portion of the red light sensed is the output of the rear lights of the preceding vehicle. When at least a portion of the red light sensed is the result of red light radiating from the rear of the preceding vehicle, a circuit is responsive thereto for energizing the brake and directional lights in response to like energization by the operator of the preceding vehicle and for energizing the brake lights when the rate of closure between the vehicles exceeds a predetermined value.

3,793,622
NEGATIVE FEEDBACK CIRCUIT FOR USE IN CONSTANT SPEED VEHICLE TRAVEL CONTROL DEVICE

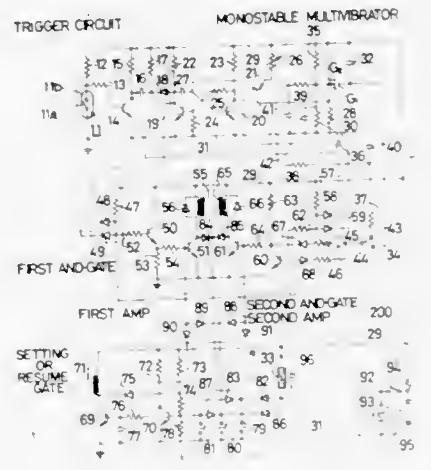
Takashi Hida, and Naoji Sakakibara, both of Kariya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Aichi Pref., Japan

Filed July 8, 1971, Ser. No. 160,638

Claims priority, application Japan, July 8, 1970, 45-59779

Int. Cl. B60k *31/00;* **B60q** *1/00*

U.S. Cl. 340—62 **6 Claims**



A device for controlling the speed of a vehicle in which the actual vehicle speed is compared to a reference speed and the speed is controlled until the actual speed is equal to the reference speed. The device includes a feedback circuit for adjusting the reference speed in order to eliminate hunting.

3,793,623
HYDRODYNAMIC STABILIZING DEVICE

Calvin A. Gongwer, Glendora, Calif., assignor to The Bendix Corporation, North Hollywood, Calif.

Filed Oct. 2, 1972, Ser. No. 293,883

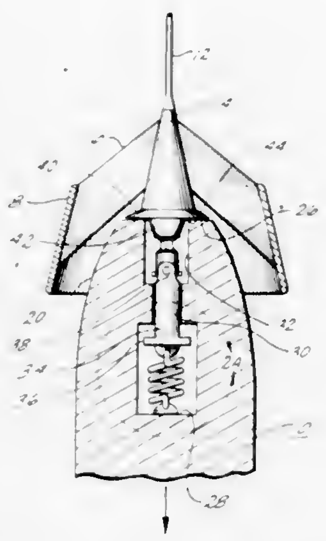
Int. Cl. H04b *13/00;* **B63b** *21/56*

U.S. Cl. 340—8 S **8 Claims**

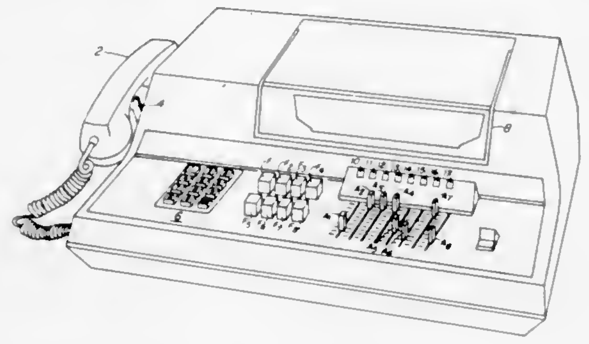
A configuration for high speed deployment and recovery of cable-suspended underwater devices makes use of a swivelable tail or shroud. The device shown is a generally cylindrical underwater sonar transducer having a comparatively flat or blunt frontal surface entering the water and a tapered configuration near the upper or cable-suspended end and having a spaced frustoconical shroud or tail structure. The means of at-

main memory. The data is recycled and continually updated

columns. Means are provided for connecting selected rows tachment of the cable to the body of the transducer includes a connector supporting the shroud and having a swivelable joint. A spring in the body is calibrated to hold the connector tightly against the body during descent, thereby holding the shroud firmly in place; but this spring yields under the greater force required to draw the transducer up out of the water, permitting an axial displacement of the connector and releasing the tail or shroud to permit the body to swivel relative to the shroud. Since the shroud always maintains its alignment relative to the end of the cable, perturbations affecting the body will always be damped out, causing the body to trail the shroud and cable, and ascent is as smooth and fast as the descent.

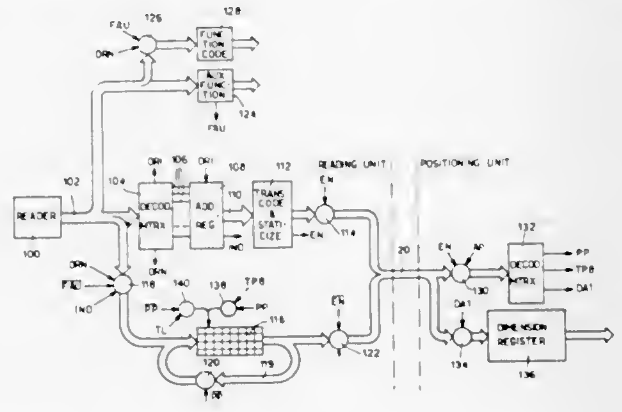


3,793,624
POINT OF SALE CREDIT CARD TERMINAL APPARATUS
Vygantas A. Vaskunas, Massapequa Park, and Howard K. Hager, Nesconset, both of N.Y., assignors to Interface Industries, Inc., Hauppauge, N.Y.
Filed Aug. 19, 1971, Ser. No. 173,217
Int. Cl. H04m *11/06*
U.S. Cl. 340—149 A **22 Claims**



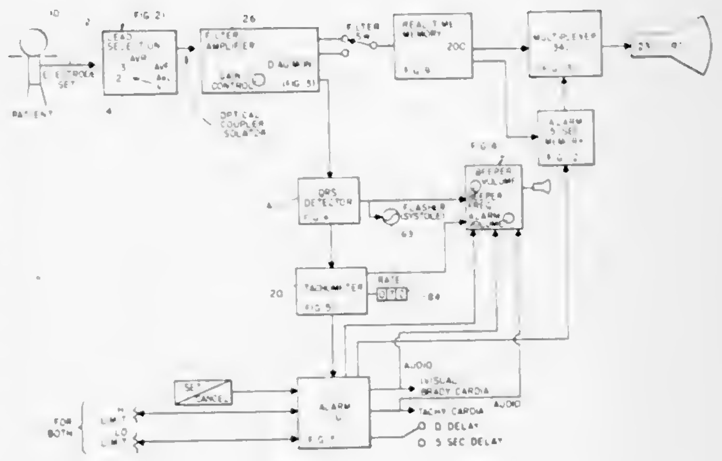
Point of sale terminal apparatus is provided in accordance with the teachings of the present invention wherein access to a central credit location may be quickly established and once a communication link to such central credit location is established a request for data signal is provided to said point of sale terminal apparatus. The request for data signal is indicated at the point of sale terminal whereupon an operator merely actuates the send button thereat so data from an already inserted credit card, preset sale information print drums and hard wired site or location designators are transmitted to said central location in a clocked logic format. If the sale is authorized on the basis of the data sent, the central location provides an authorized signal which actuates imprinter apparatus at the point of sale terminal apparatus causing the credit card sales form to be automatically imprinted, and the communication link disconnected. However, if the sale may not be automatically authorized the operator at the point of sale terminal may be placed in voice communication with a referral agency. Various overrides are also provided in case of telephone or central location failure.

3,793,625
NUMERICAL CONTROL SYSTEM FOR CONTROLLING SIMULTANEOUSLY A PLURALITY OF TOOLS OF ONE OR MORE MACHINE TOOLS
Piero Pomella, and Luciano Lauro, both of Ivrea, Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin) Italy
Filed Sept. 21, 1972, Ser. No. 290,918
Claims priority, application Italy, Sept. 30, 1971, 70210/71
Int. Cl. G06f *7/28*
U.S. Cl. 340—172.5 **3 Claims**



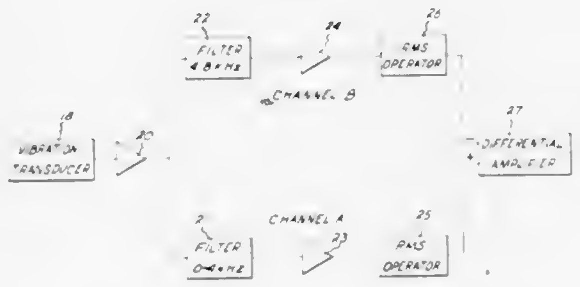
A system for the numerical control of a plurality of machine tool positioning units by a single instruction program, comprising a reading unit which reads program data comprising addresses and numerical data from a record member and issue the data in succession at an output, and a plurality of positioning units connected to receive data from the output. Each positioning unit is adapted to recognise its own address among the addresses which appear at the output and to enable a corresponding input for the reception of numerical data following the address. Each positioning unit is also able to operate during the reading of the addresses and numerical data following and/or concerning the other positioning units.

3,793,626
REFRESHED CRT DISPLAY WITH ECG
Raymond Peter Zambuto, 354 Whipple Rd., Tewksbury, Mass.
Filed Sept. 30, 1971, Ser. No. 185,322
Int. Cl. G06f *3/14*, *15/42*
U.S. Cl. 340—172.5 **33 Claims**



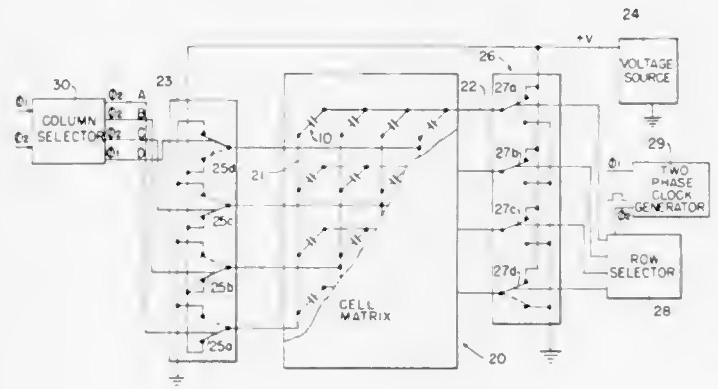
A monitor for the display of electrocardiogram (ECG) signals. The signals from the patient are digitized and enter a main memory. The data is recycled and continually updated. The data is displayed as real time on a cathode ray tube (CRT) in such a manner that the data originally entered moves from right to left across the scope in the same position. Thus, at approximately five seconds the data is at the left of the screen. All subsequent data follows the same pattern whereby the display on the CRT appears as a continuously moving waveform. An alarm memory receives data five seconds old and stores the data for five seconds. If the ECG signals from the patient violate certain limits, an alarm is actuated. The data in the alarm memory at the time of the alarm is sealed off and displayed as a stationary waveform on the CRT with the real time display.

3,793,627
AUTOMATIC SONIC DETECTION OF CHIPPED CUTTING TOOLS
Bernard Darrel, and Paul F. Scott, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed June 28, 1972, Ser. No. 267,120
Int. Cl. G08b *21/00*
U.S. Cl. 340—267 R **10 Claims**



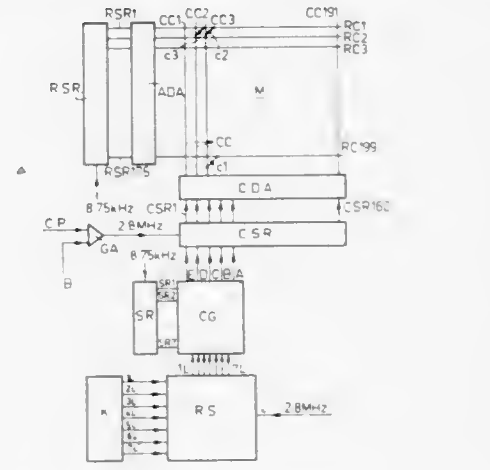
A cutting tool wear signal is obtained in known manner by sensing the sonic vibrations generated by the cutting action and extracting the high frequencies indicative of cutting tool wear. A chipped tool causes a rapid increase or decrease in the gradually rising averaged tool wear signal. The detection circuit detects this rapid increase or decrease with provision for rejecting the starting and stopping transients in the tool wear signal. The system is compatible with sonic detection of an excessively worn cutting tool.

3,793,628
ELECTROLUMINESCENT DISPLAY DEVICE
Jai P. Gaur, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio
Filed Sept. 1, 1972, Ser. No. 285,734
Int. Cl. G08b *5/36*
U.S. Cl. 340—324 M **20 Claims**



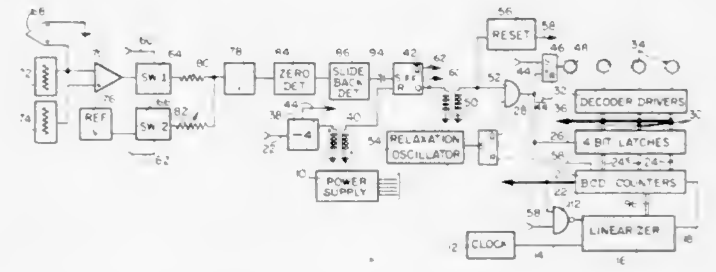
An electroluminescent display device wherein a matrix of column and row conductors is formed with electroluminescent cells interconnecting the juncture of rows and columns. Means are provided for connecting selected rows and columns to a source of voltage in a particular sequence whereby the cell positioned at the juncture of a selected column and row is caused to luminesce during each selected period while all non-selected cells are inhibited to fire except only once during the entire period of operation of displaying a pattern on the device.

3,793,629
ELECTRICAL DISPLAY DEVICES
Graham Trevor Sharpless, Peveril, England, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 81,008, Oct. 15, 1970, abandoned. This application Jan. 5, 1973, Ser. No. 321,332
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 M **8 Claims**



An electrical display device comprising an array of light emitting elements in rows and columns. A plurality of shift registers wherein each register has bit positions for energizing only a fraction of the number of columns and is employed for selectively energizing these elements in accordance with binary code. These registers are stepped in parallel by clock pulses to fill each register serially with column energizing signals. This enables the clock rate of the arrangement to operate at only a fraction of the clock rate which would be necessary if a signal column register that is filled serially was used.

3,793,630
PYROMETER WITH DIGITALIZED LINEARIZING CORRECTION
Robert S. Meijer, Chicago, Ill., assignor to Alnor Instrument Company, Div. of Illinois Testing Laboratories, Inc., Chicago, Ill.
Filed June 14, 1971, Ser. No. 152,702
Int. Cl. H03k *13/20*
U.S. Cl. 340—347 NT **20 Claims**



By feeding BCD temperature representing count pulses into simple gating logic, progressively selected count pulses are discarded to cause a nonlinear thermocouple response to become linearized. The thermocouple response is fed into an improved dual slope integrator; whereby, pulse width modulation becomes a proportional measurement of sensed temperature. A novel slide back detector effectively increases the slewing rate of the output end of the double slope integrator.

3,793,631

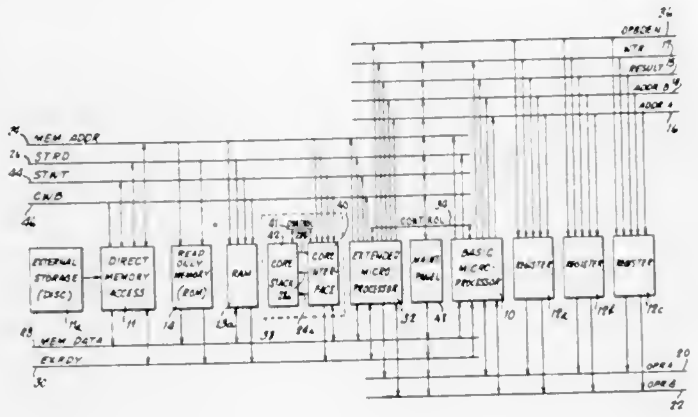
DIGITAL COMPUTER APPARATUS OPERATIVE WITH JUMP INSTRUCTIONS

Steven L. Silverstein, Pittsburgh, and Kenneth E. Daggett, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 22, 1972, Ser. No. 291,490

Int. Cl. G06f *9/00*

U.S. Cl. 340—172.5 **8 Claims**



Disclosed is a digital computer system including a programmed microprocessor system of the type used in real time systems, in industrial process control and in small scale data processing. The system can be extended and reduced in processing capabilities and in memory capabilities without any change in the data buses and the control line buses thereof, and without internal changes in the units which are added or removed. In particular, the system may include a basic microprocessor system having a basic macroprocessor, a small number of registers and a read-only memory, or it may be extended by adding, in succession, an extended processor and a read-write memory, a direct memory access unit, additional memories, and a maintenance panel which can monitor or control any system functions which can be monitored or controlled by the basic or extended microprocessors. Any of the units other than the basic system can be removed or added at any time, by plugging and unplugging, to change the size and capabilities of the system to suit particular needs. Microprocessor speed is optimized by allowing for overlap of microprocessor functions, such as overlap between instruction execution and instruction fetch, and between writing the result of the current instruction while decoding the next instruction. Timing in the system is fast pipeline timing without artificial delays. The system provides a diversified set of instructions, and particularly bit manipulation instructions in what is basically a byte oriented machine. A designator register is provided for increasing instruction diversity. The system organization allows the full instruction set of the system to be operable on input/output hardware connected to the system through regular system registers and is thus particularly suitable for industrial process control applications, and for other monitoring and control applications.

3,793,632

TELEMETRY SYSTEM FOR DRILL BORE HOLES

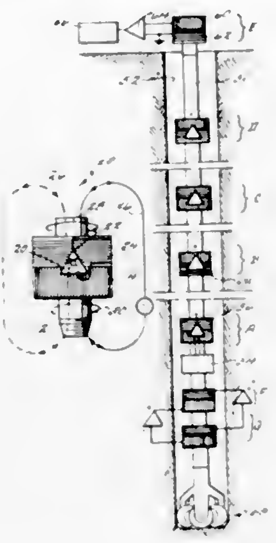
William L. Still, RFD No. 2, Box 73, Purcellville, Va.

Filed Mar. 31, 1971, Ser. No. 129,665

Int. Cl. G01v *1/40*

U.S. Cl. 340—18 NC **41 Claims**

Apparatus and method for signaling within a drill bore hole without disturbing an ongoing drilling operation. Repeater stations are utilized at intervals along a drill string with the repeater input and output being in different noninterfering first and second modes. Furthermore, means are shown for causing successive repeater transmitters of any given mode to produce only negative feedback and hence to cause the overall system to be self-stabilizing. Special means are also shown for selectively attenuating one or both modes of transmission between repeater stations thereby substantially eliminating undesired feedback in the cases where self-stabilization cannot be guaranteed. Both active and passive attenuators are discussed as well as two exemplary overall systems. One exemplary system uses electric current for one mode and magnetic flux for the other mode while the other exemplary system utilizes different signal frequencies for the different transmission modes.



3,793,633

ANNUNCIATOR CONTROL SYSTEM WITH ACKNOWLEDGEMENT

Leendert A. Beeloo, Los Angeles, Calif., assignor to Rotoflow Corporaton, Los Angeles, Calif.

Filed Apr. 12, 1971, Ser. No. 133,251

Int. Cl. G08b *23/00*

U.S. Cl. 340—213.1 R **21 Claims**

An annunciator system comprising: an electrical power source; a plurality of monitoring circuits connected to the power source for monitoring a plurality of conditions; and a lock-out circuit commonly connected to the power source and each of the monitoring circuits. Each of the monitoring circuits may comprise a relay responsive on the presence of an abnormal condition associated with its respective circuit to actuate an indicator device in such respective circuit. The lock-out circuit may comprise a relay responsive on the response of one of the monitoring circuit relays, to an abnormal condition, to connect all monitor relays, except the first responsive one, to the power source, locking them in a non-responsive condition. An acknowledgment switch, which may be provided in the lock-out circuit, is positionable to prevent response of the lock-out circuit relay so as to allow independent response of all of the montoring circuit relays to abnormal conditions.

3,793,634

DIGITAL ANTENNA POSITIONING SYSTEM AND METHOD

Robert I. Heller; Francis T. Annulis, both of Baltimore, and Walter Jachimski, Lutherville, all of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 31, 1972, Ser. No. 276,534

Int. Cl. G01s *9/22*

U.S. Cl. 343—7.4 **5 Claims**

A digital system for positioning an antenna of a tracking radar system, particularly of the type employing a driven beam reflector of the type utilized in a cassegrain antenna system, without the use of rate gyros. Signals representing various angular quantities are simultaneously sampled periodically and all preliminary functions such as normalizing are performed before the data is stored. The handling of the data as a block of data eliminates undesirable time skewing and the digital data may be used as a block of data in positioning the radar antenna.

A digital target line-of-sight error signal representing the error between the radar beam line-of-sight and the target line-of-sight in a line-of-sight coordinate system is generated and then referenced to a fixed coordinate system. In a radar system employing an antenna having an axis system corresponding to the beam line-of-sight axis system, the line-of-sight error signal is referenced to the fixed coordinate system by first referencing the error signal to an aircraft axis system and then to the fixed coordinate system to obtain a fixed coordinate referenced error signal. The fixed coordinate referenced line-of-sight error signal may then be employed to generate fixed coordinate referenced line-of-sight error rate and position signals through the use of a predetermined transfer function and an integrator having a predetermined, fixed coordinate system referenced constant of integration. The line-of-sight position signals referenced to the fixed coordinate system may then be used to generate antenna angular pointing error signals which may be used to drive the antenna in a direction tending to null the line-of-sight error signal. In a system employing a driven beam reflecting element such as in a cassegrain system, the rotation affect of the reflector on the beam is taken into account in referencing the line-of-sight error signals to the fixed coordinate system. Moreover, the complex relationship between beam position and reflector position is accounted for in transforming to and from the fixed coordinate system. A method and system for generating line-of-sight angular rate signals for use in fire control systems is also disclosed.

3,793,635

LOCATING VEHICLES USING THEIR VOICE TRANSMISSIONS

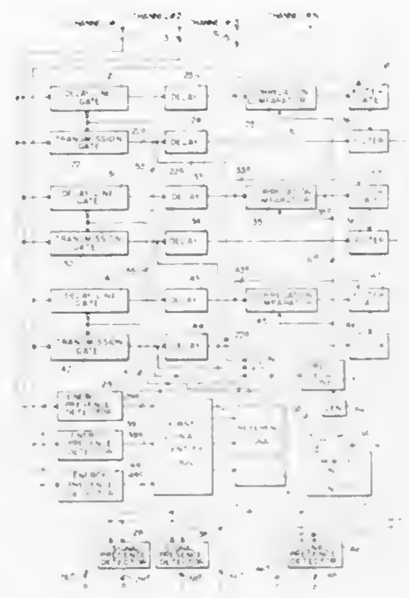
Basil E. Potter, Amherst, N.Y., assignor to Sierra Research Corporation, Buffalo, N.Y.

Filed Dec. 8, 1972, Ser. No. 313,526

Int. Cl. G01s *5/06*

U.S. Cl. 343—112 R **6 Claims**

A system for locating plural mobile units, vehicle aircraft or marine, using their voice or other intelligence transmissions to indicate their respective locations relative to at least three fixed-position receivers. These transmissions are intermittently on the air, sometimes interfering and sometimes not, and the system uses a correlation technique for determining when the transmissions received at the spaced receivers are all initiated by the same mobile unit. If so, the signals received are narrow-band filtered to recover a component of their modulation which can be used as an indication of the time of arrival of the transmission at each of the receivers. These filtered components are then delivered to a computer which determines the location of the mobile unit using well-known time-of-arrival solutions. Conversely, if several mobile units are transmitting at once, their signals will not successfully correlate and no computations are performed during such periods of interference.



3,793,636

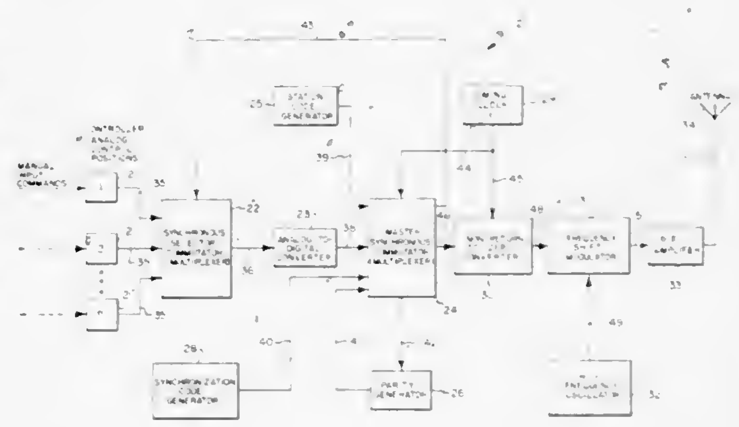
NONCONDUCTIVE DATA LINK CONTROL APPARATUS

Daniel C. Clark, Alden; Patrick M. Dark, East Aurora, and Thomas G. McGoldrick, West Seneca, all of N.Y., assignors to Moog Inc., East Aurora, N.Y.

Filed Jan. 28, 1972, Ser. No. 221,697

Int. Cl. H04b *7/00;* **G08c** *19/16*

U.S. Cl. 343—225 **6 Claims**



Apparatus provides a nonconductive data link between command and response locations remote from each other for accomplishing substantially proportional control and includes safety features to prevent outside interference.

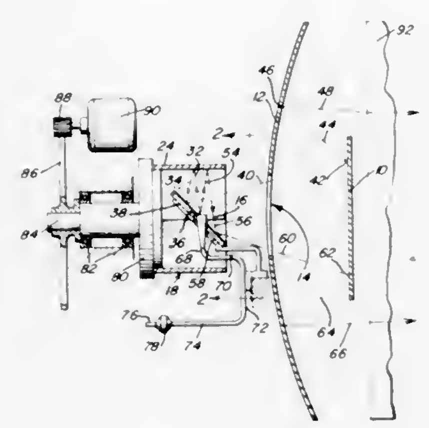
3,793,637
RADAR ANTENNA WITH MIRROR-WHEEL SCANNER FOR SECTOR AND CONICAL SCANNING

James M. Meek, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 26, 1973, Ser. No. 335,874

Int. Cl. H01q *3/18, 3/20, 15/14*

U.S. Cl. 343—761 **10 Claims**



A quasi-spherical multi-reflector radar antenna has a subreflector and a main reflector with an aperture formed centrally therein. A mirror wheel is positioned behind the aperture while a fixed microwave energy beam is directed axially or radially against the wheel for subsequent reflection to the far field. As the mirror wheel rotates, the microwave energy reflected from the mirror wheel reflects at varying angles to effect unidirectional sector scanning of a high gain pencil or oval beam in the far field.

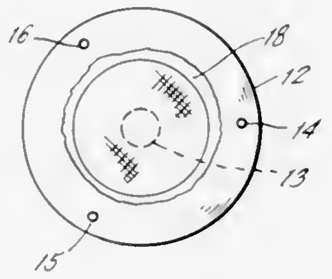
3,793,638
APPARATUS FOR AND METHOD OF GRAPHICAL RECORDING WITH SIMULTANEOUS CHARGING AND INKING

Edward L. Weiss, Quakertown, and Barry A. Bell, Glenside, both of Pa., assignors to Leeds & Northrup Company, North Wales, Pa.

Filed July 10, 1972, Ser. No. 270,327

Int. Cl. G01d *15/06;* **G03g** *9/04*

U.S. Cl. 346—74 ES **15 Claims**



In a graphical recording apparatus, a substantial and continuous flow of marking liquid moves between a discharge port and a vacuum port in communication with a record receiving medium. In both electrographic printing and ink pen embodiments, the vacuum port comprises a vacuum chamber surrounding the discharge port. The charge desposιting styli in the electrographic printing embodiment are also surrounded by the vacuum chamber.

3,793,639
DEVICE FOR THE MAGNETIC STORAGE OF DATA

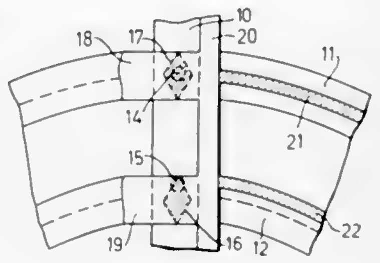
Ulrich Ernst Enz, and Frederik Ate De Jonge, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 28, 1972, Ser. No. 267,142

Claims priority, application Netherlands, July 10, 1971, 7109572

Int. Cl. G11c *19/00, 11/14*

U.S. Cl. 346—74 M **6 Claims**



A device for the magnetic recording of information in which information is written on a magnetisable medium by means of the external field of a stable cylindrical magnetic domain which is supported by a plate of a magnetic material having an easy axis of magnetisation which extends normal to the plane of the plate. For writing a number of tracks present one beside the other on the medium, the plate may comprise one stable cylindrical magnetic domain per track to be written.

3,793,640
DEVICE FOR THE MAGNETIC DOMAIN "BUBBLE" STORAGE OF DATA

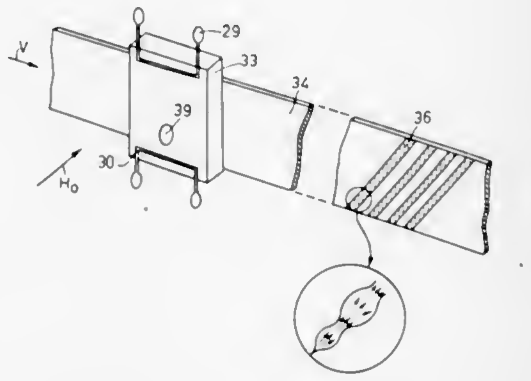
Jan Antoon Ludolf Potgiesser, Emmasingel, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 3, 1972, Ser. No. 268,819

Claims priority, application Netherlands, Apr. 13, 1972, 7204924

Int. Cl. G11c *11/14;* **G01d** *15/12*

U.S. Cl. 346—74 M **5 Claims**



A device for the magnetic storage of information in which information is written on a magnetizable medium by means of the external field of a stable magnetic domain which is supported by a plate of a magnetic material having an easy axis of magnetization which is normal to the plane of the plate. For recording a number of juxtaposed tracks on the medium, the plate may comprise one stable magnetic domain per track to be recorded.

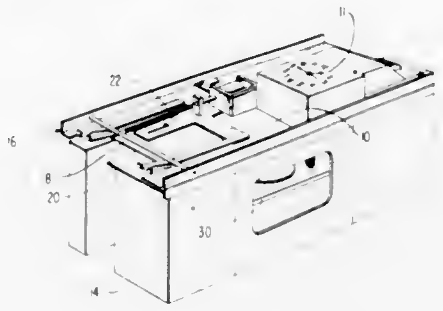
3,793,641
TIME RECORDER

Dominick Tringali, and John W. Dillard, both of Columbia, S.C., assignors to Universal Business Machines, Incorporated, Columbia, S.C.

Filed Mar. 29, 1972, Ser. No. 239,124

Int. Cl. G07c *1/18*

U.S. Cl. 346—82 **9 Claims**



A recorder for automatically printing a record receiver, such as a card, with actual time and elapsed time. The recorder includes a chute assembly with cooperating electronic elements for automatically positioning a card therein prior to selectively operating a print actuator assembly. The last named assembly cooperates with a time changeable printing assembly to effect recordings on the card. The chute assembly is provided with a mechanism to effect automatic ejection of the card subsequent to a recording operation.

3,793,642
ELECTROSTATIC RECORDING MEDIUM

Makoto Obu, and Tadamitsu Uchiyama, both of Tokyo, Japan, assignors to Kobushiki Kaisha Ricoh, Tokyo, Japan

Filed July 28, 1972, Ser. No. 276,137

Claims priority, application Japan, Aug. 25, 1971, 46-64889

Int. Cl. G01d *15/34*

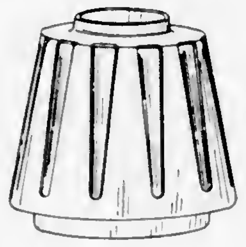
U.S. Cl. 346—135 **4 Claims**

There is provided an improved electrostatographic product having an electroconductive supporting sheet with a recording layer formed on the supporting sheet, said recording layer comprising a mixture of an insulating polymer and a ferroelectric powder having a Curie temperature above room temperature. The product will accept a persistent electrostatic charge pattern by the application of a low voltage to the recording layer.

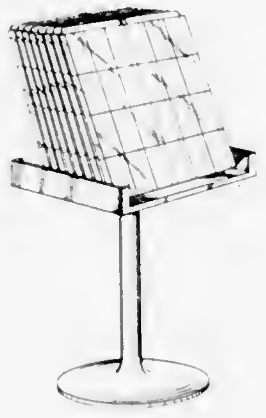
DESIGNS

FEBRUARY 19, 1974

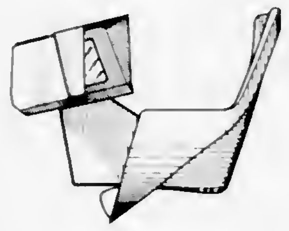
230,381
CHARGING UNIT WITH BRUSH HOLDER
Knut Otto Yran, Parklaan 26, Eindhoven, Netherlands
Filed Feb. 22, 1972, Ser. No. 228,431
Claims priority, application Netherlands Aug. 30, 1971
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—16



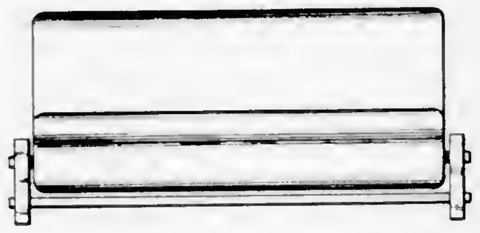
230,382
TAPE CARTRIDGE DISPLAYER
Eduard Hansjorg Schweizer, Schillstrasse 25, 423 Wesel 1, Germany
Filed Dec. 20, 1971, Ser. No. 210,304
Claims priority, application Switzerland June 26, 1971
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—20



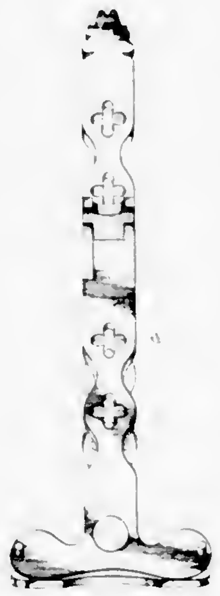
230,383
COMBINED TELEVISION VIEWER AND CHAIR SHELL UNIT
Lyle A. Atkinson, Granger, Utah, assignor to Midwest International, Granger, Utah
Filed May 12, 1971, Ser. No. 142,847
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—42



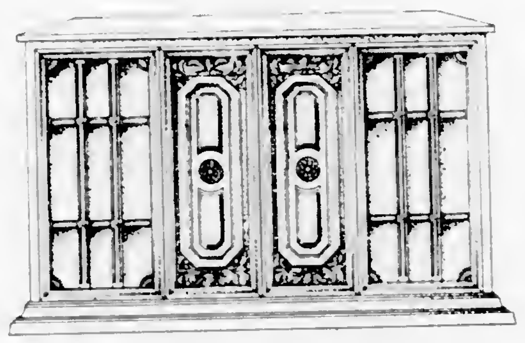
230,384
COUCH
Richard Alan Bialosky, 257 Cloydon Circle, Santa Barbara, Calif. 93108
Filed Apr. 12, 1972, Ser. No. 243,552
Term of patent 3½ years
Int. Cl. D6—*01*
U.S. Cl. D6—61



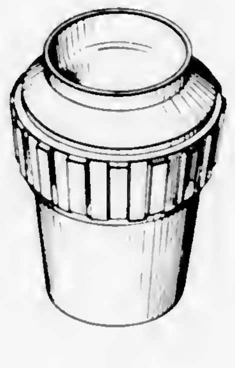
230,385
GUITAR STAND
David W. Steinmeier II, 4913 Halifax, Temple City, Calif. 91780
Filed Feb. 28, 1972, Ser. No. 230,201
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—85



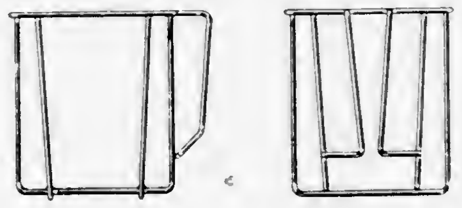
230,386
CABINET
Robert Levine, Roslyn, N.Y., assignor to Capehart Corporation, New York, N.Y.
Filed Sept. 15, 1972, Ser. No. 289,553
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—154



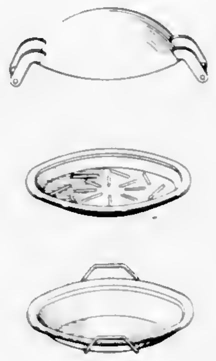
230,387
INSULATED TUMBLER OR THE LIKE
Donald Wayne Doman, Janesville, Kenneth Michael Douglas, Sun Prairie, and Le Roy William Mason and Lawrence Kenneth Sauey, Baraboo, Wis., assignors to Flambeau Plastics Corporation
Filed Aug. 11, 1971, Ser. No. 171,034
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—14



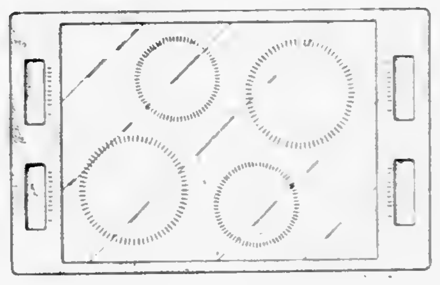
230,388
MILK CARTON HOLDER
James G. Wise, 3725 NW. 34th St., Oklahoma City, Okla. 73112
Filed Mar. 20, 1972, Ser. No. 236,542
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—70



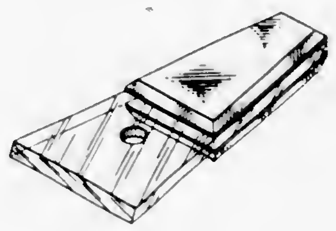
230,389
COOKING UTENSIL
Max S. Reiss, Wheeling, W. Va., assignor to Lisk-Savory Corporation, Buffalo, N.Y.
Filed Jan. 31, 1972, Ser. No. 222,441
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—96



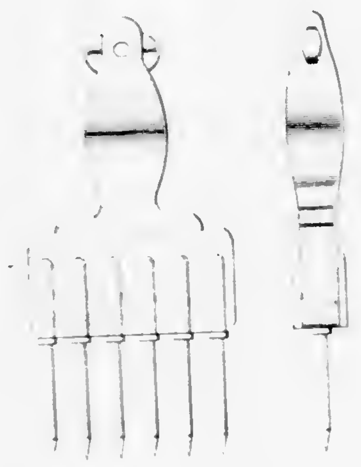
230,390
COOKING PLATFORM FOR ELECTRIC RANGES AND THE LIKE
Charles R. Tyke and Howard M. Meehan, Lexington, Ohio, assignors to Westinghouse Electric Corporation
Filed Nov. 16, 1972, Ser. No. 307,313
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—121



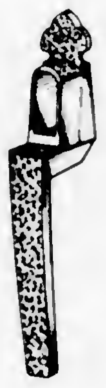
230,391
WINDSHIELD SCRAPER
Michael J. Dudte, Newton, Kans., assignor to Starkey Developmental Center for Retarded, Inc., Wichita, Kans.
Filed Dec. 23, 1971, Ser. No. 211,825
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D7—181



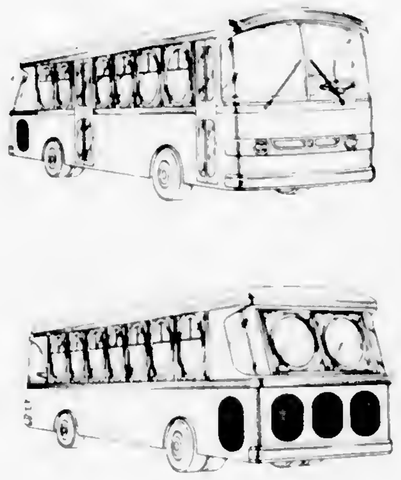
230,392
GARDEN TOOL
Hubert J. Rousseau, 224 Hoover St.,
Oceanside, Calif. 92054
Filed Apr. 10, 1973, Ser. No. 349,781
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—6



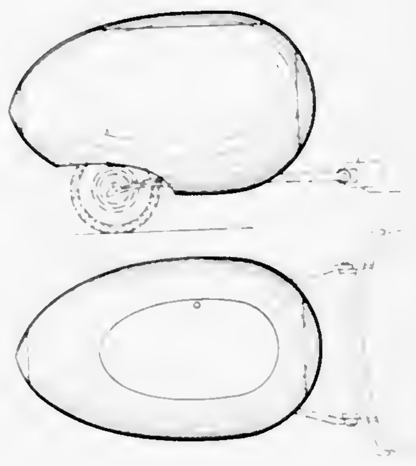
230,393
DOOR LATCH HANDLE
Claude Teggelaar, Grand Rapids, Mich., assignor to
Wolverine Industries, Inc., Grand Rapids, Mich.
Filed Jan. 11, 1973, Ser. No. 322,626
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—170



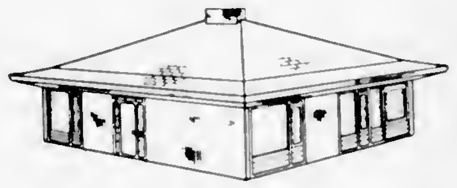
230,394
BUS
Humberto Arroyo-Lopez, Nort 87, 459,
Mexico 16, D.F., Mexico City, Mexico
Filed Aug. 17, 1972, Ser. No. 281,305
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—84



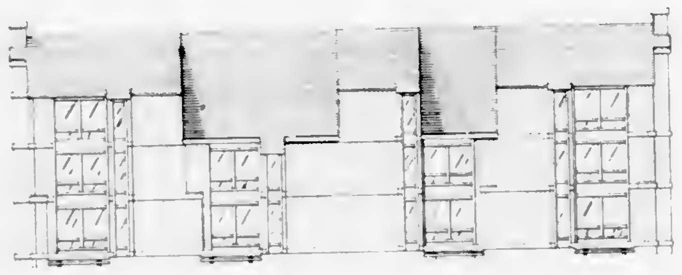
230,395
TRAILER BODY
John L. Sporich, 3007 N. 33rd St.,
Tacoma, Wash. 98407
Filed Sept. 9, 1971, Ser. No. 179,251
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—102



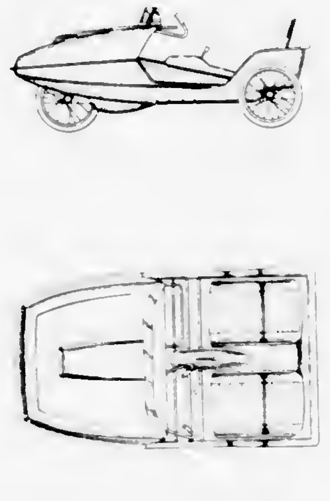
230,396
BUILDING
Cornelis van der Lely, 7 Bruschenrain, Zug, Switzerland
Filed May 12, 1972, Ser. No. 252,954
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 B



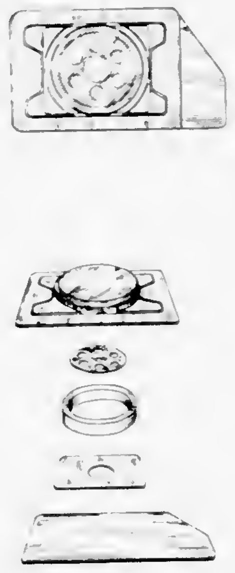
230,397
APARTMENT BUILDING
Bertram Zusman, 570 Madera Ave.,
Youngstown, Ohio 44504
Filed Mar. 12, 1973, Ser. No. 340,055
Term of patent 7 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 A



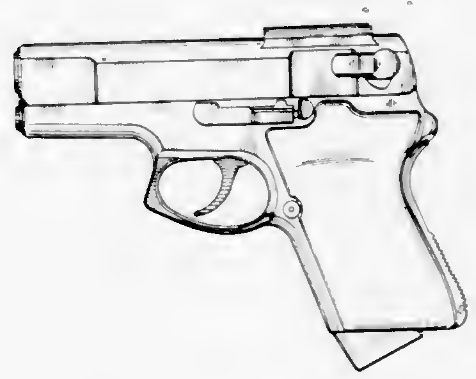
230,398
VEHICLE
Donald C. Gates, Troy, and Michael A. Pocobello, Warren, Mich., assignors to EVI, a partnership consisting of PTS and GPO, Sterling Heights, Mich.
Filed Sept. 11, 1972, Ser. No. 288,120
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D14—3 G



230,399
COMBINATION RHEOPHORESIS PLATE AND PACKAGE
Salustiano Segovia Mirasol, Jr., Pasadena, Calif., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Dec. 26, 1972, Ser. No. 318,141
Term of patent 14 years
Int. Cl. D24—*02;* D9—*03*
U.S. Cl. D16—1 R



230,400
PISTOL
Paris Theodore, 24 E. 73rd St.,
New York, N.Y. 10021
Continuation of abandoned design application Ser. No. 211,831, Dec. 23, 1971. This application Apr. 12, 1973, Ser. No. 350,599
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—1



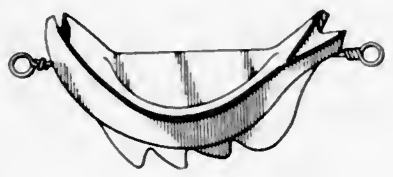
230,401

COMBINATION FISH LINE STABILIZER AND SINKER

Ewell J. Harris, Rte. 3, Box 135A,
Adrian, Mich. 49221

Continuation-in-part of design application Ser. No. 140,008, May 3, 1971, which is a continuation-in-part of design application Ser. No. 23,357, June 8, 1970, now abandoned. This application Dec. 27, 1971, Ser. No. 212,885

Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—30



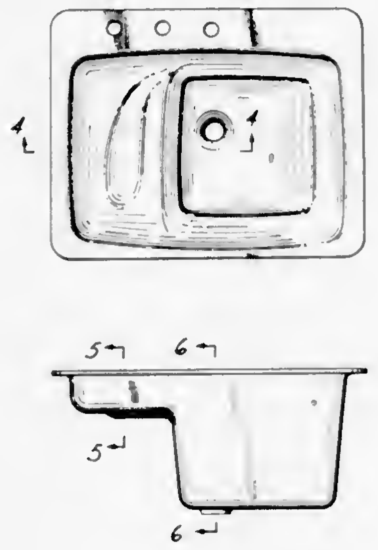
230,402

SINK

Thomas Graning, Jr., Covina, Calif., assignor to Graning Company, El Monte, Calif.

Continuation-in-part of abandoned design application Ser. No. 240,012, Apr. 17, 1972. This application Dec. 22, 1972, Ser. No. 317,647

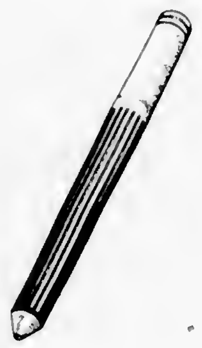
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—58



230,403

HAND HELD DATA READER OR SIMILAR ARTICLE

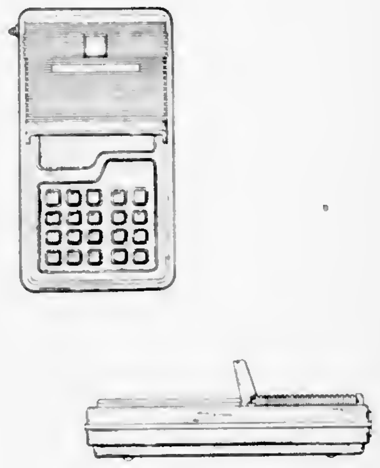
Gosta Roland Englund, Stockholm, Sweden, assignor to Svenska Dataregister AB, Solna, Sweden
Filed July 6, 1971, Ser. No. 160,250
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



230,404

ELECTRONIC CALCULATING MACHINE

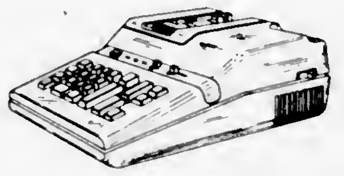
Katsumi Jimbo, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Oct. 4, 1972, Ser. No. 298,766
Claims priority, application Japan Apr. 10, 1972
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



230,405

ELECTRONIC CALCULATING MACHINE

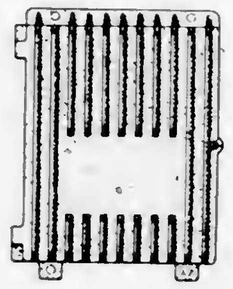
Katsumi Jinbo, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Dec. 4, 1972, Ser. No. 311,806
Claims priority, application Japan June 7, 1972
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



230,406

ELECTRICAL CONTROL BOX

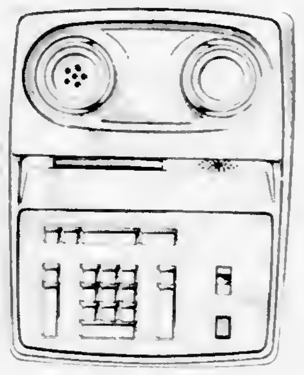
Brian O. Hampton, 1874 Honeysuckle Lane,
Rockford, Ill. 61107
Filed Mar. 23, 1973, Ser. No. 344,232
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 C



230,407

DATA PROCESSOR TERMINAL

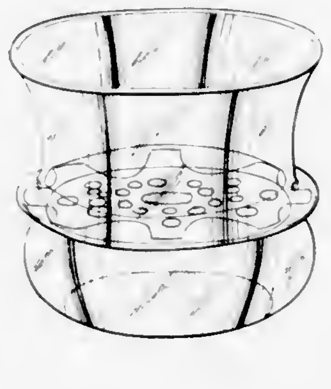
Lewis Greenwood, Tarzana, Calif., assignor to Pay Fone Systems, Inc., North Hollywood, Calif.
Filed Dec. 26, 1972, Ser. No. 317,933
Term of patent 14 years
Int. Cl. D14—*03, 01*
U.S. Cl. D26—14 A



230,408

COMBINED VASE AND FLOWER HOLDER

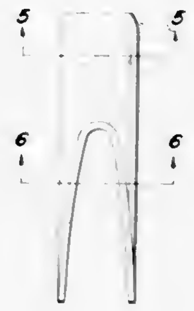
Signe H. Persson-Melin, Sanekullavagen 16,
217 74 Malmo, Sweden
Filed Apr. 14, 1972, Ser. No. 244,333
Claims priority, application Sweden Oct. 14, 1971
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—28 R



230,409

COMBINED GOLF TEE AND GREEN REPAIRER

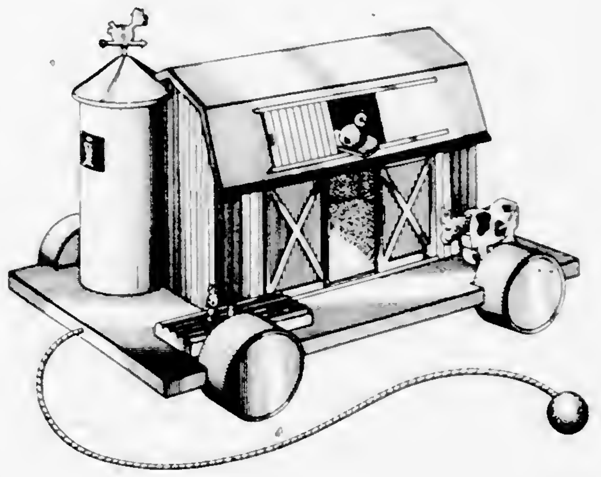
Stephen Schaffer, Country Club Drive,
Carmel Valley, Calif. 93924
Filed Mar. 2, 1973, Ser. No. 327,631
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GT



230,410

TOY BARN

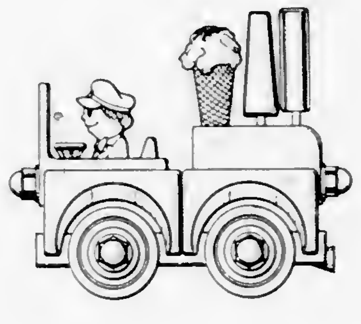
Gerald W. Schmidt, Woodland Hills, and Anson Sims, Redondo Beach, Calif., assignors to California R & D Center, Pacific Palisades, Calif.
Filed Feb. 14, 1972, Ser. No. 226,379
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 LL



230,411

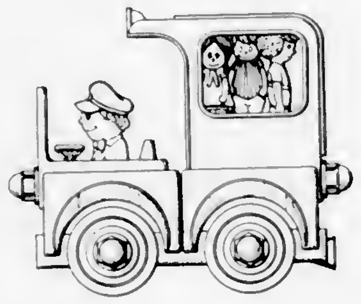
TOY ICE CREAM TRUCK

Robert W. Salmon, Huntington Beach, and Barry S. Herstein, Spring Valley, N.Y., assignors to Buddy L Corporation, New York, N.Y.
Filed Mar. 16, 1972, Ser. No. 235,455
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AN



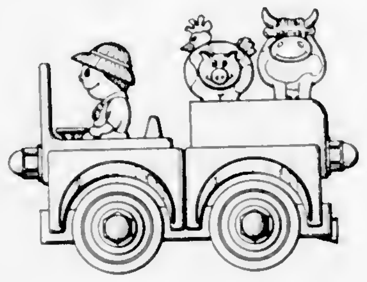
230,412
TOY SCHOOL BUS

Robert W. Salmon, Huntington Beach, and Barry S. Herstein, Spring Valley, N.Y., assignors to Buddy L Corporation, New York, N.Y.
Filed Mar. 6, 1972, Ser. No. 235,456
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AN



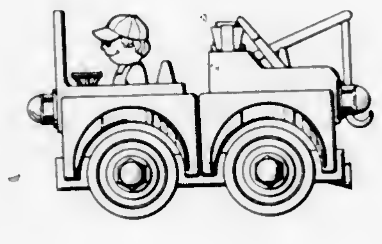
230,413
TOY FARM TRUCK

Robert W. Salmon, Huntington Beach, and Barry S. Herstein, Spring Valley, N.Y., assignors to Buddy L Corporation, New York, N.Y.
Filed Mar. 6, 1972, Ser. No. 235,457
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AN



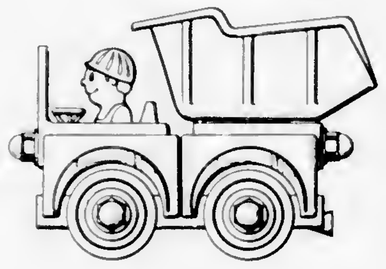
230,414
TOY LIFT TRUCK

Robert W. Salmon, Huntington Beach, and Barry S. Herstein, Spring Valley, N.Y., assignors to Buddy L Corporation, New York, N.Y.
Filed Mar. 16, 1972, Ser. No. 235,460
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AN



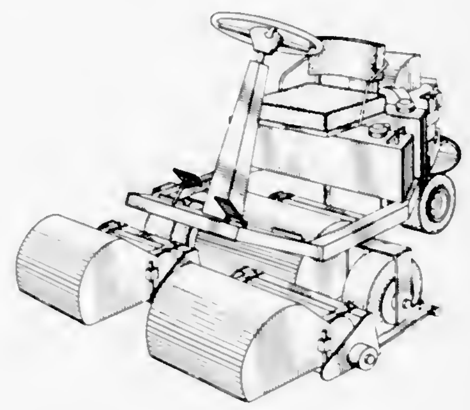
230,415
TOY DUMP TRUCK

Robert W. Salmon, Huntington Beach, and Barry S. Herstein, Spring Valley, N.Y., assignors to Buddy L Corporation, New York, N.Y.
Filed Mar. 16, 1972, Ser. No. 235,461
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AN



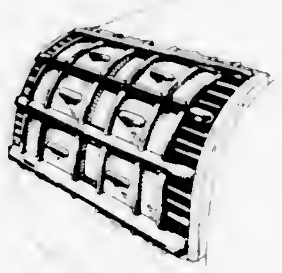
230,416
RIDING MOWER

Robert L. Baldock, 1691 Mesa Drive, Santa Ana, Calif. 92707
Filed Apr. 16, 1973, Ser. No. 351,496
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D40—1 D



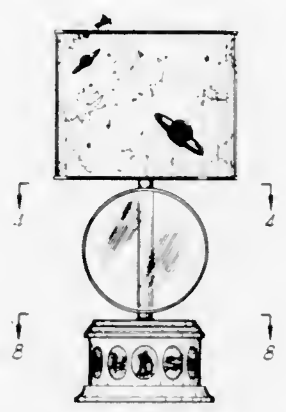
230,417
ENDLESS TRACK

Guy-Noel Chaumont, Tring-Junction, Quebec, Canada, assignor to Dayco Corporation
Filed May 12, 1972, Ser. No. 252,961
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D40—5



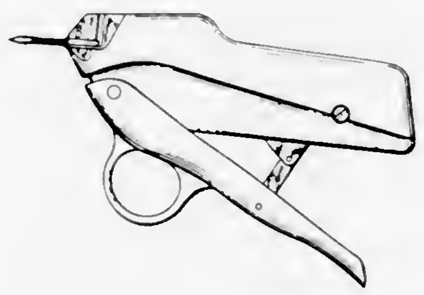
230,418
LAMP

Paul E. Nelson, 223 Bluebird Drive, Midwest City, Okla. 73110
Filed Feb. 15, 1973, Ser. No. 332,695
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 R



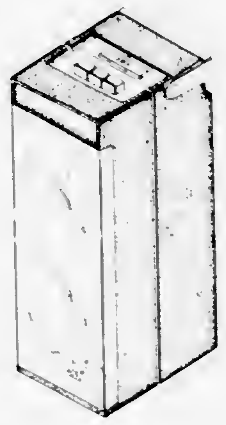
230,419
FASTENER ATTACHER

Gregory F. Fossella, Marshfield, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.
Filed Dec. 26, 1972, Ser. No. 318,246
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D3—19 A



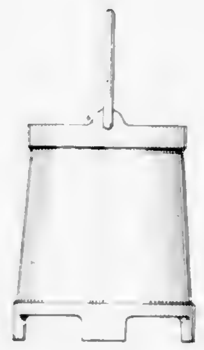
230,420
PORTABLE FLUORESCENT LANTERN

Robert E. Brindley, New York, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
Filed Aug. 31, 1972, Ser. No. 285,231
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 R



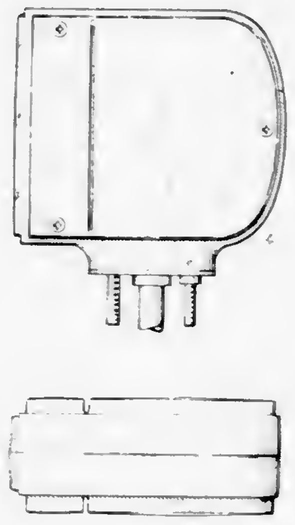
230,421
CHARCOAL FIRE STARTER

George W. Haynes, 101 Summit Blvd., Englewood, Colo. 80909
Filed Nov. 26, 1971, Ser. No. 202,724
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D48—27 C



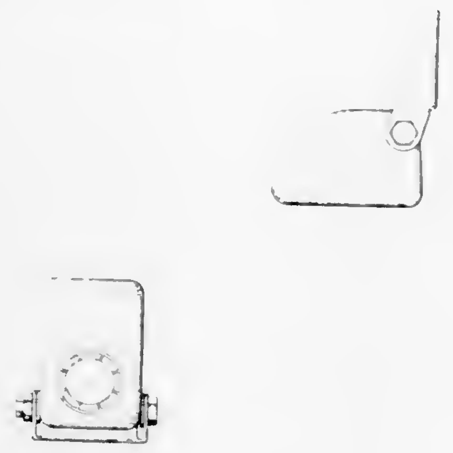
230,422
COMBINED PARK, TURN SIGNAL AND SIDE MARKER LIGHT

Edward J. Nitsch, Camillus, Fred F. Stube, Syracuse, and Ernest R. Steltzer, Lysander, N.Y., assignors to R. E. Dietz Company, Syracuse, N.Y.
Filed Mar. 15, 1972, Ser. No. 235,104
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32 R



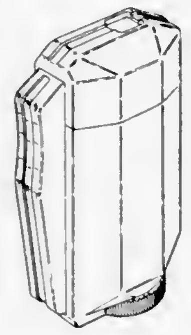
230,423
SONAR TRANSDUCER

Darrell J. Lowrance, Tulsa, Okla., assignor to Lowrance Electronics Inc., Tulsa, Okla.
Filed Feb. 20, 1973, Ser. No. 334,122
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D52—6 R



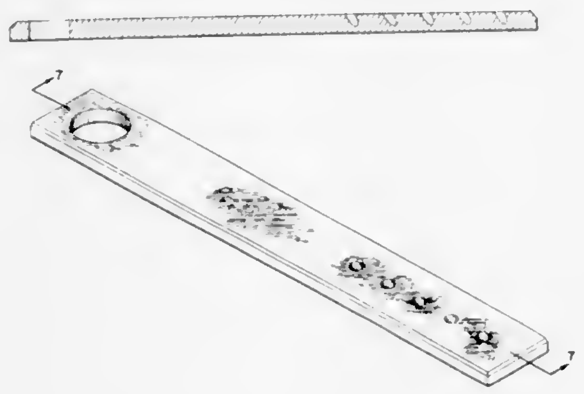
230,424
LIGHTER

Alfred Racek, Seitenberggasse 50, Wien 16, Austria
Filed Dec. 30, 1971, Ser. No. 214,529
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27 R



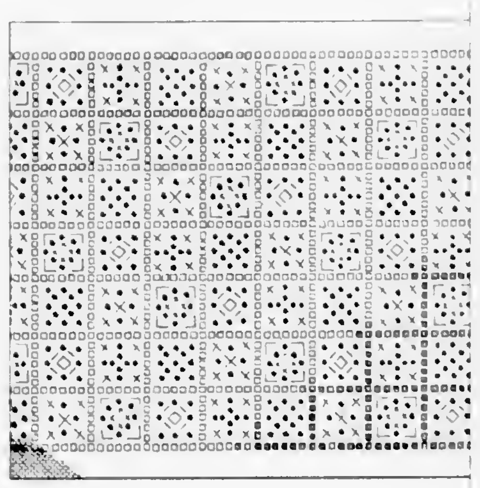
230,425
CELLO STEM RESTRAINER

Sheldon M. Rosen, 151—31 88th St., Howard Beach, N.Y. 11414
Filed Nov. 1, 1971, Ser. No. 194,782
Term of patent 14 years
Int. Cl. D17—*99*
U.S. Cl. D56—1 R



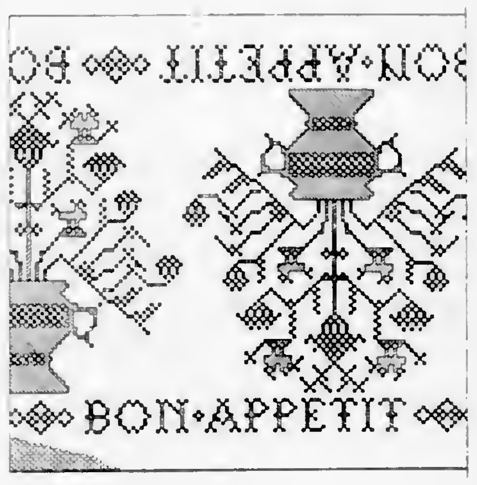
230,426
PAPER TOWELING

Karl J. Moe, Neenah, Wis., assignor to Fort Howard Paper Company
Filed Jan. 26, 1972, Ser. No. 221,135
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D59—2 B



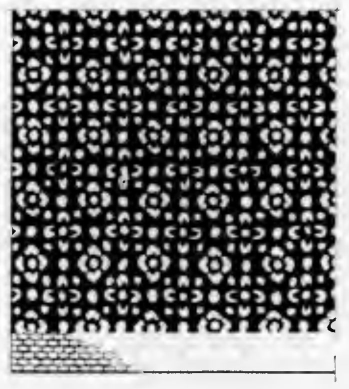
230,427
PAPER TOWELING

Barry Zald, New York, N.Y., assignor to Fort Howard Paper Company, Green Bay, Wis.
Filed Aug. 18, 1972, Ser. No. 281,840
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D59—2 B



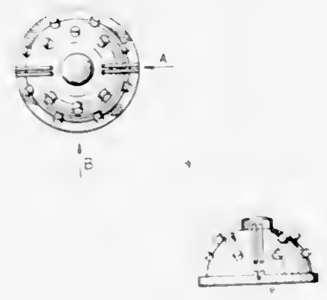
230,428
PAPER TOWELING

Martin Lipsitt, New York, N.Y., assignor to Fort Howard Paper Company, Green Bay, Wis.
Filed Oct. 12, 1972, Ser. No. 297,027
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D59—2 B



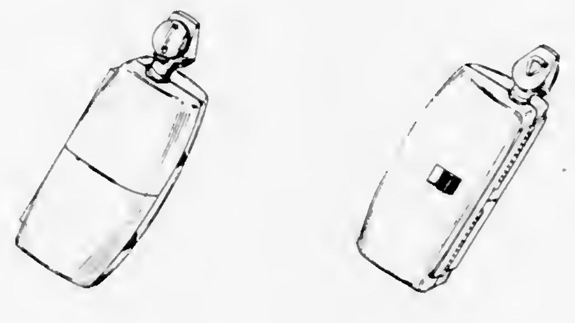
230,429
ACETABULAR CUP

David Douglas Davidson, Kingston Hill, England, assignor to Metallo Medical Limited, Swindon, England
Filed Mar. 21, 1973, Ser. No. 343,411
Claims priority, application Great Britain Oct. 17, 1972
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D83—1 E



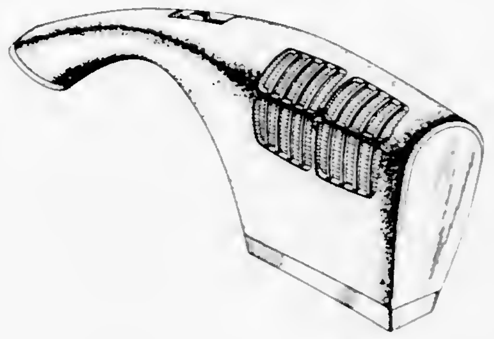
230,430
MEDICAL DIAGNOSTIC INSTRUMENT KIT

Arthur J. Pulos, Fayetteville, N.Y., assignor to Welch Allyn, Inc., Skaneateles Falls, N.Y.
Filed Sept. 10, 1971, Ser. No. 179,624
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 R



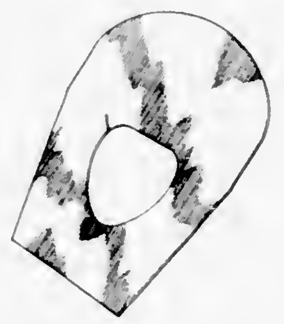
230,431
HAND-HELD HAIR DRYER

Walter C. Anderson, West Redding, Conn., assignor to General Electric Company
Filed Oct. 11, 1972, Ser. No. 296,616
Term of patent 7 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 F



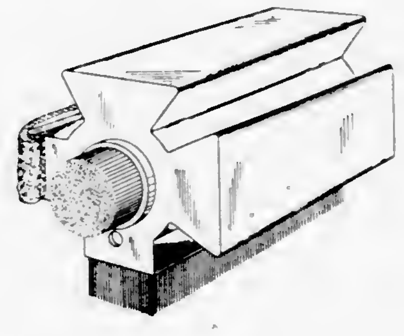
230,432
ARTIFICIAL NAIL FORM

Belva B. Bloomer, 89 Olympic Blvd., Las Vegas, Nev. 89102
Filed Dec. 7, 1972, Ser. No. 312,940
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 C



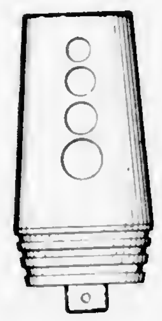
230,433
SHOE CLEANING-POLISHING DEVICE

Andrew W. Brainerd, Kent H. Brainerd, and Stuart W. Brainerd, all of 630 Walden Road, Winnetka, Ill. 60093
Filed Mar. 1, 1972, Ser. No. 231,071
Term of patent 7 years
Int. Cl. D3—*01;* D4—*02*
U.S. Cl. D86—11



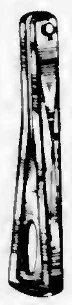
230,434
UMBRELLA HANDLE

Klaus Thür, Solingen, Germany, assignor to Telesco Brophey Limited, East Montreal, Quebec, Canada
Filed May 11, 1972, Ser. No. 252,521
Term of patent 7 years
Int. Cl. D3—*03*
U.S. Cl. D88—3 A



230,435
CONTROL LEVER FOR GARDEN TYPE UMBRELLAS

Heinz Weber, Hilden, and Peter Stamm, Witzhelden, Germany, assignors to Telesco Brophey Limited, East Montreal, Quebec, Canada
Filed Aug. 7, 1972, Ser. No. 278,433
Term of patent 14 years
Int. Cl. D3—*03*
U.S. Cl. D88—3 A



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TO WHOM
PATENTS WERE ISSUED ON THE 19TH DAY OF FEBRUARY, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Brymer, Andrew E., Jr., to Owens-Illinois, Inc. Spring mounted charge drop guiding means. 3,792,992, Cl. 65-303.000.
Bubley, Henry J.; and Oltra, Claude H., to American Screen Printing Equipment Company. Takeoff apparatus. 3,792,857, Cl. 271-85.000.
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Buchner, Gerhard Paul; and Thomaschewski, Hubertus Paulus, to Uniroyal A.G. Passive restraint system for vehicle occupants. 3,792,873, Cl. 280-150.0ab.
Bucker, Franz; and Keck, Dieter, to Keller, C., u. Co. Loading and unloading of bricks and other articles onto, and from, pallets. 3,792,788, Cl. 214-152.000.
Budd Company, The: *See—*
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Budd, Joseph Paul; and Robson, Wayne Keith, to Du Pont de Nemours, E. I., and Company. Product and process for cavity metalization of semiconductor packages. 3,793,064, Cl. 117-217.000.
Buff, Fred; Gross, Joseph Isadore; and Healy, Lawrence William, to Tenneco Chemicals, Inc. Process of preparing leather substitute from polyurethane foam sheet. 3,793,414, Cl. 264-48.000.
Bugh, Clayton G. Tie-down apparatus for a vehicle mounted camper. 3,792,900, Cl. 296-23.0mc.
Buller-Colthurst, Guy Edward: *See—*
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Burch, Darrell E.; Gryvnak, David A.; and Pembrook, John D., to Philco-Ford Corporation. Dual cell non-dispersive gas analyzer. 3,793,525, Cl. 250-343.000.
Burgeson, Oscar Burge, to Stanley Works, The. Hammer. 3,792,725, Cl. 145-29.00r.
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Burrows, Owen M., to Norton Company. Refractory cement. 3,793,040, Cl. 106-55.000.
Bushnell, Nolan K. Video image positioning control system for amusement device. 3,793,483, Cl. 178-69.5tv.
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Buzzolini, Mario G.; and Kathawala, Faizulla G., to Sandoz-Wander, Inc. 2-(1-Benzyl-4-piperidyl) acid hydrazides. 3,793,333, Cl. 260-293.690.
Cabot Corporation: *See—*
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Caddell, Bobby Gene; and Gordon, Harry E., to Kansas City Enterprise, Inc. Apparatus for the recovery of butter, oleomargerine, cheese or the like. 3,792,655, Cl. 100-116.000.
Cadieux, Charles T., to Western Electric Company, Incorporated. Processes and baths for electro-stripping plated metal deposits from articles. 3,793,172, Cl. 204-146.000.
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- Canay, Muzaffer, to Brown Boveri & Company Limited. Electronic circuit for exciting asynchronous-start slipringless synchronous motors. 3,793,572, Cl. 318-174.000.
- Canevari, Gerard P., to Esso Research and Engineering Company. Oil slick dispersant and method. 3,793,218, Cl. 252-312.000.
- Cann, Peter L., to Carrier Corporation. Sheet metal compressor enclosure. 3,792,881, Cl. 52-758.00d
- Cannon, Robert E.: *See—*
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- Cannon, Robert E.; and Pehoski, Walter L., said Pehoski assor. to said Cannon, Robert E. Constant tension ball screw feed design. 3,792,619, Cl. 74-89.150.
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- Canon Kabushiki Kaisha, mesne: *See—*
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- Carey, John Gerard; and Case, John Reginald, to Imperial Chemical Industries Limited. Manufacture of 1,1'-disubstituted-4,4'-bipyridylium salts. 3,793,319, Cl. 260-246.00b.
- Carlini, Anthony M. Lighting device for a helmet or the like. 3,793,517, Cl. 240-60.000.
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- Carnes, Roy W., to AMF Incorporated Automatic packaging method. 3,792,561, Cl. 53-28.000.
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- Cassey, Harold C. Clamp-type light for swimming pool. 3,793,516, Cl. 240-26.000.
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- Chang, Henry M., to First Dynamics, Inc. Combination liquid container and drinking straw 3,792,798, Cl. 220-90.200.
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- Chapman, Richard Matthews, to CMR & T, Inc. Lubricating grease composition. 3,793,197, Cl. 252-28.000.
- Chapman, Richard Matthews, to CMR & T, Inc. Lubricating and metal coating wax composition 3,793,198, Cl. 252-28.000.
- Chatterji, Aron K. Electrostatic imaging system and apparatus therefor. 3,792,964, Cl. 432-59.000.
- Cheeseman, William C., to FMC Corporation. Egg accumulation conveyor. 3,792,768, Cl. 198-30.000.
- Chemische Werke Huels A.G.: *See—*
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- Clarke, Michael Raymond; and Filipowicz, Leon, to Balm Paints, Limited. Process for the preparation of a polymer dispersion in an inert organic liquid. 3,793,245, Cl. 260-34.200.
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- Cleaveland, Charles M., to Westinghouse Electric Corporation. Metal-clad switchgear having an improved cell construction with insulating battle supporting terminal conductors. 3,793,562, Cl. 317-103.000.
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- Coho, Owen C.; and Waite, Malcolm W., to General Electric Company. Railway truck motor suspension. 3,792,666, Cl. 105-136.000.
- Cole, Edmund W.; Bialy, Jerzy J.; and Sweeney, William M., to Texaco Inc. Fuel oil blending to improve pour reduction. 3,792,984, Cl. 44-62.000.
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- Cook, Russell E., to Ranco Incorporated. Cold weather starting control means for refrigerating systems. 3,792,592, Cl. 62-158.000.
- Cooley, William C. Hydraulic powered hammer. 3,792,740, Cl. 173-119.000.
- Coop, Thomas, to Princeton Applied Research Corporation. Rotating capacitor square wave filter and applications thereof. 3,793,599, Cl. 333-70.00a.
- Cooper, Barry John, to Johnson, Matthey & Co., Limited. Carbon molecular sieve catalysts. 3,793,224, Cl. 252-423.000.
- Cooper, Theodore W. Method and system for open cycle operation of internal combustion engines. 3,792,690, Cl. 123-3.000.
- Corbellini, Glauco. Arc foil blade for machine wires of paper making machines. 3,793,140, Cl. 162-352.000.
- Corbett, Luke W., to Esso Research and Engineering Company. Reconstituted asphalt paving compositions. 3,793,189, Cl. 208-23.000.
- Corey, Garland G.; Csorba, Francis S.; Torok, Karl A.; and Weinstein, Bernard, to American Home Products Corporation. Hard surface polishes. 3,793,275, Cl. 260-28.50r.
- Corey, Garland George, to Colgate-Palmolive Co. Keto acid containing compositions. 3,793,210, Cl. 252-89.000.
- Corish, Patrick Joseph; Kirkham, Malcolm Cedric; and Powell, Brian David William, to Dunlop Holdings, Limited. Vulcanizable compositions. 3,793,252, Cl. 260-77.5cr.
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- Corretti, Leo A. R. Pneumatic bumper guard attachment. 3,792,890, Cl. 293-65.000.
- Corte, Herbert; Heller, Harold; and Netz, Otto, to Bayer Aktiengesellschaft. Anion exchange resins with both amine oxide and quaternary ammonium groups. 3,793,273, Cl. 260-2.10e.
- Couquelet, Dieudonne, to Ateliers de Construction Mecanique Dieudonne Couquelet, societe anonyme. Machine for the production of hollow glass bodies. 3,792,991, Cl. 65-272.000.
- Couture, John W., to Krautkramer-Branson, Incorporated, mesne. Pulse-echo ultrasonic test apparatus with cathode ray tube digital display. 3,792,613, Cl. 73-67.900.
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- Cox, Lyndon S.; and Joyce, James W., Jr., to United States of America, Army. Fluidic artillery round counter. 3,792,638, Cl. 89-14.00r.
- Crabbe, Pierr; and Fried, John H., to Syntex Corporation. 16,17-Seco-B-nor steroids. 3,793,368, Cl. 260-488.00b.
- Crabbe, Pierre, to Syntex Corporation. Process for preparing 17alpha,21-dihydroxy-20-keto-pregnanes, derivatives and intermediates thereof. 3,793,350, Cl. 260-397.450.
- Craft, Walter Boone. Ballast attachment for boats. 3,792,676, Cl. 114-123.000.
- Cramer, Mert, to Berkey-Colotron, Inc. Dimmer circuit and gapped core inductor useful therewith. 3,793,557, Cl. 315-199.000.

- Crandall, Olon F.; and Thompson, Ralph. Beet harvesting machine 3,792,733, Cl. 171-58.000.
- Crawford, Ralph W., to Quaker Oats Company, The. Tow cow. 3,792,550, Cl. 46-98.000.
- Credico, Delphine: *See—*
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- Credico, John, Jr.; and Credico, Delphine. Simulated mountain climbing board game apparatus. 3,792,865, Cl. 273-131.00b.
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- Cross, Alan N., to Lummus Company, The. Reformer heater. 3,792,689, Cl. 122-510.000.
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- Cross, Norton M., Jr.; and Sward, Melvin L., said Sward assor. to said Cross, Norton M., Jr.; d/b/a Source Properties. Sectional game device. 3,792,858, Cl. 273-1.00r.
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Elizer, Lee H., to Hubinger Company, The. Amphoteric starch and preparation and uses therefor. 3,793,310, Cl. 260-233.30r.
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Engle, Ralph L., Jr. Electronic perpetual calendar. 3,792,541, Cl. 40-107.000.
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Ghislain, Pierre Marie; D'Ostrowick, Joseph de Radzitzky; and de Roocker, Alvin Joseph, to Labofina, Soc. An. Preparation of dihalo compounds. 3,793,380, Cl. 260-648.00r.
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Gidge, Lester, to Polymer Corporation Limited. Device for the injection of fluid foaming agents into plasticized polymeric material. 3,792,839, Cl. 259-193.000.
Gilaad, Yigal. Trickle irrigation unit. 3,792,588, Cl 61-12.000.
Gilles, Martin; and Thiel, Anton, to Clouth Gummiwerke AG. Apparatus for manufacturing conveyor belts with steel cable inserts. 3,793,118, Cl. 156-436.000.
Gilliam, Scott W., to Container Corporation of America. Method of packaging grouped articles 3,792,562, Cl 53-30.000.
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Gion, Leon, to Ceraver. Hearth for a furnace for the thermal treatment of products supported by a gas cushion 3,792,960, Cl. 432-58.000.
Girard, Peter F., to Teledyne Ryan Aeronautical, a division of Teledyne Industries, Inc. VTOL aircraft with cruciform rotor wing. 3,792,827, Cl 244-7.00a.
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Glascock, Homer H., Jr.; and Webster, Harold F., to General Electric Company High temperature photoelectric gas multiplication ultraviolet ray sensor 3,793,552, Cl 313-101.000.
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Godfrey, Norman Bell; and Bentley, Floyd Edward, to Jefferson Chemical Company, Inc. Accelerator combination for epoxy curing 3,793,271, Cl. 260-18.0pn.
Goebel, Charles V., Jr., to Polymer Corporation, The. Reclamation of polyfluorohalocarbons. 3,793,235, Cl. 260-2.300.
Goikhburg, Vladimir Kelmanovich; Finikov, Georgy Ivanovich; Svirsky, Viktor Alexandrovich; Oblasti, Moskovskoi; Shklovsky, Vladimir Yakovlevich; Kuperman, Mikhail Lvovich; Oblasti, Mytischi Moskovskoi, Smirnov, Oleg Arkadievich; Fedorov, Adolf Petrovich; Pskarev, Gennady Mikhailovich; Averynov, Lev Illarionovich; Gavrilov, Nikolai Ivanovich; Litvak, Anatoly Efimovich; and Oblasti, Vladimirskoi. Single-bucket excavator. 3,792,786, Cl. 214-138.00r.
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Yamamura, Yuichi; Fujii, Setsuro; Okano, Atsuji; Hirata,

Grunberger, Sigrot, to U.S. Philips Corporation, mesne. Process of making a cutter foil for dry shaving apparatus. 3,792,523, Cl. 29-557.000.

Grundy, Reed H., to Westinghouse Air Brake Company. Vital level detector and "AND" gate circuit arrangement employing a twin-tee oscillator. 3,793,596, Cl. 331-110.000.

Grunwald, John J.; D'Ottavio, Eugene D.; Rhodenizer, Harold L.; and Lombardo, Michael S., to MacDermid Incorporated. Process for forming plastic parts having surfaces receptive to adherent coatings. 3,793,106, Cl. 156-155.000.

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Gunnarsson, Christer, to Aktiebolaget Asea-Atom. Nuclear reactor having means for clamping a steam treating unit. 3,793,142, Cl. 176-55.000.

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Hacias, Kenneth J., to Oxy Metal Finishing Corporation. Electroless copper plating solution and process. 3,793,037, Cl. 106-1.000.

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Hamano, Nobuo, to Tomy Kogyo Co., Ltd. Amusement device. 3,792,548, Cl. 46-1.00c.

Hamb, Fredrick L.; and Wilson, John C., to Eastman Kodak Company. Polyesters of 2,2'-spirobi(chroman)diols. 3,793,249, Cl. 260-47.00c.

Hamel, Bernard, to Societe Franciase d'Equipements pour la Navigation Aerienne S.F.E.N.A. Aircraft adaptive control system. 3,793,574, Cl. 318-561.000.

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Hamon, Maurice. Sheet forming device. 3,792,952, Cl. 425-343.000.

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Hawkins, Arthur Ernest; and Evans, Jerlmy Reginald, to Lever Brothers Company. Process for preparing a restructured meat product. 3,793,466, Cl. 426-274.000.

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Healy, Lawrence William: *See—*
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Heap, Alec John, to Lucas Electrical Company, Limited, The. Switch with diaphragm formed of flexible compressible material containing discrete electrically conductive particles which make and break the circuit. 3,793,495, Cl. 200-83.00b.

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Heissenberger, Otto, to Maschinenfabrik Andritz Actiengesellschaft. Pressing device for the removal of water from cellulose or the like. 3,792,656, Cl. 100-118.000.

Helgesson, Jonas Anders Gote, to Ingenjorsfirma B-Projekt Aktiebolag. Dry fiber distribution. 3,792,943, Cl. 425-83.000.

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Hendrickson, Walter R. Lure retriever. 3,792,545, Cl. 43-17.200.

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Henrick, Olive A., to Zoecon Corporation. 4-Substituted-2-unsaturated esters. 3,793,353, Cl. 260-405.000.

Henriksen, Ernst J. J. Ink feed for ball point pens. 3,792,932, Cl. 401-148.000

Henriksson, Lars-Goran, to Aktiebolaget CTC. Discharging device on a rotatable drum. 3,792,600, Cl. 68-210.000.

Henriksson, Sten Tycho, and Lindstrom, Stig Osten, to Boliden Aktiebolag. Copper-chromate-arsenate compound and a process for making the compound. 3,793,441, Cl. 423-595.000.

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Herzhoff, Peter; Gref, Hans; Schweicher, Wolfgang; Frenken, Hans; Voss, Karl; Platz, Stephan; Koepke, Gunther; and Brauniger, Georg, to Agfa-Gevaert Aktiengesellschaft. Process for coating a web surface with a plurality of emulsion coating layers. 3,793,05, Cl. 117-34.000.

Hess, Heinrich J., to General Electric Company. Seales primary sodium-halogen battery with bromine-iodine mixture. 3,793,080, Cl 136-83.000.

Hester, Jackson B., Jr., to Upjohn Company, The. 8 Benzoyl 1,2,3,4-tetrahydroquinoline. 3,793,328, Cl. 260-286.00r.

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Heyman, Albert A., to Universal Machine Company, Inc. Apparatus for baking and rolling confectionary products. 3,792,954, Cl. 425-391.000

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Higuchi, Masaru; and Suzuki, Ryoshu, to Daicel Ltd. Process for preparing 5-alkylidene-2-norbornene. 3,793,382, Cl. 260-666.0py.

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- Kanengieter, Glenn G., to Owatonna Manufacturing Co., Inc. Center axle suspension system for trailers. 3,792,870, Cl. 280-81.00r
- Kanengieter, Glenn G.; and Barry, Gerald E., to Owatonna Manufacturing Co., Inc. Automatic hood system. 3,793,156, Cl. 302-60.000.
- Kanner, Bernard: *See—*
  - Prokai, Bela; and Kanner, Bernard, 3,793,300.
  - Prokai, Bela; and Kanner, Bernard, 3,793,360.
- Kano, Saburo: *See—*
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- Kansas City Enterprise, Inc.: *See—*
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  - Goukon, Atsushi; Kawakatsu, Yasuyuki; Yano, Wataru; and Minakata, Itsuo, 3,793,270.
  - Hiyama, Osamu; Torimae, Yasuhiro; Ito, Kazuo; and Kawahara, Yoshio, 3,793,274.
- Kappus, Peter Gottfried, to General Electric Company. Exhaust vectoring means. 3,792,587, Cl. 60-229.000.

Karll, Robert E.: *See—*
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Karmas, George, to Ortho Pharmaceutical Corporation. Benzoates of the 2-(lower alkyl)-3-(lower alkyl)-4-aryl-3-or-4-cyclohexencarbinols. 3,793,363, Cl. 260-476.00r.
Karn, Jack Lee, to Lubrizol Corporation, The. Stabilized basic magnesium sulfonate compositions. 3,793,201, Cl. 252-33.400.
Karras, Ernest C. Dial tone delay monitor and recorder. 3,793,490, Cl. 179-175.20r.
Kashiwa, Ichiro; and Nakano, Hiroshi, to Lion Fat & Oil Co., Ltd. Anionic liquid detergent composition. 3,793,219, Cl. 252-526.000.
Kasmarik, Joseph R.; and Hoffmann, Ambros S., to Avco Corporation. Bearing assembly systems. 3,792,586, Cl. 60-226.00r.
Kasper, Cass S.; and Rott, Vernon, to Inter-Lakes Engineering Company. Pickup unit for cathode plates or the like. 3,792,891, Cl. 294-67.00r.
Kasper, Joseph G.: *See—*
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Katayama, Shigeru; Mizui, Kinya; and Tasaka, Katsuhiko, to Mitsui Petrochemical Industries, Ltd. Process for preparing petroleum resin. 3,793,261, Cl. 260-82.000.
Kathawala, Faizulla G.: *See—*
Buzzolini, Mario G.; and Kathawala, Faizulla G., 3,793,333.
Katsitadze, Shota Semenovich; Chkonia, Dzhansug Ilich; and Martiashvili, Alexandr Petrovich. Impact antispark alloy for machine parts. 3,793,009, Cl. 75-159.000.
Kaufman, Harold A.: *See—*
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Kaufman, Ted J.; and Mortimer, John W., to Caterpillar Tractor Company. Recoil mechanism with gas recoil spring and a hydraulic track adjuster. 3,792,910, Cl. 305-10.000.
Kawabe, Norio. *See—*
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Kawada, Shin-Ichi: *See—*
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Kawai, Kiyoo: *See—*
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Kawakami, Koichi, to Yoshida Kogyo Kabushiki Kaisha. Combination slider assembling and end stop applying apparatus. 3,792,521, Cl. 29-207.50r.
Kawakatsu, Yasuyuki: *See—*
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Kawawa, Takaho; Shi, Kawasaki; Fukuro, Koichi; Matsumura, Shunsuke, and Machi, Kuzuu, to Nippon Kokan Kabushiki Yoshizawa Lime Industry Company Limited. Method of manufacturing granular basic slag forming agent for use in steel manufacturing. 3,793,006, Cl 75-94.000.
K.C. Pen Co., Inc.: *See—*
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Keck, Dieter: *See—*
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Kelly, Daniel; Curlook, Walter; and Bell, Malcolm Charles Evert, to International Nickel Company, Inc., The. Reduction of nickel oxide in a rotary hearth furnace. 3,793,005, Cl. 75-82.000.
Kelly, Henry J. Stick throwing apparatus and target. 3,792,864, Cl. 273-95.00r.
Kelly, Herbert. Safety attachment for ladder. 3,792,756, Cl. 182-93.000.
Kelly, Robert C., to Upjohn Company, The. Intermediate in the total synthesis of elenolic acid. 3,793,346, Cl. 260-340.500.
Kemp; Geoffrey David: *See—*
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Kennedy, Paul G.; and Sziklai, George C., to Westinghouse Electric Corporation. Frequency selective network. 3,793,593, Cl. 330-103.000.
Kery, Edmund. Air chairs and convertible sofas. 3,792,501, Cl. 5-348.00r.
Kessler, Gerald. Self-reclosing cap for containers. 3,792,803, Cl. 222-511.000.
Kidde, Walter, & Company, Inc: *See—*
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Kilby, Jack S. System for screening telephone calls. 3,793,487, Cl. 179-6.00r.
Kiley, Leo R., to Teledyne Industries, Inc. Fuel injection device. 3,792,692, Cl. 123-32.00g.
Kimberlin, Charles N., Jr.: *See—*
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Kimura, Masakazu; Doi, Kikuo; and Nanamatsu, Satoshi, to Nippon Electric Company, Limited. Piezoelectric single crystal. 3,793,206, Cl. 252-62.900.
Kimura, Sachio; and Aoki, Yoshiaki, to Kabushiki Kaisha Koparu. Gear and clutch operating mechanism for multi-channel television tuner. 3,793,496, Cl. 200-18.000.
Kimura, Shiro; Nakazawa, Yoshiyuki; Sato, Akira; and Nakamura, Yashuharu, to Fuji Photo Film Co., Ltd Photographic silver halide emulsions sensitized with benzimidazole cyanine dyes. 3,793,020, Cl. 96-137.000.
King, Claude F., to Receptors. Data communication system with addressable terminals. 3,793,488, Cl. 179-15.0ba.
King, Edward I., Jr., to Westinghouse Electric Corporation. Rotor for dynamoelectric machines. 3,793,546, Cl 310-183.000.
Kinney, Alfred W., to Phillips Petroleum Company. Closure applying apparatus. 3,792,566, Cl. 53-298.000.
Kinoshita, Yoshio, to Glory Kogyo Kabushiki Kaisha. Device for automatic closure of coin slot of rental locker. 3,792,764, Cl. 194-1.00r.
Kirby, James D.: *See—*
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Kircik, Willis James: *See—*
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Kishino, Shigeo; Kudamatsu, Akio; and Shiokawa, Kozo, to Bayer Aktiengesellschaft. O-Alkyl-S-(β-alkoxyethyl)-S-(alkoxy or phenoxyalkyl) phosphorodithiolates. 3,793,409, Cl. 260-951.000.
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Kitayama, Minoru; Nakamura, Motoharu; Matsui, Kiyoshi; and Okada, Hiroshi, to Nippon Steel Corporation. Electrical steel sheets and strips having excellent punching and welding characteristics for the use of a laminated iron core. 3,793,073, Cl. 117-230.00.
Kitchens, Gary C.: *See—*
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Kito, Kazutoshi: *See—*
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Klees, Garry W., to Boeing Company, The. Increased or variable bypass ratio engines. 3,792,584, Cl. 60-204.000.
Kleiber, Armin. Heating shuttering panels. 3,792,966, Cl. 432-223.000.
Klimboff, Morris; and Chisholm, James Edwards. Basin element. 3,792,498, Cl. 4-166.000.
Kline, James D.; Yeh, William C. T.; and Preston, Ulysses A., to Foote Mineral Company. Manganese compositions. 3,793,007, Cl. 75-134.00m.
Klockner-Werke AG: *See—*
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Kloz, Eduard; and Kloz, Heinz. Neutralising device for urinary, ureteral and kidney pelvis caluli. 3,792,701, Cl. 128-7.000.
Kloz, Heinz: *See—*
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Kludas, Martin. Treatment of scleroses. 3,793,462, Cl. 424-319.000.
Knapp, Alfons. Thermostatic mixing cock. 3,792,812, Cl. 236-12.00r.
Knapsack Aktiengesellschaft: *See—*
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Knechtel, Wilhelm Josef; and Schaffer, Detlee, to Canon Kabushiki Kaisha, mesne. Photocopying device. 3,792,926, Cl. 355-29.000.

Knox, William A.; and Parker, Marion L., to Western Geophysical Company of America. Portable seismic tool. 3,792,752, Cl. 181-.5vc.
Knutson, Dale A., to Applied Power Industries, Inc. Pressure-compensated hand pump. 3,792,747, Cl. 180-89.00a.
Kobayashi, Kenji: *See—*
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Kohler, Hans-Dieter; Benda, Herbert; and Scherb, Helmut, to Erdolchemie Gesellschaft mit beschrankter Haftung. Process for purifying cyclopentene. 3,793,381, Cl. 260-666.00a.
Kohler, Robert Felix, to Hoerbiger Ventihwerke Aktiengesellschaft. Plate valve assembly. 3,792,718, Cl. 137-514.000.
Kohlhepp, Frederick F.; and Jass, Herman E., to Carter-Wallace, Inc. Effervescent composition. 3,793,211, Cl. 252-99.000.
Kolakowski, Richard A.; and McLaughlin, Alexander, to Upjohn Company, The. Production of acidic impurities in polymethylene polyphenylisocyanates. 3,793,362, Cl. 260-453.0sp.
Kolb, James M.; Franks, Charles R.; and Schenker, Barry A., to Diamond Shamrock Corporation. High current density brine electrolysis. 3,793,164, Cl. 204-99.000.
Kolby, Mark J.: *See—*
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Kosmider, Hans, and Danckeri, Dieter, to Klockner-Werke AG. Apparatus for desulphurizing pig iron. 3,792,849, Cl. 266-34.00t.
Koss, Muriel L., to Rohr Industries, Inc. Potting compound, high strength for 550°F. exposure. 3,793,285, Cl. 260-37.0ep.
Kountanis, Bill; and Piper, Paul V., to BPM Associates, Inc. Flow meter. 3,792,610, Cl. 73-229.000.
Koyanagi, Shunichi; Ogawa, Kinya; and Onda, Yoshiro, to Shinetsu Chemical Company. Synthetic resin compositions of vinyl or acrylic resins with hydroxybutylhydroxyethyl cellulose. 3,793,272, Cl. 260-17.00r.
Kozak, Zdenek Vaclav; and Stupecky, Josef Jaromir. Unidirectional flowmeter indicating changes of flow direction. 3,792,611, Cl. 73-231.00r.
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Koziol, Leo B. Data set system employing active filters and multivibrator timing. 3,793,486, Cl. 179-2.0dp.
Krag, Niels; Hernandez, Ernest S.; and Horvath, Kalman, to Electronic Memories and Magnetics Corporation. Apparatus and method for stringing magnetic cores. 3,792,527, Cl. 29-604.000.
Kramer, Daniel E., to Kramer Trenton Company. Suction line accumulator. 3,792,594, Cl. 62-503.000.
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Krull, Frank B. Method and apparatus for dry mixing. 3,792,837, Cl. 259-148.000.
Krylov, Vitaly Nikolorvich: *See—*
Krjukov, Nikolai Mikhailovich; Shparber, Lazar Yakovlevich; Egorov, Anatoly Fedorovich; Denisov, Jury Petrovich; Bakshinov, Alexi Stepanovich; Shatlin, Alexei Leontievich; Kiyashko, Vladimir Safonovich; Krylov, Vitaly Nikolorvich; Marsuversky, Boris Alexanrovich; Saifutdinov, Rafik Khisamovich; and Vier, Vladimir Ivanovich, 3,792,850.
Krysiak, Joseph E. Portable, crash-emergency ground effects skirt. 3,792,749, Cl. 180-127.000.
Kuck, David L. Excavation or earth removal by landsliding same on a fluid lubricant. 3,792,906, Cl. 299-13.000.
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Kuratomi, Tatsuo. Roller chains and the method of manufacturing the same. 3,792,623, Cl. 74-250.00r.
Kuromegawa, Toru, to Maruzen Sewing Machine Co., Ltd. Presser foot for sewing machine. 3,792,675, Cl. 112-235.000.
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Lammel, David G.; and Neidigh, Ronnie C., to Chevron Research Company. Safety interlock for a particulate solids sampler. 3,792,612, Cl. 73-421.00b.
Land, Edwin H.; Bloom, Stanley M.; and Rogers, Howard G., to Polaroid Corporation. Diffusion transfer films with anti-reflection layers and processes. 3,793,022, Cl. 96-3.000.
Land, Edwin H., to Polaroid Corporation. Diffusion transfer film units containing polyethylene glycol, their manufacture and use. 3,793,023, Cl. 96-3.000.
Landgraber, Herbert: *See—*
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- Lando, David Jacob, to Western Electric Company, Incorporated. Method of depositing a metal on a surface of a substrate. 3,793,072, Cl. 117-212.000.
- Lang, Henry A.: *See—*
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  - Sychbertus, Josephus; and Langerwerf, Adrianus, 3,793,298.
- Lanzilotta, Raymond P., to Syntex Corporation. Microbiological reduction of 1,3-dioxo-2-alkylcycloalkanes. 3,793,148, Cl. 195-51.00r.
- Larson, Arnold W. G.: *See—*
  - Arp, Ewald A., 3,792,765.
- Larson, Kay R.; Drew, John; and Ott, Howard. Silver recovery unit. 3,792,845, Cl. 266-22.000.
- Lassig, Wolfgang: *See—*
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  - Rixon, John Albert; and Last, Anthony Graham Marshall, 3,793,239.
- Lauria, Francesco; Vecchietti, Vittorio; Tommasini, Raffaele; and Ceserani, Roberto, to Carlo Erba S.p.A. Imidazoline derivatives of benzonorbornane and tetrahydronaphthaleme compounds. 3,793,338, Cl. 260-309.600.
- Lawrence, Ralph W., to Aerojet-General Corporation. Method of increasing propellant burning rate by the use of high conductive wires. 3,793,097, Cl. 149-5.000.
- Lawron Industries Limited: *See—*
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- Layton, Luke. Carrier for tobacco plants. 3,792,806, Cl. 224-49.000.
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- Lea, Hans, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Handling working pieces in liquids in dental technology. 3,793,076, Cl. 134-25.00r.
- Leak, Robert J.: *See—*
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- Ledbetter, Harvey D.: *See—*
  - Beck, Henry N.; Ledbetter, Harvey D.; and Schmitt, John A., 3,793,265.
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- Lee Pharmaceuticals, mesne: *See—*
  - Rossi, Carl J., 3,792,531.
- Leeds & Northrup Company: *See—*
  - Weiss, Edward L.; and Bell, Barry A., 3,793,638.
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- Lundh, Stig Valdemar, to Aktiebolaget Swelex-Teknik. Piezoelectric gas lighter. 3,793,561, Cl. 317-81.000.
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- Luongo, Michael C.; Martin, James A., Jr.; and Tapper, Donald N., to Westinghouse Electric Corporation. Electric power plant system and method for operating a steam turbine especially of the nuclear type preferably with electronic reheat control and an eletronic reheater. 3,792,583, Cl. 60-686.000.
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- Mager, Charles J. Electric motor operated vehicle. 3,792,742, Cl. 180-65.00f.
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- Magladry, Robert E., to Teledyne, Inc. Fuel element for a nuclear reactor of the passive metal hydride control type. 3,793,144, Cl. 176-69.000.
- Maguire, Addison Charles, to State for Defence, The Secretary of. Aircraft. 3,792,828, Cl. 244-42.0cc.
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- Maijers, Andries Cornelis; and Beekenkamp, Pieter, to U.S. Philips Corporation. Roll capacitor having a hollow pin. 3,793,569, Cl. 317-230.000.
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- Maloney, William T., to United States of America, Army. Method of lifting a heavy component for sensitive engagement with another. 3,792,787, Cl. 214-152.000.
- Mancy, Denise; Ninet, Leon, and Preud'Homme, Jean, to Rhone-Poulenc S.A. Antibiotic 18.631 RP. 3,793,147, Cl. 195-80.00r.
- Manko, Howard, to Alpha Metals, Inc. Methods for electroplating solder. 3,793,161, Cl. 204-43.00s.
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- Marchetto, Manfredo, to Siemens Aktiengesellschaft. Electrode for electrochemical cells with graduated catalyst concentration. 3,793,084, Cl. 136-120.0fc.
- Mare, Peter D.; and Ross, Albert L. Band dispensing apparatus. 3,792,807, Cl. 225-100.000.
- Maria, Paul; and Conard, Albert. Batteryless pocket spark plug tester. 3,793,582, Cl. 324-15.000.
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- Markowski, Stanley J., to United Aircraft Corporation. Combustion chamber for dissimilar fluids in siwrling flow relationship. 3,792,582, Cl. 60-39.720.
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- Martin, George Robert, to Dow Chemical Company, The. Dehydrogenation of alkanes and catalyst therefor. 3,793,392, Cl. 260-683.300.
- Martin, James A., Jr.: *See—*
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- Martinez, Eugene, to Kamar Products, Inc. Mirror and stand assembly. 3,792,917, Cl. 350-288.000.
- Martinez, James A. Automatic dough rolling apparatus. 3,792,948, Cl. 425-182.000.
- Marum, Helmut, to Addressograph-Multigraph Corporation. Justifying typewriter with conjointly oppositely movable type head and platen. 3,792,767, Cl. 197-84.00a.
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- Marx, Hans-Dieter; Scherb, Helmut, and Schleppinghoff, Bernhard, to Erdolchemie Gesellschaft mit beschrankter Haftung. Process for removing carbonyl compounds from hydrocarbons. 3,793,187, Cl. 208-289.000.
- Marzocchi, Alfred, to Owens-Corning Fiberglas Corporation. Fiber reinforced elastomers. 3,793,130, Cl. 161-93.000.
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- Mashimo, Yukio; Yazaki, Mutsunobu; and Matsuda, Mutsuhide, to Canon Kabushiki Kaisha. Electronic shutter device having an exposure meter circuit. 3,792,647, Cl. 354-49.000.
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- Mason, Jerry M.: *See—*
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- Matsuda, Yasuhisa; Amemiya, Kinya; Monma, Masao; Endo, Koichi; and Nitanda, Hiroshi, to Konishiroku Photo Industry Co., Ltd. Electrophotographic copying system. 3,792,924, Cl. 355-3.000.
- Matsui, Fumio: *See—*
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- Matsui, Kiyoshi: *See—*
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- Matsui, Shunji; Hayakawa, Yoshikazu; and Hirashima, Kenzo, to Nissan Motor Company, Limited. Automotive inertia switch with dashpot type actuator. 3,793,498, Cl. 200-61.45r.
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Mayr, Helmut; Huber, Theodor; and Pelje, Richard, to Agfa-Gevaert AG. Automatic film transport stopping arrangement in a motion picture camera. 3,792,920, Cl. 352-91.000.
McAdams, Newton Day. Bouquet form for use in the preparation of floral arrangements. 3,793,126, Cl. 161-28.000.
McCoy, Frederic C. Solubilizing process. 3,793,351, Cl. 260-404.000.
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Megee, James Francis; and Nickerson, Richard Gorham. Water-retaining latexes of styrene-butadiene-itaconic acid terpolymers. 3,793,244, Cl. 260-29.70h.
Meijer, Robert S., to Alnor Instrument Company. Pyrometer with digitalized linearizing correction. 3,793,630, Cl. 340-347.0nt.
Meisler, Robert Walter, to Johns-Manville Corporation. Method of forming the bell end of a bell and spigot joint. 3,793,427, Cl. 264-249.000.
Melton, Donald F., to Programmed & Remote Systems Corporation. Grapple assembly. 3,792,782, Cl. 214-1.0bd.
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Meyer-Simon, Eugen; Heckel, Emil; Duesing, Gerhard; and Renngardt, Franziska, to Deutsche-Gold- und-Silber-Scheideanstalt bormals Roessler. Process of making amorphous highly dispersed germanium dioxide and product obtained thereby. 3,793,442, Cl. 423-618.00.
Meyers, George E., to Extrudyne, Inc. Apparatus for producing extruded hollow board. 3,792,951, Cl. 425-326.000.
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Miller, Earl E., to Victor Comptometer Corporation. Reel securing device. 3,792,546, Cl. 43-22.000.
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Rapson, William H., to Erco Industries Limited. Production of chlorine dioxide. 3,793,439, Cl. 423-478.000.
Ratajski, Michel, to Omega, Louis Brandt & Frere S.A. Watertight watch. 3,792,576, Cl. 58-90.00r
Rauffer, Walter: *See*—
Pfeifer, Josef; Ambraschka, Kasimir; Koopmann, Adolf; Hofmann, Wilfried; Dietrich, Karl-Heinz; and Rauffer, Walter, 3,792,923.
Ray-Chaudhuri, Dilip K.; Georgoudis, Paul C.; and Stockmann, Hans H., to National Starch and Chemical Corporation. Electrophotographic coating compositions having bromine-containing polymer binders. 3,793,293, Cl. 260-47.0ua.
Rayonier Incorporated: *See*—
Daul, George C.; and Barch, Fabian P., 3,793,136.
Raytheon Company: *See*—
Di Nozzi, Robert D., 3,792,670.
RCA Corporation: *See*—
Clorfeine, Alvin Seymour, 3,793,539.
Griswold, Fred Bethel, 3,793,594.
Oh, Chan Soo; and Pasierb, Edward Francis, 3,792,915.
Sank, Jon Rinaldo, 3,793,489.
Reaves, Woodrow W.: *See*—
Turetsky, Abraham L.; and Reaves, Woodrow W., 3,792,661.
Receptors: *See*—
King, Claude F., 3,793,488.
Recordate, S.A. Chemical and Pharmaceutical Company: *See*—
Nardi, Dante; Massarani, Elene; and Degen, Ludwig, 3,793,314.
Reeves, James William; and Wells, David Francis, to Du Pont de Nemours, E. I., and Company. Multistage iron chloride oxidation process. 3,793,444, Cl. 423-633.000.
Regier, John W., to Excel Industries, Inc. Anti-overturning implement vehicle. 3,792,748, Cl. 180-104.000.
Regis, Harry J. Navigation aid and display screen. 3,793,619, Cl. 340-3.00r.
Reichert, Gunther, to International Standard Electric Corporation. Arrangement for the mounting of female connector strips. 3,793,613, Cl. 339-126.00r.
Reighard, Alan B.: *See*—
Baker, Robert G.; Nord, Eric T.; and Reighard, Alan B., 3,792,801.
Reilly, Bertram B. Method of and apparatus for preparation of waste material for disposal. 3,792,817, Cl. 241-30.000.
Reilly, James J.; and Wiswall, Richard H., Jr., to United States of America, Atomic Energy Commission. Separation of hydrogen from other gases. 3,793,435, Cl. 423-248.000.
Reinhold, Herbert E., Jr.: *See*—
Sarnoff, Stanley J.; and Reinhold, Herbert E., Jr., 3,792,700.
Reinis, Gedeminas J. Image fixing method. 3,793,017, Cl. 96-1.00m.
Reinking, Klaus; Brassat, Bert; and Schneider, Kurt, to Bayer Aktiengesellschaft. Process for the anionic polymerization of lactams. 3,793,258, Cl. 260-78.001.
Reniker, Donald K. Straight-edge for applying wood shingles and shakes on vertical surfaces. 3,792,852, Cl. 269-95.000.
Renngardt, Franziska: *See*—
Meyer-Simon, Eugen; Heckel, Emil; Duesing, Gerhard; and Renngardt, Franziska, 3,793,442.
Retobobina: *See*—
Faulhaber, Fritz, 3,793,548.
Rettig, Charles E., to Allis, Louis, Company, The. Regenerative chopper circuitry. 3,793,578, Cl. 321-44.000.

Rexnord Inc.: *See—*
Files, Thomas I., 3,792,745.

Reyniers, Albert August, Van Goethem, Hugo Vital, and Verelst, Johan Lodewijk, to Gevaert-Agfa N.V. Photochemical reproduction process. 3,793,026, Cl. 96-49.000.

Reynolds, Carl D.: *See—*
Ardary, Zane L.; Sturgis, David H.; and Reynolds, Carl D., 3,793,204.

Reynolds, Clarke: *See—*
Duckett, John W.; Brooks, Edward A.; and Reynolds, Clarke, 3,792,679.

Rheinstahl Union Aktiengesellschaft: *See—*
Blase, Helmut; and Gorl, Richard, 3,792,781.

Rhinehart, Vance E.: *See—*
Woodruff, William W.; and Rhinehart, Vance E., 3,792,796.

Rhoades, Vaughan W., 2/3 interest to Dalco Oil Company and 1/3 interest to United States Steel Corporation, mesne. Uranium solution mining process. 3,792,903, Cl. 299-5.000.

Rhodenizer, Harold L.: *See—*
Grunwald, John J.; D'Ottavio, Eugene D.; Rhodenizer, Harold L.; and Lombardo, Michael S., 3,793,106.

Rhone-Poulenc S.A.: *See—*
Mancy, Denise; Ninet, Leon; and Preud'Homme, Jean, 3,793,147.
Violet, Paul Aviron; and Blind, Andre, 3,793,336.

Richard, Eugene D.: *See—*
Richard, George E.; and Richard, Eugene D., 3,793,534.

Richard, George E.; and Richard, Eugene D. Method of surf generation. 3,793,534, Cl. 307-118.000.

Richardson-Merrell Inc.: *See—*
Usdin, Myron G., 3,793,150.

Richens, Robert H.; and Garner, Charles A., to Cole National Corporation. Key machine drive. 3,792,639, Cl. 90-13.050.

Rickenbacher, Hans Rudolf; Zwahlen, Guenther; and Markert, Juergen, to Ciba-Geigy AG. Halogenated diamino dihydroxy anthraquinones on a sublimation transfer member. 3,792,968, Cl. 8-2.500.

Riddle, Franklin D.; and Willis, John T. Fishing pole supports. 3,792,775, Cl. 211-60.00r.

Riddle, John B.: *See—*
Neff, Floyd S.; Galin, Harry; and Riddle, John B., 3,792,808.

Ridge Tool Company, The: *See—*
Province, William F., 3,793,119.

Rieker, Justus, & Co.: *See—*
Plank, Wolfgang; and Handlbauer, Peter, 3,792,537.

Rietzel, Christian: *See—*
Wieland, Theodor; Rietzel, Christian; and Birr, Christian, 3,793,304.

Rigassi, Norbert. *See—*
Schwieter, Ulrich; and Rigassi, Norbert, 3,793,375.

Rillaers, Guy Alfred; and Depoorter, Henri, to Agfa-Gevaert, N.V. Novel cyanine dyes containing a 1-oxy-3,4-dioxocyclopentene-l ring in the conjugated methine chain linking two nitrogen containing heterocyclic nuclei. 3,793,313, Cl. 260-240.00r.

Ring, Russell K.: *See—*
Ring, Sandiford; and Ring, Russell K., 3,793,608.

Ring, Sandiford; and Ring, Russell K. Electrical connectors and method of making same. 3,793,608, Cl. 339-61.00r.

Rinke, Heinrich: *See—*
Winkelmann, Hans Dieter; Rinke, Heinrich; Oertel, Harald; and Weimann, Norbert, 3,793,238.

Ripley, John A.; and Davis, Homer B., to Celesco Industries, Inc. Range scoring system. 3,793,481, Cl. 178-6.800.

Rissi, Erwin: *See—*
Ebnoetmep, Anton; and Rissi, Erwin, 3,793,334.

Ristuccia, Donald J., to Westinghouse Electric Corporation. Transformer apparatus and monitoring system. 3,793,559, Cl. 317-14.00c.

Ritchie, George D. V. Method for curing endless elastomeric belts. 3,793,426, Cl. 264-231.000.

Rixon, John Albert; and Last, Anthony Graham Marshall, to Imperial Chemical Industries, Limited. Foamed thermoplastics. 3,793,239, Cl. 260-2.50e.

RMI Company: *See—*
Bomberger, Howard B., Jr., 3,793,071.

Robbins, James F., to Sybron Corporation. Diaphragm valve. 3,792,720, Cl. 137-625.280.

Robbins, Robert Ralph. Combined vented storage/pressure discharge tank for water closets or urinals. 3,792,497, Cl. 4-26.000.

Roberts, Gordon Peter: *See—*
Hoyle, William; and Roberts, Gordon Peter, 3,793,316.

Robinson Waxed Paper Company, Limited, The: *See—*
Phipps, Raymond Harold, 3,792,682.

Robson, Wayne Keith: *See—*
Budd, Joseph Paul; and Robson, Wayne Keith, 3,793,064.

Rocchia, Peter A.; and Steffy, Robert M., to Wicker Works, The. Woven and braided furniture. 3,792,899, Cl. 297-445.000.

Rodewald, Paul G.: *See—*
Whitehurst, Darrell D.; Butter, Stephen A.; and Rodewald, Paul G., 3,793,185.

Roger, Jacques, to Societe Anonyme de Telecommunications. Process for making electrical contacts of solar batteries and solar batteries made according to this process. 3,793,082, Cl. 136-89.000.

Rogers, Howard G.: *See—*
Land, Edwin H.; Bloom, Stanley M.; and Rogers, Howard G., 3,793,022.

Rogers, Wesley A., to General Motors Corporation. Circuit for periodically energizing an electrical load. 3,793,538, Cl. 307-252.00m.

Rohm & Haas Company: *See—*
Bortnick, Newman M.; Niederhauser, Warren D.; and Smiley, Leonard H., 3,793,406.
Weiner, Robert S., 3,792,520.

Rohm GmbH: *See—*
Munzer, Manfred; and Wohnhas, Adolf, 3,793,405.

Rohr Industries, Inc.: *See—*
Koss, Muriel L., 3,793,285.

Rohrer, Ernst. System for depositing fibers from a suspension onto a hollow, perforated mold wherein a movable head applies suction from within the mold. 3,793,138, Cl. 162-219.000.

Rolinson, George Newbol: *See—*
Cole, Martin; and Rolinson, George Newbol, 3,793,449.

Roll-O-Flex 1970 Ltd.: *See—*
Mauws, Lawrence J., 3,792,743.

Romelburg, Josef: *See—*
Vollmer, Herbert; Romelburg, Josef; Kammholz, Gunther; Wanka, Oskar; and Gutlhuber, Friedrich, 3,792,980.

Romero-Sierra, Cesar Aurelio; Caron, Lionel; and Beaudry, Gerard, to Canadian Patents and Development Limited. Brain biological specimen post mortem inspection and preserving vessel. 3,792,854, Cl. 269-328.000.

Rose, Alan C. Safety closure. 3,792,793, Cl. 215-9.000.

Rose, Frederick G.; and Theile, Kenneth W., to Procter & Gamble Company, The. Liquid detergent compositions. 3,793,233, Cl. 252-547.000.

Rose, Hermann: *See—*
Grasemann, Horst; and Rose, Hermann, 3,793,373.

Rosenblum, Jesse. Vibratory separator screens. 3,792,774, Cl. 210-495.000.

Rosenwasser, Stuart N., to United States of America, Air Force. Process for fabricating porous beryllium billets. 3,793,014, Cl. 75-221.000.

Rosewicz, Horst: *See—*
Mrusek, Wilfried; and Rosewicz, Horst, 3,792,797.

Rosin, Alexander D., to United States of America, Army, mesne. Boost termination valve. 3,792,833, Cl. 251-11.000.

Ross, Albert L.: *See—*
Mare, Peter D.; and Ross, Albert L., 3,792,807.

Ross, David S., to Hydro-Clear Corporation. Apparatus and method for treating waste liquid. 3,792,773, Cl. 210-42.000.

Ross, Stephen T.: *See—*
Kaiser, Carl; and Ross, Stephen T., 3,793,460.

Rossaert, Edgard Emile, to U.S. Philips Corporation. Colour television display apparatus provided with a cathode-ray tube. 3,793,554, Cl 315-27.0xy.

Rosscup, Robert J.; Zletz, Alex; and Schaap, Luke A., to Standard Oil Company. Process for the production of alcohols. 3,793,379, Cl. 260-641.000.

Rossi, Carl J., to Lee Pharmaceuticals, mesne. Dental restorative material of improved polishability. 3,792,531, Cl. 32-15.000.

Rostoker, David, to Corning Glass Works. Foamed glass body. 3,793,039, Cl. 106-41.000.

Rostoker, David, to Corning Glass Works. Light-diffusing clay coatings for lamps. 3,793,058, Cl. 117-97.000.

Rotoflow Corporation: *See—*
Beeloo, Leendert A., 3,793,633.

Rott, Vernon: *See—*
Kasper, Cass S.; and Rott, Vernon, 3,792,891.

Rottenberg, Eugene: *See—*
Wermuth, Camille Georges; Cahn, Jean; and Rottenberg, Eugene, 3,793,458.

Rottneros AB: *See—*
Goransson, Pehr Gunnar Heine, 3,792,565.

Rouse, Donald E. Detergent holder on windshield wiper arm. 3,792,506, Cl. 15-250.030.

Rovanco, Inc.: *See—*
Stonitsch, Lawrence J.; and Stonitsch, Richard W., 3,793,411.

Rowland Development Corporation: *See—*
Rowland, William P., 3,792,678.

Rowland Products, Incorporated. *See—*
Randall, Robert E., 3,792,945.

Rowland, William P., to Rowland Development Corporation. Emergency warning sign with readily collapsible frame. 3,792,678, Cl. 116-63.00p.

Rowlette, John J.: *See—*
Duncan, Edward C.; Levy, Ernest, Jr.; and Rowlette, John J., 3,793,078.

Rubsam, Franz: *See—*
Dorn, Ludwig; Heinze, Gerhard; Wokulat, Jurgen; Muller, Wilhelm; and Rubsam, Franz, 3,793,230.

Rusch, David T., to ICI America Inc. Process for preparing aqueous emulsion of proteinaceous food products. 3,793,464, Cl. 426-89.000.

Russo, John J.; and Smith-Vaniz, William Reid, to Perkin-Elmer Corporation, The. Single frequency stabilized laser. 3,793,595, Cl. 331-94.500.

Ruttiger, Karl, to Dortmund-Horder Huttenunion Aktiengesellschaft. Method of producing a drawing and deep drawing steel resistant to ageing, particularly for single-coat enamelling. 3,792,999, Cl. 75-49.000.

Rycheck, Mark R.: *See—*
Pennella, Filippo; and Rycheck, Mark R., 3,793,257.

Sablev, Leonid Pavlovich; Atamansky, Nikolai Petrovich; Gorbunov, Valentin Nikolaevich; Dolotov, Jury Ivanovich; Lutseenko, Vadim Nikolaevich; Lunev, Valentin Mitrofanovich; and Usov, Valdislav Vasilievich. Apparatus for metal evaporation coating. 3,793,17, Cl. 204-298.000.

Safe Way Hydraulics, Inc.: *See—*
McDermott, Hugh L., 3,792,710.

Sahnas, George. Air cooled antipollution engine. 3,792,691, Cl. 123-26.00r.

Saifutdinov, Rafik Khisamovich: *See—*
Krjukov, Nikolai Mikhailovich; Shparber, Lazar Yakovlevich; Egorov, Anatoly Fedorovich; Denisov, Jury Petrovich; Bakshinov, Alexi Stepanovich; Shatlin, Alexei Leontievich; Kiyashko, Vladimir Safonovich; Krylov, Vitaly Nikolorvich; Marsuversky, Boris Alexanrovich; Saifutdinov, Rafik Khisamovich; and Vier, Vladimir Ivanovich, 3,792,850.

Sakai, Yoshifumi; Sumi, Takeshi; Wada, Atsushi; Morishima, Mitsuo; Kawakaki, Shigeto; and Kozawa, Takashi, to Daido Seiko Kabushiki Kaisha. Method for strenghtnening a metal surface. 3,792,726, Cl. 164-59.000.

Sakakibara, Noaji: *See—*
Hida, Takashi; and Sakakibara, Noaji, 3,793,622.

Sakanoue, Seiki. *See—*
Sano, Kazuya; and Sakanoue, Seiki, 3,793,028.

Sakunaga, Kenichi: *See—*
Chimura, Kazuya; Kaneko, Takashi; Mukai, Takuma, Nakazono, Ryuichi; and Sakunaga, Kenichi, 3,792,944.

Saltzstein, Julian I., to American Uniform Company. Combination dust cloth and dust map. 3,792,505, Cl. 15-231.000.

Salvati, John G.; and Krance, Earl O., to Westinghouse Electric Corporation. Metal enclosed switchgear with S-shaped vertically disposed conductors. 3,793,564, Cl. 317-120.000.

Sampson, Roy John: *See—*
Chenoweth, John Garfield; James, Ivan; Lake, Samuel; Sampson, Roy John; Osmond, Paul; and Shooter, Douglas, 3,793,384.

Samuelson, Henry Ebbe Arvid: *See—*
Sternberg, Ingvar Per Mikael; Gustaffson, Lars Lennart; Samuelson, Henry Ebbe Arvid; and Wallin, Sven-Erik, 3,793,472.

Sandler, Stanley Robert. Stable solutions of melamine-urea-formaldehyde condensates containing a stabilizing aldehyde and processes for their preparation. 3,793,280, Cl. 260-29.40r.

Sandoz Ltd.: *See—*
Gertisser, Berthold, 3,792,969.

Sandoz Ltd.; a/k/a Sandoz AG: *See—*
Ebnoetmep, Anton, and Rissi, Erwin, 3,793,334.
Hochreuter, Richard, 3,793,352.

Sandoz-Wander, Inc.: *See—*
Buzzolini, Mario G.; and Kathawala, Faizulla G., 3,793,333.
Schmutz, Jean; and Hunziker, Fritz, 3,793,325.

Sandstrom, Milton G.: *See—*
Howe, Ralph S., Jr.; Dickinson, Thorn W.; and Sandstrom, Milton G., 3,792,912.

Sandvikens Jernverks Aktiebolag: *See—*
Lundgren, Evert Gustav, 3,792,515.

Sank, Jon Rinaldo, to RCA Corporation, Ultradirectional microphone. 3,793,489, Cl. 179-121.00d.

Sano, Kazuya; and Sakanoue, Seiki, to Fuji Photo Film Co., Ltd. Photographic material. 3,793,028, Cl. 96-77.000.

Sanvordenker, Keshav S., to Tecumseh Products Company. Method of suppressing noise in hermetic compressors. 3,792,755, Cl. 181-33.00b.

Sarkar, Asim Kumar, to Hickson & Welch Limited. Novel 1,2,4-oxadiazole derivatives. 3,793,340, Cl. 260-302.00d.

Sarna, Donald S., to United States of America, Army. Anti-laser optical filter assembly. 3,792,916, Cl. 350-163.000.

Sarnoff, Stanley J.; and Reinhold, Herbert E., Jr., to Survival Technology Inc. Apparatus and method of monitoring the electrical activity of the heart of a human with armpit located electrodes. 3,792,700, Cl. 128-2.06r.

Sasaki, Ichiemon: *See—*
Nishizawa, Junichi; and Sasaki, Ichiemon, 3,793,093.

Sassa, Nagamasa, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Method of aerobic cultivation of microbes and apparatus therefor. 3,793,152, Cl. 195-109.000.

Sato, Akira: *See—*
Kimura, Shiro; Nakazawa, Yoshiyuki; Sato, Akira; and Nakamura, Yashuharu, 3,793,020.

Sato, Akira; Shiba, Keisuke; and Takei, Haruo, to Fuji Photo Film Co., Ltd. Spectrally sensitized silver halide photographic emulsions. 3,793,034, Cl. 96-137.000.

Sato, Masatoshi: *See—*
Masuzawa, Isao; Kawada, Shin-Ichi; Hirokawa, Yoichi; and Sato, Masatoshi, 3,793,576.

Saunders, Clare C. Manufacture of water tight protective coverings. 3,793,110, Cl. 156-247.000.

Saunders, Philip G., to Container Graphics Corporation. Rotary die and cutting rule. 3,792,637, Cl. 83-673.000.

Saur, Roland; and Schwarz, Wilhelm, to Behr-Thomson, Dehnstroffregler GmbH, Firma. Thermostatic valve frame structure. 3,792,813, Cl. 236-100.000.

Saut, Roger A.: *See—*
Cutter, Robert K.; and Saut, Roger A., 3,792,794.

Savo, Constantin L.: *See—*
Nastast, Adrian Vasile; Zirna, Ion; Grigoriu, Ion Doru; Savo, Constantin L.; Steeanescu, Corneliu Nicolae; Iorga, Dumitru C.; Ghejan, Ion V.; Platon, Alexandru C.; Constantin, Flavia T.; Vilcu, Petru T.; Dumitrescu, Stelian GH.; and Bohiltea, Ion T., 3,793190.

Sayles, James A., to Chevron Research Company. Floating barrier. 3,792,589, Cl. 61-1.00f.

SCA Projekt Aktiebolaget, mesne: *See—*
Backlund, Sture Olof Erik, 3,793,137.

Schaap, Luke A.: *See—*
Rosscup, Robert J.; Zletz, Alex; and Schaap, Luke A., 3,793,379.

Schaffer, Detlee: *See—*
Knechtel, Wilhelm Josef; and Schaffer, Detlee, 3,792,926.

Schaffner, Carl P.; and Gordon, Harry W., to Schmid, Julius, Inc. Method for reducing triglycerides. 3,793,448, Cl. 424-117.000.

Scheafer, Robert E. Fluid system. 3,792,643, Cl. 91-411.00b.

Scheer, Marcel: *See—*
Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, 3,793,342.

Schelkmann, Wilhelm. Recapping of tires. 3,793,116, Cl. 156-394.000.

Schenectady Chemicals, Inc.: *See—*
Petersen, Kenneth C.; Bowers, Lewis H.; and Sullivan, John L., 3,793,286.

Schenker, Barry A.: *See—*
Kolb, James M.; Franks, Charles R.; and Schenker, Barry A., 3,793,164.

Scherb, Helmut: *See—*
Kohler, Hans-Dieter; Benda, Herbert; and Scherb, Helmut, 3,793,381.
Marx, Hans-Dieter; Scherb, Helmut; and Schleppinghoff, Bernhard, 3,793,187.

Scherberich, Paul: *See—*
Asinger, Friedrich; Scherberich, Paul; and Offermanns, Heriber, 3,793,344.

Schink, Robert, to Siemens Aktiengesellschaft. Method for indiffusing or alloying-in a foreign substance into a semi conductor body. 3,793,095, Cl. 148-189.000.

Schippers, Heinz, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. High-speed cross-winding device for windings of different lengths. 3,792,819, Cl. 242-43.000.

Schleifer, Ronald H.; Price, James E.; and Bowden, Henry J., to Wallace-Murray Corporation. Abrasive powder of fused alumina containing vanadium tetroxide. 3,792,553; Cl. 51-309.000.

Schleppinghoff, Bernhard: *See—*
Marx, Hans-Dieter; Scherb, Helmut; and Schleppinghoff, Bernhard, 3,793,187.

Schlicht, Raymond C., to Texaco Inc. Friction reducing agent for lubricants. 3,793,199, Cl. 252-32.500.

Schmalbach-Lubeca-Werke Aktiengesellschaft: *See—*
Paubandt, Karl-Wilhelm, 3,793,421.

Schmid, Julius, Inc.: *See—*
Schaffner, Carl P.; and Gordon, Harry W., 3,793,448.

Schmidt, Karl; and Boockmann, Gerhard, to Beck, Dr., & Co., AG. Process of making a modified polyester imide wire insulation and product obtained thereby. 3,793,250, Cl. 260-75.00n.

Schmieder, Helmut: *See—*
Baumgartner, Franz; Schmieder, Helmut; Goldacker, Hubert; and Hausberger, Helmut, 3,793,177.

Schmitt, John A.: *See—*
Beck, Henry N.; Ledbetter, Harvey D.; and Schmitt, John A., 3,793,265.

Schmitz, Norbert L.: *See—*
Baumgartner, Kenneth A.; Cathey, Jimmie J.; and Schmitz, Norbert L., 3,793,544

Schmutz, Jean; and Hunziker, Fritz, to Sandoz-Wander, Inc. 11-Basically substituted dibenz[b,f][1,4] thiazepine and dibenz[b,e][1,4]diazepines. 3,793,325, Cl. 260-268.0tr.

Schneider, Clayton J., Jr., to Cornell Aeronautical Laboratory, Inc. Electrochemical timing apparatus. 3,792,663, Cl. 102-70.200.

Schneider, David; and Shumrak, George. Disposable tray. 3,792,809, Cl. 229-2.500.

Schneider, Kurt: *See—*
Reinking, Klaus; Brassat, Bert; and Schneider, Kurt, 3,793,258.

Schnell, Georg: *See—*
Uhl, Karl; Schnell, Georg; Hartmann, Job-Werner; Stritzinger, Heinz; Balz, Werner; and Pruegl, Rainer, 3,793,074.

Schnell, Joachim, to B. Braun Melsungen Aktiengesellschaft. Stable, non-pyrogenetic, intravenously administrable aqueous fat emulsions containing amino acids. 3,793,450, Cl. 424-195.000.

Schnitger, Herbert: *See—*
Friedel, Rudolf; and Schnitger, Herbert, 3,793,549.

Schober, Johannes, to Aktiengesellschaft Brown, Boveri & Cie. Process of manufacturing electrical apparatus such as casing-enclosed transformers and reactors. 3,792,528, Cl. 29-605.000.

Scholtholt, Josef: *See—*
Beyerle, Rudi; Stachel, Adolf; Nitz, Rold-Eberhard; and Scholtholt, Josef, 3,793,320.

Schonmeier, Herbert: *See—*
Meyer, Rolf; and Schonmeier, Herbert, 3,792,824.

Schoolar, Richard B., to United States of America, Navy. Method of varying the carrier concentration of lead-tin sulfide epitaxial films. 3,793,070, Cl. 117-201.000.

Schultheis, James R. Resistive thermal protective device for inductances. 3,793,560, Cl. 317-40.00a.

Schultheiss, Paul C.: *See—*
Ferguson, Harold W.; and Schultheiss, Paul C., 3,792,644.

Schulz, Jurgen: *See—*
Thom, Reinhard; and Schulz, Jurgen, 3,793,587.

Schulz, Wallace W., to United States of America, Atomic Energy Commission. Method for the purification of bis(2-ehtyl-hexyl) phosphoric acid. 3,793,408, Cl. 260-990.000.

Schulze, Gerhard, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Reaction of hydrogen sulphide and sulphur dioxide to form elementary sulphur. 3,793,440, Cl. 423-573.000.

Schwager, Irving; Leak, Robert J.; and Cole, Edward L., to Texaco Inc. Dehydrogenation of alcohols to ketones. 3,793,354, Cl. 260-429.00r.

Schwartz, Charles R.: *See—*
Eberly, David H., Jr.; and Schwartz, Charles R., 3,793,121.

Schwarz, Wilhelm: *See—*
Saur, Roland; and Schwarz, Wilhelm, 3,792,813.

Schweicher, Wolfgang: *See—*
Herzhoff, Peter; Gref, Hans; Schweicher, Wolfgang; Frenken, Hans; Voss, Karl; Platz, Stephan; Koepke, Gunther; and Brauniger, Georg, 3,793,051.

Schwieter, Ulrich; and Rigassi, Norbert, to Hoffmann-La Roche Inc. Process for producing polyene compounds. 3,793,375, Cl. 260-587.000.

Sci-Med Life Systems, Inc., mesne: *See—*
Freedman, Frank B., 3,792,978.

Scoggin, Jack S., to Phillips Petroleum Company. Controlled curing PF poly(arylene sulfide) resins. 3,793,256, Cl. 260-79.000.

Scott, Jack T.; and Browne, William H., to Scott-Browne Corporation. Method of fabricating, using and reconditioning apparatus for forming optical quality articles from molten glass and forming elements for use therein. 3,792,986, Cl. 65-27.000.

Scott, Paul F.: *See—*
Darrel, Bernard, and Scott, Paul F., 3,793,627.

Scott, Ronald Wilfred: *See—*
Shanahan, Cyril Edmund Arthur; and Scott, Ronald Wilfred, 3,793,412.

Scott-Browne Corporation: *See—*
Scott, Jack T.; and Browne, William H., 3,792,986.

Seeley, Forest G.; and Baldwin, Willis H., to United States of America, Atomic Energy Commission. Extraction of lithium from neutral brines using a beta diketone and trioctylphosphine oxide. 3,793,433, Cl. 423-181.000.

Selin, Terry G.: *See—*
Berger, Abe; and Selin, Terry G., 3,793,361.

Selnes, Arnold. Pivotal platform training apparatus with selectively connectible components. 3,792,860, Cl. 272-58.000.

Semperit Osterreichisch-Amerikanische Gummiwerke Aktiengesellschaft: *See—*
Wollmann, Ernest; and Zartl, Josef, 3,793,059.

Seng, Florin; Ley, Kurt; and Metzger, Karl Georg, to Farbenfabriken Bayer Aktiengesellschaft. Amino-substituted benzo(g)pteridine-di-N-oxides. 3,793,323, Cl. 260-251.500.

Sens, Fred T.: *See—*
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Sexton, Charles W., Jr.; and Jordan, John D., to General Electric Company. Linearity correction circuit using negative feedback. 3,793,553, Cl. 315-27.0td.

Shafer, Homer J. Trunnion type rotary valve of welded tube and plate construction. 3,792,835, Cl. 251-309.000.

Shaffer, John W.: *See—*
Bouchard, Andre C.; Shinn, Dennis B.; and Shaffer, John W., 3,792,957.

Shanahan, Cyril Edmund Arthur; and Scott, Ronald Wilfred, to British Steel Corporation. Sodium chromate treatment of granulated pig iron. 3,793,412, Cl. 264-7.000.

Sharp, John R.: *See—*
Holmes, William A.; and Sharp, John R., 3,792,919.

Sharpless, Graham Thevor, to U.S. Philips Corporation. Electrical display devices. 3,793,629, Cl. 340-324.00m.

Shatlin, Alexei Leontievich: *See—*
Krjukov, Nikolai Mikhailovich; Shparber, Lazar Yakovlevich; Egorov, Anatoly Fedorovich; Denisov, Jury Petrovich; Bakshinov, Alexi Stepanovich; Shatlin, Alexei Leontievich; Kiyashko, Vladimir Safonovich; Krylov, Vitaly Nikolorvich; Marsuversky, Boris Alexanrovich; Saifutdinov, Rafik Khisamovich; and Vier, Vladimir Ivanovich, 3,792,850.

Shaw, Frank D., to American Smelting and Refining Company. Electrical current measurement and rapidly locating and positively identifying cathodes having abnormal electrical conditions associated therewith in an electrolytic copper refining process tankhoue. 3,793,166, Cl. 204-108.000.

Shay, Edward G.: *See—*
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Shell Oil Company: *See—*
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Towell, Lawrence H.; and Brew, Jere R., 3,792,902.

Shelley, Shelley W. Apparatus for fabricating units of moldable building material. 3,792,832, Cl. 249-121.000.

Shelton, Winston L.: *See—*
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Sherwin, Owen W.: *See—*
Water, Rae E. Vande; Sherwin, Owen W.; and Crissy, Charles F., 3,792,894.

Shi, Kawasaki: *See—*
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Shiba, Keisuke: *See—*
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Shiba, Keisuke; Hinata, Masanano; Oishi, Yasushi; and Yoshida, Yoshinobu, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive materials for diffusion transfer process. 3,793,031, Cl. 96-99.000.

Shields, Charles J., to States Steamship Company. Cargo container lifting hook. 3,792,892, Cl. 294-82.00r.

Shikoku Kakoshi Co., Ltd.: *See—*
Ueda, Kazuo, 3,792,949.

Shimizu, Kazuo; Yoshida, Okio; and Terakawa, Kazuo, to Tokyo Shibaura Electric Co., Ltd. Process for preparing a layer of compounds of groups II and VI. 3,793,069, Cl. 117-201.000.

Shimizu, Sakae: *See—*
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Shinetsu Chemical Company: *See—*
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Shinn, Dennis B.: *See—*
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Shinozaki, Kazuo: *See—*
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Shklovsky, Vladimir Yakovlevich: *See—*
Goikhburg, Vladimir Kelmanovich; Finikov, Georgy Ivanovich; Svirsky, Viktor Alexandrovich; Oblasti, Moskovskoi; Shklovsky, Vladimir Yakovlevich; Kuperman, Mikhail Lvovich, Oblasti, Mytischi Moskovskoi; Smirnov, Oleg Arkadievich; Fedorov, Adolf Petrovich; Pskarev, Gennady Mikhailovich; Averynov, Lev Illarionovich; Gavrilov, Nikolai Ivanovich; Litvak, Anatoly Efimovich; and Oblasti, Vladimirskoi, 3,792,786.

Shodai, Masahiko; and Tomokawa, Hideo, to Matsushita Electric Works, Ltd. Forming protective inorganic coating on substrate. 3,793,055, Cl. 117-47.00r.

Sholl, Arthur F.; and Wolfe, Donald L., to Paxton Mitchell Company. Crane boom stowing mechanism. 3,792,778, Cl. 212-1.000.

Shooter, Douglas: *See—*
Chenoweth, John Garfield; James, Ivan; Lake, Samuel, Sampson, Roy John; Osmond, Paul; and Shooter, Douglas, 3,793,384.

Shore, Daniel B., to International Harvester Company. Automatic bucket positioning device. 3,792,640, Cl. 91-358.00a.

Shore, Donald Arthur; and Hart, David Edward, to Colodense Limited. Rotary printing machine with stop members for cylinder adjustments. 3,792,658, Cl. 101-247.000.

Showa Denko Kabushiki Kaisha: *See—*
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Shroff, Arvind: *See—*
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Shroff, James R.; and Bandurco, Victor, to USV Pharmaceutical Corporation. 1,4-Disubstituted piperazines. 3,793,322, Cl. 260-268.00c.

Shumrak, George: *See—*
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Shur-Flo, Inc.: *See—*
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Sidaplox: *See—*
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Siefert, August G.; and Sens, Fred T., to Owens-Corning Fiberglas Corporation. Glass-metal fiber composites. 3,792,985, Cl. 65-13.000.

Siegart, William R.: *See—*
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Siegel, Edgar, to Bayer Aktiengesellschaft. Phenylacrylic acid-N-[4'-(parasubstituted phenolazo)-phenyl]-amide compounds. 3,793,309, Cl. 260-207.000.

Siegfried, Kofink, to Eberspacher, J. Device for operating a combustion device, such as a space heater. 3,792,958, Cl. 431-1.000.

Siegrist, Adolf Emil, to Ciba-Geigy AG. Triazole derivatives. 3,793,315, Cl. 260-240.00c.

Siemens Aktiengesellschaft: *See—*
Friedel, Rudolf; and Schnitger, Herbert, 3,793,549.
Marchetto, Manfredo, 3,793,084.
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Sieradzki, Ryszard; and Goldman, Daniel, to Electronic Indexing, Inc. Numerically controlled system for gear cutting machine. 3,793,575, Cl. 318-39.000.

Sierra Research Corporation: *See—*
Potter, Basil E., 3,793,635.

Siewertsz Van Reesema, Nikolaas Hendrik. Ion exchange. 3,793,193, Cl. 210-30.000.

Signetics Corporation: *See—*
Fehlner, Francis P., 3,793,605.

Sikora, Orwill Granger; Culver, David Wayne; and Kircik, Willis James, to Chicago Bridge & Iron Company. Vessel or tank with supporting system. 3,792,795, Cl. 220-18.000.

Sillion, Bernard: *See—*
Cohen, Choua; Giuliani, Pierre, and Sillion, Bernard, 3,793,291.

Silverstein, Steven L.; and Daggett, Kenneth E., to Westinghouse Electric Corporation. Digital computer apparatus operative with jump instructions. 3,793,631, Cl. 340-172.500.

Sime, Malcolm A.; Lambeau, Eugene; and Zadoo, Vijay K., to Vapor Corporation. Inline valve with reverse pressure closing means. 3,792,716, Cl. 137-492.000.

Simmons, Larry A., to Xerox Corporation. Xerographic erase mechanism. 3,792,913, Cl. 355-7.000.

Simon, Knud, Industries Limited: *See—*
Simonsen, Knud; Jespersen, Knud; and Buller-Colthurst, Guy Edward, 3,792,508.

Simon-Hartley Limited: *See—*
Austin, Eric Paul; Kemp, Geoffrey David; Tonelli, Fernando Antonio Francesca Modesto; and Marshall, Ian, 3,793,178.

Simonsen, Knud; Jespersen, Knud; and Buller-Colthurst, Guy Edward, to Simon, Knud, Industries Limited. Sausage-supporting apparatus for use in smoke houses and the like. 3,792,508, Cl. 17-44.400.

Simpson-Lawrence, Limited: *See—*
Lyall, Gordon M., 3,792,622.

Singer Company, The: *See—*
Flower, Robert A.; and Greenwood, Ivan A., 3,793,180.
Maggi, Charles Robert, 3,793,508.

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Siragusa, George A.: *See—*
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Sisk, Francis J.; and Garland, Chesley F., to Westinghouse Electric Corporation. Submerged turbine aerator. 3,792,840, Cl. 261-93.000.

Skelton, Harry Leslie: *See—*
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SKF Industrial Trading and Development Company, N.V.: *See—*
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Huber, Wolfgang, and Marx, Anton, 3,792,911.

Sloan Valve Company: *See—*
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Smidth, F. L., & Co.: *See—*
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Smiley, Leonard H.: *See—*
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Smith, Alan George, to Imperial Chemical Industries Limited. Injection molded resin articles having a foamed resin core. 3,793,415, Cl. 264-45.000.

Smith, Brian Robson, to Colgate-Palmolive Company. Soap bars. 3,793,215, Cl. 252-117.000.

Smith, Cecil R., Jr.: *See—*
Powell, Richard G.; and Smith, Cecil R., Jr., 3,793,454.

Smith, Christopher I.; and Poliak, John M., to Leviton Manufacturing Co., Inc. Electrical terminal for connection to a conductor of a cable. 3,793,607, Cl. 339-217.00r.

Smith, Donald G. Hygienic toothbrush. 3,792,504, Cl. 15-167.00r.

Smith, Donald G. Dental apparatus. 3,792,530, Cl. 32-54.000.

Smith, Gordon. Polarized light-controlled combination door lock. 3,793,565, Cl. 317-134.000.

Smith, James. Acoustical device. 3,792,753, Cl. 181-31.00b.

Smith, John Liberty, to Dunlop Limited. Polyurethane foams. 3,793,240, Cl. 260-2.5ab.

Smith, Laurence Michael: *See—*
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Smith, Thomas R. Drive belt. 3,792,621, Cl. 74-231.00r.

Smith-Vaniz, William Reid: *See—*
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Smithkline Corporation: *See—*
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Smythe, Stewart T.: *See—*
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Snead, William K.; and Abraham, Fred, to PPG Industries, Inc. Catalyst composition for fluid-bed production of trichloroethylene. 3,793,227, Cl. 252-441.000.

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McKay, Richard H.; Ziebold, Paul G.; Kirby, James D.; Hetzel, Douglas R.; and Snydacker, James U., 3,793,505.

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Socibre: *See—*
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Societe Anonyme de Telecommunications: *See—*
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Societe anonyme dite: Laboratoire L. Lafon: *See—*
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Societe Anonyme: Glaenzer Spicer: *See—*
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Societe Franciase d'Equipements pour la Navigation Aerienne S.F.E.N.A.: *See—*
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Societe Lignes Telegraphiques et Telephoniques: *See—*
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Societe "Lucien Ferraz & Cie": *See—*
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Societe Nationale d'Etude et de Construction de Moteur d'Aviation: *See—*
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Societe Suisse pour l'Industrie Horlogere Management Services S.A.: *See—*
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Societe Ulmer & Co.: *See—*
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Sontag, Rollin H.; and Keim, Karl H., to Sontag, John S. Hand held label attaching iron. 3,793,112, Cl. 156-306.000.

Sowman, Harold G., to Minnesota Mining and Manufacturing Company. Refractory fibers of zirconia and silica mixtures. 3,793,041, Cl. 106-57.000.

S.p.A. (Fabbrica Accessori Auto Bolognese): *See—*
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Spadano, Vinvenzo. Machine for heat sealing together the edges of plastic sheets and the like. 3,793,120, Cl. 156-499.000.

Spain, Stanley R., to Kidde, Walter, & Company, Inc. Mechanism for positioning and restricting crane control levers to prevent dangerous load condition. 3,792,780, Cl. 212-39.00r.

Sperry Rand Corporation: *See—*
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Stachel, Ingeburg Lydia Katharine: *See—*
Beyerle, Rudi; Stachel, Adolf; Nitz, Rold-Eberhard; and Scholtholt, Josef, 3,793,320.

Stage, Hermann. Perforated-tray column. 3,792,843, Cl. 261-148.000.

Stancomp, Inc., mesne: *See—*
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Standard Oil Company: *See—*
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Stanley Works, The: *See—*
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Stapper, Christian H.; and D'Andrea, Richard W., to Cincinnati Milacron Chemicals Inc. Cobalt II halides ketazine and aldezine complexes. 3,793,359, Cl. 260-439.00r.

State for Defence, The Secretary of: *See—*

Strong, Jerry G.; Kaufman, Harold A.; and Napier, Roger P., to Mobil Oil Corporation. Use of alkyl-substituted 4-benzo[b]thienyl N-alkylcarbamates as systemic insecticides. 3,793,452, Cl. 424-275.000.

Studentlitteratur AB: *See—*

Tachikawa, Kyoji; and Inoue, Kiyoshi, to National Research Institute for Metals, The Director of. Alloy for superconductive magnet. 3,792,990, Cl. 75-134.00v.

Takagi, Kazumi; Matsuda, Teruo; and Murakami, Masahiro, to Sumitomo Chemical Company, Ltd. Method for producing isoprene

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Textron, Inc.: *See—*
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Steininger, Alfred: *See—*
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Steinlin, Felix; and Nobs, Horst, to Ciba-Geigy AG. Process for the manufacture of viscose fibres with novel dyeing properties. 3,793,419, Cl. 264-78.000.
Stencel, Edgar L., to VSI Corporation. High-strength fastening system. 3,792,933, Cl. 403-19.000.
Stephenson, Francis V., to Integrity Transcoil Incorporated. Automotive oil cooler. 3,792,727, Cl. 165-44.000.
Sternberg, Ingvar Per Mikael; Gustaffson, Lars Lennart; Samuelson, Henry Ebbe Arvid; and Wallin, Sven-Erik, to Studentlitteratur AB. Systems for correcting of processing so-called diagnostic tests of multiple choice type. 3,793,472, Cl. 35-48.00a.
Stewart, Norvin G., to Otis Engineering Corporation. Well flow controlling system and apparatus. 3,792,732, Cl. 166-315.000.
Stieg, Robert W., to Mask Trucks, Inc. Torque proportioning and spin limiting differential. 3,792,628, Cl. 74-714.000.
Still, William L. Telemetry system for drill hore holes. 3,793,632, Cl 340-18.0nc.
Stitt Spark Plug Company: *See—*
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Stolzer, Claus; Homeyer, Bernhard; Hammann, Ingeborg; and Unterstenhofer, Gunter, to Bayer Aktiengesellschaft. O,S,N-tri-aliphatic hydrocarbon-thionothiolphosphoric acid ester amides. 3,793,407, Cl. 260-948.000.
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Strack, Hans A.; and Clark, George D., to Texas Instruments Incorporated. Fabrication of junction laser devices having mode-suppressing regions. 3,793,094, Cl. 148-189.000.
Strassberger, Werner: *See—*
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Strategic Automated Systems, Inc.: *See—*
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Suling, Carlhans, to Bayer Aktiengesellschaft. Process for the preparation of vinyl chloride polymers. 3,793,294, Cl. 260-92.80w.
Sullhofer, Heinz. Device for producing in continuous process plates of polyurethane hard foam with covering plates. 3,793,122, Cl. 156-537.000.
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Youngdale, Gilbert A., to Upjohn Company, The. 4-Spiro[cyclopropyl]androstenes and process for their production. 3,793,308, Cl. 260-239.55r.
Ysauda, Yasushi: *See—*
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Zebley, Donald Dane, to United Merchants and Manufacturs, Inc. Torque control device for a potential-energy torque-generating mechanism. 3,792,826, Cl. 242-75.500.
Zecher, David C., to Hercules Incorporated. Scale and corrosion control in flowing waters. 3,793,194, Cl. 210-58.000.
Zeeb, Rhinhold J. Automatic purse light. 3,792,652, Cl. 95-6.45p.
Zeller, Norbert: *See—*
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Heseltine, Donald W., P. W. Jenkins, and J. D. Mee, to Eastman Kodak Co. Crosslinkable polymer composition. Re. 27,922, 2-19-74, Cl. 96—35.100.
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Hingston, William F., to RCA Corp. Frequency shift oscillator which avoids the generation of transient. Re. 27,924, 2-19-74, Cl. 331—179.
Jablonski, Werner L., by The Dow Chemical Co. Foamable thermoplastic polymer granules and method for making. Re. 27,927, 2-19-74, Cl. 260—2.50 B.
Jenkins, Philip W.: *See—*
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Coke, Stephen M., to H. Barry Rose. Apple tree. 3,485, 2-19-74, Cl. 35.
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Danielson, Robert E., to Pan-American Plant Co. Chrysanthemum plant. 3,486, 2-19-74, Cl. 78.
Dayton, Daniel F., J. B. Mowry, L. F. Hough, C. Bailey, E. B. Williams, J. Janick, F. H. Emerson, and J. R. Shay to Purdue Research Foundation. Apple tree. 3,488, 2-19-74, Cl. 34.
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Shoesmith, Leonard H. Chrysanthemum plant (silver coin). 3,484, 2-19-74, Cl. 77.
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Anderson, Walter C., to General Electric Co. Hand-held hair dryer. 230,431, 2-19-74, Cl. D86—10.
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Atkinson, Lyle H., to Midwest International. Combined television viewer and chair shell unit. 230,383, 2-19-74, Cl. D6—42.
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Greenwood, Lewis, to Pay Fone Systems, Inc. Data processor terminal. 230,407, 2-19-74, Cl. D26—14.

Hampton, Brian O. Electrical control box. 230,406, 2-19-74, Cl. D26—13.
Harris Ewell J. Combination fish line stabilizer and sinker. 230,401, 2-19-74, Cl. D22—30.
Haynes, George W. Charcoal fire starter. 230,421, 2-19-74, Cl. D48—27.
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Levine, Robert, to Capehart Corp. Cabinet. 230,386, 2-19-76, Cl. D6—154.
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  Reiss, Max S. 230,389.
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Rosen, Sheldon M. Cello stem restrainer. 230,425, 2-19-74, Cl. D56—1.
Rousseau, Hubert J. Garden tool. 230,392, 2-19-74, Cl. D8—6.
Salmon, Robert W., and B. S. Herstein, to Buddy L Corp. Toy ice cream truck. 230,411, 2-19-74, Cl. D34—15.
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Tyke, Charles R., and H. M. Meehan, to Westinghouse Electric Corp. Cooking platform for electric ranges and the like. 230,390, 2-19-74, Cl. D7—121.
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Zusman, Bertram. Apartment building. 230,397, 2-19-74, Cl. D13—1.

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424	3,792,625
492	3,792,626
568FS	3,792,627
714	3,792,628
801	3,792,629
860	3,792,630
866	3,792,631
CLASS 75	
.5R	3,792,997
10R	3,792,998
49	3,792,999
	3,793,000
60	3,793,001
	3,793,002
68	3,793,003
71	3,793,004
82	3,793,005
94	3,793,006
128G	3,793,008
134M	3,793,007
134V	3,792,990
159	3,793,009
170	3,793,010
171	3,793,011
	3,793,012
	3,793,013
221	3,793,014
CLASS 81	
10	3,792,632
CLASS 82	
2.5	3,792,633
CLASS 83	
71	3,792,634
154	3,792,635
468	3,792,636
673	3,792,637
CLASS 89	
14R	3,792,638
CLASS 90	
13.05	3,792,639
CLASS 91	
51	3,792,642
358A	3,792,640
372	3,792,641
411B	3,792,643
412	3,792,645
420	3,792,644
CLASS 93	
51	3,792,646
CLASS 96	
1LY	3,793,015
1M	3,793,017
1R	3,793,016
	3,793,018
1.5	3,793,021
3	3,793,022
	3,793,023
33	3,793,024
35.1	Re 27,922
	Re.27,925
36	3,793,025
36.1	3,793,035
49	3,793,026
66R	3,793,027
76R	3,793,019
77	3,793,028
84R	3,793,029
91R	3,793,020
99	3,793,031
114 5	3,793,032
115R	3,793,033
137	3,793,020
	3,793,034
CLASS 99	
339	3,792,653
427	3,792,654
CLASS 100	
116	3,792,655
118	3,792,656
CLASS 101	
38R	3,792,657
247	3,792,658
365	3,792,659
CLASS 102	
27R	3,792,660
65	3,792,661
70R	3,792,662
	3,792,664
70.2	3,792,663
CLASS 104	
148LM	3,792,665
CLASS 105	
136	3,792,666
404	3,792,667
CLASS 106	
1	3,793,037
	3,793,038
41	3,793,039
55	3,793,040
57	3,793,041
68	3,793,042
100	3,793,036
194	3,793,043
262	3,793,044
288B	3,793,046
300	3,793,045
CLASS 108	
69	3,792,668
CLASS 110	
1H	3,792,669
8R	3,792,670
	3,792,671
CLASS 112	
104	3,792,672
158A	3,792,673
235	3,792,675
254	3,792,674
CLASS 114	
123	3,792,676
CLASS 116	
34R	3,792,677
63P	3,792,678
	3,792,679
173	3,792,680
CLASS 117	
3	3,793,047
17	3,793,049
17.5	3,793,048
	3,793,050
34	3,793,051
36	3,793,052
36.2	3,793,075
38	3,793,053
47R	3,793,054
	3,793,055
60	3,793,056
62 2	3,793,057
95	3,793,059
97	3,793,058
98	3,793,060
106R	3,793,061
126CQ	3,793,065
139.5C	3,793,062
155UA	3,793,067
201	3,793,068
	3,793,069
	3,793,070
206	3,793,071
212	3,793,072
213	3,793,063
217	3,793,064
230	3,793,073
235	3,793,074
237	3,793,066
CLASS 118	
5	3,792,681
62	3,792,682
416	3,792,683
620	3,792,684
CLASS 119	
14.03	3,792,686
23	3,792,685
95	3,792,687
CLASS 122	
248	3,792,688
510	3,792,689
CLASS 123	
3	3,792,690
26	3,792,691
32EA	3,792,693
32G	3,792,692
41.12	3,792,697
148A	3,792,694
148E	3,792,695
198DB	3,792,696
CLASS 126	
299A	3,792,698
CLASS 128	
2W	3,792,699
2.06R	3,792,700
7	3,792,701
146.7	3,792,702
214.4	3,792,703
221	Re.27,923
CLASS 131	
3	3,792,704
209	3,792,705
CLASS 132	
91	3,792,706
150	3,792,707
CLASS 134	
25R	3,793,076
167C	3,792,708
CLASS 136	
6E	3,793,077
24	3,793,078
30	3,793,079
83	3,793,080
86D	3,793,081
89	3,793,082
120FC	3,793,083
	3,793,084
121	3,793,085
134R	3,793,086
168	3,793,087
CLASS 137	
47	3,792,709
102	3,792,710
217	3,792,711
384 2	3,792,712
486	3,792,713
492	3,792,716
493	3,792,715
494	3,792,714
505.25	3,792,717
514	3,792,718
546	3,792,719
625.28	3,792,720
CLASS 138	
30	3,792,721
108	3,792,722
CLASS 139	
194	3,792,723
CLASS 141	
115	3,792,724
CLASS 145	
29R	3,792,725
CLASS 148	
1.5	3,793,088
	3,793,090
2	3,793,089
11 5R	3,793,091
31.55	3,793,092
186	3,793,093
189	3,793,094
	3,793,095
CLASS 149	
2	3,793,096
5	3,793,097
19	3,793,099
19 8	3,793,098
77	3,793,100
109	3,793,101
CLASS 156	
62 2	3,793,125
78	3,793,102
80	3,793,103
94	3,793,104
106	3,793,105
155	3,793,106
174	3,793,107
180	3,793,108
245	3,793,109
247	3,793,110
253	3,793,111
306	3,793,112
335	3,793,113
361	3,793,114
381	3,793,115
394	3,793,116
433	3,793,117
436	3,793,118
499	3,793,119
	3,793,120
522	3,793,121
532	3,793,124
537	3,793,122
584	3,793,123
CLASS 161	
1	3,793,127
28	3,793,126
44	3,793,128
49	3,793,129
93	3,793,130
143	3,793,131
144	3,793,132
148	3,793,133
162	3,793,134
165	3,793,135
173	3,793,136
CLASS 162	
42	3,793,137
219	3,793,138
225	3,793,139
352	3,793,140
CLASS 164	
59	3,792,726
CLASS 165	
44	3,792,727
47	3,792,728
76	3,792,729
167	3,792,730
CLASS 166	
274	3,792,731
315	3,792,732
CLASS 171	
58	3,792,733
CLASS 172	
43	3,792,734
751	3,792,736
753	3,792,735

CLASS 173		39	3,793,160	92EL	3,793,509	**CLASS 259**			3,793,339	23F	3,792,846
12	3,792,737	43S	3,793,161	92EV	3,793,510	148	3,792,837	309 6	3,793,338	34A	3,792,848
		47	3,793,162	92MT	3,793,504	161	3,792,838	323	3,793,341	34T	3,792,849

90	3,793,543	**CLASS 323**		**CLASS 339**		**CLASS 350**		**CLASS 415**		308	3,793,463
168	3,793,545	9	3,793,580	8R	3,793,606	123	3,792,914	110	3,792,935	317	3,793,457
183	3,793,546	19	3,793,581	61R	3,793,608	160LC	3,792,915	**CLASS 416**			3,793,458

CLASS 173	
12	3,792,737
118	3,792,739
119	3,792,738
	3,792,740
CLASS 174	
23C	3,793,473
52PE	3,793,474
73R	3,793,475
102SC	3,793,476
143	3,793,477
CLASS 175	
11	3,792,741
CLASS 176	
36R	3,793,141
55	3,793,142
65	3,793,143
69	3,793,144
87	3,793,145
CLASS 178	
5 2R	3,793,478
5 4R	3,793,479
6.8	3,793,481
7.3R	3,793,480
	3,793,482
69.5TV	3,793,483
CLASS 179	
1N	3,793,484
	3,793,485
2DP	3,793,486
6R	3,793,487
15BA	3,793,488
121D	3,793,489
175.2R	3,793,490
CLASS 180	
5R	3,792,743
6.48	3,792,744
9.46	3,792,745
65F	3,792,742
82	3,792,746
89A	3,792,747
104	3,792,748
127	3,792,749
CLASS 181	
.5VM	3,792,751
.5XC	3,792,752
31B	3,792,753
	3,792,754
33B	3,792,755
CLASS 182	
93	3,792,756
206	3,792,750
CLASS 186	
1AC	3,792,757
CLASS 187	
9	3,792,758
29R	3,792,759
CLASS 192	
075	3,792,763
3M	3,792,760
	3,792,761
	3,792,762
CLASS 194	
1R	3,792,764
4C	3,792,765
101	3,792,766
CLASS 195	
37	3,793,146
51R	3,793,148
66R	3,793,149
80R	3,793,147
96	3,793,150
103.5R	3,793,151
109	3,793,152
111	3,793,153
139	3,793,154
CLASS 197	
84A	3,792,767
CLASS 198	
30	3,792,768
CLASS 200	
18	3,793,491
	3,793,496
44	3,793,497
	3,793,500
47	3,793,492
50AA	3,793,493
	3,793,494
61.08	3,793,501
61.45R	3,793,498
83B	3,793,495
148E	3,793,499
CLASS 202	
267	3,792,769
CLASS 203	
2	3,793,157
CLASS 204	
1T	3,793,158
30	3,793,159
39	3,793,160
43S	3,793,161
47	3,793,162
72	3,792,995
98	3,793,163
99	3,793,164
106	3,793,165
108	3,793,166
109	3,793,168
129 55	3,793,169
129 6	3,793,170
130	3,793,171
146	3,793,172
149	3,793,173
	3,793,174
192	3,793,175
195F	3,793,176
195S	3,793,155
269	3,793,177
272	3,793,178
298	3,793,167
	3,793,179
299	3,793,180
CLASS 206	
455	3,792,771
CLASS 208	
15	3,793,181
23	3,793,189
57	3,793,190
59	3,793,191
70	3,793,192
111	3,793,182
134	3,793,183
183	3,793,184
251R	3,793,185
264	3,793,186
289	3,793,187
313	3,793,188
CLASS 209	
173	3,792,772
CLASS 210	
30	3,793,193
42	3,792,773
58	3,793,194
495	3,792,774
CLASS 211	
60R	3,792,775
118	3,792,776
169	3,792,777
CLASS 212	
1	3,792,778
2	3,792,779
39R	3,792,780
59	3,792,781
CLASS 214	
1BD	3,792,782
2.5	3,792,783
6H	3,792,784
16 4A	3,792,785
138R	3,792,786
152	3,792,787
	3,792,788
390	3,792,789
501	3,792,790
762	3,792,791
763	3,792,792
CLASS 215	
9	3,792,793
247	3,792,794
CLASS 219	
69G	3,793,502
106	3,793,503
CLASS 220	
18	3,792,795
19	3,792,796
60R	3,792,797
90.2	3,792,798
CLASS 222	
1	3,792,799
43	3,792,800
146HE	3,792,801
402.13	3,792,802
511	3,792,803
CLASS 223	
85	3,792,804
CLASS 224	
29R	3,792,805
49	3,792,806
CLASS 225	
100	3,792,807
CLASS 226	
145	3,792,808
CLASS 229	
2.5	3,792,809
39R	3,792,810
40	3,792,811
CLASS 235	
54F	3,793,505
61.12N	3,793,600
61.6B	3,793,506
61.7R	3,793,507
92EL	3,793,509
92EV	3,793,510
92MT	3,793,504
92V	3,793,508
151 11	3,793,511
151 13	3,793,512
152	3,793,513
CLASS 236	
12R	3,792,812
100	3,792,813
CLASS 239	
149	3,792,814
265.39	3,792,815
553	3,792,816
CLASS 240	
6 45P	3,792,652
8 16	3,793,514
10R	3,793,515
26	3,793,516
60	3,793,517
CLASS 241	
30	3,792,817
CLASS 242	
18PW	3,792,818
42	3,792,821
43	3,792,819
55.19A	3,792,823
55.3	3,792,822
55.53	3,792,770
65	3,792,824
66	3,792,820
67.3R	3,792,825
75.5	3,792,826
CLASS 244	
7A	3,792,827
42CC	3,792,828
CLASS 248	
42	3,792,829
CLASS 249	
28	3,792,830
121	3,792,832
219W	3,792,831
CLASS 250	
199	3,793,521
206	3,793,522
209	3,793,523
339	3,793,524
343	3,793,525
347	3,793,518
360	3,793,526
366	3,793,519
	3,793,520
459	3,793,527
482	3,793,528
CLASS 251	
11	3,792,833
148	3,792,834
309	3,792,835
CLASS 252	
8.8	3,793,196
12	3,793,195
28	3,793,197
	3,793,198
32.5	3,793,199
32.7E	3,793,200
33.4	3,793,201
51.5A	3,793,202
56R	3,793,203
62	3,793,204
62 1	3,793,205
	3,793,234
62.9	3,793,206
71	3,793,208
78	3,793,207
87	3,793,209
89	3,793,210
99	3,793,211
	3,793,212
107	3,793,213
117	3,793,214
	3,793,215
136	3,793,221
171	3,793,220
180	3,793,222
187H	3,793,216
300	3,793,217
312	3,793,218
358	3,793,223
423	3,793,224
437	3,793,225
441	3,793,227
442	3,793,229
448	3,793,230
463	3,793,231
466PT	3,793,232
526	3,793,219
	3,793,226
541	3,793,228
547	3,793,233
CLASS 254	
139	3,792,836
CLASS 259	
148	3,792,837
161	3,792,838
193	3,792,839
CLASS 260	
2.1E	3,793,273
2 2R	3,793,299
2 3	3,793,235
2 5AB	3,793,240
2.5AD	3,793,241
2.5AH	3,793,237
	3,793,300
2.5AT	3,793,268
2.5AW	3,793,236
2.5AY	3,793,238
2.5B	Re.27,927
	3,793,242
2 5E	3,793,239
2.5N	3,793,281
15	3,793,302
17R	3,793,272
17	3,793,269
18PN	3,793,271
18N	3,793,270
23XA	3,793,274
28	3,793,276
28 5R	3,793,243
	3,793,275
29 2EP	3,793,278
	3,793,279
29 4R	3,793,280
29.6AN	3,793,277
29.7H	3,793,244
31 8M	3,793,282
33 6AQ	3,793,283
33.8UA	3,793,284
34 2	3,793,245
37EP	3,793,285
38	3,793,286
42 15	3,793,288
42 18	3,793,287
45 75K	3,793,301
45.75N	3,793,290
45.8N	3,793,289
47CP	3,793,291
47EA	3,793,247
47EP	3,793,248
47ET	3,793,246
47UA	3,793,293
47C	3,793,249
67FP	3,793,303
75N	3,793,250
77.5AT	3,793,253
77.5CR	3,793,252
77.5R	3,793,254
78L	3,793,255
	3,793,258
78.5R	3,793,259
79	3,793,256
82	3,793,261
85.1	3,793,306
	3,793,307
86.7	3,793,262
88.2R	3,793,263
91.7	3,793,265
92.8W	3,793,294
93.5A	3,793,266
93.7	3,793,295
94 1	3,793,267
	3,793,296
96HA	3,793,298
112.5	3,793,304
154	3,793,305
207	3,793,309
233.3R	3,793,310
239.55R	3,793,308
239.6	3,793,311
	3,793,312
240A	3,793,316
240C	3,793,315
240J	3,793,314
240R	3,793,313
243D	3,793,318
246B	3,793,319
247.1	3,793,320
247.5R	3,793,317
248NS	3,793,321
251QA	3,793,326
251QB	3,793,324
251.5	3,793,323
268SY	3,793,397
268TR	3,793,325
268C	3,793,322
279	3,793,327
285	3,793,329
286R	3,793,328
289QP	3,793,330
	3,793,331
293.54	3,793,332
293.69	3,793,333
293.73	3,793,334
295AM	3,793,335
296R	3,793,336
307D	3,793,340
309	3,793,337
	3,793,339
309 6	3,793,338
323	3,793,341
326.47	3,793,342
326.5FL	3,793,343
327P	3,793,344
333	3,793,345
340.5	3,793,346
347 8	3,793,347
348C	3,793,348
377	3,793,349
397 45	3,793,350
404	3,793,351
404 5	3,793,352
405	3,793,353
429R	3,793,354
	3,793,355
429 7	3,793,356
439R	3,793,359
448 2B	3,793,360
448 2E	3,793,358
448 2N	3,793,361
448 2P	3,793,357
453SP	3,793,362
465D	3,793,364
471A	3,793,365
471R	3,793,292
476R	3,793,363
477	3,793,366
485R	3,793,367
488B	3,793,368
497A	3,793,369
501.1	3,793,370
524R	3,793,371
556F	3,793,372
586A	3,793,373
586H	3,793,374
587	3,793,375
599	3,793,376
612R	3,793,377
621R	3,793,378
641	3,793,379
648R	3,793,380
666PY	3,793,382
666A	3,793,381
667	3,793,383
668A	3,793,384
674SA	3,793,385
	3,793,386
675	3,793,387
676R	3,793,251
677A	3,793,388
679R	3,793,389
681	3,793,390
683 2	3,793,257
683.3	3,793,391
	3,793,392
683.47	3,793,393
683.48	3,793,264
	3,793,394
683 68	3,793,395
	3,793,396
835	3,793,398
857PG	3,793,399
862	3,793,400
876R	3,793,401
	3,793,402
	3,793,403
879	3,793,260
880R	3,793,404
881	3,793,405
884	3,793,406
944	3,793,297
948	3,793,407
951	3,793,409
990	3,793,408
CLASS 261	
93	3,792,840
112	3,792,841
148	3,792,842
	3,792,843
CLASS 264	
7	3,793,412
26	3,792,847
41	3,793,413
45	3,793,410
	3,793,411
	3,793,415
48	3,793,414
53	3,793,416
77.5AM	3,793,417
78	3,793,418
	3,793,419
89	3,793,420
	3,793,421
99	3,793,422
103	3,793,423
154	3,793,424
210R	3,793,425
231	3,793,426
249	3,793,427
250	3,793,428
CLASS 266	
6S	3,792,844
22	3,792,845
23F	3,792,846
34A	3,792,848
34T	3,792,849
38	3,792,850
CLASS 269	
32	3,792,851
48 1	3,792,856
95	3,792,852
228	3,792,853
310	3,792,855
328	3,792,854
CLASS 271	
85	3,792,857
CLASS 272	
58	3,792,860
CLASS 273	
1R	3,792,858
34A	3,792,861
38	3,792,862
41	3,792,859
95R	3,792,864
131AB	3,792,866
131B	3,792,865
186A	3,792,863
CLASS 277	
193	3,792,867
CLASS 279	
2	3,792,868
4	3,792,869
CLASS 280	
81R	3,792,870
104 5A	3,792,871
150AB	3,792,872
	3,792,873
	3,792,874
204	3,792,875
415A	3,792,876
	3,792,877
CLASS 285	
137R	3,792,878
197	3,792,879
CLASS 290	
33	3,793,529
55	3,793,530
CLASS 292	
1	3,792,883
37	3,792,884
39	3,792,885
169.21	3,792,886
	3,792,887
173	3,792,888
256 61	3,792,893
CLASS 293	
63	3,792,889
65	3,792,890
CLASS 294	
67R	3,792,891
82R	3,792,892
CLASS 296	
23MC	3,792,900
24R	3,792,894
28R	3,792,895
84K	3,792,901
CLASS 297	
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PLANT PATENTS

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U. S. GOVERNMENT PRINTING OFFICE : O - 1974

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Certificates of Correction for the Week of Feb. 26, 1974

Patent No. 3,577,475, S. M. Csicsery, ISOMERIZATION OF

PATENT OFFICE NOTICES

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WILLIAM FELDMAN,
Jan. 29, 1974. *Deputy Assistant Commissioner for Patents.*

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents on or before March 15, 1974.

Buchler, Milton, 9505 Ocala St., Silver Spring, Md. 20901.
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LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,741,416, G. W. Hileman, CONTAINER; **3,269,610**, E. L. Arneson, same; **3,411,692**, E. G. Mathews, same, **filed** May 4, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c1117, *Federal Paper Board Co. Inc.* v. *Field Container Corp.* Pursuant to settlement agreement the Court finds that the patents are valid, cause dismissed, May 15, 1973.

2,780,611, T. A. Te Grotenhuis, PIGMENTED SILICONE ELASTOMERS; **3,156,576**, same, ISOCYANATE MODIFIED PIGMENTS, **filed** June 8, 1972, D.C., N.D. Ohio (Cleveland), Doc. C-73-297, *Eastwood Chemical, Inc.* v. *Mamec International, Inc., formerly Master Mechanics Co.* Consent judgment: Patents valid and defendants permanently restrained and enjoined, June 12, 1973.

3,061,139, B. Edwards, SELF-VENTING PACKAGE; **3,091,360**, same, NESTABLE CUP; **3,139,213**, same, **filed** Mar. 6, 1969, D.C., N.D. Ill. (Chicago), Doc. 69c481, *Illinois Tool Works Inc.* v. *Foster Grant Co., Inc.*

3,139,213. (See 3,061,139.)

3,156,576. (See 2,780,611.)

3,246,336, Baribo, Porter, Turner and Wright, MOLASSES FEED BLOCKS AND METHOD OF PREPARATION AND USE, **filed** June 20, 1973, D.C., S.D. Ill. (Springfield), Doc. S-C-73-128, *A. E. Staley Manufacturing Company* v. *M. D. King Milling Company.*

3,259,349, E. R. Lee, REAR VIEW MIRROR; **3,372,897**, same **filed** June 6, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1455, *S. H. Leggitt Company, Incorporated* v. *King of the Road Mirrors, Inc. and William A. Panozzo.*

3,269,610. (See 2,741,416.)

3,372,897. (See 3,259,349.)

3,403,431, B. B. Buttler, BOAT ANCHOR, **filed** June 5, 1973, D.C., N.D. Tex. (Dallas), Doc. CA-3-7278-E, *Arthur D. Botvin, doing business as Art-Fin Co.* v. *Okiebug Distributing Co., Inc., Don T. Butler and Ray Scott, doing business as Bass Anglers Sportsman Society.*

3,411,692. (See 2,741,416.)

3,461,124, F. D. Buzzelli, METHOD FOR RETAINING HAIR, **filed** June 15, 1973, D.C., E.D. Mich. (Detroit), Doc. 72-2181, *Frank Buzzelli* v. *Minnesota Mining & Manufacturing Co.* Per curiam, patent invalid, District Court erred in granting summary judgment; reversed and remanded, June 15, 1973.

3,528,227, Lee and Sorrells, PROTECTIVE ANIMAL CAGE COVER; **3,528,390**, C. A. Lee, FILTER TYPE ANIMAL CAGE COVER; **3,613,639**, Lee and Sorrells, ANIMAL CAGE PROTECTIVE COVER AND METHOD OF MAKING SAME, **filed** June 19, 1973, D.C., N.D.N.Y. (Utica), Doc. 73-CV-285, *Maryland Plastics Incorporated* v. *Albany International Corp.*

3,528,390. (See 3,528,227.)

3,613,639. (See 3,528,227.)

Plant Patents 3,183, Jessel and Duffett, CHRYSANTHEMUM PLANT; **3,184**, same; **3,185**, same; **3,189**, same; **3,191**, same; **3,212**, same; **3,214**, same; **3,215**, same; **3,216**, same; **3,220**, same; **3,221**, same; **3,231** same; **3,232**, same; **3,233**, same; **3,236**, same; **3,248**, same; **3,250**, same; **3,254**, same; **3,255**, same; **3,256**, same; **3,257**, same, **filed** Mar. 6, 1973, D.C., S.D. Fla. (Miami), Doc. 73-392-C-JLK, *Yoder Brothers* v. *California-Florida Plant Corp.*

P.P. 3,184. (See P.P. 3,183.)
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Certificates of Correction for the Week of Feb. 26, 1974

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Disclaimer

3,627,964.—*Jack Morris,* Monsey, N.Y. LAPPED WELDING OF METAL EDGE PORTIONS. Patent dated Dec. 14, 1971. Disclaimer filed Dec. 21, 1973, by the assignee, *Thermatool Corp.*

Hereby enters this disclaimer to claims 1, 2, 3, 9, 12 and 15 of said patent.

Dedication

3,781,228.—*Robert William McDonnell,* Teaneck, and *Maung Hla Win,* Berkeley Heights, N.J. LAUNDRY PRODUCT CONTAINING ENZYME. Patent dated Dec. 25, 1973. dedication filed Sept. 23, 1973, by the assignee, *Colgate-Palmolive Company.*

Hereby dedicates to the Public the entire remaining term of said patent.

Adverse Decisions in Interferences

In the designated interferences involving the indicated claims of the following patents final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,432,998, D. F. Downey, END CLOSURE FOR DISPOSABLE VACUUM CLEANER DUST BAG, Interference No. 97,682, decided May 23, 1973, claim 1.

Patent No. 3,513,425, R. H. Arndt, MODULAR ELECTRICAL CONDUCTOR TERMINATION SYSTEM, Interference No. 97,875, decided Nov. 30, 1973, claims 1, 2 and 3, 4, 5, 6 and 7.

Patent No. 3,533,600, L. G. Gerson, COMBINATION ROTARY BEATER AND RECIPROCATING KNIFE KITCHEN APPLIANCE, Interference No. 98,313, decided Nov. 20, 1973, claim 6.

Patent No. 3,561,330, S. R. Rich, FLUID OPERABLE MOTOR, Interference No. 97,955, decided Oct. 11, 1973, claims 1, 2, 3, 5 and 6.

Patent No. 3,563,184, J. A. Angelbeck, Jr., PALLET, Interference No. 98,108, decided Oct. 17, 1973, claim 11.

Patent No. 3,567,668, R. Güldenpfenning, METHOD FOR PREPARING AND COMPOSITIONS OF EPOXY RESIN ESTERS PRECONDENSED WITH PHENOPLASTIC OR AMINOPLASTIC RESINS, Interference No. 98,143, decided Nov. 27, 1973, claims 1, 4 and 13.

Patent No. 3,577,475, S. M. Csicsery, ISOMERIZATION OF C_8 ALKYL AROMATICS, Interference No. 97,793, decided Aug. 20, 1973, claims 1, 2 and 3.

Patent No. 3,589,094, R. A. Pearson, CARTON LOADING APPARATUS AND METHOD, Interference No. 98,038, decided Oct. 10, 1973, claims 1, 2, 3, 4, 6, 11 and 13.

Patent No. 3,627,060, N. F. Lemmon, DRAFT LINK SWAY CONTROL MECHANISM, Interference No. 98,120, decided Nov. 8, 1973, claim 1.

Patent No. 3,635,960, G. Girell Di Giovanoel and R. Zweidler, PARA-PHENYLTHIDIAZOLYL- AND PARA-PHENYLOXDIAZOLYL DERIVATIVES OF STYRYLBENZOXAZOLES OR OF STYRYLBENZOTHIAZOLES, Interference No. 98,286, decided Oct. 5, 1973, claims 1, 2, 4, 6 and 7.

Patent No. 3,666,167, J. H. Watts, SHIPPING CASE WITH ACCESS OPENING, Interference No. 98,230, decided Nov. 26, 1973, claim 1.

Patent No. 3,683,991, F. H. Ruhland and R. H. Schmidt, IMPROVED TIRE BEAD SEATER, Interference No. 98,216, decided Nov. 27, 1973, claims 1, 7 and 8.

Patent No. 3,464,897, J. C. Jubin, Jr., SEPARATION OF PROPYLENE OXIDE FROM OTHER HYDROCARBONS, Interference No. 97,594, decided Oct. 1, 1973, claims 1, 2, 3, 4, 6 and 7.

Patent No. 3,636,621, R. H. Dammar, LEAD FORMING METHOD, Interference No. 97,972, decided Sept. 10, 1973, claims 5, 6 and 7.

National Technical Information Service

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DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
National Institutes of Health, Chief, Patent Branch,
Westwood Building, Bethesda, Md. 20014

Patent application 375,883. Droplet Counter Current Chromatography. Filed July 2, 1973. PC $3/MF $1.45.

Patent application 384,805. Scintillation Analysis System. Filed Sept. 17, 1970. PC $4/MF $1.45.

Patent application 406,870. Concentric Electrode Construction for an Electrocardiogram Transmitter. Filed Oct. 10, 1973. PC $3/MF $1.45.

Patent application 407,532, Thermesthesiometer. Filed Oct. 18, 1973. PC $4/MF $1.45.

Patent 3,740,850. Tertiary Aromatic Amine Accelerators in Dental Compositions. Filed Feb. 2, 1971. Patented June 26, 1973. Not available NTIS.

Patent 3,743,088. Diagnostic Device and Method of Treatment. Filed Jan. 18, 1971. Patented July 3, 1973. Not available NTIS.

Patent 3,749,913. Renal Scanning Composition and Method Using Technetium 99 m. Filed June 24, 1971. Patented July 31, 1973. Not available NTIS.

Patent 3,775,309. Countercurrent Chromatography With Flow-Through Coil Planet Centrifuge. Filed July 27, 1972. Patented Nov. 27, 1973. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Sts. NW.,
Washington, D.C. 20240

Patent application 401,003. Preparation of Reverse Osmosis Membranes by Complete Evaporation of the Solvent System. Filed Sept. 26, 1973. PC $3.25/MF $1.45.

Patent application 409,104. Rock Bolt Tension Load Cell. Filed Oct. 24, 1973. PC $3/MF $1.45.

Patent 3,345,272. Multiple Effect Purification of Contaminated Fluids by Direct Gaseous Flow Contact. Filed May 14, 1965. Patented Oct. 3, 1967. Not available NTIS.

Patent 3,608,072. Fish Toxicant Compositions and Method of Using Them. Filed Mar. 21, 1969. Patented Sept. 21, 1971. Not available NTIS.

Patent 3,644,625. Anesthetization of Fish. Filed Mar. 13, 1969. Patented Feb. 22, 1972. Not available NTIS.

Patent 3,657,115. Semipermeable Membranes, Their Use and Method for Preparation Wherein the Membranes Are Stretched During the Initial Gelation Period. Filed Jan. 27, 1971. Patented Apr. 18, 1972. Not available NTIS.

Patent 3,661,634. Semipermeable Osmotic Membrane and Method of Producing Same. Filed Oct. 31, 1969. Patented May 9, 1972. Not available NTIS.

Patent 3,663,692. Methods of Bird Control. Filed Dec. 29, 1969. Patented May 16, 1972. Not available NTIS.

Patent 3,774,759. Separation of Particulate Solids of Varying Densities in a Fluidized Bed. Filed Dec. 16, 1970. Patented Nov. 27, 1973. Not available NTIS.

DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research,
Code 302, Arlington, Va. 22217

Patent 3,592,669. Water Repellent Composition for Coated Optical Glass Surfaces. Filed Apr. 23, 1968. Patented July 13, 1971. Not available NTIS.

Patent 3,592,946. Flexible Amine-Epoxide Resin and the Controlled Temperature Preparation Thereof. Filed Mar. 5, 1968. Patented July 13, 1971. Not available NTIS.

Patent 3,594,415. Tricarballylic Acids. Filed Aug. 30, 1968. Patented July 20, 1971. Not available NTIS.

Patent 3,599,350. Educational Device for Use in Conversion Between Number Systems. Filed Apr. 15, 1970. Patented Aug. 17, 1971. Not available NTIS.

Patent 3,605,007. DC Power Supply Regulated by a Shunt Transistor Whose Bias Voltage Is Varied by Transistor Means To Stabilize Load Voltage. Filed Aug. 5, 1969. Patented Sept. 14, 1971. Not available NTIS.

Patent 3,605,114. Protective Eyeshield for Helmets. Filed Apr. 6, 1970. Patented Sept. 20, 1971. Not available NTIS.

Patent 3,609,855. Production of Beryllium Ribbon Reinforced Composites. Filed Apr. 25, 1969. Patented Oct. 5, 1971. Not available NTIS.

Patent 3,611,077. Thin Film Room-Temperature Electron Emitter. Filed Feb. 26, 1969. Patented Oct. 5, 1971. Not available NTIS.

Patent 3,611,139. Orthogonal Mixer F1F1 Repeater. Filed Feb. 25, 1970. Patented Oct. 5, 1971. Not available NTIS.

Patent 3,611,776. Crystal Bending Tool. Filed Oct. 22, 1969. Patented Oct. 12, 1971. Not available NTIS.

Patent 3,611,815. Frictionless Gyroscope. Filed Dec. 24, 1969. Patented Oct. 12, 1971. Not available NTIS.

Patent 3,614,992. Sandwich-Type Acoustic Material in a Flexible Sheet Form. Filed May 26, 1969. Patented Oct. 26, 1971. Not available NTIS.

Patent 3,615,896. Metal Surface Primer. Filed July 31, 1969. Patented Oct. 26, 1971. Not available NTIS.

Patent 3,615,928. Growth of Pb(1-x)Sn(x)Te From Nonstoichiometric Melts. Filed Oct. 8, 1969. Patented Oct. 26, 1971. Not available NTIS.

Patent 3,615,949. Crossover for Large Scale Arrays. Filed Nov. 5, 1968. Patented Oct. 26, 1971. Not available NTIS.

Patent 3,619,130. Method of Removing Carbon Dioxide From Gaseous Mixtures. Filed Aug. 27, 1968. Patented Nov. 9, 1971. Not available NTIS.

Patent 3,619,718. Method and Apparatus for Neutralizing Electrostatic Charges on Flowing Liquids. Filed Feb. 20, 1970. Patented Nov. 9, 1971. Not available NTIS.

Patent 3,632,961. Silica-Clay Tooling Material for Welding and Brazing Operations. Filed Nov. 4, 1970. Patented Jan. 4, 1972. Not available NTIS.

Patent 3,633,092. Pulsed Power Supply. Filed July 30, 1970. Patented Jan. 4, 1972. Not available NTIS.

Patent 3,633,174. Memory System Having Self-Adjusting Strobe Timing. Filed Apr. 14, 1970. Patented Jan. 4, 1972. Not available NTIS.

Patent 3,634,207. Nickel Etching and Plating Bath. Filed Sept. 4, 1969. Patented Jan. 11, 1972. Not available NTIS.

Patent 3,634,220. Method for Improving Graphite Fibers for Plastic Reinforcement and Products Thereof. Filed Sept. 19, 1968. Patented Jan. 11, 1972. Not available NTIS.

Patent 3,634,694. Programmed-Response Spectral Scanning Telephotometer System. Filed Mar. 18, 1969. Patented Jan. 11, 1972. Not available NTIS.

Patent 3,634,751. Precision Voltage Regulator. Filed Feb. 1, 1971. Patented Jan. 11, 1972. Not available NTIS.

Patent 3,635,108. Laser-Guided Boring Tool for Deep Hole Boring. Filed Mar. 9, 1970. Patented Jan. 18, 1972. Not available NTIS.

Patent 3,635,801. Nickel Electrodeposition Process for Improving High-Temperature Ductility. Filed Mar. 5, 1969. Patented Jan. 18, 1972. Not available NTIS.

Patent 3,635,813. Anode System for Cathodic Protection of Stretched Chain. Filed Mar. 3, 1969. Patented Jan. 18, 1972. Not available NTIS.

Patent 3,636,329. Five-Bit Binary to Decimal Translator. Filed Apr. 28, 1970. Patented Jan. 18, 1972. Not available NTIS.

Patent 3,636,380. Power Amplifier. Filed Sept. 4, 1970. Patented Jan. 18, 1972. Not available NTIS.

Patent 3,637,497. Moisture Resistant Dry Film Lubricants. Filed June 12, 1968. Patented Jan. 25, 1972. Not available NTIS.

Patent 3,637,607. Silicon-Containing Polyamide. Filed Feb. 12, 1969. Patented Jan. 25, 1972. Not available NTIS.

Patent 3,661,728. Nickel Plating of Nickel-Copper Printed Circuit Board. Filed Mar. 31, 1971. Patented May 9, 1972. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—
Code GP-2, Washington, D.C. 20546

Patent application 394,207. Apparatus for Producing High Purity 1-123. Filed Sept. 4, 1973. PC \$3/MF \$1.45.

Patent application 409,990. Automatic Microbial Transfer Device. Filed Oct. 26, 1973. PC \$3/MF \$1.45.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JANUARY 19, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-02-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-25-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	10-11-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-04-73
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	9-01-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	6-13-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	9-18-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-02-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	8-16-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	2-02-73
DESIGNS, GROUP 290—R. L. CAMPBELL, Director Industrial Arts; Household, Personal and Fine Arts.	4-11-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	3-16-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	2-26-73
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	3-02-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-22-73
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-28-72

Expiration of patents: The patents within the range of numbers indicated below expire during January 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,775,762 to 2,779,941, inclusive
Plant Patents	Numbers 1,543 to 1,558, inclusive

REISSUES

FEBRUARY 26, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,928

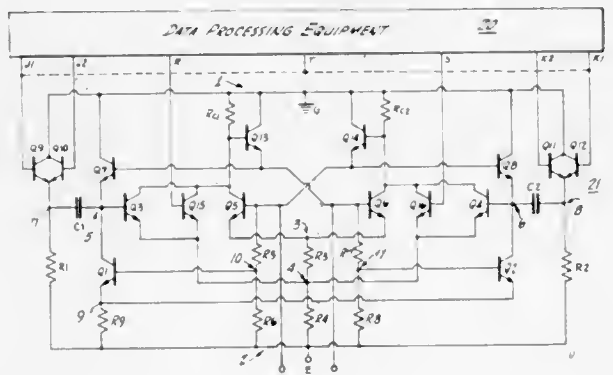
GATED FLIP-FLOP EMPLOYING PLURAL TRANSISTORS AND PLURAL CAPACITORS COOPERATING TO MINIMIZE FLIP-FLOP RECOVERY TIME

Edwin K. C. Yu, Norristown, Pa., assignor to RCA Corporation

Original No. 3,398,300, dated Aug. 20, 1968, Ser. No. 460,168, June 1, 1965. Application for reissue May 11, 1970, Ser. No. 36,133

Int. Cl. H03k *3/286*

U.S. Cl. 307—247 **13 Claims**



A gating arrangement for gating input signals to a bistable multivibrator, or flip-flop. The arrangement includes first and second capacitors for A.C. coupling input signals to set and reset points, respectively, of the flip-flop. In the steady state of the flip-flop, the gating arrangement biases the set and reset points at different values so that the input signal coupled by one of the capacitors is effective to switch the flip-flop. When the flip-flop switches, the gating arrangement provides a further current path for that capacitor.

27,929

DEVICE FOR PRODUCING GASEOUS REACTANTS, PARTICULARLY HYDROGEN AND OXYGEN FOR FUEL CELLS

Ferdinand von Sturm and Hans Kohlmuller, Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Original No. 3,574,560, dated Apr. 13, 1971, Ser. No. 780,426, Dec. 2, 1968. Application for reissue Aug. 10, 1972, Ser. No. 279,736

Claims priority, application Germany, Dec. 2, 1967, P 16 67 277.8

Int. Cl. B01j *7/02*

U.S. Cl. 23—282 **4 Claims**

Method of producing gaseous reactants, particularly hydrogen and oxygen, for fuel cells by reaction or catalytic dissociation of liquid or liquid-dissolved substances, with solid substances or solid catalysts, whereby the development of gas is automatically adjusted to the gas consumed. The liquid substance or the liquid-dissolved substance is placed into a storage container which is connected with a sealed gas chamber and also connected, via at least one line, to a reaction tube containing the solid substance or the solid catalyst. Thus when the pressure drops in the reaction tube, the liquid located in the storage container is further compressed into the reaction tube and when the pressure in the reaction tube rises, the liquid is either completely or partially returned to the storage container.

27,930

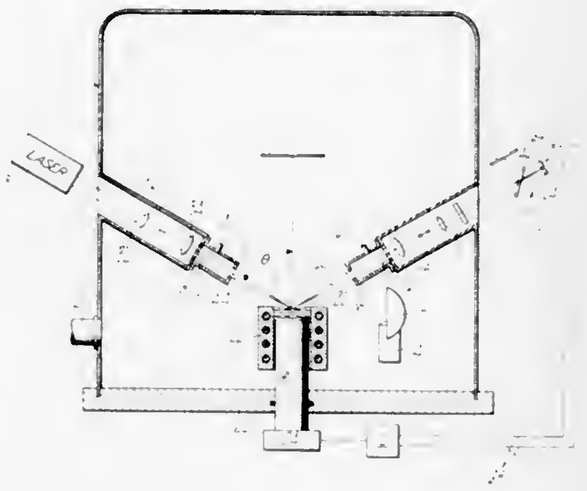
VACUUM VAPOR DEPOSITION WITH CONTROL OF ELEVATION OF METAL MELT

Randolph D. House, Manchester, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Original No. 3,574,650, dated Apr. 13, 1971, Ser. No. 806,956, Mar. 13, 1969. Application for reissue Jan. 31, 1972, Ser. No. 222,012

Int. Cl. C23c *13/02, 13/12*

U.S. Cl. 117—106 **7 Claims**



In the processes for forming protective coatings on metal substrates, particularly the nickel-base and cobalt-base superalloys, by melting a coating material to cause vaporization thereof, a monochromatic light beam is utilized in sensing and controlling displacement of the surface elevation of the melt.

27,931

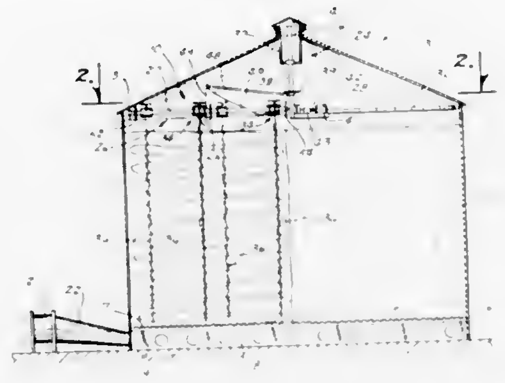
APPARATUS FOR AERATING STORED GRAIN

Eugene G. Sukup, Dougherty, Iowa 50433

Original No. 3,584,842, dated June 15, 1971, Ser. No. 861,685, Sept. 29, 1969. Application for reissue June 14, 1972, Ser. No. 262,835

Int. Cl. B01f *7/00*

U.S. Cl. 259—102 **16 Claims**



An apparatus for aerating grain stored in an enclosure by mechanically moving a stirring apparatus therethrough. The apparatus comprises a vertically disposed element which is rotatably mounted on a carriage movable itself back and forth on a flightless, smooth tubular member which is rotated about its own axis as it is moved over the stored grain. The tubular member is supported above the grain by means connected to the enclosure and a motor is provided for both rotating and moving the tubular member.

27,932

OUTBOARD MOTOR TILTING MECHANISM

Donald R. Mettetal, Jr., Livonia, Mich., assignor to Andrew F. Wintercorn, trustee, Rockford, Ill.

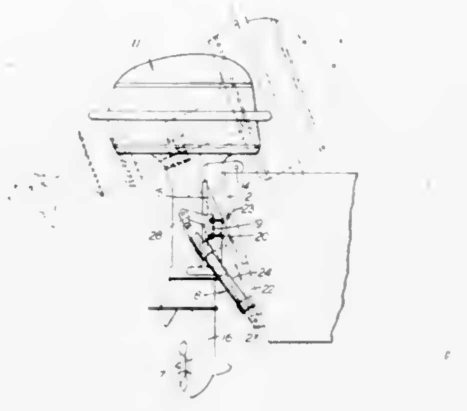
Original No. 3,406,652, dated Oct. 22, 1968, Ser. No. 748,363, July 14, 1958. Application for reissue Oct. 1, 1969, Ser. No. 33,539

(Filed under Rule 47(b) and 35 U.S.C. 118)

Int. Cl. B63h *5/12*

U.S. Cl. 115—41 HT **31 Claims**

Hydraulic piston and cylinder means (or power operable screw and nut means) pivotally connected at opposite ends between the transom of the boat and an outboard engine that is pivotally mounted on the transom, usually only for angle adjustment to a fixed setting, is tiltably adjustable quickly by power in either direction to a desired angle usually for "trimming" the engine but occasionally for docking or beaching a boat in shallow water or to enable operating safely at less than usual depth through a weed bed.



27,933

PHOTOGRAPHIC MATERIAL FOR THE SILVER DYE BLEACHING PROCESS

Heinrich Bruengger, Basel, and Carlo Boragine, Fribourg, Switzerland, by Ciba-Geigy AG, Basel, Switzerland, assignee

No Drawing. Original No. 3,635,716, dated Jan. 18, 1972, Ser. No. 852,075, Aug. 21, 1969. Application for reissue May 10, 1973, Ser. No. 360,245

Claims priority, application Switzerland, Aug. 26, 1968, 12,771/68

Int. Cl. G03c *1/72*

U.S. Cl. 96—99 **10 Claims**

Photographic material for the silver dyestuff bleaching process is provided which contains in at least one silver halide emulsion layer a bleachable azo dyestuff as image dyestuff and an asymmetrically substituted thiocarbocyanine as red sensitizer. Unexpectedly high relative sensitivities are achieved with these sensitizers which may have a betainelike structure, especially in the presence of polyazo dyestuffs.

central area, and finally to a semi-glossy dark yellowish

themum characterized particularly as to its uniqueness

PLANT PATENTS

GRANTED FEBRUARY 26, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,491
ST. AUGUSTINE GRASS

Curran L. Garrett, Ingleside, and Joseph T. Mahoney, Corpus Christi, Tex., assignors to Curran L. Garrett, Ingleside, Tex.
Filed Oct. 2, 1972, Ser. No. 293,921
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—88 **1 Claim**

1. A new and distinct variety of St. Augustine grass, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of superior tolerance to St. Augustine decline virus (SADV), with no evidence of any susceptibility thereto in either field trials or in inoculation tests, a pleasing attractiveness for lawn plantings, an ability to be easily propagated from stolons, a relatively fast growing habit, although somewhat slower than Texas common, good hardiness to temperatures as low as 13° F., an exceptionally long internode length, and distinctive purpose stigmas, with white filaments toward the base.

3,492
ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.
Filed Oct. 4, 1972, Ser. No. 294,993
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—18 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its dark, glossy foliage; vigorous, upright habit of growth; Camellia rose flower color with the reverse of the petals being Dawn pink.

3,493
HEBE (VERONICA) PLANT

Louis E. Gavello, 3436 Maricopa Ave., Richmond, Calif. 94804
Filed Oct. 19, 1972, Ser. No. 298,864
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—54 **1 Claim**

1. A new and distinct variety of Hebe (Veronica) plant substantially as illustrated and described and characterized as to novelty by

- (a) Low growing, trailing ground cover type plant
- (b) Profuse flowers of color "Campula Blue" covering the entire plant
- (c) Its long and repeated blooming period, and
- (d) Its resistance to weather and diseases.

3,494
HEBE (VERONICA) PLANT

Louis E. Gavello, 3436 Maricopa Ave., Richmond, Calif. 94804
Filed Oct. 19, 1972, Ser. No. 299,121
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—54 **1 Claim**

1. A new and distinct variety of Hebe (Veronica) plant, substantially as illustrated and described and characterized as to novelty by:

- (a) the compact mounding form of the plant having a low height and a spread greater than its height
- (b) the distinct bluish color of the profuse flowers covering the tips of the foliage
- (c) the long and repeated blooming period
- (d) its resistance to weather and disease
- (e) its moderate growth and controlled habit making it suitable for garden ornament as massed blue flowering shrubs.

3,495
HEBE (VERONICA) PLANT

Louis E. Gavello, 3436 Maricopa Ave., Richmond, Calif. 94804
Filed Oct. 19, 1972, Ser. No. 299,122
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—54 **1 Claim**

1. A new and distinct variety of Veronica plant substantially as herein described and characterized by its large blossoms as compared to its parent plants and the pansy color of said blossoms.

3,496
APPLE TREE

Floyd Blount, 10941 Beauty Lane, Dallas, Tex. 75229
Filed Oct. 26, 1972, Ser. No. 300,899
Int. Cl. A01b *5/03*
U.S. Cl. Plt.—34 **1 Claim**

A new and distinct variety of apple tree of the golden delicious type which is more highly productive and at an earlier age than other varieties of golden delicious apple and which produces fruit of a size and quality superior to other varieties of golden delicious apple. The leaves which are unlike those of other apple varieties are arranged to give a good mix of shade and sun to withstand the hot summers of the Southwestern United States and are large, dark green, and leathery, with a tendency to have deeply serrated edges. The tree and fruit grow extremely well in the climate of the Southwestern United States and are particularly well adapted to the hot dry summers of Texas and Oklahoma. The fruit is more disease resistant than other varieties of golden delicious apple and is not course and pithy as are other golden delicious varieties grown in the Southwest United States.

3,497
IVY PLANT

Milton C. Ballas, North Plainfield, N.J., assignor of a fractional part interest to Anastasia C. Ballas
Filed Nov. 2, 1972, Ser. No. 303,020
Int. Cl. A01g *5/00*
U.S. Cl. Plt.—67 **1 Claim**

1. A new and distinct variety of ivy plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of the production of vines which grow from 3 to 5 or more feet in length if not cut back, said vines being full and plush at the top and attractively cascading from the base in irregular shapes, a vigorous and rapid-growing rooting habit, and the ability to be propagated readily and easily from rooted cuttings, distinctive and attractive leaves which are relatively round in general shape but having five lobes, said leaves being about two inches in diameter when mature and being symmetrical on both sides of the vines, with tiny clusters of small leaf offshoots breaking at the base of each large leaf and which tend to give the vine a very compact appearance, a tendency of the leaves to curl when exposed to full sunlight, and a distinctive and attractive leaf color which sometimes is practically all yellowish white at first, but which changes as the leaves develop and mature to ivory white at the edges and moderate yellow green over the

central area, and finally to a semi-glossy dark yellowish green color with an ivory white border when fully mature.

3,498
GERANIUM PLANT

Frank Andrea, 390 N. Franklin St., Holbrook, Mass. 02343
Filed Apr. 7, 1972, Ser. No. 242,147
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of geranium plant, substantially as shown and described, characterized particularly by its health growth; its continuous and exceptionally free blooming habits; its large and double flowered truss; its large florets with double petalage and distinctive red color combination.

3,499
CHRYSANTHEMUM PLANT

Barrie J. Machin, Chichester, and G. B. Hall, Ashley Green Chesham, England, assignors to Yoder Brothers, Inc., Barberton, Ohio
Filed May 11, 1972, Ser. No. 252,498
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of daisy form chrysanthemum characterized particularly as to its uniqueness when compared to Florida Marble by its pale yellow to off-white color, it's approximately one-fourth inch smaller flower, and it is approximately two inches less vigor.

3,500
CHRYSANTHEMUM PLANT

Grace H. Mack, New Canaan, Conn., and Walter E. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Grace H. Mack, New Canaan, Conn.
Filed May 15, 1972, Ser. No. 253,640
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—75 **1 Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the cultivar White Grandchild by its flowers which are approximately 2½ inches to 3 inches larger in diameter, and which are more ivory white in color, and do not pink with age; by its growth habit which produces flowerng plants which are approximately three inches shorter in height and which average three more breaks per plant when flowered naturally as field grown plants from plantings made in mid-June and given a single pinch; and by its foilage, which is lighter green in color and which is more coarsely indented and more moderately serrated.

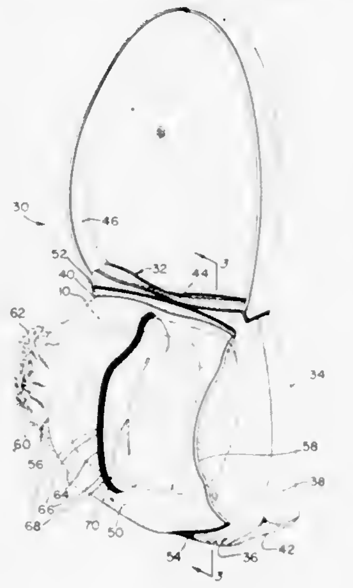
PATENTS

GRANTED FEBRUARY 26, 1974

GENERAL AND MECHANICAL

3,793,643
CARRIER FOR PORTABLE HEATER

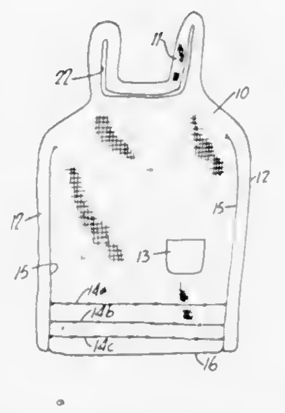
Joseph Kinoshita, Los Angeles, Calif., assignor to Underwood Rivers Company, Inc.
Filed Jan. 17, 1972, Ser. No. 221,334
Int. Cl. A61f *7/06*
U.S. Cl. 2—66 **8 Claims**



A carrier is provided for a portable heater, the heater comprising a solid combustible fuel element and an air permeable incombustible casing, said carrier being in the form of a bag of air pervious material having a zippered opening, and a flap secured to an outer wall of the bag at the upper and lower margins, leaving hand openings at either end. The openings may be provided with sleeves, and the flap-covered outer wall may have a slit to provide access to the bag interior.

3,793,644
DISPOSABLE APRON

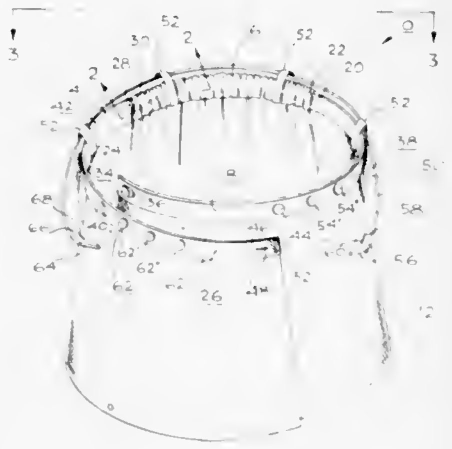
Irving Kellner, New York, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed Aug. 18, 1972, Ser. No. 281,745
Int. Cl. A41b *13/10*
U.S. Cl. 2—49 R **5 Claims**



A disposable apron of non-woven textile, plastic, or paper material, which is formed in continuous lengths of sheeting and with the individual apron separated along perforated or other tear-off lines to form the individual aprons of the desired length. The neck strap and tie straps of the apron are formed of the integral material of the apron body, by means of appropriate tear lines or cuts in the sheeting.

3,793,645
ADJUSTABLE WAIST BAND ARRANGEMENT

Gloria C. Kadison, P.O. Box 626, Thousand Oaks, Calif. 91360
Filed Oct. 16, 1972, Ser. No. 297,592
Int. Cl. A41d *1/14*
U.S. Cl. 2—221 **7 Claims**

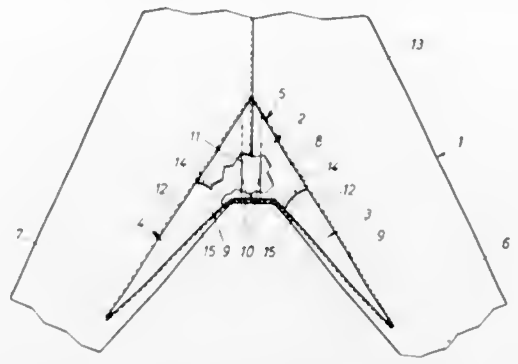


An improved adjustable waist band arrangement for providing a garment adjustable to fit all sizes within a predetermined range and still provide a tailored, finished appearance. The adjustable waist band arrangement is provided with a waist encircling band having a resiliently stretchable back portion. A pair of front portions of the band are coupled to each of the ends of the stretchable back portion. The front portions are adapted to be positioned in the front of the waist of the wearer in an overlapping arrangement. Restraining means are provided for holding the over-lapped front portions detachably together. The waist encircling band may be coupled to, for example, a skirt. A nonstretchable belt means extends around the back portion of the waist encircling band and has ends that are detachably fastenable by, for example, a plurality of buttons, to the pair of front portions. Depending upon the waist size of the wearer, the buttons to which the nonstretchable belt means is detachably fastened are selected to provide a comfortable fit. The resiliently stretchable back portion of the waist encircling band allows the waist encircling band to stretch to fit any desired waist size.

3,793,646
WORK TROUSERS

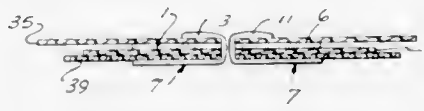
Hermann Tempelhof, La Favorite, 2016 Cortaillod, Switzerland
Filed Nov. 2, 1972, Ser. No. 303,186
Claims priority, application Switzerland, Nov. 11, 1971, 16414/71
Int. Cl. A41d *1/06*
U.S. Cl. 2—227 **8 Claims**

The invention is directed to work trousers which are provided with effective ventilation by inserting a gusset on the inner side of the leg pieces of the work trousers, which gusset is constructed to provide two vent channels in the gusset.



3,793,647
PRE-CONSTRUCTED BUTTONHOLE AND METHOD OF INCORPORATING SAME IN A GARMENT

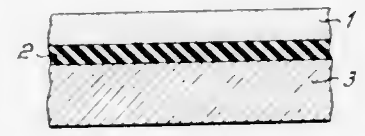
Mary Ann Spetz, 5675 Farcier Ct., Utica, Mich. 48087
Continuation-in-part of Ser. No. 141,293, May 7, 1971, Pat. No. 3,701,167. This application Aug. 2, 1972, Ser. No. 271,559
Int. Cl. A41f *1/02*
U.S. Cl. 2—266 **13 Claims**



A pre-constructed buttonhole consisting of components independent of an article to which they are to be attached, and a method for incorporating the components into a material to form a finished buttonhole. The components consist of a reinforcing piece disposed on the surface opposite the exterior finished surface of the article, and buttonhole piece assembly comprised of buttonhole pieces having tab-portions disposed on the finished surface of the article. A slit is made which extends through the reinforcing piece and layers of material composing the article. The tab portions of the buttonhole pieces, which comprise the buttonhole piece assembly, are inserted through this slit to the exterior finished surface of the article and affixed thereto to form a buttonhole.

3,793,648
BULLET-RESISTING ARMOR

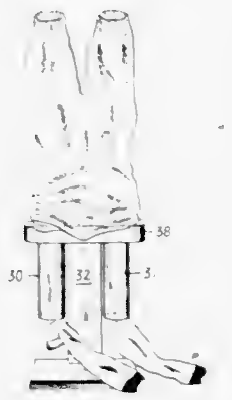
Erhard Dorre, and Manfred Nussbaum, both of Plochingen, Germany, assignors to Feldmuhle Anlagen- und Produktiongesellschaft mit beschrankter Haftung, Duesseldorf-Oberkassel, Germany
Filed Dec. 15, 1972, Ser. No. 315,422
Claims priority, application Germany, Dec. 17, 1971, 2162701
Int. Cl. F41h *1/02*
U.S. Cl. 2—2.5 **10 Claims**



Laminar plates having an outer layer of hard, polycrystalline, sintered ceramic backed by an aluminum alloy layer resist the passage of bullets and like projectiles as well as much heavier steel armor or heavier armor having a similar ceramic outer layer over a steel base. An intermediate rubber layer permits a reduction in the thickness of the aluminum layer and a corresponding reduction in overall weight at equal protection. Armored vests in which small laminar plates are held in pockets in overlapping relationship are a prime field of application.

3,793,649
PROCESS FOR PREPARING LADIES' SEAMLESS PANTYHOSE

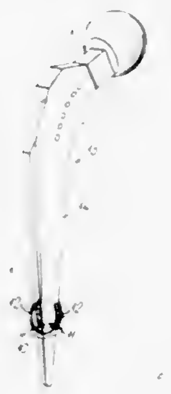
Robert M. Matthews, Pittsboro, and Albert W. Petty, Siler City, both of N.C., assignors to Kellwood Company, St. Louis, Mo.
Filed Sept. 18, 1972, Ser. No. 289,837
Int. Cl. A41b *9/04*
U.S. Cl. 2—224 R **4 Claims**



Pantyhose are formed from two circularly knitted blanks of which the toes have been left unsewn, by an operation wherein the upper portions of the blanks are slit and sewn and then, without turning the entire garment inside out, the garment is slipped over a pair of suction tubes in close proximity to the sewing machine on which the panty portion has been sewed, and suction applied to pull the toe portions through and out of the ends of the tubes in inside-out condition for sewing of the toes which then can be pulled out of the tubes by sliding the leg portions back along the tubes until the toes have been turned to their original position, and then the entire garment slid forwardly off the tubes; thus greatly expediting the operation. The blanks may be dyed and scoured at a boil in advance of these operations.

3,793,650
PROSTHETIC BONE JOINT HAVING A SPACER DEVICE

Robin Sydney Mackwood Ling, Teignmouth, and Alan John Clive Lee, Exeter, both of England, assignors to National Research Development Corporation, London, England
Filed Sept. 22, 1972, Ser. No. 291,161
Claims priority, application Great Britain, Sept. 24, 1971, 44709/71
Int. Cl. A61f *1/00*
U.S. Cl. 3—1 **2 Claims**



The intramedullary or equivalent stem of a prosthetic bone joint device is uniformly spaced within a bone canal during implantation using gap-filling cement. This achieved by using a spacer device having an annular base with at least three spring members extending from spaced points around the base, the spring members extending in a direction having radially outward and common axial components relative to the base. The base is formed to engage around and partway along the stem with its spring members facing forward. When the stem/spacer combination is implanted the springs act to centralise the position of the stem.

3,793,651

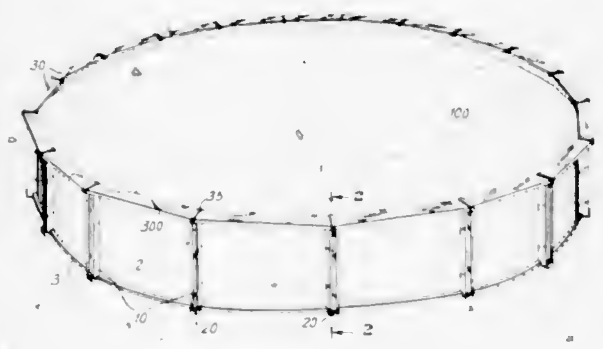
PORTABLE SWIMMING POOL

Joseph J. Pitti, Wantagh, Long Island; George A. Tassone, Brooklyn, and Benjamin Davidoff, Hartsdale, all of N.Y., assignors to Atreo Manufacturing Co., Inc., Brooklyn, N.Y.

Filed Aug. 23, 1971, Ser. No. 173,802

Int. Cl. E04h *3/16, 3/18*

U.S. Cl. 4—172.19 **16 Claims**



A portable pool for erection on any suitable level surface includes an impermeable liner of plastic material for the retention of water, a continuous thin metallic wall for defining the shape of the pool, circular or oval, reinforcing beads for the top and bottom edges of the side-wall, vertical columns equally spaced around the circumference of the wall and rigidly interconnecting the top and bottom reinforcing beads, and a top rail for resisting the hoop stresses induced by the hydrostatic action of the water mass contained inside the liner. In oval pools additional tension members interconnect pairs of columns near their bottom ends to resist the unbalanced loads on the linear portions of the circumference and external buttresses aid in transmitting these loads to the top rail. Hold-down plates bearing some of the weight of the contained water aid in stabilizing and anchoring the wall of the pool.

3,793,652

ELECTRICALLY NON-CONDUCTIVE HOSPITAL BED

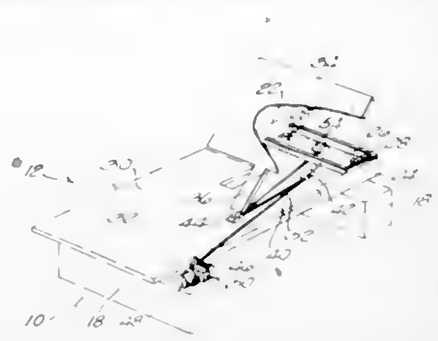
John H. Linehan, 6028 N. Santa Monica Blvd., Whitefish Bay, Wis. 53217, and Stanley V. Jaskolski, N76W22144 Chestnut Hill Rd., Sussex, Wis. 53089

Filed May 24, 1972, Ser. No. 254,783

Int. Cl. A61g *7/00*

U.S. Cl. 5—63 **9 Claims**

An electrically safe hospital bed comprises a pair of independently operable mechanical jacks which include electrically non-conductive, pivotally interconnected links and which are spaced apart to define an unobstructed region therebetween to permit access by X-ray equipment. An electrically non-conductive, X-ray transparent mattress support platform is mounted on these jacks.



3,793,653

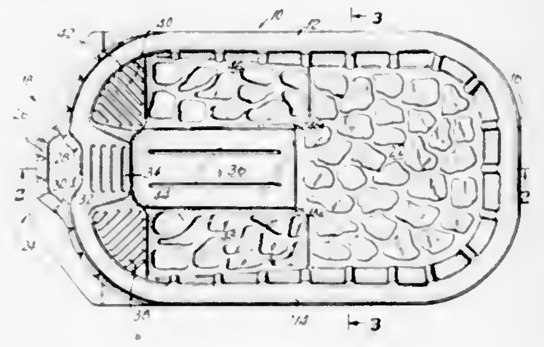
ONE-PIECE PLASTIC POOL

Bertram Brooks, Yonkers, N.Y., assignor to Carolina Enterprises, Inc., Tarboro, N.C.

Filed May 17, 1972, Ser. No. 254,048

Int. Cl. E04h *3/16, 3/18*

U.S. Cl. 4—172 **4 Claims**



A one-piece plastic pool having a slide for enabling a child to descend to the bottom of the pool. Means is provided integral with the pool for enabling a child positioned on the bottom of the pool to position himself at the top of the slide without leaving the pool.

3,793,654

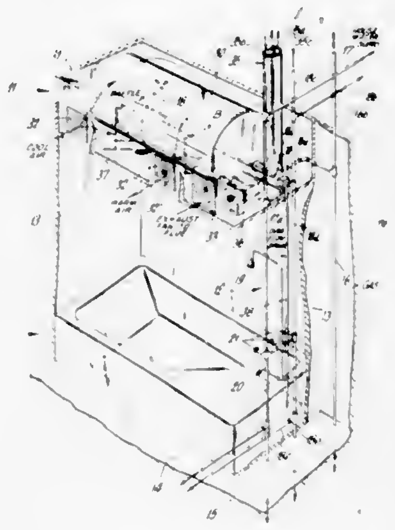
COMBINATION BATHTUB AND WATER AND SPACE HEATING UNIT

Helm Roberts, 217 N. Upper St., Lexington, Ky. 40507

Filed July 14, 1971, Ser. No. 162,434

Int. Cl. A47k *3/00;* **F24h** *6/00*

U.S. Cl. 4—179 **6 Claims**



The invention relates to the combination of a conventional bathtub, and a combined space heating and water heating unit mounted directly above the bathtub to provide hot water for use with the bathtub, and to provide heated air for heating the room in which the bathtub is located. The combined water and space heating unit is enclosed in an insulated enclosure and includes an opening to allow the passage of hot air to the bathroom, and an exhaust fan for conducting exhaust air from the bathroom to the vent.

ERRATUM

For Class 5—63 see:
Patent No. 3,793,652

3,793,655

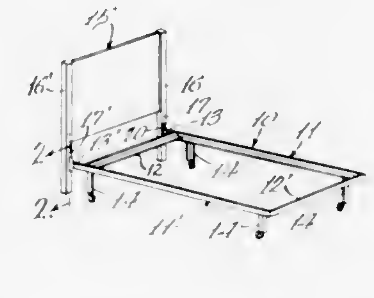
ENDBOARD ATTACHMENT MEANS

George M. Harris, and Wilbert E. Behnke, both of Chicago, Ill., assignors to Harris-Hub Company, Inc., Harvey, Ill.

Filed Aug. 21, 1972, Ser. No. 282,410

Int. Cl. A47c *19/00*

U.S. Cl. 5—296 **11 Claims**



An improved bed assembly includes a pair of parallel side rails, a headboard extending perpendicularly between the side rails, and a hook assembly for each side rail for joining the side rails with the headboard. The headboard is provided with respective pairs of support pins recessed beneath the headboard surfaces for engagement with a respective hook assembly. The hook assembly includes a bracket having a vertical plate secured at one side to the end of the rail and having an offset portion at its other side extending perpendicularly from the plate, and which presents a planar surface outwardly of the bracket. A hook plate is carried upon the bracket plate by means of a pair of rivets anchored in the hook plate and inserted through respective slots in the bracket plate inclined to the offset bracket portion at the same angle to maintain the hook plate in sliding engagement with the bracket plate. A portion of the hook plate protrudes through an elongated vertical slot in the offset portion and is formed into a pair of hooks by slots inclined to the offset portion in an opposite sense from the bracket plate slots. The hook portions engage the headboard pins and the vertical surface of the offset portion becomes urged under loading into abutting engagement with the confronting headboard surface to form a rigid joint.

3,793,656

WHEEL WEIGHT TOOL

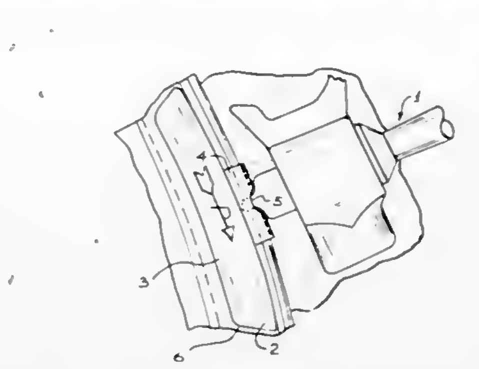
Hubert D. Songer, and Warren E. Carter, both of Murfreesboro, Tenn., assignors to Perfect Equipment Corporation, Murfreesboro, Tenn.

Filed Sept. 7, 1971, Ser. No. 177,958

Int. Cl. B25f *1/00;* **B23p** *19/04*

U.S. Cl. 7—8 **6 Claims**

A tool for removing and installing wheel weights is provided designed to permit utilization of the tool in a variety of situations including use where the tire and wheel are mounted on an axle of a vehicle. The components of the tool are mounted on a handle and the tool is constructed so that those components are replaceable whenever normal wear or breakage destroys their effectiveness. The tool has a prying means and a spanner removably mounted on one end of an elongated handle portion. The prying means and spanner are adapted to remove wheel weights quickly and effectively in one motion of the tool.



3,793,657

DEVICE FOR SEPARATING THE LANES IN A SWIMMING POOL FOR SWIMMING RACE

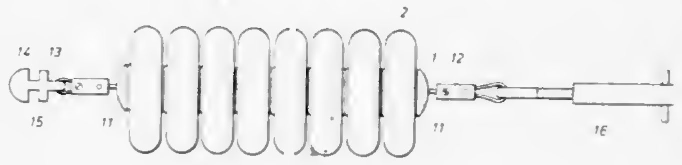
Povl Kaas, Albertslund, Denmark, assignor to Svejsa A/S, Strand, Denmark

Filed May 30, 1972, Ser. No. 257,909

Claims priority, application Denmark, May 28, 1971, 2627/71

Int. Cl. B63b *21/52*

U.S. Cl. 9—8 R **5 Claims**



A device for separating the lanes in a swimming pool for swimming race and comprising a cable carrying floats shaped as solids of revolution having a hub provided with an axial through-going hole for the cable and with a concave spherical support surface at one end and a convex spherical support surface at the opposite end, the middle portion of said hub being connected to a surrounding water breaking peripheral portion having a smaller axial extent than the hub.

3,793,658

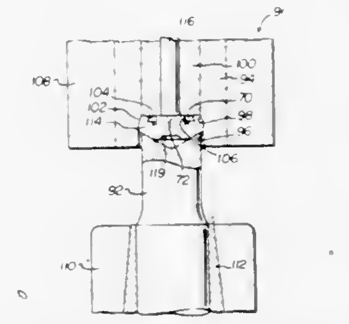
METHOD OF FORMING A FASTENER

Harold A. Ladouceur, Livonia, Mich., assignor to Multifastener Corporation, Detroit, Mich.

Filed June 3, 1971, Ser. No. 149,518

Int. Cl. B21k *1/70*

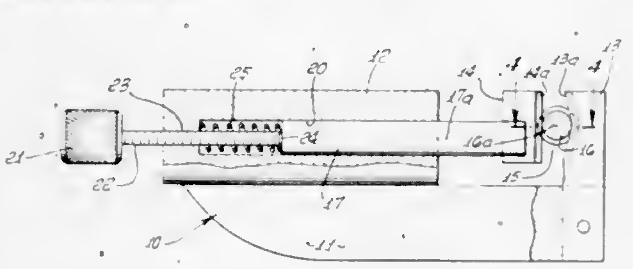
U.S. Cl. 10—86 F **10 Claims**



The method disclosed herein is suitable for forming a fastener having a panel receiving re-entrant groove, such as a piercing nut or fastener having a central pilot portion and a surrounding groove which is restricted at the open end. The method includes impacting the pilot or piercing face of nut blank with a punch having an annular protrusion forming the central pilot portion and a surrounding groove having parallel side walls. The grooved end of the fastener is then forced into a tapered die opening, deforming the outer side wall of the groove inwardly to provide a restricted or re-entrant groove opening. In the disclosed method, the nut blank is first deformed in a hexgonal die and the outer groove wall is also hexagonal. The nut blank is then pierced, through the pilot portion.

3,793,659
THREAD RE-FORMING TOOL

Lawrence E. Edgar, 961 E. Bennett, Glendora, Calif. 91740
Filed May 16, 1972, Ser. No. 253,792
Int. Cl. B23g *5/00*
U.S. Cl. 10—1 B **4 Claims**



Apparatus for re-forming the thread of a fastener defining as an axis, comprises

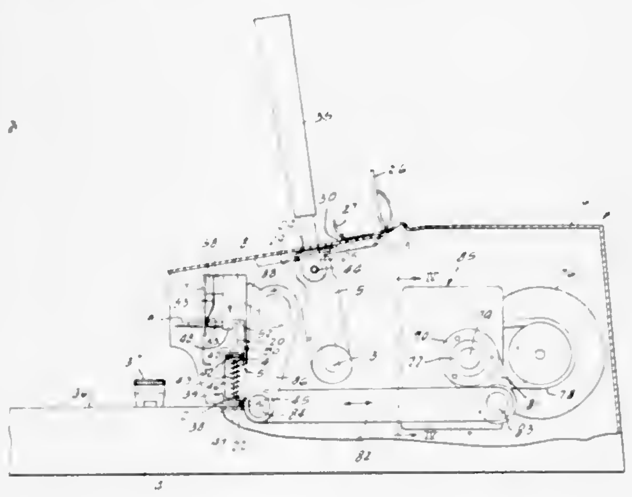
a. a support

b. multiple jaws having edges tapered for forcible reception in the thread defined groove at opposite sides of the fastener when the fastener is located in a zone formed between the jaws whereby the jaws may re-form the thread when rotated relatively about the fastener, one of the jaws carried by the support,

c. and means on the support mounting another of the jaws for adjustment along another axis extending generally toward said one jaw but eccentrically relative to the fastener axis, and for rotation about said other axis to fit the thread groove for thread re-forming.

3,793,660
BOOKBINDING AND POWERED PUNCH MACHINE

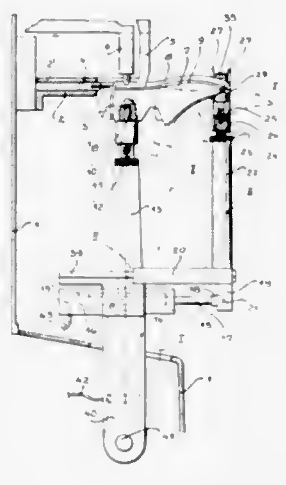
Raymond E. Sims, Round Lake Beach, Ill., assignor to General Binding Corporation, Northbrook, Ill.
Filed Oct. 31, 1972, Ser. No. 302,584
Int. Cl. B42c *19/00*
U.S. Cl. 11—1 AC **8 Claims**



This invention provides a combination bookbinding and power punch machine for punching and binding sheets of paper into a book with a plastic binding edge. The bookbinding machine comprises a frame having a base, a row of punches mounted on the frame for vertical movement with respect to the base thereof and corresponding cooperating apertures spaced in the frame beneath the punches, a pressure bar disposed above the punches and mounted on the frame for vertical movement with respect to the punches, power means arranged for cooperation with the pressure bar for vertically moving the pressure bar in a punching and return direction. There are provided a stationary comb which extends upwardly from the frame and is spaced from the row of punches, and a slide member having uncurling fingers extending therefrom along the upright comb, the slide member being arranged to move transversely with respect to the frame along the comb and longitudinally of the frame toward and away from the comb. An adjustable punching back gauge plate is provided with adjustment means mounted on a common shaft to adjust both the position of the punching back gauge plate to correspond with the depth the holes are to be punched along the border of the sheets to be bound, and the movement of the slide member to correspond with the diameter of the binding element by which the punched sheets are to be bound.

3,793,661
GRIPPER DEVICE FOR A HEEL-LASTING MACHINE

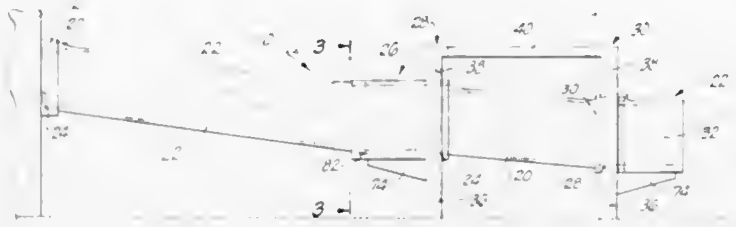
Herbert Schindler, Pirmasens, and Gerhard Winter, Hauenstein, both of Germany, assignors to Firma Schoen & Cie Gesellschaft mit Beschrankter Haftung, Pirmasens, Germany
Filed July 12, 1972, Ser. No. 271,023
Claims priority, application Germany, July 19, 1971, P 21 35 951.3
Int. Cl. A43d *23/00*
U.S. Cl. 12—14.5 **9 Claims**



A gripper device in a heel-lasting machine, for tightly stretching a leather shank on a last, having a pair of box members disposed on opposite sides of a bracket member for supporting the last. Each box member has a set of upper and lower jaw members for gripping the shank. At least one arcuate groove is provided in each of the box members for directing movement of each respective set of jaw members along a curved path directed upwardly and outwardly away from the last defined by its gripping points. A mechanism is associated with each set of jaw members for moving each set along its respective path to stretch the shank gripped between the sets. Another mechanism moves the gripper device longitudinally along the last for stretching the shank to closely follow a surface of a heel part of the last for moulding thereon.

3,793,662
AIRCRAFT LOADING BRIDGE

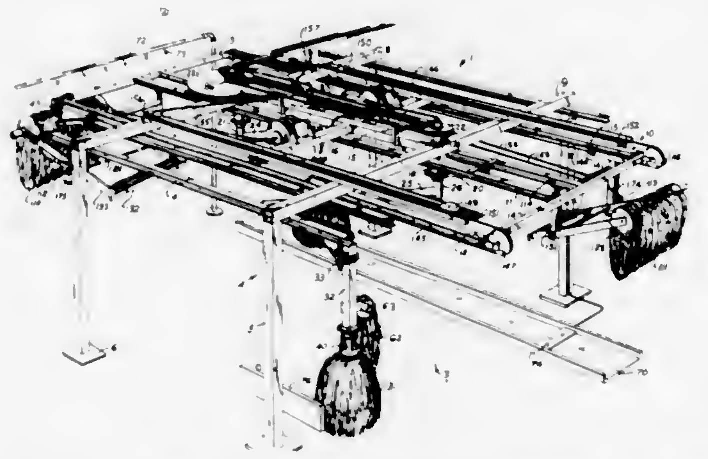
Peter T. Gacs, Palos Verdes Peninsula, and Lucien C. Williams, Palos Verdes Estates, both of Calif., assignors to Foremark Corporation, Gardena, Calif.
Filed Mar. 1, 1972, Ser. No. 230,829
Int. Cl. B65g *11/00*
U.S. Cl. 14—71 **12 Claims**



An aircraft loading bridge can be constructed utilizing two tunnel sections, the first of which extends from a terminal to a first vertically movable vestibule, the second tunnel extends between the first vestibule and a second vertically movable vestibule. Means are provided on these vestibules for gaining access to an aircraft. By regulating the height of the vestibule the complete bridge can be used to accomodate various different aircraft without making the slope of the tunner sections undesirably steep. If desired, a first tunnel section and an associated vestibule may be initially installed at a terminal and then subsequently a second tunnel section and a vestibule may be added to the already existing structure.

3,793,663
VEHICLE WASH APPARATUS

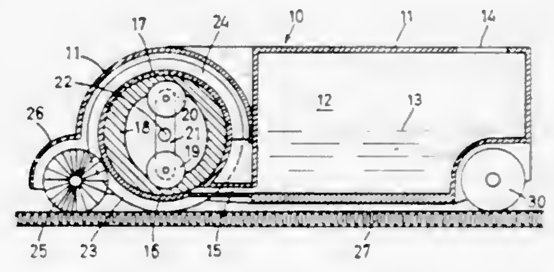
Gordon V. Lieffring, Prairie Village, Kans., assignor to Rolo-Wash, Inc., Kansas City, Mo.
Filed Dec. 6, 1971, Ser. No. 205,028
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 D **8 Claims**



A vehicle washing apparatus having a supporting structure over a vehicle wash position in which a vehicle is parked during washing operations. The apparatus includes top brushes movable longitudinally of the vehicle in side by side paths, the brushes being swingable up and down to engage top surfaces of the vehicle as they are moved therealong. Brushes to engage the sides and ends of the vehicle in the wash position are carried in depending relation to ends of overhead outer arms which have other ends pivotally connected to an end of an inner arm which has its inner end pivotally mounted above the vehicle wash position, there being two sets of arms and side brushes with the inner arms in longitudinally spaced relation and extending in generally opposed directions whereby each operate on a respective side and end portion of the vehicle. The apparatus has sprays for detergents and rinsing liquids to direct same onto the vehicle and power means connected to said inner arms and top brush means to effect movement thereof during washing operation. The apparatus has controls, whereby at the end of the washing cycle the top brushes are raised and the side and end brushes swing outwardly away from the vehicle and are returned to washing position in response to positioning another vehicle in the wash position. Each brush structure travels in one direction to scrub its respective portion of the vehicle, makes a return path thereover and moves away from the vehicle at the end thereof which is the end of the washing cycle.

3,793,664
CLEANING DEVICE

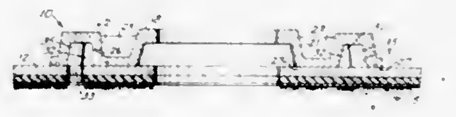
Gunter Leifheit, and Johannes Liebscher, both of Nassau-Lahn, Germany, assignors to Leifheit International Gunter Leifheit KG, Nassau-Lahn, Germany
Division of Ser. No. 881,440, Dec. 2, 1969, Pat. No. 3,696,458. This application July 10, 1972, Ser. No. 270,570
Int. Cl. A47l *11/03*
U.S. Cl. 15—50 C **9 Claims**



A cleaning device comprises a reservoir for containing a body of formable material in unfoamed state. Converting means is connected with the reservoir for receiving from the latter unfoamed material and for converting this into foamed state. Moving means mounts the reservoir and converting means for movement over a surface to which the material is to be applied in unfoamed state.

3,793,665
SHOWER FEED ASSEMBLY

James E. Thielen, New Brighton, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Mar. 13, 1972, Ser. No. 234,104
Int. Cl. A46b *13/02;* **A47l** *7/02*
U.S. Cl. 15—180 **4 Claims**



A floor-treating machine head assembly for use with rotary floor surfacing machines. The assembly comprises a support member, a base plate, and a backing with fastening means releasably securing the scrubbing pads or brushes to the head assembly. The support member has recesses in the top surface which receive the detergent and shampoo solutions and directs the same downward through the base plate. A cavity is formed by the assembly and controls the foam from the solutions and does not allow this foam to interrupt the flow of the solutions through the assembly into the scrubbing member.

3,793,666

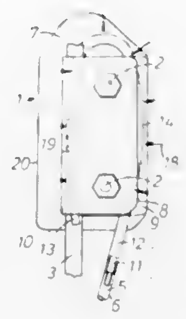
WINDSCREEN WASHER

Anthony Brillenburg Wurth, Teckerstraat 12, 3052 Ottenburg, Belgium

Filed Dec. 23, 1971, Ser. No. 211,583

Int. Cl. B60s *1/52*

U.S. Cl. 15—250.04 **5 Claims**



The windscreen washer comprises a deflector protecting, against the vehicle slipstream, liquid nozzles with which it is provided. The turbulence effect set up in the vicinity of the nozzles deflects the liquid towards the windscreen. The deflector is advantageously fast with the arm of the windscreen wiper.

3,793,667

VEHICLE-WASHING APPARATUS

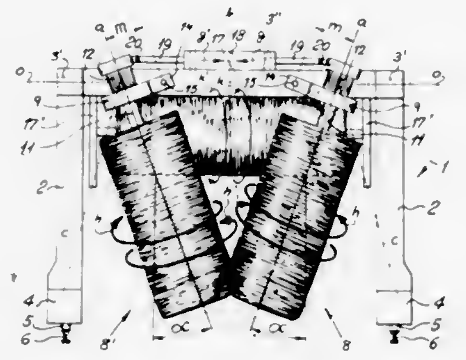
Uberto Capra, Alte Ceccato, Vicenza, Italy

Filed Mar. 27, 1972, Ser. No. 238,369

Claims priority, application Italy, Apr. 30, 1971, 23918 A/71; May 22, 1971, 24865 A/71

Int. Cl. B60s *3/06*

U.S. Cl. 15—21 E **11 Claims**



Two rotary scrubbing brushes, suspended from the lintel of a portal frame which straddles the path of a vehicle to be washed, are so balanced as to hang at an angle from the upper corners of the frame with their lower ends touching or crossing in the region of the centerline of the path. According to its direction of rotation, a brush coming into contact with an end of a vehicle moving relatively to the portal frame is swung either outwardly, to scrub a side of the vehicle, or upwardly to sweep a horizontal top surface thereof.

3,793,668

CURLING BROOM

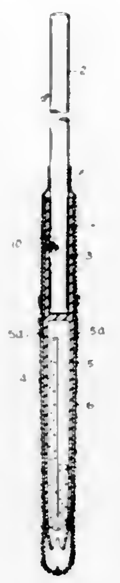
Herbert Oliver Olson, Edmonton, Alberta, Canada, assignor to Olson Paddle Brooms (1972) Ltd., Edmonton, Alberta, Canada

Filed July 31, 1972, Ser. No. 276,733

Int. Cl. A47l *13/16;* **A63b** *67/14*

U.S. Cl. 15—210 R **2 Claims**

A curling broom which comprises a handle, a paddle attached to the handle, which paddle is made of synthetic material, and a fabric cover enclosing the paddle. The paddle is tubular in form and made of flexible plastic. The thin wall provides desirable "spring-back" and yet the tube design ensures sufficient rigidity. The walls are downwardly tapered in thickness to provide gradually changing flexibility. A slab of foam plastic is inserted within the tube for altering the weight and flexibility within narrow limits.



3,793,669

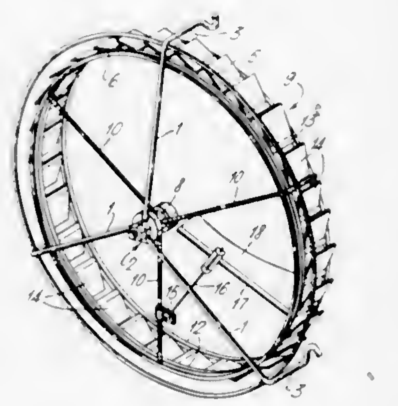
MEANS FOR CLEANING MOTOR ROAD VEHICLE HEAD LAMPS

William Wharton, Piccotts End House, Hemel Hempstead, England

Filed May 30, 1972, Ser. No. 257,547

Int. Cl. B60s *1/44*

U.S. Cl. 15—250.22 **4 Claims**



Wiper means adapted automatically to keep the front glass of a road vehicle headlamp clean as the vehicle is driven along, such means including a member which in use is disposed and is rotatable in a plane substantially parallel to the front glass of the headlamp, which member is adapted to drive a wiper element and has thereon blades arranged so that air flowing radially outwards over them from the centre of the member will cause rotation of the latter.

3,793,670

WINDSHIELD WASHER ASSEMBLY

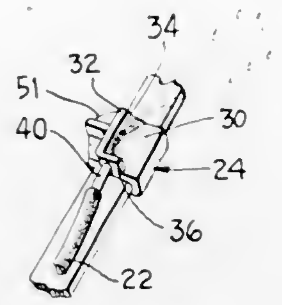
William C. Riester, Williamsville, and Bronislaus S. Graczyk, Snyder, both of N.Y., assignors to Trico Products Corporation, Buffalo, N.Y.

Filed Aug. 9, 1971, Ser. No. 170,139

Int. Cl. B60s *1/46*

U.S. Cl. 15—250.04 **3 Claims**

A windshield wiper cleaning system includes an arm mounted spray nozzle. The nozzle includes a baffle projecting from a base member having a surface at a compound angle with respect to the member for dispersing the fluid into a conical shaped configuration of droplets and directing the array of droplets toward the windshield in the path of the windshield wiper. Washer solvent under pressure is directed through an orifice toward the baffle. A nipple is provided at the orifice to which flexible tubing extending along the length of the arm is connected at one end. At the other end the tubing is connected to a washer pump so that washer fluid can be directed through the tubing and the orifice against the baffle. In another embodiment a second baffle is provided which intersects the stream of the fluid and directs the stream toward the first baffle which in turn deflects the fluid to the windshield in a substantially conically shaped array of droplets. The provision of the second baffle results in increased directional control and in more finely divided droplets.



3,793,671

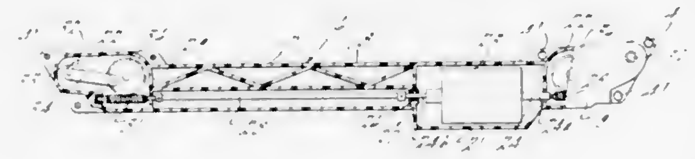
WINDSHIELD CLEANER ASSEMBLY

Harold C. Gebhard, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed June 19, 1972, Ser. No. 264,118

Int. Cl. B60s *1/46, 1/24*

U.S. Cl. 15—250.01 **7 Claims**



A cowl mounted windshield washer and wiper system is preassembled as a unit. The assembly comprises an elongated casing horizontally divided into upper and lower half shells. Housed within the casing are a drive motor and wiper blade pivot shaft actuating means. The pivot shaft actuating means are located at each end of the casing and the motor intermediate the ends.

3,793,672

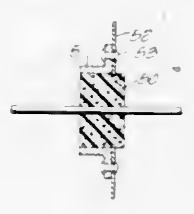
HEAT RECOVERABLE ARTICLE AND PROCESS

Judson Douglas Wetmore, San Mateo, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 812,789, April 2, 1969. This application Dec. 6, 1972, Ser. No. 312,703

Int. Cl. F16l *5/00;* **B29d** *27/00;* **B29c** *25/00*

U.S. Cl. 16—2 **18 Claims**



A heat recoverable article having intersticed walls, the interstices being filled with a compressible fluid so that the wall thickness of the article can be varied without appreciably varying the length of the article, together with the process of making such articles.

3,793,673

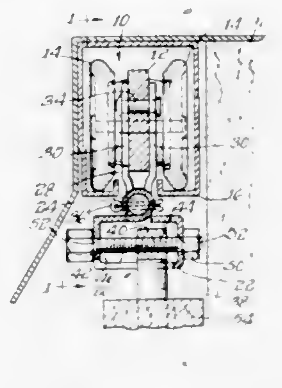
LATERALLY ADJUSTABLE DOOR HANGER

Edwin F. Lawrence, Jr., Sterling, Ill., assignor to Lawrence Brothers, Inc., Sterling, Ill.

Filed Nov. 17, 1971, Ser. No. 199,661

Int. Cl. A47h *15/00*

U.S. Cl. 16—97 **4 Claims**



The present invention relates generally to improvements in slideable door-suspending devices and more particularly to novel structural improvements which will greatly facilitate the ease with which a horizontally slideable door member may be laterally adjusted. The present application discloses in combination with a carriage horizontally slideable within an overhead track, a frame pivotally suspended from the underside of a carriage device, a rotary threaded shank traversing said frame and a vertically disposed door hanger member or rod having a threaded aperture at its upper extremity for telescopically accommodating the threaded shank, and means at the opposite extremity thereof for attachment to the upper portion of a door member.

3,793,674

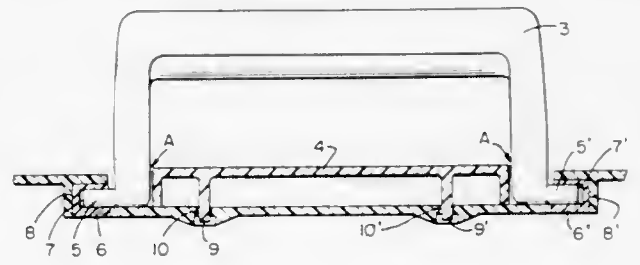
HANDLE ASSEMBLY

Joseph W. Kneier, Chesterland, Ohio, assignor to Pendleton Tool Industries, Inc., Los Angeles, Calif.

Filed Dec. 1, 1972, Ser. No. 311,215

Int. Cl. A47b *95/02*

U.S. Cl. 16—126 **7 Claims**



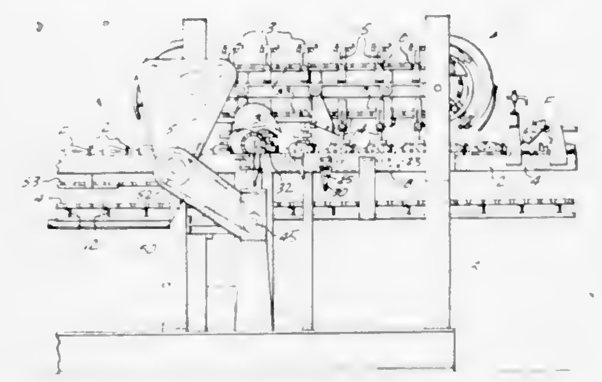
A handle assembly for use on hand-carried receptacles such as tackle boxes, articles of luggage, bulk containers, trays or the like. The assembly comprises a handle having trunnions formed thereon at either end thereof which extend co-axially and engage trunnion supports disposed in the wall element of the receptacle. The trunnion supports comprise inserts which are placed in pockets formed in the wall element providing a water tight seal between insert and pocket while allowing pivotal rotation of the handle for flush storage thereof in a recess provided in the wall element. A spacer bar secures the trunnions in the trunnion supports by preventing their axial movement once inserted.

3,793,677

3,793,675
FISH-CONVEYING MECHANISM

Elmer R. Hogan, Bellevue, and John I. Simpson, Seattle, both of Wash., assignors to Smith-Berger Manufacturing Corporation, Seattle, Wash.

Division of Ser. No. 19,162, March 13, 1970, Pat. No. 3,670,363. This application Mar. 27, 1972, Ser. No. 238,271
Int. Cl. A22c *25/14*
U.S. Cl. 17—59 **9 Claims**

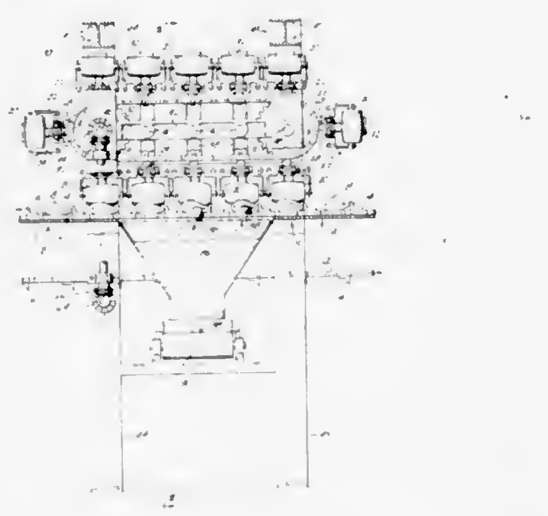


Fish-beheading mechanism and fish-cleaning mechanism are driven by a common drive means, including a jaw clutch engageable in different positions to alter the timed relationship between the fish-beheading mechanism and the fish-cleaning mechanism. A tail-receiver lifted by a cam wheel rotating about a horizontal axis transfers the fish from the feed table of the fish-beheading mechanism to tail-impaling pins of the fish-cleaning bull ring. In a common drive for the bull ring and the beheading table an automatic satellite gear train throw-out will disengage a holding lever to disconnect the drive for the means feeding the cleaning mechanism if such feeding means becomes overloaded.

3,793,676
METHOD AND APPARATUS FOR REMOVING ROE AND VISCERA FROM A FISH

Gary K. Wiggins, Seattle, Wash., assignor to Marine Construction & Design Co., Seattle, Wash.

Division of Ser. No. 11,092, Feb. 13, 1970. This application July 7, 1972, Ser. No. 269,794
Int. Cl. A22c *25/00*
U.S. Cl. 17—45 **3 Claims**

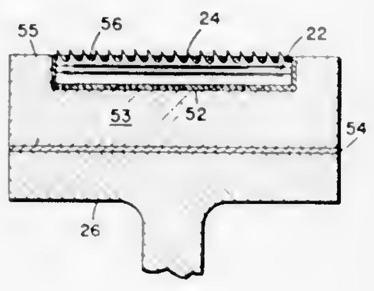


Method and apparatus for removing roe, milt producing organs and other entrails from deheaded fish at high speed by resilient pressure applied tail forward of the fish as conveyed sidewise along a path of travel. Rollers and the like of various configurations, moved across the fish during conveyance thereof, are used to apply the resilient pressure on a repetitive basis.

3,793,677
CARD CLOTHING

Alfred R. Bechtel, Jr., Portsmouth, R.I., assignor to Ashworth Bros. Inc., Fall River, Mass.

Continuation-in-part of Ser. No. 71,481, Sept. 11, 1970, Pat. No. 3,737,953. This application July 29, 1971, Ser. No. 167,162
Int. Cl. D01g *15/26*
U.S. Cl. 19—113 **4 Claims**

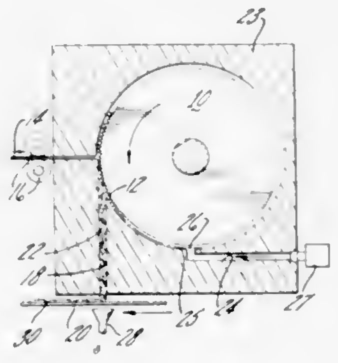


Card clothing for flats comprising a plurality of elongated wire strips assembled in side by side relationship and inclined at an angle to the direction of fiber flow across the flats. The strips have upstanding portions laterally spaced apart, and each upstanding portion provides a row of teeth having sides inclined at an angle to the direction of fiber flow. Either the wire strips or conventional fillet card clothing can be covered to a predetermined extent with a plastic material to control or limit the degree of exposure of the teeth or pins.

3,793,678
PULP PICKING APPARATUS WITH IMPROVED FIBER FORMING DUCT

David W. Appel, Neenah, Wis. 54956

Continuation-in-part of Ser. No. 882,265, Dec. 4, 1969, abandoned. This application Dec. 20, 1971, Ser. No. 209,935
Int. Cl. D01g *25/00*
U.S. Cl. 19—156.3 **4 Claims**

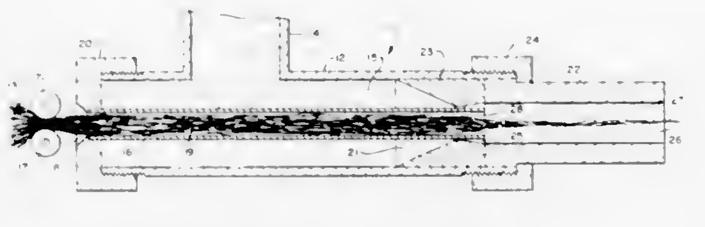


An apparatus and method for airlaying wood pulp fibers which avoids fiber floccing is disclosed. Wood pulp sheets are divellicated with a picker roll and the individual fibers are conveyed through a forming duct to a collecting screen. The position of the forming duct with respect to the picker roll and the size of the duct are such that the fibers separated from the sheets maintain substantially the same velocity during their travel through the forming duct. A process air duct for supplying air to transport the fibers to the collecting surface is used; and, when high picking rates are desired, a supplemental air duct is also employed.

3,793,679
PNEUMATIC DRAFTING OF FIBROUS STRANDS

Preston F. Marshall, Walpole, Mass., assignor to The Kendall Company, Walpole, Mass.

Filed July 2, 1971, Ser. No. 159,229
Int. Cl. D01g *25/00*
U.S. Cl. 19—156.3 **4 Claims**

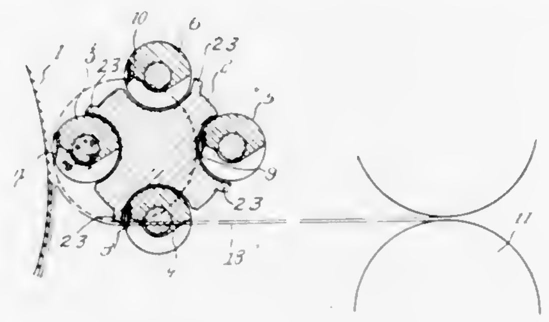


A twist-free strand of textile length fibers is pneumatically drafted at its leading end into a high velocity fibrous stream which may be decelerated and diffused in a plenum chamber from which it is removed as a fibrous web.

3,793,680
CARDING ENGINE PROVIDED WITH A ROTARY TYPE WEB STRIPPING DEVICE

Kiichi Ota, 5-1, Hinatamachi 3-chome, Mizuho-ku, Nagoya, Japan

Filed Dec. 8, 1972, Ser. No. 313,491
Int. Cl. D01g *15/50*
U.S. Cl. 19—106 R **3 Claims**



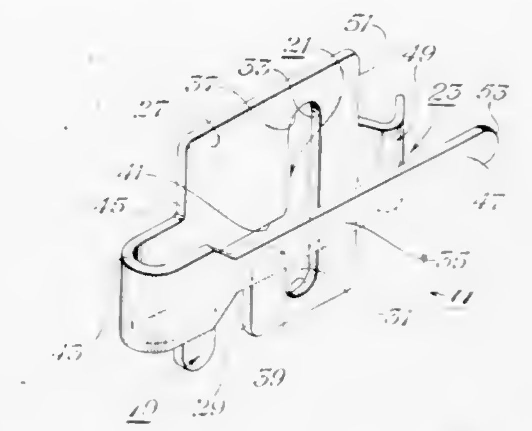
A carding engine provided with a rotary type web stripping device for stripping a web of material from a doffer cylinder having a stripping roller assembly which includes a plurality of stripping rollers having stripping combs associated therewith. A differential gear train assembly interconnects the stripping roller assembly and the stripping rollers such that the stripping rollers are rotated in a direction which is opposite to that direction in which the stripping assembly is rotated, the stripping combs of the stripping rollers being positioned adjacent the doffer cylinder so as to safely strip the web of material therefrom. As the stripping combs strip the material from the doffer cylinder, the stripping rollers are subsequently rotated by the gear assembly so as to positively release the material from the combs whereupon the material may then be conveyed to delivery rollers.

3,793,681
HOLDER FOR TIES AND THE LIKE

Floyd C. Casstevens, Jr., and Truett C. Henry, both of Fort Worth, Tex., assignors to F & W Products, Inc., Fort Worth, Tex.

Filed Jan. 22, 1973, Ser. No. 325,242
Int. Cl. A41d *25/04;* **A44b** *13/00*
U.S. Cl. 24—60 **7 Claims**

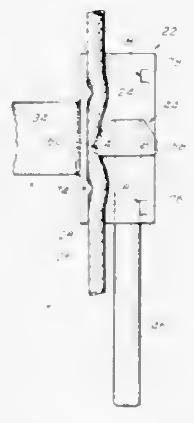
A holder for holding depending folds of a tie, scarf or the like in place characterized by an anchoring portion adapted to anchor the holder to button threads; a locking means carried by the anchoring portion for preventing the holder from slipping from anchoring engagement with the threads when in place; fold retaining structure connnected with the anchoring portion and including an elongate horizontal clamp bar that is connected at one end with the anchoring portion and a retaining means carried at the other side of the anchoring portion and extending forwardly toward the free end of the horizontal clamp bar for retaining the folds in place. Also disclosed are specific embodiments including use of respective slots in the anchoring portion and in the locking means, the slot serving as a locking means having a vertically extending portion for accommodating vertical movement of the holder and its tie without slipping from engagement with the threads and without causing discomfort to the wearer.



3,793,682
DUAL ROPE CLAMP

Robert C. Nelson, 727 Heatherwood Rd., Bluefield, W. Va. 24701

Filed Oct. 2, 1972, Ser. No. 294,345
Int. Cl. F16g *11/00*
U.S. Cl. 24—134 P **7 Claims**



Rope clamp optionally usable on one or another standard size of wire rope to attach a conveyor roller assembly or supporting stand. An elongated plate has a lateral flange providing an L-cross-section angle bracket with a rope-receiving bight extending along the inner corner. A cable-locking dog member is rotatably supported on the inside of the plate and connected to an external lever. The locking dog member has a pair of diametrically opposed cam surfaces and is eccentrically mounted in such a way that one of the cam surfaces is offset from the axis of rotation more than the other cam surface. A third peripheral surface intermediate the cam surfaces is spaced from the axis of rotation a lesser distance than either of the cam surfaces, the latter being inclined to crowd rope into the bight. The lever has two 180°-displaced operating positions lengthwise of the bracket. One diameter of wire rope can be clamped by moving the lever to one of these operating positions, and a different diameter wire rope can be clamped by moving the lever to the other operating position. The clamp is specifically described for rope sideframe conveyors where current practice has standardized on either ¾ inch or ⅝ inch diameter wire rope depending on the size of conveyor and service requirements.

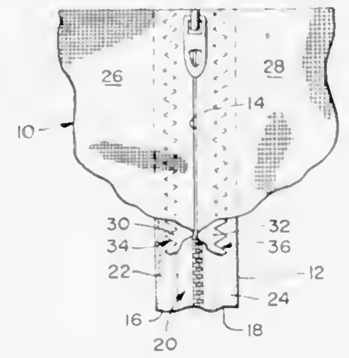
3,793,683
ADHESIVE INSTALLED SLIDE FASTENER

Bruce K. Thaeler, Meadville, Pa., assignor to Textron Inc., Providence, R.I.

Filed July 18, 1972, Ser. No. 272,999

Int. Cl. A44b *19/34*

U.S. Cl. 24—205.1 R **14 Claims**



A slide fastener having a single strip of adhesive on each carrier tape is bonded directly to each folded seam allowance at a garment opening and to each main fabric section adjacent the opening. A thermoplastic adhesive permits permanent installation of the slide fastener by means of an iron without the use of stitching threads.

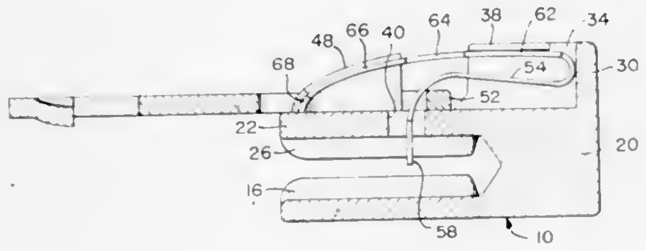
3,793,684
SLIDER FOR SLIDE FASTENER

George B. Moertel, Conneautville, Pa., assignor to Textron Inc., Providence, R.I.

Filed Sept. 15, 1969, Ser. No. 857,988

Int. Cl. A44b *19/30*

U.S. Cl. 24—205.14 **2 Claims**



A slider for a slide fastener device having a pair of wing portions connected in spaced relation by a post element and having an upper structure on one of the wing portions of sufficient height to receive any load applied to the slider and transmit such load to the connecting post. The upper structure includes a wall surface super-imposed over the connecting post and being substantially flush with the leading edges of the connecting post and the leading edges of the wing portions.

3,793,685
COUPLING APPARATUS FOR THE MOORING OF BOATS OR THE LIKE

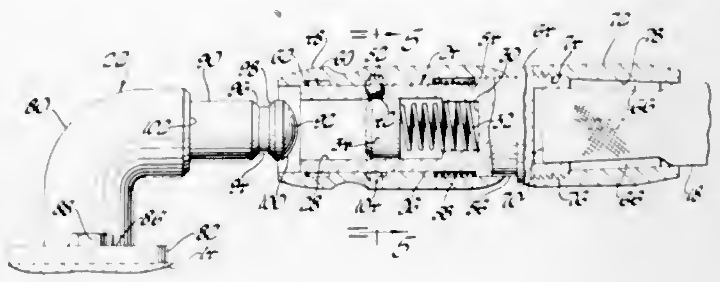
Hillery G. Knecht, 2766 W 11 Mile, Berkley, Mich. 48072

Filed Mar. 3, 1971, Ser. No. 120,477

Int. Cl. A44b *17/00, 11/25*

U.S. Cl. 24—230 AN **4 Claims**

A coupling apparatus has two sections movable relative to each other for effecting connection and disconnection therebetween; one the the sections includes a generally tubular housing with ball type detent means carried thereby which detents are radially movable with respect to the tubular housing; a plunger-like member within the tubular housing served to hold the ball detents radially outwardly and thereby keep an outer sleeve in a cocked position; the other of the two sections includes a shaft-like extension provided with an annular groove formed near the outer-most end thereof which, when inserted into the tubular housing, is effective for depressing the plunger and having the ball detents move radially inwardly to be at least partly received in the annular groove; the outer sleeve is biased toward a second position whereat it prevents the radial outward movement of the ball detents thereby resulting in the shaft-like extension being securely connected to the tubular housing.



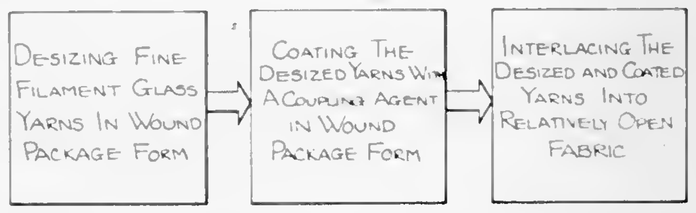
3,793,686
METHOD OF FORMING GLASS FABRIC SUITABLE FOR CASTS, BANDAGES, AND THE LIKE

John L. Nisbet, and Hubert C. Woodall, Jr., both of Winston-Salem, N.C., assignors to Carolina Narrow Fabric Company, Winston-Salem, N.C.

Division of Ser. No. 888,447, Dec. 29, 1969, Pat. No. 3,686,725. This application Aug. 23, 1972, Ser. No. 283,061

Int. Cl. D06c *25/02;* **A61l** *15/00;* **D06l** *1/14*

U.S. Cl. 28—75 R **5 Claims**


Desizing Fine Filament Glass Yarns In Wound Package Form
Coating The Desized Yarns With A Coupling Agent in Wound Package Form
Interlacing The Desized and Coated Yarns Into Relatively Open Fabric

A method of producing a relatively open air permeable glass fiber fabric for use in orthopedic casts, bandages and the like and comprising interlaced chemically desired glass yarns consisting essentially of filaments having an average diameter not greater than about 0.00021 inches. The fabric is formed by a method wherein sized glass yarns consisting of filaments of the above diameter are desized by forcing a treatment solution through the yarns while confining the yarns in wound package form. A coupling agent may also be applied to the glass yarns, and then the yarns are interlaced to form a fabric.

3,793,687
METHOD FOR MACHINING THE STROKE BEARINGS AND LINE BEARINGS OF A CRANK SHAFT

Hermann Berbalk, Goppingen, Germany, assignor to Gebruder Boehringer Gesellschaft mit beschrankter Haftung, Goppingen, Germany

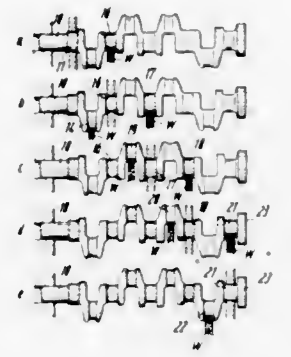
Filed Feb. 20, 1973, Ser. No. 333,513

Claims priority, application Germany, Feb. 23, 1972, 2208593

Int. Cl. B23c *3/06*

U.S. Cl. 29—6 **2 Claims**

Pairs of bearing sections of a crankshaft, each pair comprising a line bearing and an adjacent stroke bearing are machined consecutively starting with a pair close to one end of the crankshaft and proceeding pair by pair towards the other end of the crankshaft. In this operation the section of the crankshaft located between the pair in cutting engagement with the tools and the other end of the crankshaft is left radially upsupported and freely to undergo any deformation that may result from the removal of stock by the tools, whereas the other section of the crankshaft including the pair of bearings machined in the preceding operation is held by engagement with suitable clamping means. As a result of this method any deformation of the character just explained is eliminated by the subsequent machining operation and the end product is free from any deformation. Therefore, it is no longer necessary, as heretofore, to subject the crankshaft after the roughing operation to a truing and finishing operation prior to the heat treatment and the grinding operation.



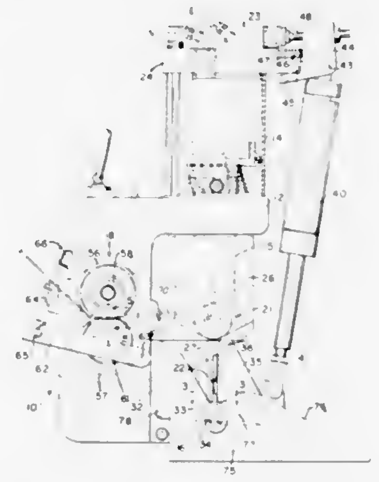
3,793,688
APPARATUS FOR HERMETICALLY SEALING A PACKAGE

Raymond J. Keating, Bettendorf; Lewis M. Shuh, Davenport, and Roy E. Wells, Maquoketa, all of Iowa, assignors to The Kartridg Pak Co., Davenport, Iowa

Filed May 10, 1971, Ser. No. 141,588

Int. Cl. B23p *23/04*

U.S. Cl. 29—33.5 **5 Claims**



A method and apparatus for forming and applying closure fasteners to the gathered neck portions of bags or casings wherein the fastener is preformed from wire stock into a U shape by means of a fastener forming and applying apparatus which includes a punch and co-operating anvils operable to preform the fasteners while simultaneously applying a previously formed fastener to a gathered bag neck so as to wrap the legs of the fastener tightly about the bag neck material with the legs lying side by side and providing a tight hermetic seal.

3,793,689
TUBULAR ROLLER

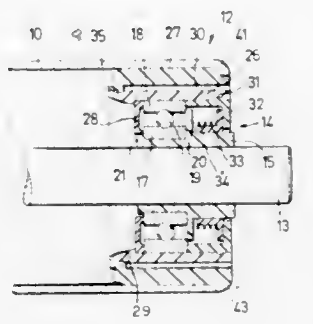
Dieter Specth, Dhuenn/Rhineland, Germany, assignor to Hans Vom Stein oHG, Dhuenn/Rhineland, Germany

Filed Oct. 16, 1972, Ser. No. 297,987

Claims priority, application Germany, Feb. 4, 1972, P 22 05 242.2

Int. Cl. B21b *13/02*

U.S. Cl. 29—116 R **7 Claims**



A tubular roller has a circumferential tubular wall provided at its opposite ends with circumferentially offset first cutouts and projections located between adjacent ones of the cutouts. The roller further has two end walls located at the opposite ends and rigidly connected with the tubular wall. The end walls each have circumferentially offset second projections received in the first recesses of the tubular wall, and second recesses which accommodate the first projections of the tubular wall.

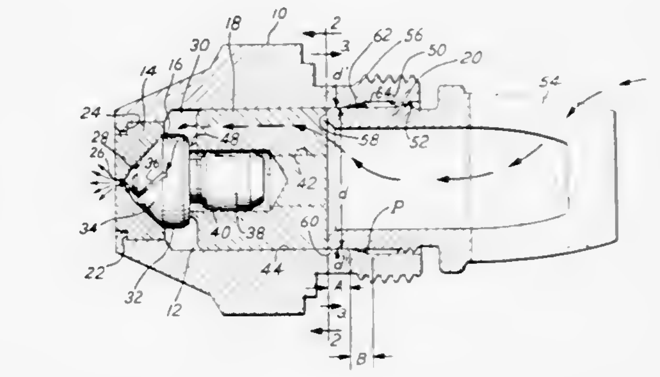
3,793,690
NOZZLE

Alex Wayne, Des Moines, Iowa, assignor to Delavan Manufacturing Company, West Des Moines, Iowa

Division of Ser. No. 65,545, Aug. 20, 1970, Pat. No. 3,672,578. This application Apr. 13, 1972, Ser. No. 243,882

Int. Cl. B21d *53/00*

U.S. Cl. 29—157 C **3 Claims**



In a fluid nozzle the clearance between the nozzle body and an orifice retaining member is reduced in a zone between the spray orifice and passages in a fluid distributor and the threads by which the retaining means is threaded into the nozzle body such that the clearance is smaller than the minimum cross sectional dimension of either the spray orifice or the passages in the fluid distributor which distribute the fluid to be sprayed in the spray orifice to prevent clogging by particulate contaminants present on the threads.

3,793,691
THERMAL AND ABRASION RESISTANT SINTERED ALLOY

Kentaro Takahashi, Ohmiya; Minoru Hasegawa, Saitama, and Kaoru Nara, Kawaguchi, all of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

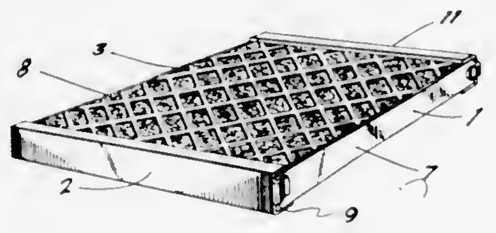
Filed Sept. 5, 1972, Ser. No. 286,389
Claims priority, application Japan, Sept. 2, 1971, 46/66979
Int. Cl. B22f *1/00, 5/00*
U.S. Cl. 29—182 **1 Claim**

An alloy prepared by molding a powdery composition comprising 0.6 to 2 percent of carbon, 0.5 to 5 percent of molybdenum, 6 to 15 percent of cobalt and 1 to 5 percent of copper, by weight, and the balance being iron, and then sintering the molded composition has large thermal resistance and abrasion resistance.

3,793,692
FLUID TREATING FILTER

John E. Tate, and Robert L. Jackson, Louisville, Ky., assignors to American Air Filter Company, Inc., Louisville, Ky.

Division of Ser. No. 111,303, Feb. 1, 1971, abandoned. This application Dec. 12, 1972, Ser. No. 314,368
Int. Cl. B01d *27/08*
U.S. Cl. 29—163.5 F **4 Claims**

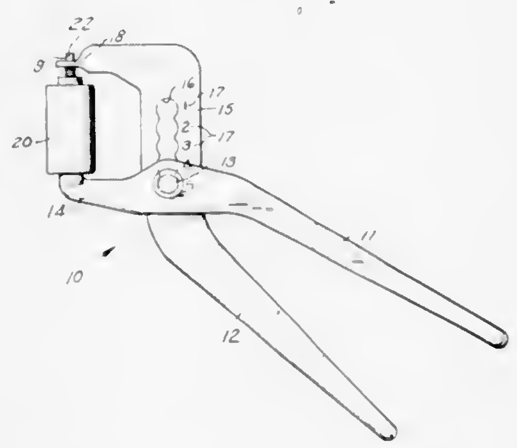


An improved filter for treating fluids utilizing a frame of unitary construction. The frame is constructed from a sheet of expanded substantially rigid material having solid sections disposed between sections of expanded material. The frame is adapted for folding into a box-like configuration with the solid portions forming end walls of the box. Filter media, such as fiberglas, is disposed within the enclosed box.

3,793,693
HAND TOOL FOR INSTALLING POINTS, CONDENSERS AND OTHER DEVICES

Michael Levak, 82165 Adobe Rd., Indio, Calif. 92201

Filed Jan. 19, 1973, Ser. No. 325,096
Int. Cl. H01r *43/00;* **B23p** *19/04*
U.S. Cl. 29—203 H **3 Claims**

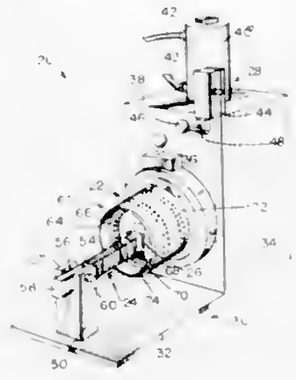


A pliers-like tool for installing devices. This tool consists primarily of a pair of pivotable handles with jaw means for gripping devices, one of the jaws having an opening for receiving the shank portion of condensers or other devices.

3,793,694
APPARATUS FOR USE IN REBUILDING ELECTROMAGNETIC UNITS

Anthony B. Norkaitis, 906 Linden Ct., Western Springs, Ill. 60558

Filed June 2, 1972, Ser. No. 259,220
Int. Cl. H02k *15/06*
U.S. Cl. 29—205 R **11 Claims**

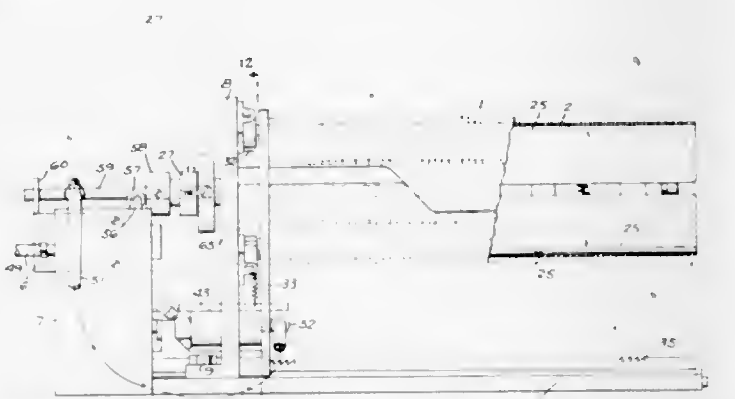


An apparatus for rebuilding electrical units by inserting coils of wire into the units in a desired position, such as into stators of motors or generators. The apparatus includes means for positioning the part to be rebuilt, means for indexing it to a succession of different positions, means for guiding a coiled wire into the part at each of the positions, means for storing the coils of wire prior to insertion thereof, and means for repositioning the part holder after each of a first sequence of position movements is undergone. According to the invention, wire is coiled about a coil receiving mandrel, this mandrel is positioned within a part receiving mandrel, the wire is fed from the wire mandrel in coils into slots in the stator or armature, and, in the case of multi-phase motors or generators, after each slot is filled, the part is indexed by rotation to the next succeeding postion for repetition of the cycle.

3,793,695
DEVICE FOR AUTOMATICALLY LOADING AN OIL RING SPACER-EXPANDER INTO THE OIL RING GROOVE OF A PISTON

Ronald E. Carter, Muskegon, and Jack S. Clifford, North Muskegon, both of Mich., assignors to Sealed Power Corporation, Muskegon, Mich.

Filed Aug. 29, 1972, Ser. No. 284,656
Int. Cl. B23q *7/10;* **B23p** *15/10*
U.S. Cl. 29—211 R **23 Claims**

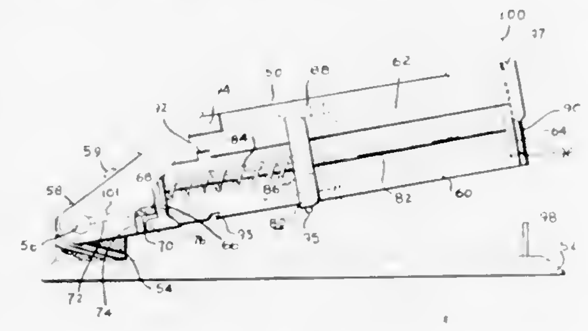


A device for automatically loading an oil ring spacer-expander into the oil ring groove of a piston. The device has an expandable mandrel over which is telescoped a fiberboard tube upon which a quantity of spacer-expanders are stacked. The mandrel is expanded by a cam arrangement so that the inside dimension of the shoe surfaces of the mandrel are slightly larger than the largest land diameter of the piston. Upon inserting a piston into the open end of the expanded mandrel, the top of the piston acts through a push rod to open an air valve, pressurizing a cylinder which causes a pawl to engage a rack and move the cylinder and a pusher ahead one rack pitch or ring width. The pusher engages the rear spacer-expander of the stack of spacer-expanders and advances the stack one ring width, the forward spacer-expander on the stack being pushed from the tube into the oil ring groove. Upon removal of the piston the air valve is closed, de-pressurizing the cylinder, causing the pawl to advance one rack pitch, and the cycle will be repeated upon the insertion of another piston into the expanded mandrel. When the last ring on the tube has been loaded, the mandrel is collapsed, the empty tube removed, the cylinder, pawl and pusher assembly moved to starting position and a new fiberboard tube with a stack of spacer-expanders is telescoped over the mandrel and the device is again ready to load spacer-expanders on successive pistons.

3,793,696
CLIP FASTENER DISPENSER

Davis N. Barr, 2705 Via Montezuma, San Clemente, Calif. 92672, and Bill J. Hays, 10582 Palladium Ave., Garden Grove, Calif. 92640

Filed Feb. 28, 1972, Ser. No. 229,777
Int. Cl. B23q *7/10*
U.S. Cl. 29—212 P **12 Claims**

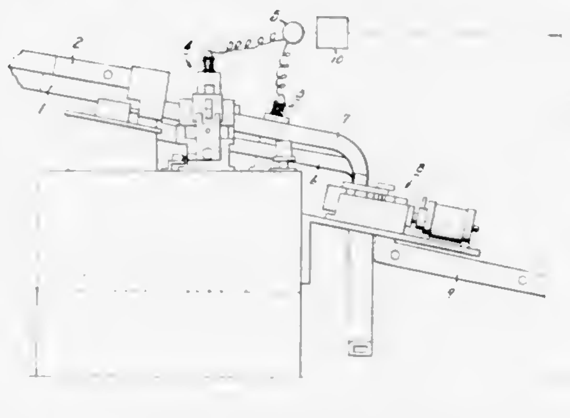


An improved dispenser for clip type fasteners is disclosed wherein the clips are mounted in a face-to-face array in a dispenser housing that is pivotally mounted on a base. The leading fastener is ejected from the housing by ejection ram means so mounted that it reciprocates in a transverse plane to the array of fasteners with fastener engaging means carried on the ram to engage and eject the leading fastener through an aperture in the housing.

3,793,697
APPARATUS FOR AUTOMATICALLY ASSEMBLING ANTIFRICTION BEARINGS

Takasi Inque; Shinsuke Nagao, both of Iwata, and Hiroshi Nakamura, Shizuoka, all of Japan, assignors to Toyo Bearing Manufacturing Company Limited, Osaka-shi, Japan

Filed Feb. 29, 1972, Ser. No. 230,231
Claims priority, application Japan, Sept. 6, 1971, 46-69039; Nov. 19, 1971, 46-92816; Nov. 17, 1971, 46-108027
Int. Cl. B23p *19/04*
U.S. Cl. 29—201 **6 Claims**

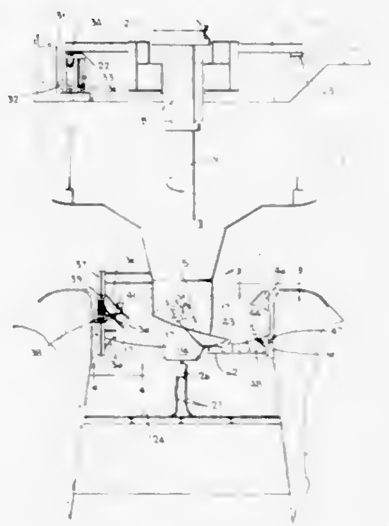


In an apparatus for automatically assembling antifriction bearings wherein inner and outer rings and rolling elements are assembled together to automatically complete antifriction bearings, an improved apparatus whereby the step of measuring the groove diameters of inner and outer rings and the step of feeding rolling elements to measured inner and outer rings to complete the assembling of antifriction bearings are independently carried out so that the assembling station is permitted to operate continuously without involving idle motion. A control circuit and a mechanism for withdrawing rolling elements to be used in said apparatus, and other constructional advantages and particulars will be made clear.

3,793,698
METHOD OF REPAIRING CAVITATION DAMAGE ON A HYDRAULIC TURBINE

Iden Dean Goings, 4858 N. 13th St., Terre Haute, Ind. 47805

Filed Jan. 8, 1973, Ser. No. 322,042
Int. Cl. B23p *7/00*
U.S. Cl. 29—401 **4 Claims**

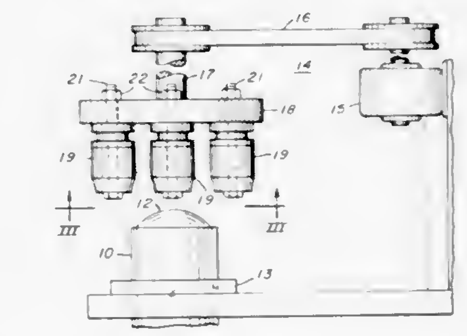


The method disclosed involves installation of welding, machining, etc. apparatus on the turbine runner itself, the apparatus extending into close proximity to the turbine draft or discharge tube wall, and then mechanically rotating the turbine runner so that the machining or other apparatus is moved over the wall for conditioning or repairing it. In effect, a vertical boring mill is formed using the runner of the turbine itself as a tool.

3,793,699
METHOD OF FINISHING METAL BALL-BAT

Anthony Merola, Pittsburgh, Pa., assignor to Amerola Products Corporation, Pittsburgh, Pa.

Filed Mar. 30, 1971, Ser. No. 129,505
Int. Cl. B23p *17/00*
U.S. Cl. 29—415 **3 Claims**



A metal ball-bat and method of finishing a tubular metal ball-bat at the large diameter end by securing a generally cylindrical resilient member within the end portion of the ball-bat. The resilient member is forceably inserted into the ball-bat end, and the end edge of the ball-bat deformed circumferentially inward to secure the resilient member within the bat. The resilient member also overlaps the end edge of the metal ball-bat as a safety feature.

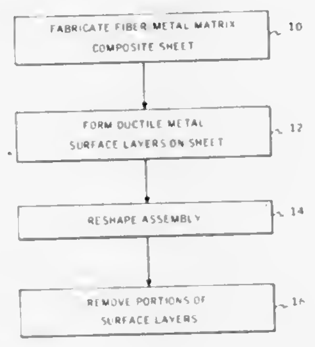
3,793,700
METHOD OF RESHAPING METAL MATRIX COMPOSITE MATERIAL

Charles R. Maikish, and Herman R. Wiant, both of Cajon, Calif., assignors to General Dynamics Corporation, San Diego, Calif.

Filed Sept. 1, 1972, Ser. No. 285,684

Int. Cl. B23p *17/00*

U.S. Cl. 29—419 **6 Claims**


FABRICATE FIBER METAL MATRIX COMPOSITE SHEET
10
FORM DUCTILE METAL SURFACE LAYERS ON SHEET
12
RESHAPE ASSEMBLY
14
REMOVE PORTIONS OF SURFACE LAYERS
16

A method of reshaping high strength fiber reinforced metal composite sheets is disclosed. The sheets, which typically comprise unidirectionally oriented boron fibers in an aluminum matrix are metallurgically bonded to a pair of thin ductile metal face sheets. The resulting composite is then reshaped as desired by bending the composite along lines parallel to the fiber direction. Finally, the face sheets are removed, such as by acid etching, except in those areas in which it is desired to retain portions of the overlayer. Among other advantages, this technique permits much sharper radius bends by much simpler techniques that those previously used with such composite materials.

3,793,701
PROCESS FOR THE CONNECTION BY SETTING OF COLLECTORS ON WATER-BOXES OF HEAT EXCHANGERS

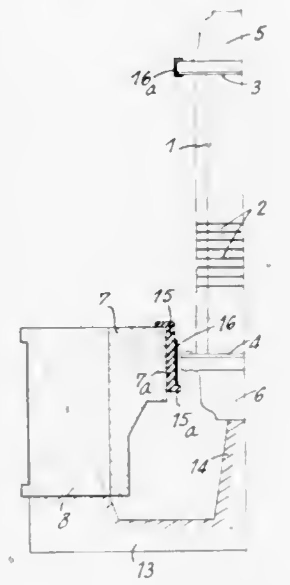
Andre Chartet, Meudon, France, assignor to Societe Anonyme des Usines Chausson, Asnieres, France

Filed Dec. 1, 1970, Ser. No. 94,237

Claims priority, application France, Dec. 4, 1969, 6942015

Int. Cl. B23p *17/00*

U.S. Cl. 29—421 **5 Claims**



The process for the connection by crimping of collectors on water-boxes of heat exchangers is characterized in that parts of the collector and the water-box are surrounded by an electrically conductive metallic belt which is then submitted to at least one high electromagnetic pulse.

3,793,702
METHOD OF DISMANTLING FRAMEWORK STRUCTURES

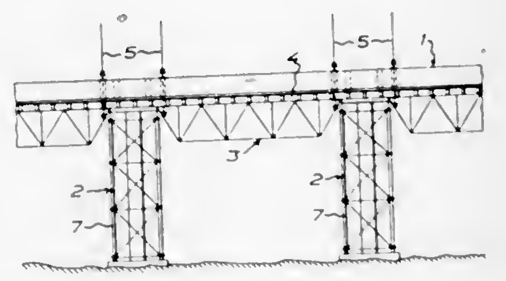
Nils Harald Ahlgren, Skyttevagen 22 F, 133 00 Saltsjobaden, Sweden

Filed Apr. 20, 1972, Ser. No. 245,987

Claims priority, application Sweden, Apr. 29, 1971, 5594/71

Int. Cl. B23p *19/00*

U.S. Cl. 29—426 **3 Claims**



In the erection of bridges and other constructions of considerable horizontal length, special framework structures or scaffoldings are used for supporting the shuttering and similar framework for the construction, said framework structures also comprising vertical structures. For dismantling these structures, the vertical structures are mounted on the building construction by means of jacks, whereupon the lowermost parts of the structures are dismantled at ground level. The vertical structures are then successively lowered to be successively dismantled at ground level.

3,793,703
PROCESS FOR FABRICATING REAR AXLE HOUSING FOR MOTOR VEHICLES

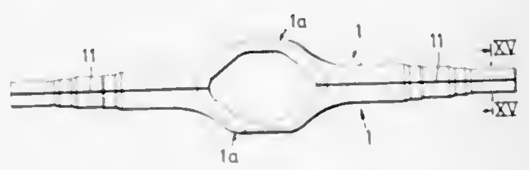
Helmut Winkler, Meerbusch; Gunter Seifert, Leverkusen; Hans Moll; Otto Oeckl, both of Munich, and Eberhard Werner, Leverkusen, all of Germany, assignors to Emuco Aktiengesellschaft fur Maschinenbau, Leverkusen and Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Munich, both of, Germany, part interest to each

Filed Oct. 8, 1971, Ser. No. 187,667

Claims priority, application Germany, Oct. 10, 1971, P 20 49 889.9

Int. Cl. B21d *39/02*

U.S. Cl. 29—463 **10 Claims**



A rear axle housing comprises two longitudinal sections welded together, each section being produced by the process of first preshaping a rough billet into the general configuration of a forging blank, forging the blank in several steps into a flat shaped member and then forging the member into the general shape of the housing section. A minimum amount of machining is required to remove the excess material and finish the housing. A special apparatus is provided for performing the intermediate steps of forging the preformed billet into a shaped forging blank.

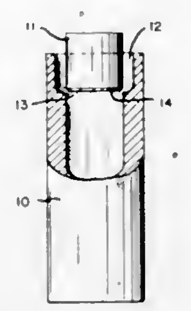
3,793,704
METHODS OF ASSEMBLING JOINTS

John N. Antonevich, Jamestown, N.Y., assignor to Blackstone Corporation, Jamestown, N.Y.

Filed July 24, 1972, Ser. No. 274,173

Int. Cl. B23k *21/00*

U.S. Cl. 29—470.1 **5 Claims**



A method of assembling parts is provided in which a pair of interfitting surfaces adapted for press fitting are formed on the two parts, a driving force is applied to the two parts urging them axially together while a superposed vibrating force is applied to at least one of the two parts to cause the interfitting parts to engage and dipping said parts into a bath of molten metal.

3,793,705
PROCESS FOR BRAZING A MAGNETIC CERAMIC MEMBER TO A METAL MEMBER

Thomas R. Cole, III, Boulder; William D. Kehr, Longmont, and James R. Wiitala, Louisville, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 11, 1972, Ser. No. 313,894

Int. Cl. B23k *31/02*

U.S. Cl. 29—473.1 **13 Claims**

A strong, heat resistant, stress free joint is formed between nickel-zinc type ferrite ceramic and titanium by sputtering a thin chromium-containing metal layer on the ferrite joint site, and then brazing the metallized ferrite joint site to the titanium joint site by way of a silver-containing brazing alloy.

3,793,706
METHOD FOR SEIZING, AND HOLDING FOR TRANSFER OF SMALL OBJECTS, PARTICULARLY COILED FILAMENTS FOR ELECTRICAL LAMPS AND THE LIKE

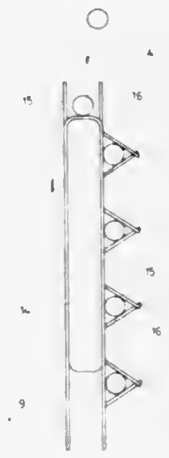
Klaus V. Dohlen, Landershofen, and Josef Lukas, Augsburg, both of Germany, assignors to Patent-Freuhand-Gesellschaft fur elektrische Gluhlampen mbH, Munchen, Germany

Filed Jan. 17, 1972, Ser. No. 218,112

Claims priority, application Germany, Feb. 5, 1971, 2105517

Int. Cl. B23q *7/00*

U.S. Cl. 29—559 **9 Claims**



A belt, preferably of polyethylene, for example about 50 μ thick is provided which has cuts placed therein shaped to provide counter-directed projecting portions located essentially adjacent each other; in a preferred form, a single Z-shaped cut can be used. The belt is wrapped about a mandrel of small diameter, preferably less than the distance of the base portions of the cuts, so that when the belt is wrapped thereabout, the portions of the belt which project, between the cuts, will stand up to form flaps. The objects are dropped between the upstanding projections and when the belt is again straightened, the upstanding projections will resiliently hold the objects against the remainder of the belt, for transport and further processing, for example by immersing the belt with the objects in a chemical dissolving bath.

3,793,707
AUTOMATIC TURNING MACHINE

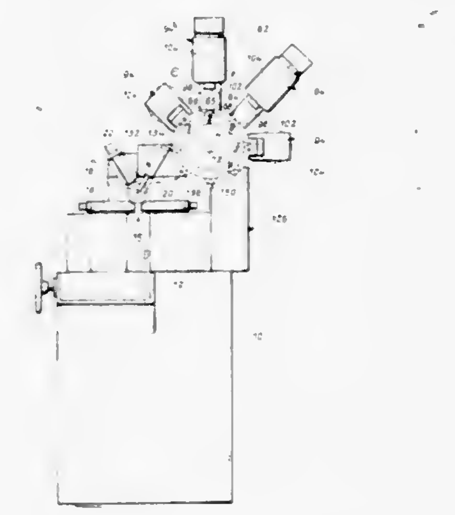
Gerhard Foll, Esslingen-Sulzgries, and Heinz Dieter Baumer, Esslingen, both of Germany, assignors to Index-Werke KG Hahn & Tessky, Esslingen, Germany

Filed Dec. 30, 1971, Ser. No. 214,228

Claims priority, application Germany, Jan. 18, 1971, P 21 02 150.1

Int. Cl. B23q *39/04*

U.S. Cl. 29—563 **15 Claims**



An automatic turning machine which employs two discrete turning units and a transfer mechanism serving to deliver semifinished workpieces from the first unit to the second unit. The first unit employs a rotary work spindle which cooperates with several cross slides and, if necessary, with a turret or tool spindle for tools whereby the tools which are held by the cross slides and/or turret and tool slide treat the workpiece while the latter rotates with the work spindle. The second unit employs an indexible carrier with several sets of equidistant jaws which transport workpieces, received from the work spindle by way of the transfer mechanism, past several working stations at each of which a workpiece held by the respective jaws can be treated by one or more rotary tools which are mounted in tool spindles forming part of assemblies mounted for movement radially, in parallelism with or at another angle relative to the axis of the carrier.

3,793,708
AUTOMATIC CUTTING-TIP REPLACING APPARATUS

Toshiaki Watanabe, Kasugai, and Hideo Yuhara, Nagoya, both of Japan, assignors to Okuma Machinery Works Ltd., Kita-ku, Nagoya-shi, Japan

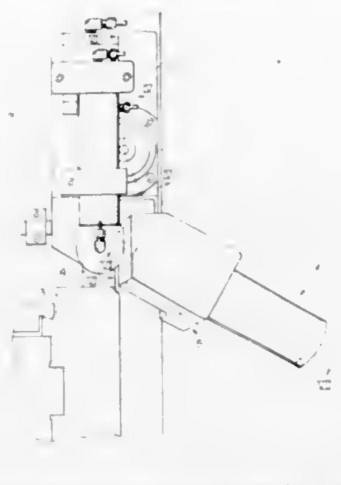
Filed Sept. 18, 1972, Ser. No. 289,894

Claims priority, application Japan, Sept. 20, 1971, 46-73190

Int. Cl. B23q ; B23b *39/00, 29/00*

U.S. Cl. 29—568 **6 Claims**

An automatic cutting-tip replacing apparatus in a machine tool, having means for firmly clamping, at the required position, a cutting-tip which is detachably attached to the predetermined position of a tool holder or a cutting tool shunk and for removing the cutting-tip therefrom, and also having means for feeding a spare tip to said required position, said apparatus being mounted on a rotary table rotating between the tip-replacing position and the awaiting position. This arrangement eliminates the prior need of replacing the entire tool holder and greatly reduces the size of the tool replacing device thereby making both the designing of the apparatus and the attachment of the apparatus to the machine easy, providing an efficient operation as well as greatly saving time and labor.



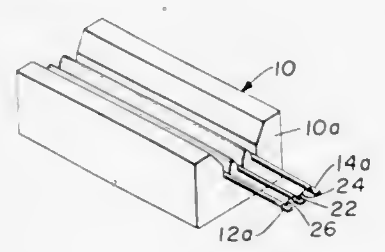
3,793,709
PROCESS FOR MAKING A PLASTIC-ENCAPSULATED SEMICONDUCTOR DEVICE

Albert C. Baumann, Dallas, Tex., assignor to Texas-Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 015,862, March 3, 1970, abandoned, which is a continuation of Ser. No. 562,239, July 1, 1966, abandoned. This application Apr. 24, 1972, Ser. No. 247,074

Int. Cl. B01j *17/00*

U.S. Cl. 29—588 **9 Claims**



Disclosed is a process for manufacturing semiconductor devices and the devices produced by the process. Lead wires are held in a carrier block, cantilevered out in proper position for assembly. Then, at least one of the cantilevered ends is flattened, a semiconductor device is bonded to the flattened end, and a wire is bonded to each of the other end wires and to a contact on the device. The device is then encapsulated in thermosetting plastic.

3,793,710
METHODS OF BONDING A BEAM-LEAD DEVICE TO A SUBSTRATE

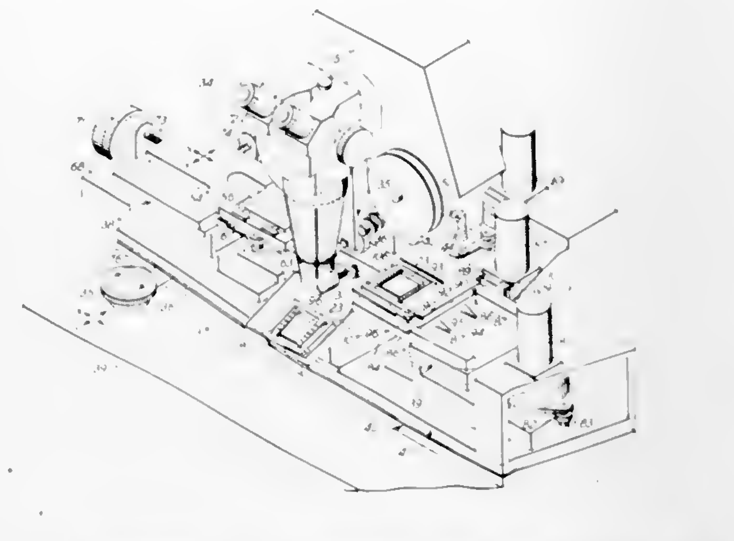
Jack J. Monahan, Allentown, and Fred J. Schneider, Catasauqua, both of Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Oct. 12, 1971, Ser. No. 188,272

Int. Cl. B01j *17/00*

U.S. Cl. 29—577 **7 Claims**

A beam-lead bonder incorporates an automatically indexable feeder slide for feeding a selected integrated circuit device to a bonding station, and a shuttle table for positioning a particular bond site on a substrate in alignment with the selected device. The alignment can be checked by optical instrumentation and refined by a micromanipulator. Before bonding, the device is transferred to the bonding tip of the bonder, and the substrate is transferred to a bonding support. The feeder slide and the shuttle table retract, permitting the table to be loaded with a substrate for a subsequent bonding operation while bonding of the previously aligned device and substrate is taking place. The bonded substrate disengages from the bonding support after bonding and slides into a receiving tray.



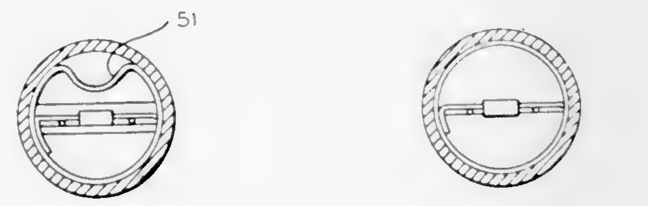
3,793,711
METHOD OF MAKING THE PROBE ASSEMBLY OF A TEMPERATURE SENSOR

Steven J. Heiress, Chicago, Ill., assignor to V.A.C. Industries, Inc., Chicago, Ill.

Filed Apr. 14, 1972, Ser. No. 243,969

Int. Cl. G01r *3/00*

U.S. Cl. 29—595 **4 Claims**



A temperature sensor for sensing the temperature of air moving at low velocity including a transducer assembly having a temperature transducer element in association with a shield or case capable of having fast response and a high degree of accuracy at a specified temperature. The temperature transducer element includes a bobbin of plastic film over which wire sensitive to temperature is wound. A cover is provided over the wire, also of plastic film, and is bonded to the wire as is the bobbin to provide a stable assembly capable of withstanding severe shock and vibration. The invention also includes a method of making a temperature transducer assembly and in mounting it within a shield or case to avoid contamination with the air, while not sacrificing performance.

3,793,712
METHOD OF FORMING CIRCUIT COMPONENTS WITHIN A SUBSTRATE

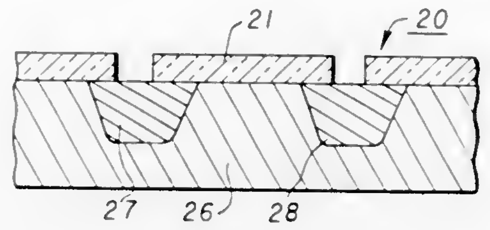
Kenneth E. Bean, Richardson, and Paul S. Gleim, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 26, 1965, Ser. No. 435,634

Int. Cl. B01j *17/00*

U.S. Cl. 29—577 **7 Claims**

Disclosed is a method of etching a cavity in a semiconductor body and redepositing semiconductor material in the cavity formed thereby such that a uniform cavity is formed thereby allowing a uniform fill of semiconductor material resulting in a planar surface by use of a semiconductor body with a crystal orientation other than (111). Also is disclosed the structure formed by the method.



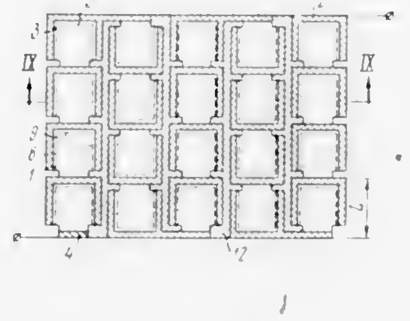
3,793,713
SEMICONDUCTOR PHOTOELECTRIC GENERATOR AND METHOD OF ITS MANUFACTURE

Nikolai Stepanovich Lidorenko, 3 Mytischinskaya, 14a, kv. 127; Arkady Pavlovich Landsman, Rizhsky proezd, 3, kv. 140; Dmitry Semenovich Strebkov, Luganskaya, 21; Aita Konstantinovna Zaitseva, 3 Mytischinskaya ulitsa, 14, kv. 81; Vitaly Vinktorovich Zadde, poselok Severny, 9, Linia, 3, kv. 120, and Viktor Sergeevich Kosarev, 12 Novokuzminskaya ulitsa, 4, korpus 2, kv. 2, all of Moscow, U.S.S.R.

Division of Ser. No. 840,307, July 9, 1969, Pat. No. 3,653,971. This application May 12, 1971, Ser. No. 142,457

Int. Cl. B01j *17/00*

U.S. Cl. 29—583 **2 Claims**



A method of forming a semiconductor generator of semiconductor photoelectric converters united into a solid-state matrix, each conveter having the shape of a microminiature parallelpiped and containing; an alloy region; a base region; at least one P-N junction making an angle with an operating surface of the generator exposed to radiation; a metallic conductor on at least one of said regions making the same angle with the operative surface as the P-N junction and deposited all over the parallelepiped-surface uniting the parallelepipeds of the converters into a matrix; and wherein the width of a microminature parallelepiped is approximately equal to the diffusion length of minority carriers in said base region.

3,793,714
INTEGRATED CIRCUIT ASSEMBLY USING ETCHED METAL PATTERNS OF FLEXIBLE INSULATING FILM

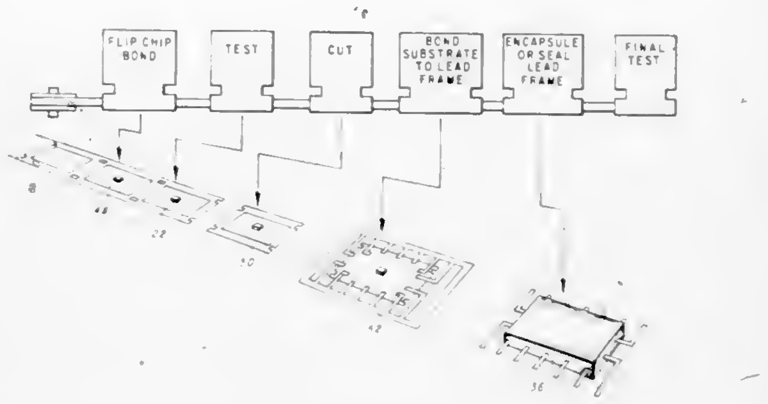
Ernest Gerald Bylander, McKinney, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 27, 1971, Ser. No. 147,577

Int. Cl. H01l 7/66

U.S. Cl. 29—583 **2 Claims**

This disclosure provides methods and apparatus for assembling semiconductor devices. A first embodiment provides a method and apparatus for assembling an integrated circuit in which the chip is bonded to a pattern of leads which is disposed on a thin sheet of insulating material and the film is bonded to a lead frame in a single operation. The structure is then encapsulated and the lead frame trimmed to produce a completely packaged integrated circuit. A second embodiment provides a method and apparatus for packaging semiconductor devices in which the semiconductor chips are first bonded to a pattern of leads which are disposed on a strip of thin insulated material. The strip of insulated material is then separated and the conductors bonded to a lead frame. The structure is then encapsulated and the lead frame trimmed to produce a completely packaged integrated circuit.



3,793,715
PROCESS FOR PRODUCING HIGH-QUALITY ELECTRETS

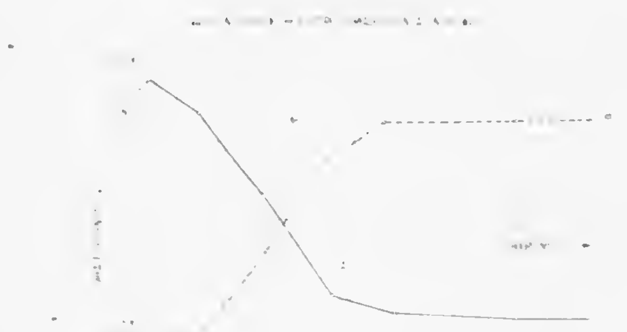
Naohiro Murayama, and Makoto Fukuda, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Chuo-ku, Tokyo-to, Japan

Filed Aug. 26, 1971, Ser. No. 175,307

Claims priority, application Japan, Aug. 26, 1970, 45/74291

Int. Cl. H04r *31/00, 17/00*

U.S. Cl. 29—592 **4 Claims**



A process for producing a high quality electret comprising treating an electret having a heterocharge and a homocharge prepared from a molded resin in the presence of water to decay the unstable component of the heterocharge and the homocharge and maintain only a stable heterocharge.

3,793,716
METHOD OF MAKING SELF LIMITING HEAT ELEMENTS

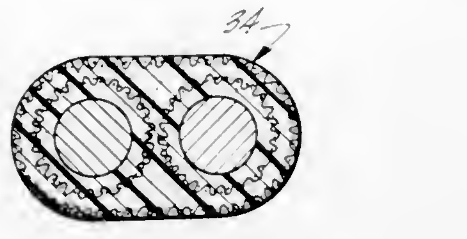
Robert Smith-Johannsen, Portola Valley, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 88,841, Nov. 12, 1970, abandoned. This application Sept. 8, 1972, Ser. No. 287,443

Int. Cl. H05b *3/00*

U.S. Cl. 29—611 **2 Claims**

A process for manufacturing self-limiting heating elements by casting a semi-conducting composition from solution or fusing a powder. Preferred embodiments of the composition contain conductive carbon black and polyethylene, the black loading being lower than that used in prior art compositions. New constructions, including a multi-wire arrangement, are described.

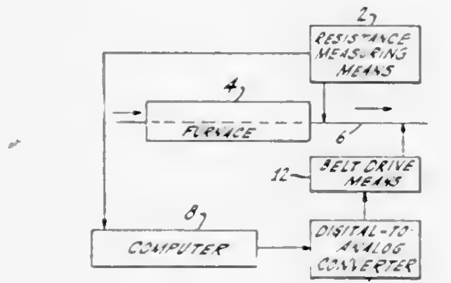


3,793,717

METHOD OF CONTROLLING RESISTANCE VALUES OF THICK-FILM RESISTORS

Robert Stephen Degenkolb, Indianapolis, Ind.; Trevor Richard Allington, Hempstead, England; Yin Huai Wang, and Martin Oakes, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 1, 1971, Ser. No. 130,316
Int. Cl. H01c *17/00*
U.S. Cl. 29—610 **7 Claims**



In the manufacturing of a series of Cermet thick-film resistors deposited on insulating substrates wherein the wet-printed resistor composition units are dried and then passed through a furnace on a belt to fuse glassy components, drift in resistance away from the target resistance value of the fired units emerging from the furnace, which occurs due to a variety of causes, is compensated for by controlling and changing either or both peak temperature and belt speed in accordance with a measured relationship between resistivity and time-temperature in furnace.

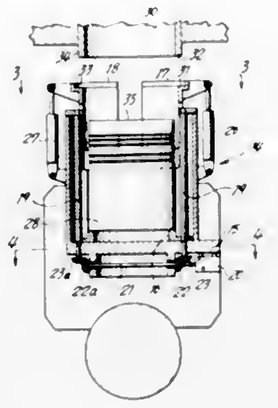
3,793,718

APPARATUS FOR REMOVING OR INSERTING A PISTON IN RECIPROCATING ENGINES

Takeo Okazaki, Tokyo, Japan, assignor to Mitsui Shipbuilding and Engineering Company Ltd. and Japan Ship's Machinery Development Association, both of Tokyo, Japan, part interest to each

Filed Nov. 3, 1972, Ser. No. 303,310
Claims priority, application Japan, Nov. 8, 1971, 46-88826
Int. Cl. B25b *27/14*
U.S. Cl. 29—256 **1 Claim**

A device to assist the mounting and dismounting of a piston through the crankshaft side of the cylinder of a reciprocating engine. The device mounts upon the crankshaft and is adapted to receive the piston thereon. The device includes means to center the piston so that it is axially aligned with the cylinder and to displace the piston radially of the crankshaft into and out of engagement with the cylinder. When the piston is engaged within the cylinder, the device may be removed from the crankshaft to permit connection of the usual connecting rod from the piston to the crankshaft.

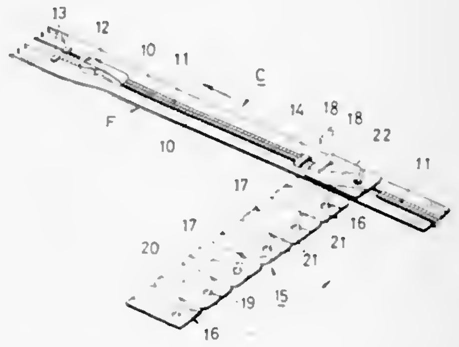


3,793,719

METHOD FOR PRODUCING TUGGED ZIP FASTENERS

Hiroyuki Ebata, Uozu, Japan, assignor to Yoshida Kogyo Kabushika Kaisha, Tokyo, Japan

Filed Mar. 7, 1972, Ser. No. 232,473
Claims priority, application Japan, Mar. 10, 1971, 46/12954
Int. Cl. B23p *11/00*
U.S. Cl. 29—408 **4 Claims**



A method is disclosed for producing zip fasteners having applied thereon tags indicating information relative to zip fastener products. Continuous production of these zip fasteners is made possible by feeding a train of tags in a direction at right angles to the direction of movement of a zip fastener chain.

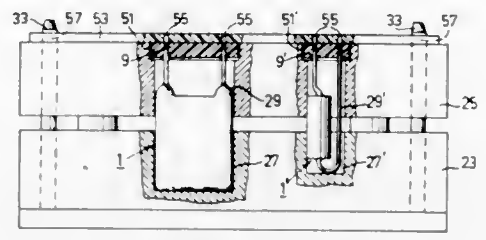
3,793,720

METHOD OF AND DEVICE FOR MOUNTING ELECTRIC COMPONENTS ON A MOUNTING PANEL

Henri Carel Haverkorn Van Rijsewijk; Ludovicus Megens, and Gerard Hendrik Oskam, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 29, 1972, Ser. No. 239,209
Claims priority, application Netherlands, Apr. 9, 1971, 7104836
Int. Cl. H05k *3/30*
U.S. Cl. 29—626 **5 Claims**

A method of and device for mounting electric components on a mounting panel in which the components are provided in recesses of a dual jig and their connection wires are forced into the apertures of a mounting panel. During mounting, the connection wires are held at pitch and are accurately positioned relative to the recesses. Each component is provided with a sliding block surrounding the ends of the connection wires and the circumference of which corresponds to the circumference of a recess in the jig. By moving the two parts of the jig against each other, the sliding block is moved relative to the connection wires so that the ends thereof are freed and are forced into the apertures of the mounting panel.

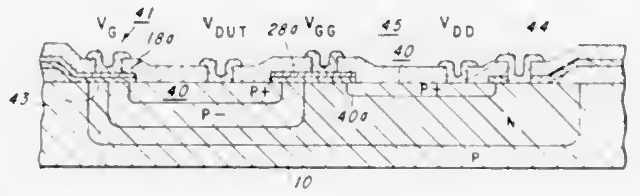


3,793,721

INTEGRATED CIRCUIT AND METHOD OF FABRICATION

Robert H. Wakefield, and James A. Cunningham, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 2, 1971, Ser. No. 168,294
Int. Cl. B01j *17/00*
U.S. Cl. 29—571 **14 Claims**



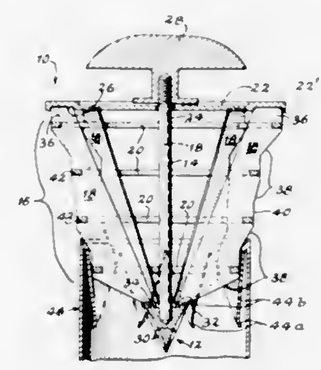
An insulated gate field effect transistor inverter and method of fabrication is disclosed. The invention comprises two field effect transistors integrated on a semiconductor substrate. The configuration has a common source and is thus compatible with integrated circuit fabrication processes. The channel length of one of the two field effect transistors is made extremely small utilizing the method of the invention, enabling significant reduction in size of the inverter. In accordance with this method the channel length is determined by the distance between two accurately controlled diffusions, rather than conventional photolithographic techniques.

3,793,722

CAN OPENER

Telford C. Hill, Jr., 1216 E. Quaker Rd., E. Aurora, N.Y. 14052

Filed Dec. 7, 1972, Ser. No. 313,120
Int. Cl. B65b *7/24;* **B26b** *27/00*
U.S. Cl. 30—6.1 **12 Claims**



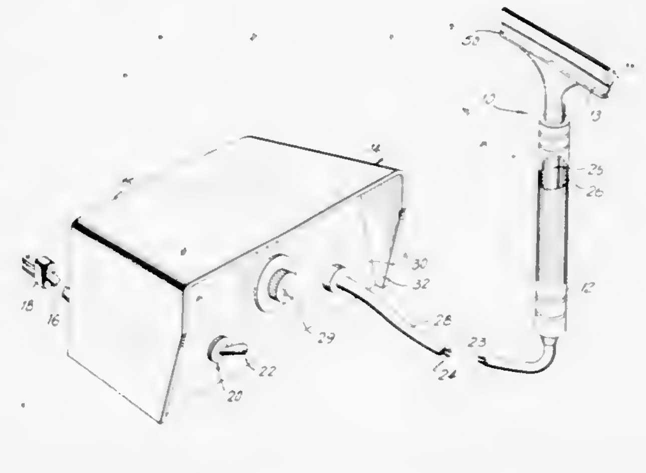
A manually operable can opener for opening a can top when forced thereinto including a plurality of cutting blades radiating from a cutter center line or axis extending through a piercing point and a plurality of deflector rings of progressively increasing size spaced along such axis and successively operable to increase the size of a starting hole formed in the can top by the piercing point.

3,793,723

ULTRASONIC REPLACEABLE SHAVING HEAD AND RAZOR

Arthur Kuris, Riverdale; Lewis Balamuth, New York, and Anthony P. Farina, Centereach, all of N.Y., assignors to Ultrasonic Systems, Inc., Farmingdale, N.J.

Filed Dec. 3, 1971, Ser. No. 204,632
Int. Cl. H01v *7/00;* **B26b** *21/00*
U.S. Cl. 30—45 **58 Claims**



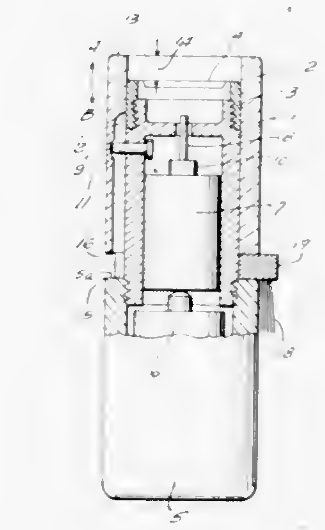
A shaving head for use, in combination with a handle containing an ultrasonic motor, said head including a blade disposed therein and mounted therein in a manner to be ultransonically vibrated with the head detachably and rigidly coupled to the ultrasonic motor.

3,793,724

A DRYSHAVER WITH AN ADJUSTABLE PROTECTIVE SLEEVE

Werner Messinger, Kronberg; Klaus Zimmerman, Bremthal, and Florian Seiffert, Oberhochstadt, all of Germany, assignors to Braun Aktiengesellschaft, Frankfurt, Germany

Filed June 7, 1972, Ser. No. 263,355
Claims priority, application Germany, Feb. 5, 1972, P 22 05 421.3
Int. Cl. B26b *19/38, 19/48*
U.S. Cl. 30—41 **10 Claims**



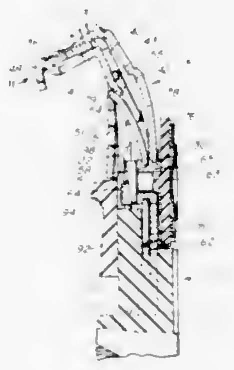
A dryshaver has a rod-shaped housing provided at one end with a shear head which is driven by an electromotor. A protective sleeve surrounds a portion of the housing and can be

ially displaced between two positions in one of which it is facilitate safe removal of the guard from the handle. A

porary prosthesis device is formed by placing a cap on a tooth- tooth on which the bracket is mounted. The appliance in-axially displaced between two positions in one of which it is retracted rearwardly of the shear head and in the other of which it projects forwardly of the shear head to protect the same. An actuator button of a switch for the current supply to the motor is interconnected with the sleeve to prevent the same from being withdrawn off the housing and is displaced in response to shifting of the sleeve to circuit making or breaking.

3,793,725
ADJUSTABLE SAFETY RAZOR

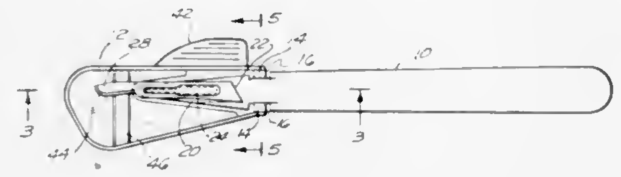
Jan Dawidowicz, Fairfield, and Frank A. Ferraro, Trumbull, both of Conn., assignors to Warner-Lambert Company, Morris Plaines, N.J.
Filed Sept. 14, 1972, Ser. No. 289,031
Int. Cl. B26b *21/24*
U.S. Cl. 30—63 **6 Claims**



The specific embodiment provides a safety razor comprising a guard member pivotally mounted with respect to means for releasably engaging a single cutting edge blade. The guard member includes a transverse guard surface and a cam follower portion. A cam is provided for engagement with the cam follower, and a spring biases the cam follower into abutting engagement with the cam whereby movement of the cam pivots the guard surface with respect to the blade to adjust the shave angle. The embodiment also provides means movable with respect to the cam and cam follower for pivoting the cam follower out of engagement with the cam and for positioning the guard surface in front of the cutting edge of the blade.

3,793,726
STERILE DISPOSABLE SCALPEL

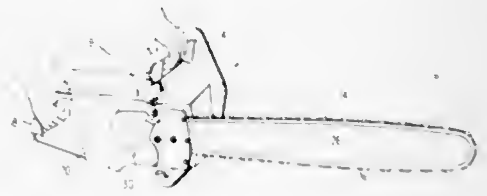
George I. Schrank, Woodcliff Lake, N.J., assignor to Becton, Dickinson & Company, East Rutherford, N.J.
Filed June 7, 1972, Ser. No. 260,494
Int. Cl. A61b *17/32*
U.S. Cl. 30—151 **4 Claims**



A molded handle has a blade attached to and extending from one end and a blade guard frangibly attached to the same end. The guard has first and second flat surfaces formed on opposite sides with a raised edge extending substantially around the periphery of each surface. The first flat surface is contiguous with one side of the blade and extends beyond the blade so that the raised edge of the guard protects the edge of the blade. A pressure tab is molded onto the guard and is disposed remotely from a sharpened edge of the blade to facilitate safe removal of the guard from the handle. A retainer bar is formed adjacent to but spaced from the second flat surface to define a narrow slot between the bar and the second surface into which the blade is inserted after use to provide for safe disposal of the device.

3,793,727
CHAIN SAW SAFETY METHOD AND APPARATUS

Harold Edward Moore, Torrance, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.
Continuation-in-part of Ser. No. 190,574, Oct. 19, 1971. This application Oct. 4, 1972, Ser. No. 294,866
Int. Cl. B27b *17/02, 17/10*
U.S. Cl. 30—383 **10 Claims**



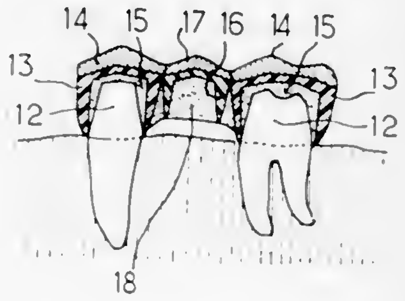
A method and apparatus for preventing injury to an operator of a chain saw of the type having a frame, a frame handle, a control handle, a guide bar, a cutting chain and power means mounted on the frame and operably connected to the cutting chain for driving the cutting chain on the guide bar.

The apparatus includes a first lever pivotally mounted adjacent to the frame handle and a second lever pivotally mounted adjacent to the control handle. A self-locking brake is biased toward actuation and upon actuation is operably sufficient to instantly stop movement of the cutting chain and stall out the chain saw power means. Actuation of the self-locking brake is controlled by engaging the first and second levers against the frame and control handles respectively. This engagement is translated through a linkage system to overcome the aforementioned bias and disengage the self-locking brake. Upon release of either the first or second levers, or both, from engagement with the frame or control handles respectively the brake will be immediately actuated.

The method includes the steps of controlling the actuation of a self-locking brake and actuating the brake in the event an operator's hand slips from either the frame handle or the control handle. If such an event occurs the method includes braking the cutting chain to an immediate stop and thus minimizing the possibility of injury to the operator.

3,793,728
METHOD OF FASHIONING A DENTAL PROSTHESIS DEVICE AND A TEMPORARY PROSTHESIS DEVICE TO PUT THIS METHOD INTO EFFECT

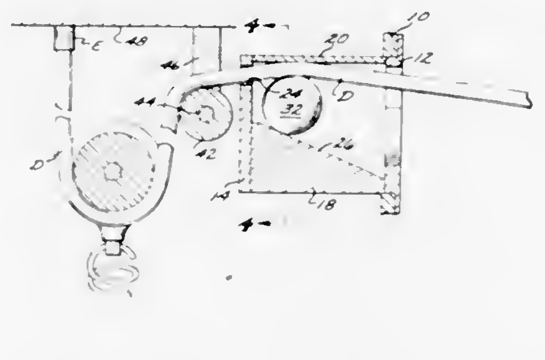
Jean G. Corbineau, 33, rue du Commerce, Paris, France
Filed Mar. 23, 1972, Ser. No. 237,489
Claims priority, application France, Mar. 25, 1971, 7110646
Int. Cl. A61c *12/22*
U.S. Cl. 32—6 **4 Claims**



A method of making a dental prosthesis device, and an improved device for use as a temporary prosthesis device. A temporary prosthesis device is formed by placing a cap on a tooth-stump, which cap is topped by a soft metal chewing surface. The temporary prosthesis device remains in the patient's mouth for several days so that he can perform the action of chewing, so as to shape the soft metal surface. A final prosthesis device provided with a harder metal chewing surface is then fashioned from the model provided by the soft metal chewing surface.

3,793,729
GRIPPING DEVICE ASSEMBLY FOR TENSIONED PLIABLE ELONGATE MEMBER

Robert P. Nyboer, 2016 Calle Candela, Fullerton, Calif. 92632
Filed Sept. 22, 1972, Ser. No. 291,313
Int. Cl. A61c *1/00*
U.S. Cl. 32—23 **9 Claims**



An assembly that is preferably used in conjunction with a hand-holdable instrument that has an elongate pliable member extending therefrom to a source of power that serves to actuate the instrument.

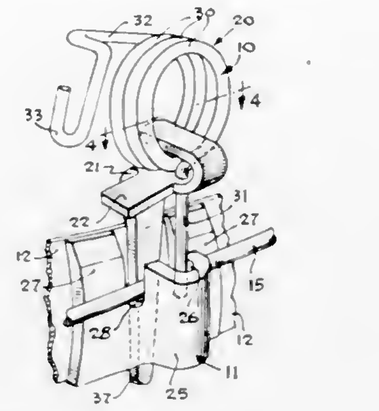
The assembly includes a housing that is located in a fixed base position relative to the source of power, and the housing having the elongate pliable member extending through a confined space therein. The confined space is partially defined in the housing by a top and a bottom, with the bottom including an inclined surface on which a rotatable member is movably supported. Means for maintaining tension on the elongate pliable member are disposed between the source of power and the housing.

The housing is preferably capable of removably supporting the instrument at a first position thereon. When the instrument is moved outwardly from the housing without the pliable elongate member contacting the rotatable member, tension is maintained on the elongate member until the instrument is moved downwardly to bring the elongate member into frictional contact with the rotatable member. The instrument is then allowed to move toward the housing a short distance due to the tension on the elongate member, with the rotatable member now rolling up the inclined surface to frictionally grip the pliable elongate member between the rotatable member and the top of the housing. The portion of the elongate member extending outwardly from the housing to the instrument is now free of tension and the instrument may be maneuvered without any restraint thereon. After the instrument has been used, the instrument is returned to the first position by reversing the above-described steps.

3,793,730
LOCK SPRING PIN APPLIANCE

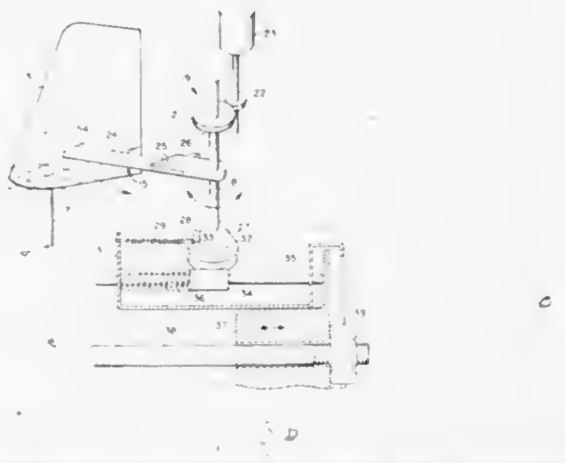
Percy R. Begg, Adelaide, Australia, and Peter C. Kesling, La Porte, Ind., assignors to TP Laboratories, Inc., LaPorte, Ind.
Continuation-in-part of Ser. No. 218,910, Jan. 19, 1972, abandoned. This application May 5, 1972, Ser. No. 250,590
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 A **28 Claims**

An orthodontic appliance for use with a bracket having a pin opening and an arch wire slot, which comprises an uprighting spring and a pin coacting to lock one or more arch wires to the bracket and to apply an uprighting force to the tooth on which the bracket is mounted. The appliance includes a pin having a head, which coacts with the coil of the uprighting spring wherein the tail of the pin and the tail of the spring are received in the pin opening and the arch wire slot is closed such that free tipping between the arch wire and bracket is possible. The lever arm of the spring terminates in a hook for engaging with the arch wire and the coil of the spring is positioned at the bracket.



3,793,731
ANGLE POSITION INDICATOR

Eino J. Hyyppa, North Hollywood, and Chester L. Reed, Burbank, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed July 12, 1972, Ser. No. 271,100
Int. Cl. G01c *1/00*
U.S. Cl. 33—1 PT **9 Claims**



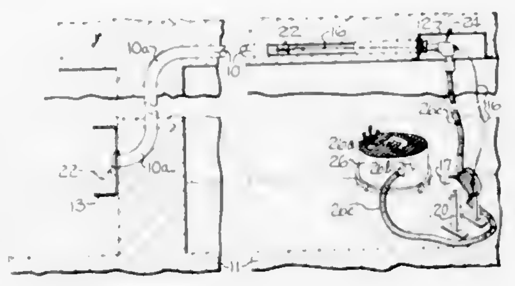
A sensor mechanism is provided to detect movements of rudders about axes which are perpendicular to a propeller axis on a propeller-driven vehicle. Follower arms are configured to engage rudders of the propeller-driven vehicle and be moved in response to movements thereof. The followers are constrained to rotate about a fixed shaft; the rotation of which is coupled, via suitable mechanical amplifier means, to electromechanical transducer. An interlock is provided to cause the arms to engage the rudders when the mechanism is mounted on the propeller shaft and to retract the followers to inoperative position when the device is removed from the propeller shaft.

3,793,732
METHOD AND APPARATUS FOR INSTALLING HEAVY ELECTRICAL CONDUCTOR LINES IN CONDUITS

James Carver Hamrick, Matthews, N.C., assignor to Jet Line Products, Inc., Mathews, N.C.
Filed July 29, 1970, Ser. No. 59,244
Int. Cl. G01b *3/10;* **B65h** *59/00*
U.S. Cl. 33—137 R **8 Claims**

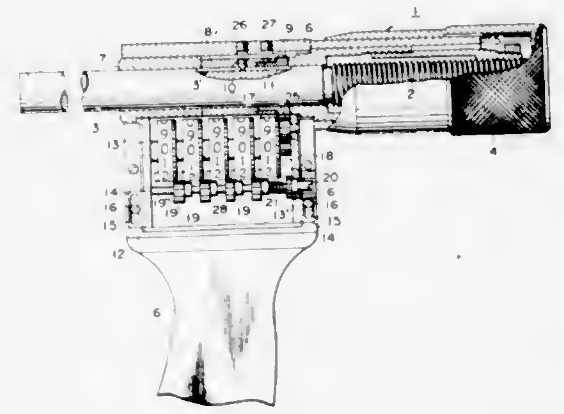
A novel light-weight plastic tape with measuring indicia thereon is propelled through an electrical conduit by fluid

the lateral spacing of a pair of vehicle wheels. Each tubular suring and locating fixtures having ferromagnetic base protupressure therein, and the indicia on the tape is noted at opposite ends of the conduit to determine the desired length of a conductor line to be installed in the conduit. Thereupon, the tape is used to pull a strong pull line or rope through the conduit, a heavy conductor line of the desired pre-cut length thus determined then is attached to the strong pull line, and the pull line is used to pull the conductor line into the conduit so that the conductor line then extends throughout the length of the conduit.



3,793,733
ZERO ADJUSTING DEVICE FOR DIGITAL MICROMETER

Goro Nishikata, Kawasaki, Japan, assignor to Yehan Numata, Yokahama, Japan
Filed Jan. 18, 1972, Ser. No. 218,761
Claims priority, application Japan, May 5, 1971, 46-37554
Int. Cl. G01b *5/00*
U.S. Cl. 33—166 **3 Claims**

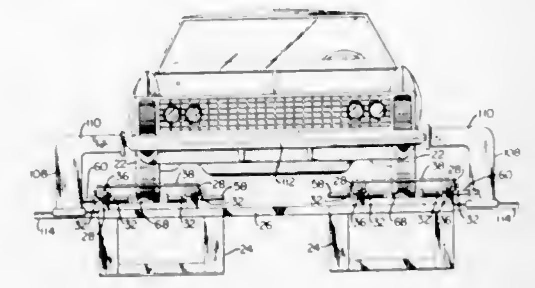


A zero adjusting device for a digital micrometer comprises a spindle directly connected to a thimble and encircled by a clamp-ring rotatable with said spindle. A gear wheel is disengagably coupled to said clamp-ring by means of an adjusting screw, and an adjusting gear is adapted to be directly coupled to the first stage wheel of a digital indicator interlocked with said gear wheel to be driven thereby. The adjusting gear is spring-biassed away from the first-stage wheel.

3,793,734
METHOD AND APPARATUS FOR DETERMINING CASTER TRAIL

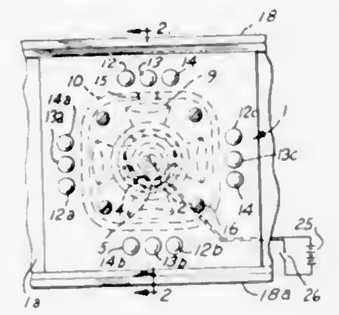
Marcellus S. Merrill, 335 Colorado Blvd., Denver, Colo. 80206
Continuation of Ser. No. 821,535, Jan. 22, 1969, abandoned, which is a division of Ser. No. 499,380, Oct. 21, 1965, Pat. No. 3,494,045. This application June 25, 1971, Ser. No. 156,988. The portion of the term of this patent subsequent to Feb. 10, 1987, has been disclaimed.
Int. Cl. G01b *11/26*
U.S. Cl. 33—203.12 **14 Claims**

A method and apparatus for measuring static, kinetic and pneumatic caster trail of a steerable, vehicle mounted wheel. The apparatus includes a pair of fore and aft spaced rollers which supportingly contact the wheel at two points of reference. The rollers are mounted both for rotary and nonrotary movement about their longitudinal axis. The swinging of the wheel away from a "straight ahead" direction results in a force being distributed by the wheel to the surfaces of said supports in a direction generally parallel to the longitudinal axes of said supports. The amount of force distributed along each roller in a direction longitudinally thereof is sensed, measured and compared one with the other to compute or determine static, kinetic and pneumatic caster trail.



3,793,735
LEVELLING INSTRUMENT

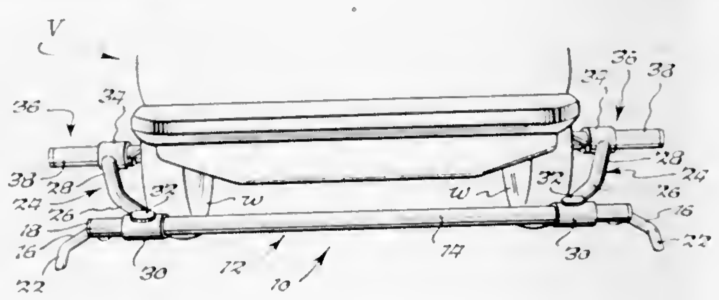
David H. Humphrey, General P.O. Box 2226, San Juan, P.R.
Filed May 10, 1972, Ser. No. 252,339
Int. Cl. G01c *9/00*
U.S. Cl. 33—348 **15 Claims**



A levelling instrument wherein a level condition is indicated by the projection of a light beam within the instrument on an indicator. The light beam is projected in a constant vertical direction by a reflecting surface that is rotatable about a light source, which is focused on the indicator only when the instrument is level. The reflecting surface can comprise a pendulum mirror or a continuous circular conduit partially filled with mercury.

3,793,736
WHEEL ALIGNMENT MEASURING APPARATUS

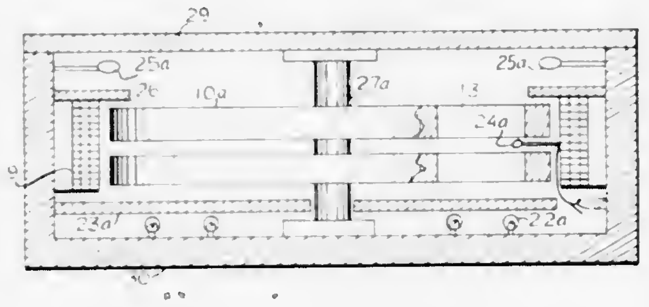
Franco Cufrini, Frosinone, Italy, assignor to Allitalia Import-Export Inc., Buffalo, N.Y.
Filed July 21, 1972, Ser. No. 273,787
Int. Cl. G01b *5/255*
U.S. Cl. 33—203.17 **7 Claims**



A wheel alignment measuring apparatus for determining vehicle wheel camber and toe characteristics. A pair of telescopic measuring heads in the form of tubes are adjustable to the lateral spacing of a pair of vehicle wheels. Each tubular head is provided with an axial rod projecting through the head and carrying an elongated member having spaced probes engagable with diametrically opposed points on the rim of the wheel hub. The elongated member swings to an inclined position corresponding to the inclination of the wheel relative to a true reference plane causing movement of the rod, the rear end of which serves as a pointer associated with a calibrated scale to indicate the degree of wheel inclination.

3,793,737
SELF-TIMED REACTION-MASS COMPASS

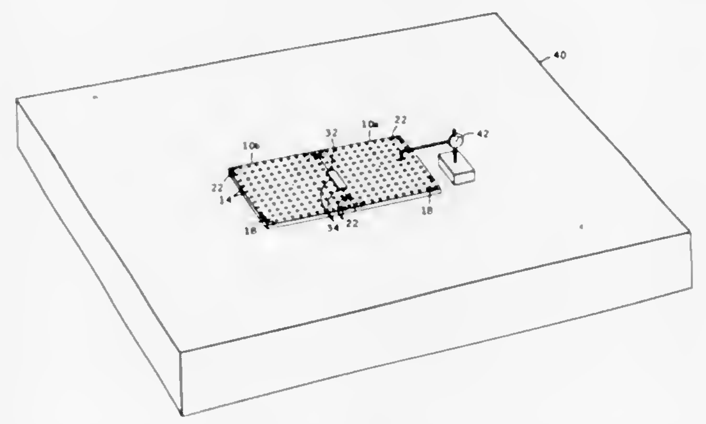
Max Alth, 6 Tamarack Rd., Port Chester, N.Y. 10573
Filed Oct. 9, 1970, Ser. No. 79,557
Int. Cl. G01c *17/00*
U.S. Cl. 33—300 **2 Claims**



Two horizontal discs of identical mass and dimensions are rotated in opposite directions at identical and fixed speed. Each disc is pierced by a radial slot. Coincidence of said slots provides an index spot on a compass card. Said coincidence is independent of the device support and holds its direction in space despite support movement and rotation. The discs may be rotated by any means. A counter may be employed to read out the slot-coincidence position in degrees relative to any fixed angular position about the axis of said discs.

3,793,738
MEASURING AND LOCATING SYSTEM COMPONENTS

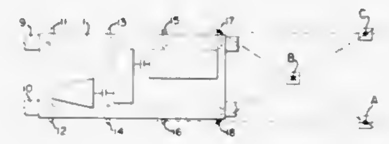
Alexander G. Blakey, San Diego, Calif., assignor to General Dynamics Corporation, San Diego, Calif.
Filed Oct. 25, 1972, Ser. No. 300,547
Int. Cl. G01b *3/30, 5/14*
U.S. Cl. 33—180 R **5 Claims**



Components from which a measuring and locating system may be assembled and a method of assembling them are disclosed. The basic component is a thin planar tile having a plurality of openings in one surface arranged in a repeating uniform geometric pattern. The openings contain magnetic inserts having uniformly recessed upper surfaces. A contiguous array of these tiles may be assembled in which the highly accurate opening pattern continues across the entire array. Measuring and locating fixtures having ferromagnetic base protuberances arranged to conform to the insert recess shape and pattern may be removably mounted on the tile assembly to perform a wide variety of measuring and locating functions.

3,793,739
PROCESS FOR INSTALLING BASE-MOUNTED MACHINERY SUBJECT TO MISALIGNMENT

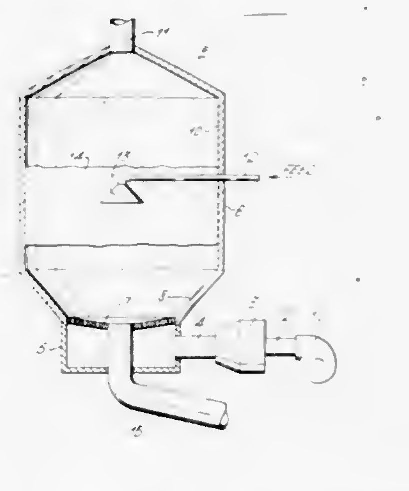
Herbert N. Hoffman, Lunenburg, and Harry A. Mayor, Fitchburg, both of Mass., assignors to General Electric Company, Schenectady, N.Y.
Filed Apr. 17, 1972, Ser. No. 244,409
Int. Cl. G01b *5/00*
U.S. Cl. 33—286 **3 Claims**



A machinery base carrying several rotating components is aligned on a factory foundation, prior to shipment to an installation site foundation. At the installation site, the original factory alignment is maintained by establishing the relationship of the supporting surfaces of the foundation with the equipment in place substantially identical to that of the factory condition. This is carried out by an alignment process which utilizes reference points outside of the machinery base.

3,793,740
FLUIDIZED BED PROCESS

Neophytos Ganiaris, Riverdale, N.Y., assignor to Struthers Scientific and International Corporation, New York, N.Y.
Filed June 6, 1972, Ser. No. 260,147
Claims priority, application Great Britain, June 18, 1971, 28,756/71
Int. Cl. F26b *17/10, 3/08*
U.S. Cl. 34—10 **1 Claim**



A fluidized bed process for the drying and granulation of a 50 per cent by weight aqueous solution of ammonium sulphate is carried out in a container having a conical bottom portion in which a gas is introduced, the conical bottom portion reducing the velocity of gas flowing upward therein from about 7 to 10 to about 4 to 6 feet per second to control the generation of dust.

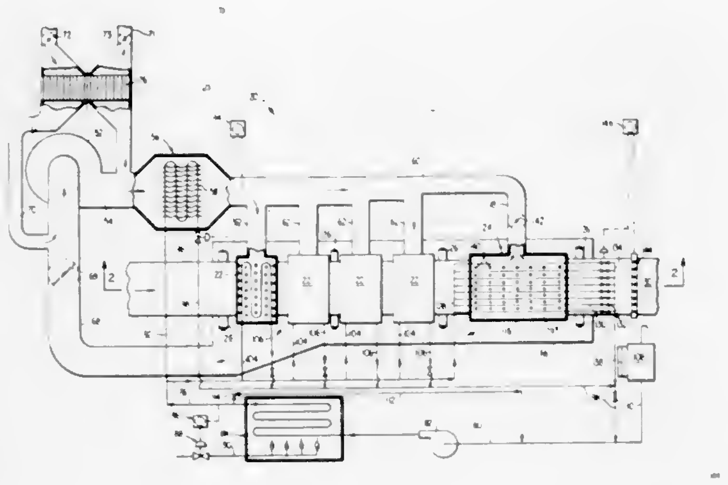
3,793,741
DRYING APPARATUS WITH MOISTURE PROFILE CONTROL

Horace L. Smith, Jr., Richmond, Va., assignor to Smitheen Industries, Inc., Richmond, Va.

Continuation of Ser. No. 97,943, Dec. 14, 1970, abandoned, which is a division of Ser. No. 46,704, June 16, 1970, abandoned. This application Jan. 7, 1972, Ser. No. 216,046

Int. Cl. F26b *19/00*

U.S. Cl. 34—48 **17 Claims**



Apparatus for drying material in web, sheet, and similar forms by a combination of radiant and convective heating in which provision is made for controlling the moisture or other volatiles profile across the width of the material being dried.

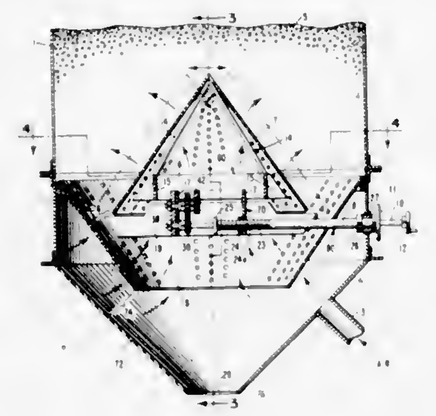
3,793,742
HOPPER DRYER FOR PARTICULATE MATERIAL

Dewey Rainville, Westfield, N.J., and Homer C. Hek, Alexandria, Va., assignors to Universal Dynamics Corporation, Woodbridge, Va.

Filed Apr. 3, 1972, Ser. No. 240,539

Int. Cl. F26b *17/10*

U.S. Cl. 34—57 R **30 Claims**



Improved drying apparatus is disclosed which maintains the even flow of material to be dried through a drying vessel in countercurrent flow to a drying gas and maintains the residence time of material in the vessel at a constant value. In prior art systems, material tends to accumulate along the periphery of the drying vessel. In accordance with the present invention, a moveable means is placed at the bottom of the drying vessel which effects a predetermined and selectable spatial non-uniformity in the flow of material through the hopper body. The improved apparatus has the effect of preventing peripheral accumulation of the material or "-hilling" in the dryer to the end that there is uniform flow and drying of the material passing therethrough.

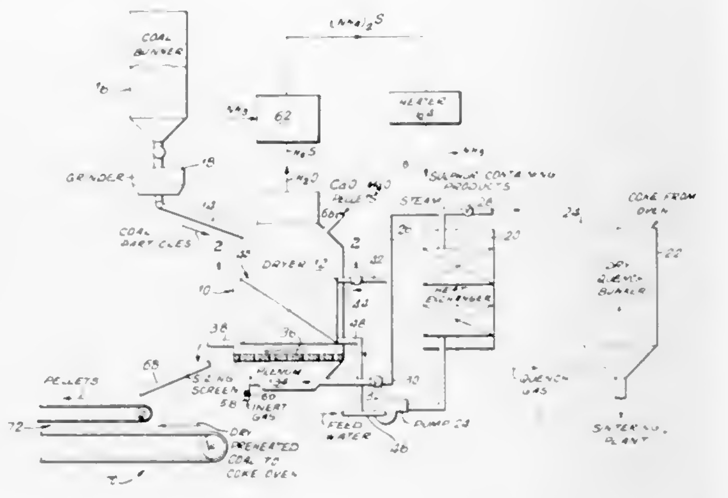
3,793,743
APPARATUS FOR DRYING COAL

Roland Kemmetmueller, Pittsburgh, Pa., assignor to American Waagner-Biro Company, Inc., Pittsburgh, Pa.

Filed Aug. 23, 1972, Ser. No. 283,155

Int. Cl. F26b *17/10*

U.S. Cl. 34—57 A **8 Claims**



An apparatus for drying coal. The coal, in the form of coal particles, is fed into a drying chamber where the coal is suspended in a fluidized bed while being dried in an atmosphere of steam which is at a temperature too low to release oxygen but high enough to extract sulphur from the coal particles. The temperature of the atmosphere in the fluidized bed where the drying of the coal takes place in regulated with heating coils which directly contact the coal particles while the latter are suspended in the fluidized bed, so that further drying is achieved by direct contact between the coal particles and the heating coils. The coal with its reduced sulphur and moisture content is taken in a preheated condition from the dryer and delivered to a coke oven to reduce the extent to which coal must be heated therein. Gas extracted from the dryer is treated to have water condensed therefrom and to extract sulphur therefrom. In addition, pellets of calcium oxide and/or magnesium oxide are delivered to the fluidized bed together with the coal particles for further extracting sulphur from the atmosphere in the fluidized bed, these pellets also being subsequently treated, as by roasting, to extract sulphur therefrom.

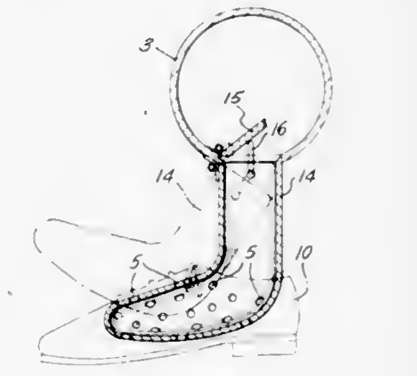
3,793,744
DEVICE FOR DRYING SHOES

Yasufumi Saita, 7-16, Yoshihara-cho, Oaza, Fukuoaka Prefecture, Iizuka, Japan

Filed June 12, 1972, Ser. No. 261,996

Int. Cl. F26b *25/00*

U.S. Cl. 34—104 **5 Claims**



A device for directly drying the inside of shoes, such as bowling shoes or golf shoes, which consists of a drying box provided with an external heater, a serpentine air inlet pipe within the box connected to said heater and provided with a plurality of perforate nozzles on which said shoes may be hung.

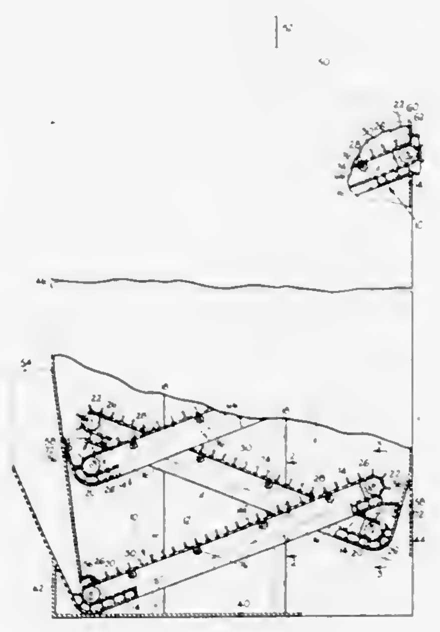
3,793,745
AGGREGATE DRYER

Donald W. Myers, 11000 S.W. Boones Ferry Rd., Portland, Oreg. 97219

Filed Mar. 19, 1973, Ser. No. 342,507

Int. Cl. F26b *15/20*

U.S. Cl. 34—189 **10 Claims**



A plurality of elongated conveyors are arranged in two vertical stacks disposed side-by-side the conveyors of the first stack being spaced apart vertically and inclined upward in one direction and the conveyors of the second stack being spaced apart vertically and inclined upward in the opposite direction. The upper, outfeed end of each conveyor is positioned vertically above, but to the side of, the lower, infeed end of the next adjacent conveyor, in the downstream direction of movement of aggregate through the conveyors, and a side chute communicates the upper, outfeed end of each conveyor with the lower, infeed end of the next adjacent downstream conveyor. A source of heat is associated with the conveyors, and the assembly is confined in a housing provided with an aggregate inlet communicating with the lower, infeed end of the lowermost conveyor, an aggregate outlet communicating with the upper, outfeed end of the uppermost conveyor, and a vapor outlet at the upper end of the housing. Aggregate material thus is conveyed upward alternately through the conveyor stacks while being heated sufficiently to vaporize its moisture content.

3,793,746
SLIPPERS

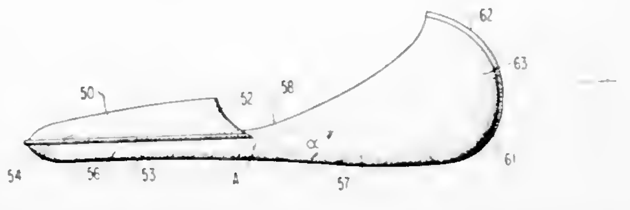
Winalee Mitchell, and James G. Mitchell, both of 110 Secor Woods Ln., Perrysburg, Ohio 43551

Filed Aug. 29, 1972, Ser. No. 284,535

Int. Cl. A43b *00/00*

U.S. Cl. 36—2.5 R **8 Claims**

Elastomeric slippers, having an upper blank joined to a lower blank to form a bottom sole and at least a front-of-the-foot cavity, exhibit improved tear resistance by the formation of the marginal rear edge of the upper blank in such a way as to form an acute angle with the coextensive marginal edge of the lower blank. Additional tear resistance is added when the marginal rear edge is formed as a forwardly extending cusp so as to circumvent the upper half of the foot's instep.



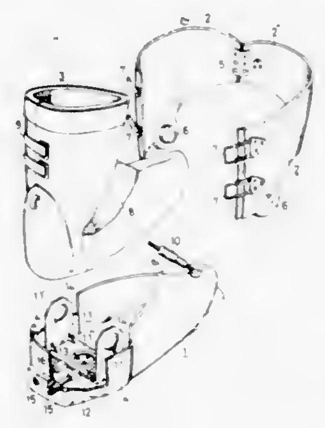
3,793,747
SKI BOOT

Yoshinari Mochizuki, Tokyo, Japan, assignor to Hope Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1973, Ser. No. 353,732

Int. Cl. A43b *00/00*

U.S. Cl. 36—2.5 AL **6 Claims**



A ski boot is provided which comprises a rigid upper shell, a rigid lower shell, an inner and an outer pivot means for pivotal movement of the upper shell with respect to the lower shell, the inner pivot means locating nearer to the boot toe than the outer pivot means, and means for slightly adjusting the position of at least one of the inner and outer pivot means substantially along horizontal plane.

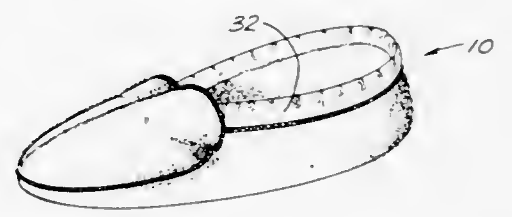
3,793,748
FOOT COVERING

Verna Lee Pursley, 11194 Magnolia Ave., Riverside, Calif. 92505

Filed May 4, 1972, Ser. No. 250,431

Int. Cl. A43b *1/02*

U.S. Cl. 36—9 R **4 Claims**



Soft, absorbent slippers suitable for wear by women around the house. Each slipper is made from a single square of terrycloth which has been folded in half, with the loose edges up, and then sewn into the general shape of the slipper. This sewing is accomplished by means of three seams, a curving heel seam at the right end of the folded cloth, a short diagonal toe seam at the lower left corner of the cloth and a longer diagonal instep seam running upwardly from the toe seam to a point near the top edges of the cloth halves. Between the tops of the instep seam and the heel seam the edges of the folded cloth halves are left free to form an opening for the foot. A strip of elastic is fastened at its ends in a downturned fold of cloth around the foot opening to form an elastic rim which holds the slipper in place on the foot. Ornamental cloth flaps extend outwardly from the instep seam to decorate the top of the slipper.

3,793,749
SKI BOOT

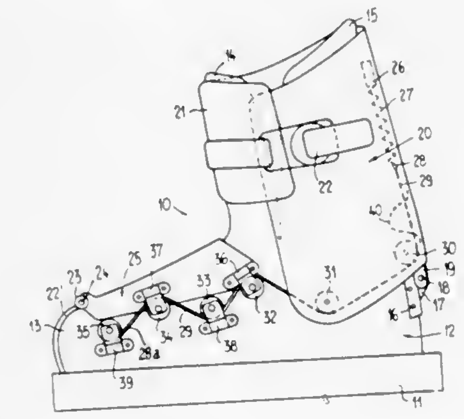
Ernst Gertsch, Wengen, and Ulrich Gertsch, Interlaken, both of Switzerland, assignors to Gertsch AG, Interlaken, Switzerland

Filed Apr. 9, 1973, Ser. No. 349,287

Claims priority, application Great Britain, Apr. 17, 1972, 17568/72

Int. Cl. A43b *00/00*

U.S. Cl. 36—2.5 AL **13 Claims**



A ski boot having outer upper portions which can be pivoted about hinges with regard to the sole of the ski boot from an open position into a closed position. The outer upper portion arranged at the region of the vamp and the outer upper portion arranged at the region of the quarter are coupled to one another by means of at least one rope- or cable traction element which transmits the closing movement of the one outer upper portion as a closing movement to the other outer upper portion.

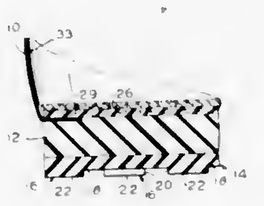
3,793,750
ATHLETIC SHOE FOR ARTIFICIAL TURF

William J. Bowerman, Eugene, Oreg., assignor to BRS, Inc., Tigard, Oreg.

Filed Aug. 30, 1972, Ser. No. 284,736

Int. Cl. A43b *23/28*

U.S. Cl. 36—59 C **14 Claims**



An athletic shoe suitable for use on artificial turf is described including an improved upper of a porous multiple layer construction and an improved sole having integral polygon shaped studs. The upper is preferably made of nylon tricot fabric outer layer, a polyurethane foam middle layer, and a porous synthetic fabric inner layer. This greatly reduces the weight of a football shoe made in accordance with the invention so that it is approximately one-half the weight of a conventional leather football shoe as well as providing great comfort and enabling use in wet weather without damage. The sole has short multi-sided polygon shaped studs of square, rectangular or triangle cross section, having a plurality of flat sides which provide gripping edges that give greatly improved traction.

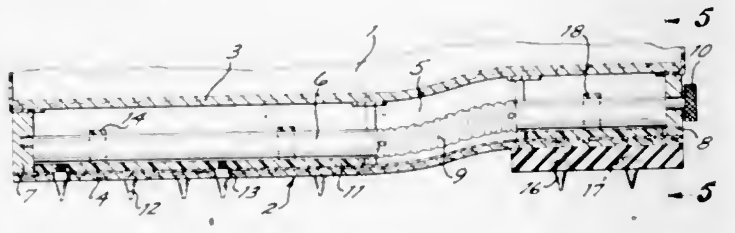
3,793,751
RETRACTABLE SPIKE GOLF SHOE

Ambrose L. Gordos, 4301 E. 2nd St., Apt. 1E, Long Beach, Calif. 90803

Filed Apr. 5, 1971, Ser. No. 131,292

Int. Cl. A43c *15/00;* **A43b** *00/00*

U.S. Cl. 36—61 **3 Claims**



This invention relates to a retractable spike, particularly for a golf shoe and the like, whereby the spikes can be either protruded or retracted from the bottom sole of the shoe to protect the floor of a clubhouse or the turf on the green. This movement of the spikes can be accomplished from the outside of the shoe by a mere rotation of a protruding knob.

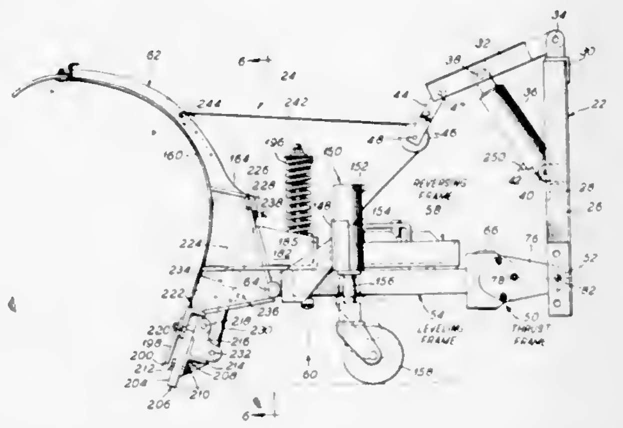
3,793,752
CONVERTIBLE SNOW PLOW WITH AUXILIARY GROUND SUPPORT

Roderick C. Snyder, Owen, Wis., assignor to Loed Corporation, Wausau, Wis.

Filed Dec. 29, 1972, Ser. No. 319,895

Int. Cl. E01h *5/04*

U.S. Cl. 37—42 R **7 Claims**



A snow plow attachable to the front of a truck or other vehicle. A moldboard assembly is supported by hydraulic jacks on ground-engaging members such as caster wheels or shoes and is connected by a thrust frame to a hitch on the vehicle. A moldboard has two separate blades each having a ground-engageable scraping edge. One blade is steel, fixed along the lower portion of the moldboard. The other blade is rubber-like and is movable to an extended, working position below the steel blade, enabling it to act as a squeegee to clear soft snow and slush. The rubber-like blade is also movable to a stowed position above the scraping edge of the steel blade, enabling the steel blade to engage the ground when a harder, general purpose cutting edge is required. Pressure applied to the hydraulic jacks exerts a lifting force on the moldboard assembly through the ground-engaging members. Pressure is regulated by a relief valve which is adjustable to transfer a definite, predetermined portion of the moldboard assembly weight to the ground-engaging members. By adjusting the relief valve, heavy cutting pressure, or light squeegee pressure, may be applied through the moldboard assembly as required by the steel or rubber-like blade.

3,793,753
HAND OPERATED STEAMING AND IRONING DEVICE

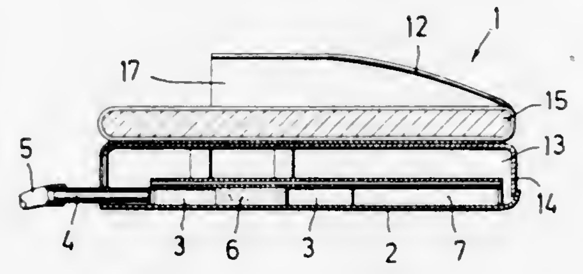
Wilhelm Engelbart, Seelscheid-Nackhausen, Germany, assignor to Hoffman Rheem Maschinen GmbH, Cologne, Germany

Filed July 31, 1972, Ser. No. 276,542

Claims priority, application Germany, July 31, 1971, 2138491

Int. Cl. D06f *75/06, 79/00*

U.S. Cl. 38—77.6 **13 Claims**



A manually operated steam ironing device comprises a bottom portion including a bottom ironing plate having outlet openings to allow passage of steam. An upper portion includes a hand receiving means located above the ironing plate. The hand receiving means has a structural configuration effective to enwrap at least a portion of an operator's hand for protecting the operator's hand and to facilitate operation of the device. The upper portion also includes a padded insulated layer and a carrier plate portion having a structural configuration which defines an insulating chamber above the bottom heating plate. The bottom portion includes a heating element and a heated cover plate carrying said element. The cover plate has a structural configuration to form a steam expansion chamber between itself and the bottom ironing plate.

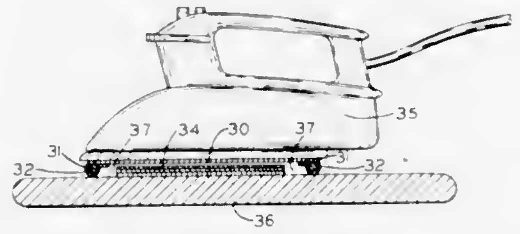
3,793,754
APPARATUS FOR STEAM CONDITIONING TEXTILE ARTICLES

John F. Harms, 6418 Stonybrook Dr., Fort Wayne, Ind. 46815

Filed Feb. 3, 1972, Ser. No. 223,244

Int. Cl. D06f *79/00*

U.S. Cl. 38—141 **2 Claims**



A method and apparatus for steam conditioning articles, such as neckties and cravats and napped belts and napped fabrics, in which the article to be treated is disposed in a cavity located between a pair of spaced supporting members on which a heated pressing iron is adapted to be supported in relatively closed spaced relation to the article being pressed. The device supporting the iron may include a pressing cloth engaged by the iron that may be moistened for the generation of steam and either with or without the pressing cloth the iron is advantageously a steam type iron. The arrangement prevents the sole of the iron from pressing directly on the article being treated and thereby prevents deformation of the nap on the article or the forming of sharp wrinkles or creases therein.

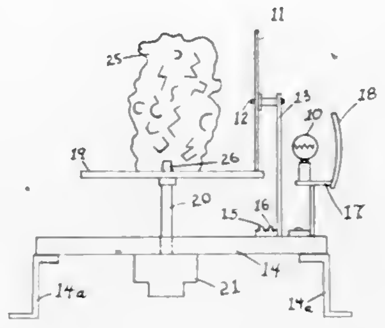
3,793,755
ILLUMINATED DISPLAY APPARATUS

William R. Gersch, Long Valley, N.J., and Sheldon H. Lebowitz, Silver Spring, Md., assignors to William R. Gersch, Long Valley, N.J.

Filed July 15, 1971, Ser. No. 162,879

Int. Cl. F21p *03/00;* **G09f** *19/20*

U.S. Cl. 40—132 E **3 Claims**



Apparatus for producing moving light patterns comprising a light source, a three-dimensional rotatable and light transmitting member having a multiplicity of light transmitting surfaces and mounted to receive light from the source and a rotatable wheel having multi-colored light transmitting segments mounted between the source and the member. The member may be a molded mass, a plurality of differently shaped or differently disposed objects secured together, a vessel with an irregular interior or exterior surface and/or filled, or partially filled, with said objects. Preferably, the wheel is rotated at a rate different from that of the member.

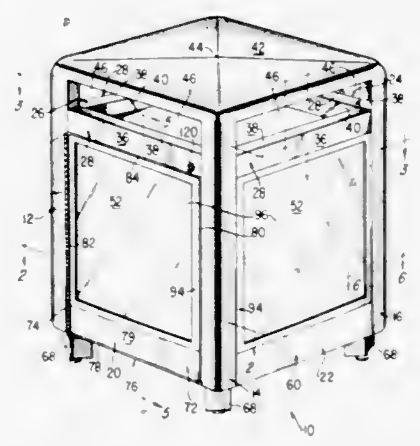
3,793,756
COMBINATION LITTER CONTAINER AND DISPLAY DEVICE

Walter Kay, Arlington, Va., and Raymond M. Poelvoorde, Birmingham, Mich., assignors to Walter Kay, Arlington, Va.

Filed Dec. 11, 1972, Ser. No. 313,733

Int. Cl. G09f *23/00*

U.S. Cl. 40—306 **11 Claims**



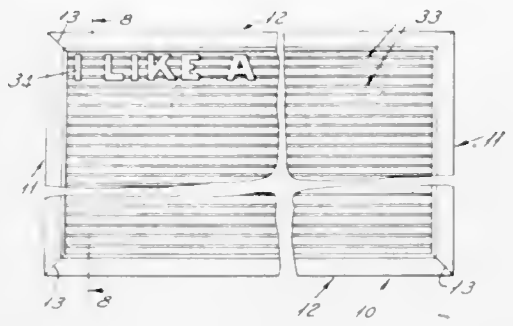
A combination litter container and display device includes a four sided housing having a top section receiving trash and a bottom section for displaying posters, with the top section having an opening on each of its sides. An outwardly opening door on one side of the bottom section contains a backing plate. A window panel is provided on each of the four sides of the bottom section with one of the window panels being mounted in the door in front of the backing plate to form an opening therewith for receiving a display poster. A hinged frame is provided in back of and cooperating with each of the three remaining window panels. Each frame has means for receiving a display poster from its side and is movable between a first position where the frame overlies the window panel and a second position where the frame is swung inwardly into the housing so that a display poster can be inserted into it when the side door is opened.

3,793,757
SIGN BOARD

George E. Jaquillard, 27600 Lathrup, Lathrup Village, Mich. 48076

Filed Apr. 3, 1973, Ser. No. 347,467
Int. Cl. G09f *7/02*

U.S. Cl. 40—142 **6 Claims**



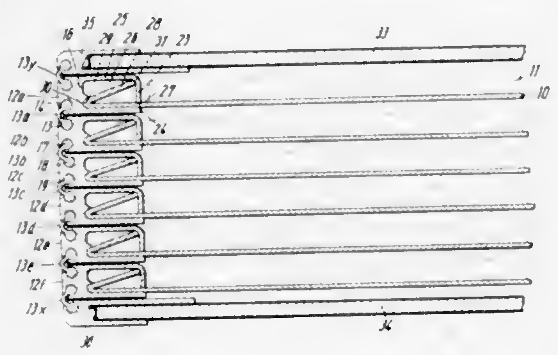
A double-sided display sign for use by gas stations and the like. The sign is made from a plurality of rolled metal sections. A first set of rolled metal sections are assembled to form a rectangular frame. A double-sided sign board is mounted within the frame and is fabricated from a plurality of two differently shaped rolled metal sections to provide a plurality of vertically spaced, horizontal display element support members on each side of the sign board. Display elements are releasably attached to said support members by attachment clips.

3,793,758
DISPLAY BOOK

Johann Feldhusen, Bremen, and Carsten Langhorst, Lilienthal, both of Germany, assignors to Carsten Langhorst, Einstmannstrasse, Germany

Filed Feb. 22, 1972, Ser. No. 228,002
Claims priority, application Germany, June 12, 1971, P 21 29 317.4; July 7, 1971, P 21 33 670.9
Int. Cl. G09f *11/06*

U.S. Cl. 40—102 **14 Claims**



A display book that can be added to or subtracted from by the addition or removal of individual plastic holding units is provided. Stiff plastic pages designed to carry textile samples are fastened in the holding units by simply bending their edges greater than 90°. The holding units have a pair of bores for receiving a flexible plastic lock member. The plastic lock member also attaches the covers to the book and if desired a pair of locking lid members.

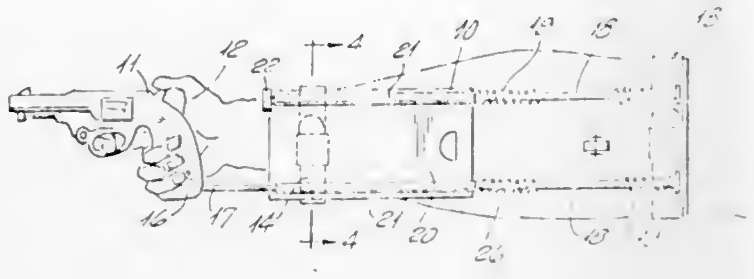
3,793,759
CONCEALED PISTOL MOUNTING

Emmett S. Deckard, Corpus Christi, Tex., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Mar. 29, 1972, Ser. No. 239,294
Int. Cl. F41c *27/00*

U.S. Cl. 42—1 K **1 Claim**

A pistol mounting, adaptable for fastening about the forearm by means of attached straps, with compression spring propelled means to snap the pistol, attached to said mounting, into the wearer's hand for immediate use of the pistol. The entire device may be concealed inside the arm sleeve of a security guard or non-uniformed attendant so as to avoid alarming the general public when the pistol is in the stored position attached to the forearm.

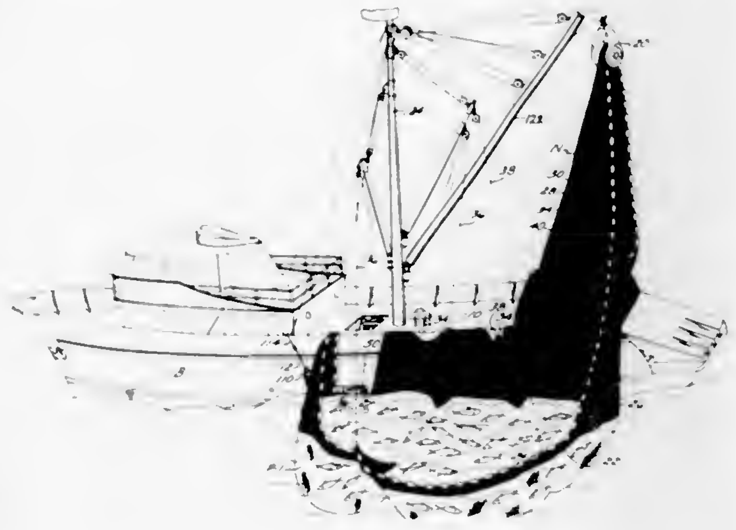


3,793,760
FISH LOADING METHOD

Mario J. Puretic, 259-6th Ave., N. Monte Cristo Isle, Tierra Verde, Fla. 33715

Filed May 20, 1971, Ser. No. 145,245
Int. Cl. A01k *73/12*

U.S. Cl. 43—4.5 **2 Claims**



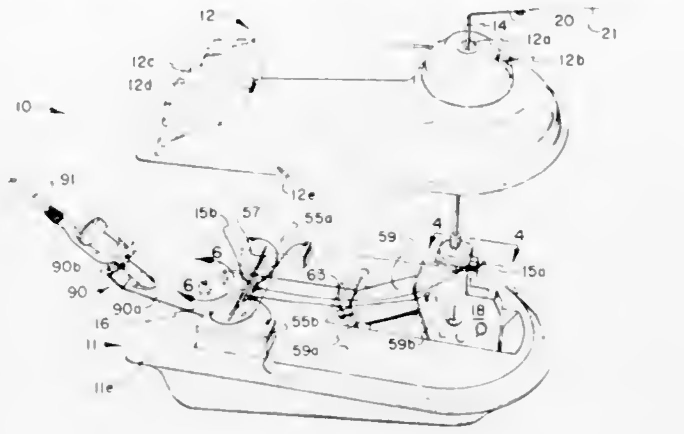
A fish loading method for transferring fish from a net gathered alongside a fishing boat into the hold of the fishing boat. The method includes providing a fish receiving aperture formed in the side of the boat adjacent the boat's water-line. A gate normally closes this aperture, with the gate being opened during a loading operation. A conveyor belt leads from the aperture to a deck of the boat. A power-operated pressure bar is movable vertically in the aperture and in its lower position wedges a portion of the net during a loading operation. The remaining portion of the net is progressively raised and gathered towards the aperture so as to progressively float fish from the net into and through the fish receiving aperture. The conveyor belt then moves the fish upwardly and inboard for transfer to the boat's hold or holds.

3,793,761
REMOTELY STEERED TROLLER

Ralph D. Bonham, 381 W. Center, Pleasant Grove, Utah 84062

Filed May 28, 1971, Ser. No. 147,755
Int. Cl. A01k *85/06*

U.S. Cl. 43—26.1 **7 Claims**



A powered watercraft having a fishing pole mounted thereon. The craft is launched and is remotely controlled by a stationary operator and is powered by rechargeable electric batteries which drive an electric motor to turn a propeller. A retractable line extends from the operator to a directional control mast on the craft such that a tug or jerk on the line connected to the mast, from any direction, operates a mechanical linkage, thereby changing the relative position of a directional rudder beneath the rear portion of the craft.

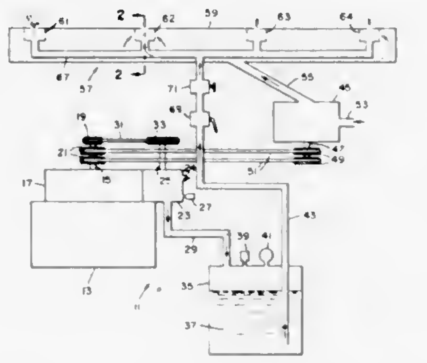
Each time the mast is pivoted, the position of the rudder is changed through one step in a series of indexed angular attitudes. Thus, the direction of travel of the craft is remotely controlled by the operator, pivoting the mast to the extent necessary to achieve a desired direction.

3,793,762
LOW VOLUME INSECTICIDE AEROSOL GENERATOR

George S. Stains, 45-655 Mohawk Cir., Indian Wells, Calif. 92260

Division of Ser. No. 8,574, Feb. 4, 1970, Pat. No. 3,648,401. This application July 2, 1971, Ser. No. 159,318
Int. Cl. A01m *7/00*

U.S. Cl. 43—124 **5 Claims**



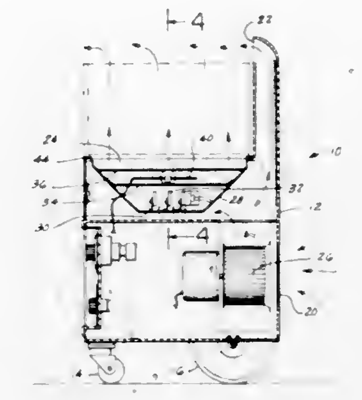
A method of producing an insecticide spray for killing insects with droplets in the size range of from about 5 microns to about 15 microns. The spray consists of an insecticide, such as Naled-14, diluted with a non-volatile liquid, such as cottonseed oil, in a ratio of 1 to 4 by volume. The aerosol generating equipment includes an engine driven blower supplying air at about 450 cubic feet per minute at a pressure of about 4 psi. This air is supplied to a group of four air-liquid double vortical nozzles that atomizes the insecticide into the 5 to 15 micron size range.

3,793,763
INSECTICIDE DISPENSER

Charles D. Griffin; Murray L. Young, and James E. Griffin, all of Brookshire, Tex., assignors to H. T. McGill, Inc., Brookshire, Tex.

Filed Dec. 27, 1971, Ser. No. 212,237
Int. Cl. A01m *1/20*

U.S. Cl. 43—129 **10 Claims**



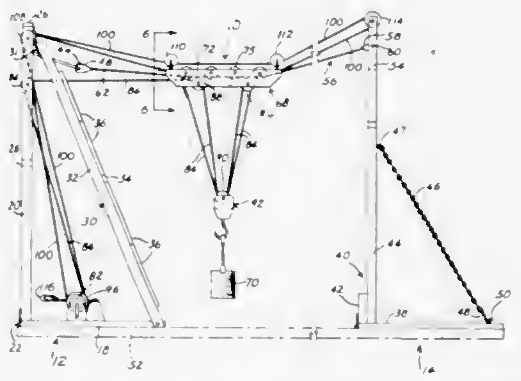
An insecticide dispenser having a housing with a blower mounted therein and an offset thereon for receiving an insecticide pellet container, the housing defining two outlets for said blower one extending to said offset to direct flow through said container and the other outlet being directed to intercept flow out of said container, means for controlling the flow to said outlets, a heater in said housing to heat the air flowing to said containers, means for controlling the heater responsive to the temperature of gas flowing through said container, a heater shield, a manual reset excess temperature cut-off being so mounted in said housing to prevent its ready resetting and a timer for controlling operation of said blower and said heater.

3,793,764
TOY MACHINE FOR BUILDING DAMS AND LIKE PURPOSES

Harvey J. Gagnon, Sr., Star Route 2, Box 944, Trail, Oreg. 97541

Filed Dec. 17, 1971, Ser. No. 209,252
Int. Cl. A63h *33/30*

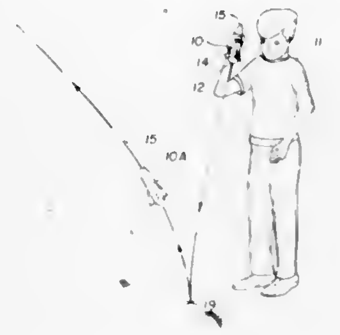
U.S. Cl. 46—40 **8 Claims**



A toy for building dams and like purposes is inexpensively provided which includes two spaced standards, a fixed carrier supporting line that extends between the tops of the standards, a bucket carrier operable along the carrier line, and means operable from a fixed remote control station for selectively driving the carrier back and forth along the carrier line or raising and lowering the bucket relative to the carrier while the carrier, itself, remains stationary. The raising and lowering mechanism desirably comprises a windlass which winds in and pays out a raising and lowering cable so long as the carrier remains idle. A carrier drive pulley, coaxial with the drum, may be clutched to the windlass drum for rotation in unison with the drum. When this is done the bucket is moved horizontally by and with the carrier.

3,793,765
BOUNCING TOY ROCKET

Martin L. Schatz, Chicago, Ill., assignor to The Raymond Lee Organization, New York, N.Y., a part interest
Filed Nov. 2, 1972, Ser. No. 303,237
Int. Cl. A63h *27/00*
U.S. Cl. 46—74 A **1 Claim**



A toy in the shape of a space rocket, which is powered by a spring in the tail section which is in contact with a ball which protrudes out of the rear of the tail section. Throwing the rocket, tail-first towards the ground, results in the bouncing of said ball and spring so as to shoot the rocket, nose-first, up into the air. The nose section of the rocket is weighted so as to cause the rocket in flight to level off and then fall nose-first into the ground.

3,793,766
TELEPHONE-TALKING FIGURE TOY SIMULATOR

Leonard R. Moquin, Los Angeles, and Jurgis Sapkus, Manhattan Beach, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Aug. 21, 1972, Ser. No. 282,886. The portion of the term of this patent subsequent to Nov. 14, 1989, has been disclaimed.
Int. Cl. A63h *5/00*
U.S. Cl. 46—232 **12 Claims**

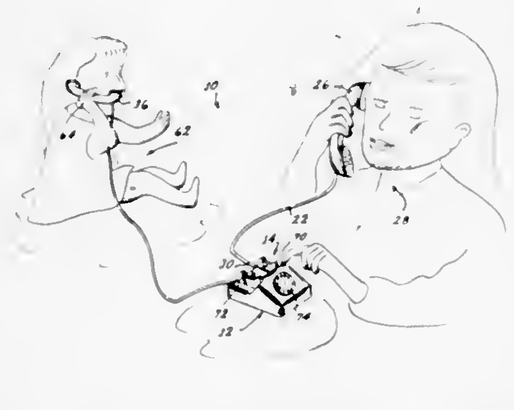
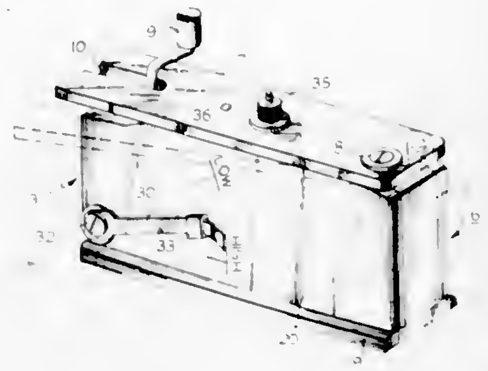


Figure toy holds a first simulated telephone handset camouflaging a switch or other electrical connection to an electric phonograph in the figure toy or in a toy telephone having a second simulated handset through which sounds may be transmitted from the phonograph to a child-user. When the phonograph is in the figure toy, these sounds are picked up by the first simulated handset which is connected to the second simulated handset. When the phonograph is in the telephone, sounds are picked up directly by the second simulated handset through a hollow tube having one end provided with a sound-pick-up horn mounted in the telephone over the phonograph speaker and another end connected to the receiver portion of the second simulated handset.

3,793,767
CRANK OPERATED REEDLESS TURKEY CALL

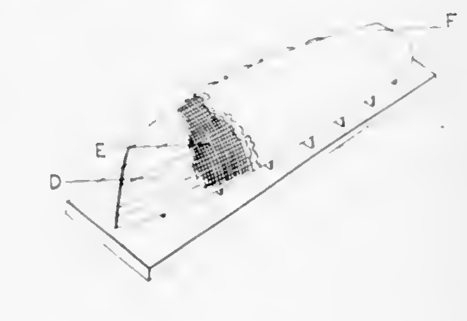
John Lindell Pulley, Centerville, Mo. 63633
Filed Oct. 25, 1972, Ser. No. 300,592
Int. Cl. A63h *5/00*
U.S. Cl. 46—189 **12 Claims**



A crank operated reedless turkey call has a vibratable sounding board as one wall of a box with an extending edge accessible to rub against the lower surface of a spring biased lid pivoted at one corner of the box and moved by a crank over a predetermined degree of rubbing motion. The sound is produced over half of the crank cycle during the frictional contact between the edge and the lid when the lid is moved in the one direction toward the inside of the box and no sound is produced as it is returned in the opposite direction.

3,793,768
MODEL KIT INCLUDING TEMPORARY ARMATURE

Richard A. Surving, 44 Pammer Ave., Staten Island, N.Y. 10304
Filed May 26, 1972, Ser. No. 257,226
Int. Cl. A63h *33/42, 23/02*
U.S. Cl. 46—1 R **1 Claim**

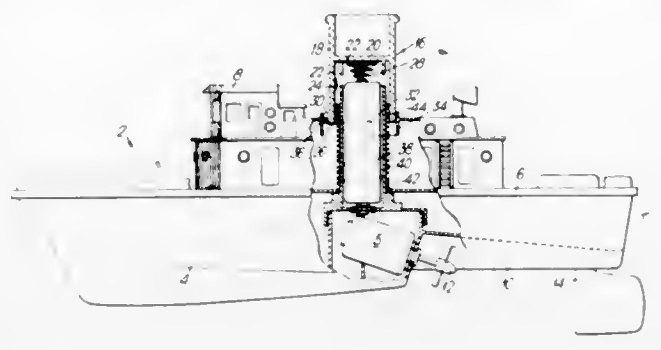


A kit for making models including sheets with cut outs thereon for making a temporary armature, adhesive tape for covering the armature, self-hardening mesh for forming the model around the armature, modeling compound for coating the model, cutout paper patterns, tools, and instructions, all contained in a telescoping box. The armature and its tape covering are used to form the mesh in the form of the model and are then removed and may be disposed of.

3,793,769
BATTERY POWERED TOYS

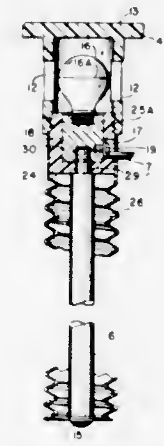
Duncan Tong, Hong Kong, assignor to Playart Limited, Hong Kong, Hong Kong
Filed Feb. 16, 1973, Ser. No. 333,021
Claims priority, application Great Britain, Mar. 2, 1972, 9,881/72
Int. Cl. A63h *23/04*
U.S. Cl. 46—243 MV **5 Claims**

A battery powered toy or model in which the battery compartment is formed as a cylinder comprising at least two telescopically inter-engaging or nesting tubes, a first tube being located in the body of the toy and carrying a first electrical switch contact and a second tube carrying a second electrical switch contact, the arrangement being such that rotation of the said second tube on or in the first tube causes the contact to engage so as to operate the motor of the toy.



3,793,770
WORM ROD

George Johnson, 606 S. High St., Galena, Ill. 61036
Filed Nov. 1, 1972. Ser. No. 302,765
Int. Cl. A01m *19/00*
U.S. Cl. 47—1.3 **4 Claims**

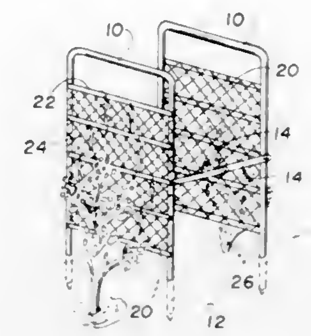


An improved worm rod for forcing worms and insects out of moist ground thru insertion of the rod into the ground or soil and electric current passing thru the rod into the ground, a rigid straight rod of good electrical conductivity such as aluminum, brass or copper. One end of the worm rod is a hard and high impact handle made of plastic with excellent electrical insulating properties. An indicator bulb that signals the user the rod is functioning properly is provided for in the handle. Means for electrical and mechanical connections are provided. A thin flexible and collapsible cylindrical plastic shield for the electrical rod to safeguard the user from accidently coming in contact with the live electrical rod is also provided.

3,793,771
FOLDABLE PLANT SUPPORT

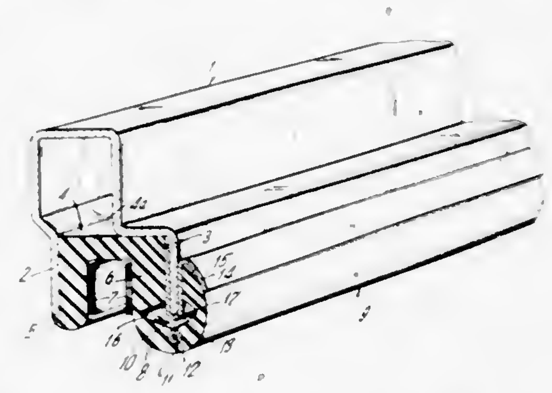
Delia L. Slaughter, Greensboro, Ga., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Mar. 15, 1973, Ser. No. 341,371
Int. Cl. A01g *17/14, 17/06*
U.S. Cl. 47—44 **1 Claim**

A plant support comprising first and second vertical parallel members, each member defining an inverted U with the bottom ends of the vertical legs being pointed; hinge means secured to and extending between the members to either hold the members in extended position or to enable the members to be folded together side by side; and a vertical section of mesh secured to the front face of each of the members.



3,793,772
SAFETY MOLDING FOR ELECTRICALLY ACTUATED SLIDING WINDOWS

Herbert Kouth, Schoneck-Kilianstadten, Germany, assignor to Firma H.T. Golde GmbH
Filed Nov. 17, 1971, Ser. No. 199,598
Claims priority, application Germany, Nov. 24, 1970, G 70 43 313.5
Int. Cl. E05f *15/08*
U.S. Cl. 49—28 **4 Claims**



A safety molding for electrically actuated sliding windows, such as in motor vehicles, consists of an elastomeric material formed in a U-shaped configuration providing a groove into which the sliding window seats in its closed position. One of the legs of the U-shaped molding contains a longitudinally extending cavity in its interior and a flexible electrical conductor is fitted in a channel formed in the wall of the cavity adjacent the free end of the leg. A metal rib is positioned within the cavity in normally spaced relationship from the conductor. When a pressure is exerted against the outer surface of the free end of the leg containing the cavity, the flexible conductor deflects into contact with the metal rib so that a drive motor for the electrically actuated window can be stopped to avoid any injury or damage if someone or something is located in the path of the closing window and prevents it from moving into its closed position.

3,793,773
COLLAPSING MECHANISM FOR REVOLVING DOOR WINGS

Amuel E. Sheckells, Evansville, Ind., assignor to International Steel Company, Evansville, Ind.
Continuation-in-part of Ser. No. 161,552, July 12, 1971. This application Aug. 1, 1972, Ser. No. 277,115
Int. Cl. E06b *3/90*
U.S. Cl. 49—44 **9 Claims**

The right angular wings of a revolving door are secured releasably in normal radial use positions by the interlocking action of plastic plungers and cooperating notches in the

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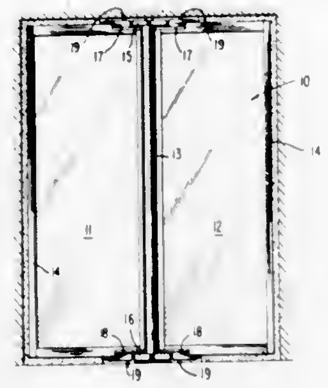
peripheries of upper and lower hanger discs on the door center shaft. The plastic plungers may be housed on the horizontal portions of upper and lower hanger bars which serve to suspend the revolving door wings pivotally from the



hanger discs. The arrangement assures safe collapsing or folding of the door wings in case of panic and prevents premature collapsing due to stack drafts found in many modern buildings or jarring by a user of the door.

3,793,774

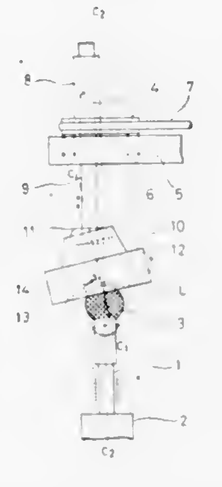
APPARATUS FOR GRINDING INNER AND OUTER CURVED SURFACES OF A CONTACT LENS BLOCK SIMULTANEOUSLY

Toyohiro Kawaguchi, and Isao Mizutani, both of Nagoya, Japan, assignors to Toyo Contact Lens Co., Ltd.

Filed Mar. 10, 1972, Ser. No. 233,667

Int. Cl. B24b *5/18*

U.S. Cl. 51—117 **6 Claims**



A method and an apparatus for grinding the inner and outer curved surfaces of a contact lens block simultaneously, wherein a member having a substantially spherical grinding head is used to grind the inner surface of the block, while a grinding abrasive having a desired contour is used to simultaneously grind the outer surface of the block, the abrasive being moved in a circle about the axis of rotation of the grinding member.

3,793,775

SIZING DEVICE

Mineo Ishikawa, and Seiichi Oikawa, both of Kariya, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Karsha, Kariya-shi, Aichi-ken, Japan

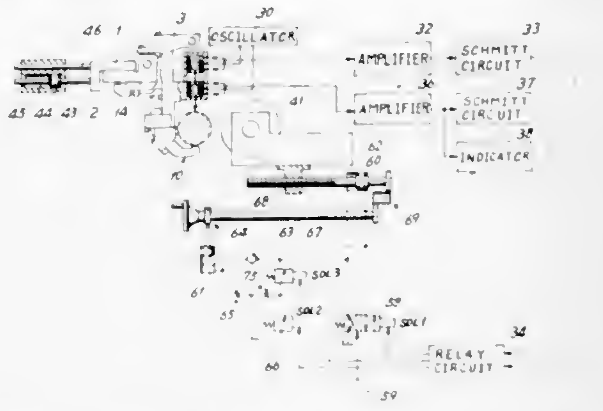
Filed Nov. 29, 1971, Ser. No. 202,868

Claims priority, application Japan, Dec. 3, 1970, 45/107053

Int. Cl. B24b *49/04, 51/00;* **G01b** *19/12*

U.S. Cl. 51—165.77 **9 Claims**

A sizing device for a grinding machine is provided with a pivotal member which is pivotally mounted on a supporting member which moves horizontally toward and away from a workpiece. The pivotal member pivotally mounts a measuring head at the front end thereof in such a manner that the measuring head is urged toward the workpiece by the eccentricity of gravity thereof. A contact member is mounted between a pair of upper and lower measuring feelers for making contact



with the surface of the workpiece opposite to a grinding wheel. A spring is mounted between the supporting member and the rear end of the pivotal member for urging the lower measuring feeler, mounted on the measuring head, upwardly toward the workpiece. The pivotal center of the measuring head is in a plane which passes through the points of contact of the measuring feelers with the workpiece.

3,793,776

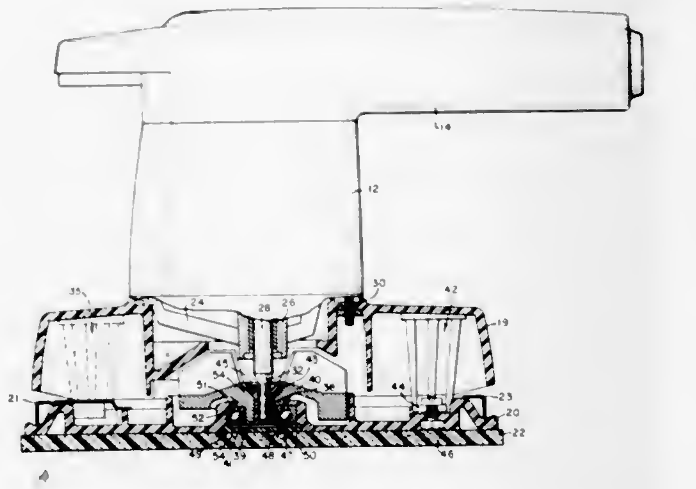
DOUBLE INSULATED PORTABLE SANDER

Peter T. Sadow, Jr., Cockeysville, Md.; Gordon B. Baum, Fayetteville, N.C., and Richard L. Hurn, Baltimore, Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Filed July 21, 1972, Ser. No. 273,878

Int. Cl. B24b *23/04*

U.S. Cl. 51—170 MT **4 Claims**



A portable sander tool of the orbital type wherein the housing is formed of insulating material, the lower end of the motor shaft being connected to a wear inhibiting sleeve drivably connected with the conventional counterbalance, together with a base plate of insulating material which is provided with a central opening for receiving a bearing having its outer race pressed into a bore in the base plate and having its inner race pressed on to a hub of the counterbalance, the central opening in the plate being sealed by a cap of insulating material thus sealing the lubricant in the bearing opening and preventing access to the bearing and shaft from the bottom of the tool to achieve double insulation, the wear inhibiting sleeve, counterbalance, base plate and bearing being permanently assembled and constituting a self-contained unit or sub-assembly adapted to be removably bolted to the housing for replacement by a new unit in the event this becomes necessary in servicing the tool.

3,793,777

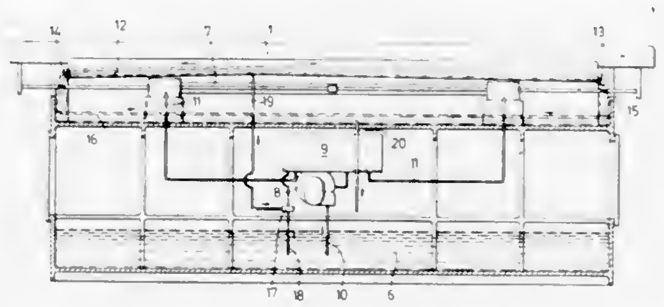
FLUID-OPERATED MACHINE TOOL WITH MEANS FOR EFFECTING UNIFORM EXPANSION OF ITS FRAME IN RESPONSE TO HEATING BY OPERATING FLUID

Edmund Lang, Babenhausen, Germany, assignor to Elb-Schliff, Babenhausen, Germany

Filed May 22, 1972, Ser. No. 254,792

Int. Cl. B24b *41/06*

U.S. Cl. 51—233 **10 Claims**



A machine tool wherein the lower portion of the frame defines a vessel for a supply of oil and the upper portion of the frame forms a bed with a pair of elongated ways for a reciprocable table. The table is movable by a double-acting cylinder and piston unit which receives oil from the vessel by way of a pump and a control valve system and discharges heated oil for return flow into the vessel. A portion of heated oil is diverted into elongated trough-shaped channels which are outwardly adjacent to the ways to heat the base and to thus prevent unequal expansion of various parts of the frame. The channels slope toward their ends and receive heated oil midway between such ends so that the oil flows toward the ends of the channels and thence into the ends of an elongated trough which is provided in the frame at a level between the channels and the vessel. The bottom surface of the trough slopes from its ends toward its median portion and the latter discharges oil into the vessel. The amount of oil which is diverted into the channels is determined by an adjustable distributor which is mounted in a return conduit connecting the vessel with the outlet of the control system.

3,793,778

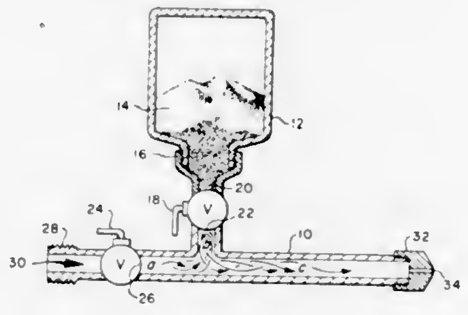
SAND BLAST APPARATUS

Richard Price, 2116 W. Patapsco Ave., Baltimore, Md. 21230

Filed Feb. 25, 1970, Ser. No. 14,167

Int. Cl. B24c *5/02, 7/00*

U.S. Cl. 51—12 **3 Claims**



A method and the apparatus for selectively mixing sand or other solid polishing materials (such as glass beads) with a stream of pressurized fluids such as air, and then propelling them through an orifice wherein the solid material is basically under gravity feed actuation and the amount of sand that is allowed to mix with the air is controlled by a combination of a mechanical valve and the reaction of the solid material under the force of gravity to air turbulence within the pressurized system.

3,793,779

APPARATUS FOR TREATING A SURFACE

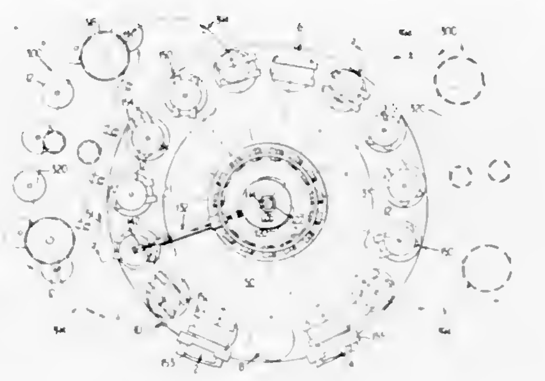
Guido Perrella, Westmount, Quebec, Canada, assignor to DBM Industries Limited, Montreal, Quebec, Canada

Filed June 21, 1971, Ser. No. 155,151

Claims priority, application Canada, Jan. 29, 1971, 103,996

Int. Cl. B24b *7/04*

U.S. Cl. 51—5 **8 Claims**



An apparatus and process are described for finishing a surface on a workpiece. At least one workpiece is rotatably supported by a chuck assembly provided on a turntable. The turntable can be indexed to advance the workpieces through one or more treatment zones. The workpieces on each chuck assembly are preferably engaged by a corresponding lapping disc that is releasably and floatingly supported by the main turntable. A pushrod assembly is provided for reciprocally moving each lapping disc in a direction radially of the rotatable turntable. This reciprocal movement combines with rotational movement of the lapping disc as derived from the floating mounting and frictional contact with the rotating workpiece, enabling wear of the surfaces in contact to be very uniformly distributed. Extreme smoothness and flatness of the workpiece surface being treated can be obtained. Each zone is provided with a recirculating conveyor for the lapping discs and a transfer mechanism that moves such discs at a predetermined time from one of the chuck assemblies to the recirculating conveyor, and vice versa. The treatment zones are independent of one another. By initial treatment in the first lapping zone followed by final finishing in the second zone, surface flatness can be obtained to within one-half of a lightwave band width of monochromatic light, for example, obtained from a sodium source.

3,793,780

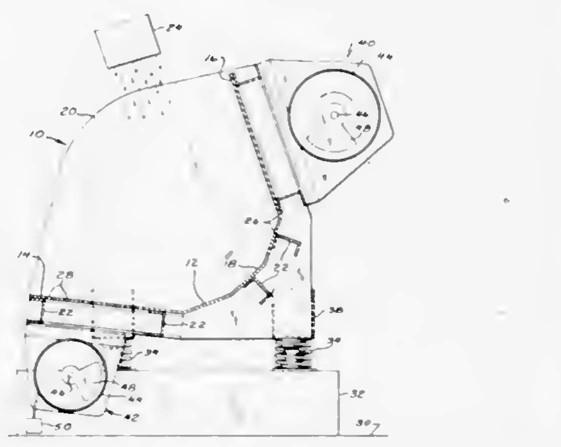
VIBRATORY CASTING TUMBLING APPARATUS

Albert Musschoot, 777 Lake Zurich Rd., Barrington, Ill. 60010

Filed Apr. 21, 1972, Ser. No. 246,231

Int. Cl. B24c *3/30*

U.S. Cl. 51—14 **2 Claims**

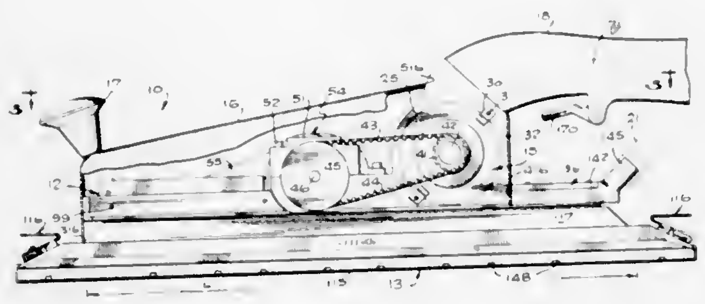


A vibratory casting tumbling apparatus of the type including a generally U-shaped hopper tipped on its side which may receive castings to be vibrated to shake loose sand particles therefrom. A first vibration imparting device is associated with the hopper so as to advance castings from along the tipped side thereof into the center of the hopper to be tumbled. A second vibratory device is associated with the hopper and is arranged with respect to the center of the gravity of the hopper and the location of the first vibratory device is such that, when energized, castings within the hopper will be advanced out of the tipped side for use in emptying the hopper upon completion of a tumbling operation.

3,793,781

RECIPROCATING ABRADING OR POLISHING TOOL

Alma A. Hutchins, 49 N. Lotus Ave., Pasadena, Calif. 91107
Filed Mar. 10, 1972, Ser. No. 233,554
Int. Cl. B24b *23/00*
U.S. Cl. 51—170 TL **11 Claims**

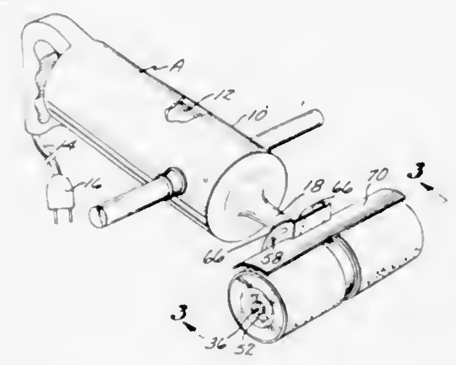


A portable powered sander or the like having a hand held body carrying a rotary motor which reciprocates a working shoe structure relative to the body through a crank element and connecting rod, and which oppositely reciprocates a counterweight relative to the body through a second rotary crank element and connecting rod.

3,793,782

POWER DRIVEN SURFACE FINISHING DEVICE

Dan P. Bowling, 2625 Colt Rd., San Pedro, Calif. 90732
Filed Apr. 6, 1972, Ser. No. 241,733
Int. Cl. B24b *23/02*
U.S. Cl. 51—170 PT **5 Claims**

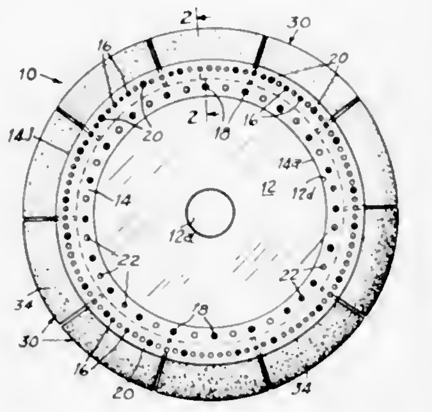


A lightweight, compact, portable, power-driven device that includes an elongate housing having an electric motor therein, which motor can drive either one or two circular surface finishing members that are supported from a forwardly extending extension of the housing, said housing and motor, if desired, being an electrically operated drill. The device is particularly adapted for use in close quarters where it is difficult, if not impossible, to use conventional surface finishing power tools.

3,793,783

SEGMENTAL CUT-OFF GRINDING WHEEL

Joseph J. Paterno, Jr., Sterling Junction; Norton S. Remmer, Worcester, and Hussain G. Lakhani, Holden, all of Mass., assignors to Norton Company, Worcester, Mass.
Filed Oct. 2, 1972, Ser. No. 294,083
Int. Cl. B24d *5/06, 5/08*
U.S. Cl. 51—206.5 **10 Claims**

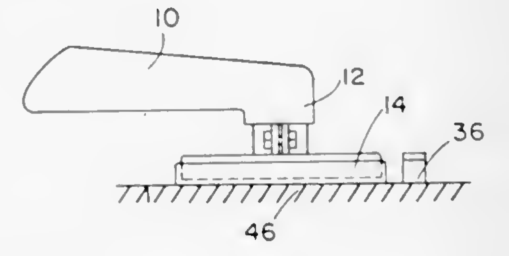


A relatively large diameter high speed segmental cut-off grinding wheel and identical, interchangeable, and replaceable composite arcuate abrasive segments therefor each comprised of a fiber glass reinforced resin bonded abrasive portion resin bonded to an embedded portion of a relatively thin preformed segment base member made of metal or laminated fiber glass material adapted for easy removal and fastening of the abrasive segment to a thin reusable drive center with precision segment locating and retaining member thereon and a removable annular segment clamping ring fastened to the center.

3,793,784

PROTECTIVE DEVICE FOR CUTTING MACHINES

Fritz Jetzt, Melanchtonstrasse 21,, Munich, Germany
Filed July 21, 1971, Ser. No. 164,679
Claims priority, application Germany, July 29, 1970, G 70 28 588.0
Int. Cl. B25b *55/04*
U.S. Cl. 51—269 **5 Claims**

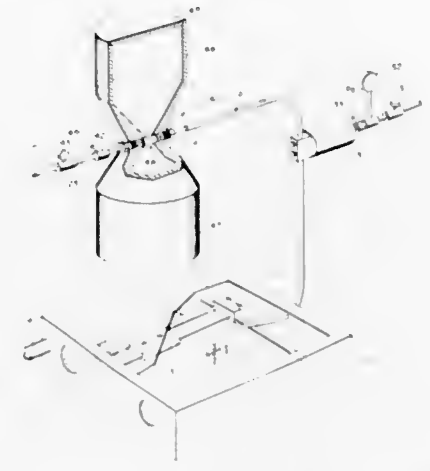


A safety device for the cutting disk of a manual cutting machine comprising a bottom part fastened to the spindle flange of the machine, which bottom part covers at least one circular surface of the disk, and a pot-like upper part which covers the other circular surface of the disk and has a flange covering the circumference of the disk, a radial recess being provided in the upper part and if need be also in the bottom part, the width of the recess being adjusted to correspond to the work piece, whereby the cutting disk is covered all around except for the recess which during operation of the machine is covered by the work piece.

3,793,785

PARTICLE BLASTING

Frank C. Austin, Nine Meadow Rd., Rockport, Mass. 01966
Filed Jan. 15, 1973, Ser. No. 323,957
Int. Cl. B24c *3/00, 7/00*
U.S. Cl. 51—12 **21 Claims**



Blasting system for particles, e.g., air blast of fine abrasive particles, having an non-clogging feed device and a reliable, long-lasting on-off valve system acting upon a resilient hose. The feed device features: hourglass type particle metering into an air stream; countercurrent air percolation from air conduit through the particle metering orifice; and air turbulence at the orifice in a constant diameter region of the conduit. The valve member features: a ball member pressed against a resilient passage toward a pair of opposing ball members; adjustment devices for adjusting initial depression of each of the pair of ball members into the hose; air pressure actuation of the one ball member; and actuation increasing the depression of each of the pair of ball members to urge the respective resilient wall portion into conformity with the opposite wall of the conduit and reverse depression effect at the central ball member, cooperating to choke off the flow. A removable metering member defining the hourglass configuration orifice and transverse air passage permits replacement of the most active, hence wear-exposed, portion of the system.

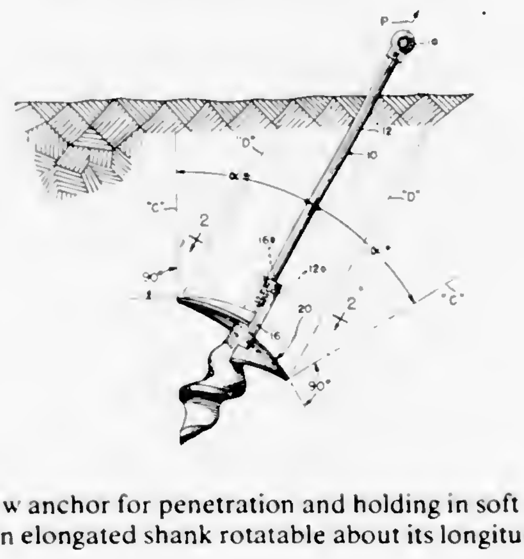
ERRATUM

For Class 51—249 see:
Patent No. 3,793,792

3,793,786

SCREW ANCHOR

Earl M. Jahnke, Elmhurst, Ill., assignor to Joslyn Mfg. and Supply Co., Chicago, Ill.
Filed Sept. 8, 1971, Ser. No. 178,712
Int. Cl. E02d *5/74*
U.S. Cl. 52—157 **3 Claims**

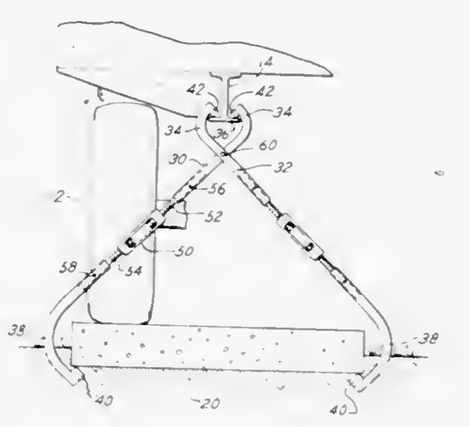


A screw anchor for penetration and holding in soft soil comprising an elongated shank rotatable about its longitudinal axis and having a lower end adapted to penetrate into the earth upon rotation. A helical flight is secured to the shank for holding engagement in the earth and includes a crowned upper surface extending outwardly of the shank and sloping downwardly adjacent the outer edge thereof, thereby increasing the holding strength of the flight by providing a larger, frustoconical, shear area in the soil rather than a smaller cylindrical shear area, as with conventional anchors.

3,793,787

TRAILER AND MOBILE HOME ANCHORING DEVICE

Clyde L. Shidaker, 1406 W. Sixth St., Mishawaka, Ind. 46544, and Joseph H. Manning, 57046 Mayflower Rd., South Bend, Ind. 46619
Filed Mar. 29, 1972, Ser. No. 239,230
Int. Cl. E02d *5/74*
U.S. Cl. 52—163 **4 Claims**



An anchoring device for trailers, mobile homes and similar vehicles in which an arm is provided with a securing means at opposite ends, the lower securing means consisting of a hooked portion for extending beneath the edge of the concrete slab or runner and the upper portion preferably being a hook member for attachment to a frame member on the vehicle, and a means for varying the length of the arm to secure the vehicle in place on the runner or slab. When the vehicle is to be secured to a runner, another embodiment may be used consisting of a pair of arms pivotally connected to one another, each having hooks at the upper and lower ends facing one another for gripping the runner and a member on the under side of the vehicle. Each arm contains an adjustable means such as a turnbuckle for varying the length of the arms, to secure the vehicle on the runner.

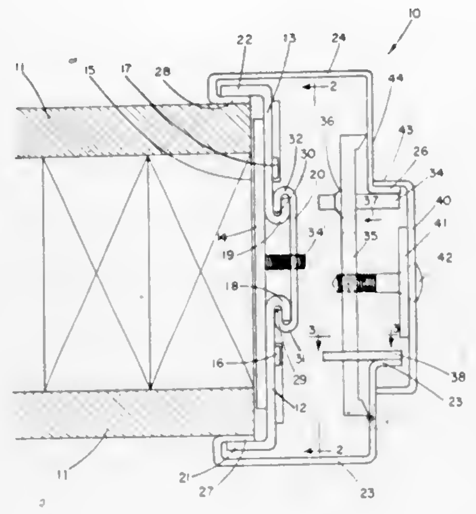
3,793,788

ADJUSTABLE SPLIT DOOR FRAME

John H. Collins, 3651 Forest Manor, Indianapolis, Ind. 46218
Filed June 7, 1972, Ser. No. 260,444
Int. Cl. E06b *1/20*
U.S. Cl. 52—211 **2 Claims**

A frame for erecting around a door which is split to accommodate different wall thicknesses. A pair of opposed brackets are slidably mounted to a plate positioned adjacent the end of the wall. A pair of door jamb channels have outer ends sandwiched between the wall and the outer ends of the brackets.

The inner ends of the brackets are forced and locked together to secure the channels to the wall. The inner ends of the channels project into a rail which is secured to a member located between the channels and brackets.



3,793,789

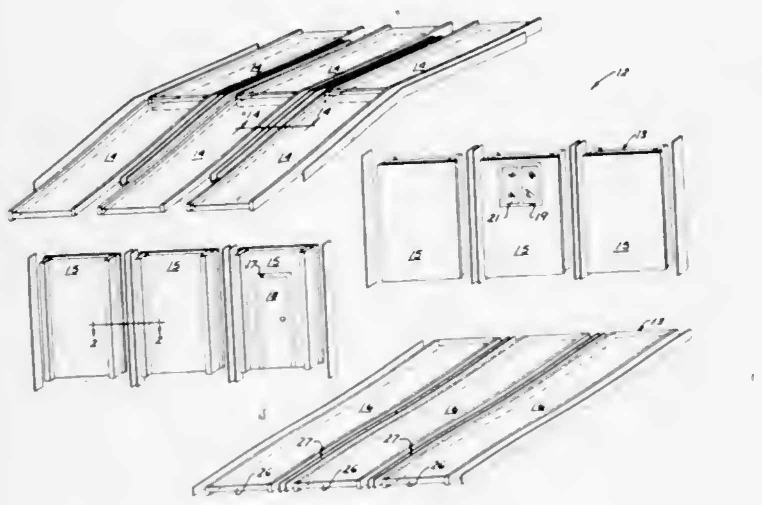
BUILDING STRUCTURAL SYSTEM

Charles E. Greenamyer, Stateline, Nev., assignor to Building Structural Systems, Inc., Carson City, Nev.

Filed Jan. 24, 1972, Ser. No. 220,316

Int. Cl. E04b *1/41, 7/02*

U.S. Cl. 52—463 **12 Claims**



Structural units comprising laminated, skin-stressed, panels and attendant components are joined in various combinations by connecting members so as to form frameless, load-carrying structures affording a clear span desirable not only in commercial, industrial and institutional applications but in residential construction as well. The structural system especially lends itself to factory manufacture and assembly in maximum size transportable sections completely finished for jobsite installation on pre-arranged foundations.

The term panel is used herein in its broadest sense and denotes a structural member substantially greater in the dimensions of length and width than in thickness. The term structural unit is more comprehensive than the term panel and includes not only a panel but also various components associated with a panel.

3,793,790

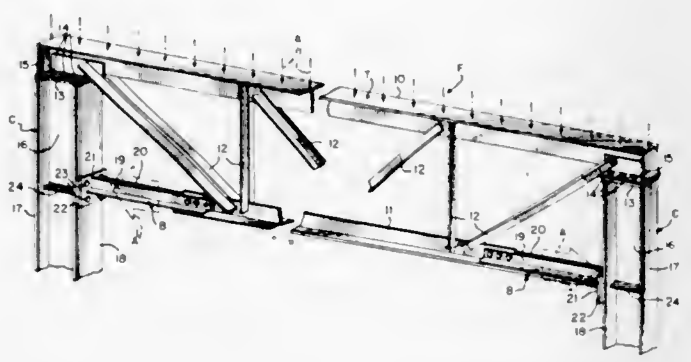
FRAME CONSTRUCTION WITH YIELDABLE KNEE BRACE CONNECTION

Samuel L. Love, Overland Park, Kans., and Paul E. Swain, Grain Valley, Mo., assignors to Butler Manufacturing Company, Kansas City, Mo.

Filed May 2, 1972, Ser. No. 249,505

Int. Cl. E04c *3/02;* **E04b** *1/36*

U.S. Cl. 52—393 **10 Claims**



A frame construction with a yieldable knee brace connection comprising a beam truss means having a top chord and a bottom chord, the top chord of said beam truss means supported at least at one end thereof adjacent the top of a vertically extending column means, at least one knee brace means connected to and extending from one end of the bottom chord to the adjacent side of said vertically extending column means, and means operatively associated with said knee brace means to absorb horizontal deflection of said bottom chord and thus prevent bending of said vertically extending column means.

3,793,791

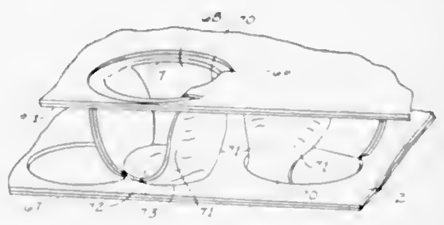
METHOD AND APPARATUS FOR FORMING A PANEL FOR USE AS A STRUCTURAL ELEMENT

William A. Wootten, 425 Via Corta, Palos Verdes Estates, Calif. 92266

Filed Oct. 21, 1971, Ser. No. 191,528

Int. Cl. E04b *2/28;* **E04c** *2/00*

U.S. Cl. 52—615 **16 Claims**



Two or more thin flat metal, paper or plastic panels are combined by perforating areas or tabs in the plane of the panels, bending the portions of such perforations that are freed, at right angles to the plane of the panels, and attaching said extended members to one another, thus forming a link or intermediary-connecting web or section between the two or more panels. A parallel panel spacing can be achieved or by the variation of the perforated area, the panels can be proportionally spaced to achieve a desired panel contour or shape between panels. A third panel element, provided with larger tabs, can be affixed to the joined panels, and its larger tabs can be forced through the preexisting perforations in one panel to form additional struts engaging the opposite panel to increase the strength of the structure.

3,793,792

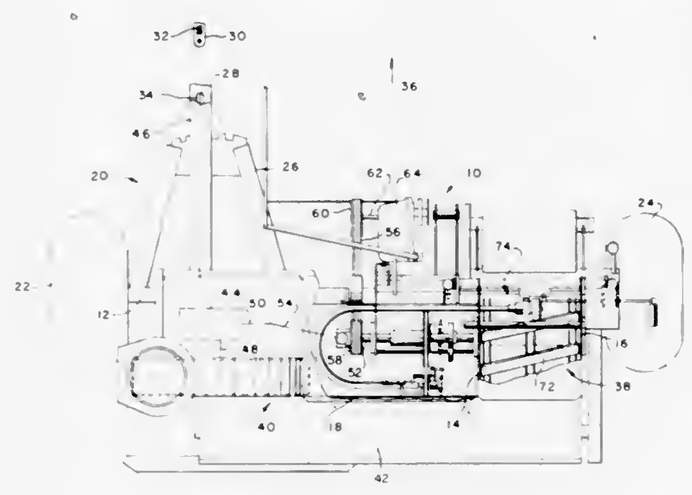
POWER KNIFE GRINDER FOR A FORAGE HARVESTER CAPABLE OF GRINDING FIRST AND SECOND BEVELS ON THE KNIVES OF THE FORAGE HARVESTER CUTTERHEAD

Robert A. Wagstaff, and Thomas W. Waldrop, both of New Holland, Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Continuation-in-part of Ser. No. 183,392, Sept. 24, 1971. This application Jan. 4, 1972, Ser. No. 215,615

Int. Cl. B24b *3/42, 1/00*

U.S. Cl. 51—249 **30 Claims**



A powered knife grinder carried by a forage harvester and operable in one mode of operation to grind a first bevel on the forage harvester knives, and operable in a second mode of operation to grind a second bevel on each of the knives. The knife grinder includes a rotary abrasive member which is connected with the drive line to the forage harvester cutterhead when the knives are to be ground. During normal operation of the forage harvester when cutting crops the drive to the grinding means is disconnected. When grinding the first bevel on the forage harvester both the grinding means and the cutterhead are rotated, the grinding means being moved back and forth across the width of the cutterhead to grind the first bevel. During grinding of the second bevel, the drive to the cutterhead is disconnected, however, the drive to the grinding means is maintained and the grinding means is positioned along a radial inner surface of each knife to grind the second bevel. To facilitate the grinding of the second bevel, the cutterhead is spring biased against guide means carried by the grinding means to maintain each knife in its desired position with respect to the grinding means as the grinding means is moved back and forth across the width of the cutterhead during the grinding of the second bevel.

3,793,793

MULTIPLE SERVICE DECKING UNIT

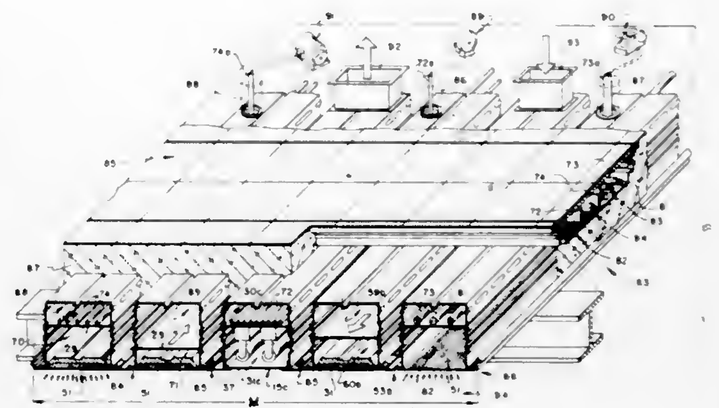
Mark Dobbins, 1841 Titlon Drive, Pittsburgh, Pa. 15241

Filed Nov. 17, 1971, Ser. No. 199,656

Int. Cl. E04f *17/08*

U.S. Cl. 52—221 **3 Claims**

A decking unit presenting one or more main cells and incorporating partition means in at least one of the main cells which divides the same into separate upper and lower sub-cells. The decking units are assembled with an overlying layer of concrete to provide an integrated floor/ceiling structure wherein the sub-cells accommodate mechanical services, such as, acoustical control, electrical distribution, recessed ceiling lighting, ventilation and exhaust. The arrangement is such that the upper sub-cells provide selected mechanical services for the space above the floor/ceiling structure; and the lower sub-cells provide selected mechanical services for the space below the floor/ceiling structure. The sub-cells of the present integrated floor/ceiling accommodate the aforesaid mechanical services within an acceptable modular distance, whereby an adequate repetition of each mechanical service is provided throughout the floor/ceiling structure.



3,793,794

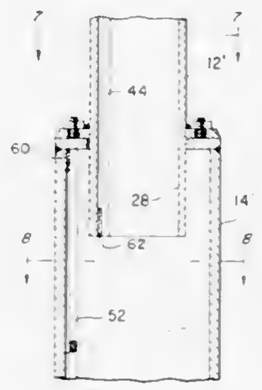
STACKED COLUMN

Bill Archer, Meridian, and John L. Low, III, Laurel, both of Miss., assignors to Arlo, Inc., Laurel, Miss.

Filed Sept. 15, 1972, Ser. No. 289,701

Int. Cl. E04h *12/34*

U.S. Cl. 52—632 **4 Claims**



A column comprised of a plurality of concrete-filled stacked tubes of increasingly smaller diameter, the tubes engaging each other in overlapping relationship and being secured by means of locking rings at the point of their engagement, prior to pumping the tube interiors with concrete. A modification of invention includes the positioning of longitudinally extending tension rods in the tubes on a tension and or compression side, so as to counteract anticipated load prior to pumping of concrete.

3,793,795

WATERPROOFING RECEIVER

Charles A. Annand, P.O. Box 366, Truro, Nova Scotia, Canada

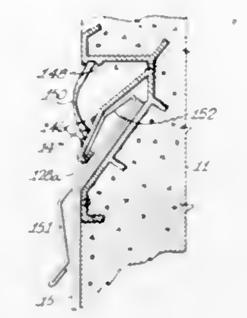
Filed June 14, 1972, Ser. No. 262,853

Claims priority, application Canada, Sept. 23, 1971, 123534

Int. Cl. E04d *3/36*

U.S. Cl. 52—61 **4 Claims**

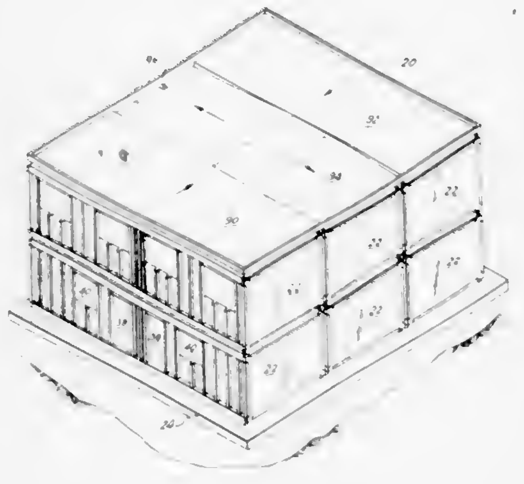
A receiver for use in fastening membranes of waterproofing material to a concrete wall structure so as to tightly secure the upper edge of the membranes and thereby prevent the upper edge from peeling away from the wall and sagging of the membranes. The receiver is in the form of an elongated member which is fastened to the inside of the concrete forms prior to pouring of the concrete, the receiver extending along the length of the forms at grade level. The elongated member is concave in cross-section so as to form a hollow central portion which is exposed in the wall after the forms are removed, the receiver being contained within the poured wall. The concave shape is defined by a pair of leg sections with a tongue element



projecting from between the leg sections and biased towards the lower of the leg sections so that the upper edges of the waterproofing members or membranes are clamped between the tongue element and the lower leg section prior to adhering the membranes to the wall surface below the receiver.

3,793,796
MODULAR BUILDING SYSTEM

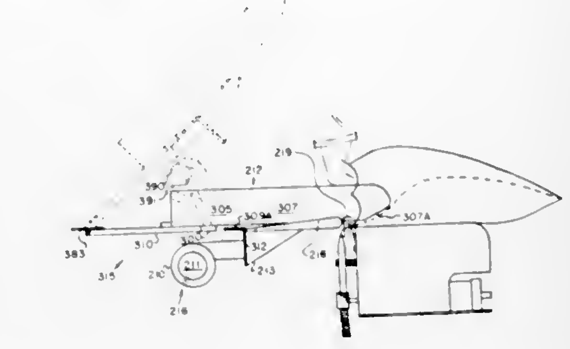
Robert Hughes, 26 Beaconsfield Blvd., Beaconsfield, Quebec, Canada
Filed Sept. 24, 1971, Ser. No. 183,343
Int. Cl. E04h *9/06*
U.S. Cl. 52—79 **12 Claims**



Modular building units are fabricatd from metal parts to form tubular sections having a rectangular cross section and variable length. The modular units are placed side by side and stacked to form a multi-story dwelling. The ends of the modules are closed with a rigid insulating material, and the sides, bottoms and tops are perforated where required for installation of doors, windows and staircases and to permit access from one module to another. The metal parts are trough shaped for increased strength, and the sides, bottoms and tops are interconnected by four channel members, which extend the entire length of the modules. The inside surfaces of the sides and tops are lined with gypsum board or some other suitable non-combustible material, and the inside surfaces of the bottoms are covered with particle board or the like. Gypsum board diaphragms are placed at suitable positions along the modules to define rooms or to divide the modules into a plurality of dwelling units. The modules are secured together and a roof section is placed above the stacked modules after which insulation and siding are placed around the exterior surfaces of the dwelling.

3,793,797
METHOD OF PACKAGING ITEMS IN BAGS

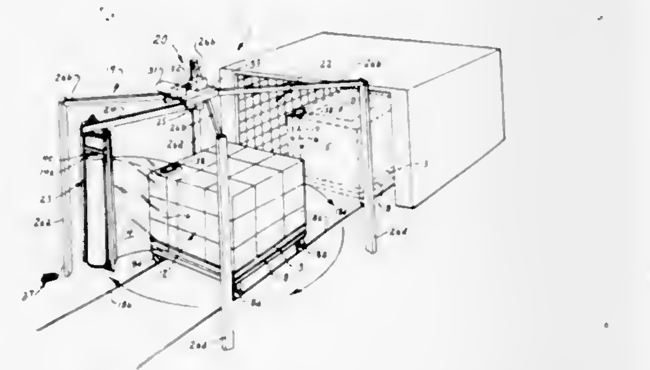
John T. Roberts, Simpsonville, and Ralph L. Wing, Greenville, both of S.C., assignors to W. R. Grace & Co., Duncan, S.C.
Division of Ser. No. 47,926, May 7, 1970, Pat. No. 3,698,847. This application Aug. 10, 1972, Ser. No. 279,414
Int. Cl. B65b *43/36*
U.S. Cl. 53—29 **1 Claim**



This invention is directed to apparatus for sequentially packaging items in a chain of imbricated bags mounted on two strands of tape including a stationary support table, a tape puller, a forced air bag opener, a tray for inserting articles in the bag, indexing means operated by the bags for positioning the bags for loading; a method for sequentially loading such a chain of bags, supporting the bags in the loading position, opening the bags by directing air stream over and then into the bag, loading article via tray into bags; a special power supply apparatus for driving the tape puller including air motor, drive clutch and lock clutch; and a cartridge equipped chain of imbricated bags; all as further described hereafter.

3,793,798
SHRINK PALLETIZED PROCESS AND APPARATUS

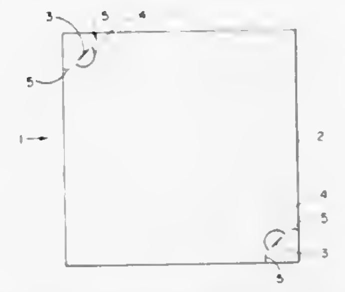
Patrick R. Lancaster, III, and William G. Lancaster, both of Louisville, Ky., assignors to Lantech, Inc., Louisville, Ky.
Filed Oct. 6, 1972, Ser. No. 295,532
Int. Cl. B65b *53/02*
U.S. Cl. 53—30 **34 Claims**



This invention provides a process for making a high-strength unitary package, which has its generally vertically arranged portion overwrapped by a sheet of material of a type laminateable at its heat-shrinking temperature wherein an overlapped laminated seal is simultaneously formed between the leading and trailing edges of the sheet when the overwrapping sheet is also heat shrunk tightly against the package. Basically, the process comprises the steps of: placing a package on a support; locating a generally vertically arranged rolled-up sheet of a material of a type laminateable at its heat-shrinking temperature on dispenser means mounted for movement relative to the support; withdrawing a leading edge of the material from the dispenser and holding that leading edge against the package; moving the dispenser means relative to the support about a generally vertical axis and thereby causing a sufficient amount of the material to be dispensed from the dispenser means to overwrap the generally vertically arranged portion of the package and also provide a section of the material overlapping the leading edge; severing the overlapping section from the dispenser means and holding it to the package in a position overlapping the leading edge; and heating the overwrapped package to the heat-shrinking temperature of the material and thus simultaneously forming an overlapping laiminated seal between the leading edge and the overlapping section and also heat shrinking the overwrapped material tightly against the package. The present invention is also directed toward the product that is produced by this process and to certain apparatus which can be utilized to perform this process.

3,793,799
METHOD OF FILM SHEET DISPENSING AND WRAPPING

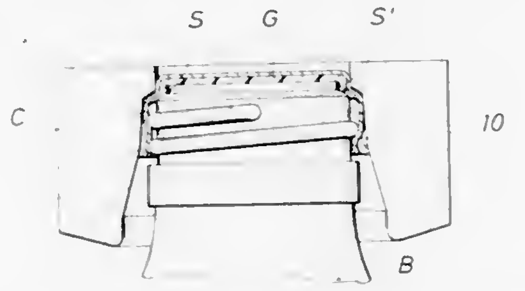
Milton A. Howe, Spartanburg; Everett H. Dexter, Lyman; Eugene D. Thompson, Greenville, all of S.C., assignor to W. R. Grace & Co., Duncan, S.C.
Division of Ser. No. 225,820, Feb. 14, 1972. This application Feb. 26, 1973, Ser. No. 335,855
Int. Cl. B65b *11/02*
U.S. Cl. 53—32 **1 Claim**



This invention is a method and apparatus for dispensing film sheets which are used for wrapping hamburgers, sandwiches, or other products which must be hand wrapped quickly. The film sheets are stacked and stapled at at least one corner with cooperating slits cut in the film near the staple. The sheets can be easily and rapidly torn from the stack with the remaining film held firmly by the staple so that film fragments do not contaminate the product. A dispensing tray is provided which further secures the stack of film sheets. Products can be wrapped by placing them on the top sheet of film and lapping the corners over the product so the sheet is torn from the staple thereby wrapping the product as the sheets are dispensed.

3,793,800
CROWNING DIE

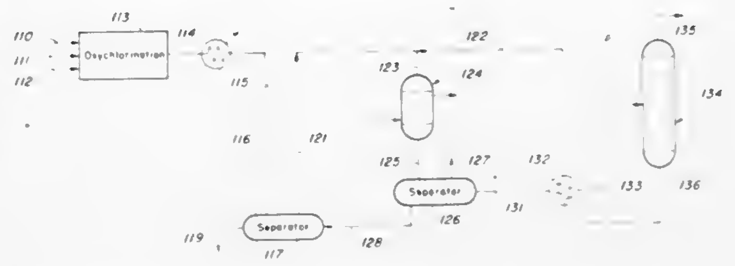
James P. Sexton, Beaumont, Tex., assignor to Peter J. Bevlaqua, Beaumont, Tex., a part interest
Filed Dec. 26, 1972, Ser. No. 317,953
Int. Cl. B67b *3/12*
U.S. Cl. 53—341 **3 Claims**



A crowning die for use in bottle crowning apparatus defines a number of concentric throat surfaces of successively smaller diameters for forming a resealable, twist-off crown on a bottle in a single axial movement onto the bottle.

3,793,801
RECOVERY OF CHLORINATED HYDROCARBON

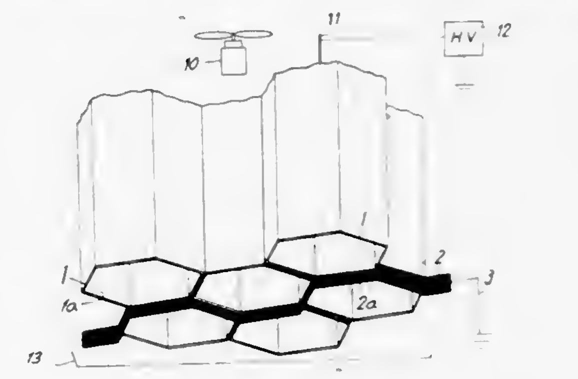
Utah Tsao, Jersey City, N.J., assignor to The Lummus Compant, Bloomfield, N.J.
Filed Sept. 28, 1972, Ser. No. 292,915
Int. Cl. B01d *53/00*
U.S. Cl. 55—71 **11 Claims**



A chlorinated hydrocarbon, such as dichloroethane, is recovered from an oxychlorination reaction effluent by cooling the effluent to condense chlorinated hydrocarbon and water, combining the remaining gas with hydrogen chloride in an amount to produce, in the subsequent cooling step, an aqueous hydrogen chloride condensate which does not freeze, and cooling the combined stream to condense remaining chlorinated hydrocarbon and aqueous hydrogen chloride.

3,793,802
GROUNDING SYSTEM FOR TUBULAR COLLECTORS IN ELECTROSTATIC PRECIPITATING APPARATUS

Lothar Hardt, Eschborn, Germany, assignor to Metallgesellschaft A.G., Frankfurt am Main, Germany
Filed June 8, 1972, Ser. No. 260,813
Claims priority, application Germany, June 18, 1971, P 21 30 074.3
Int. Cl. B03c *3/49*
U.S. Cl. 55—155 **10 Claims**



Tubular electrodes, generally of a polygonal configuration, and composed of nonconducting synthetic resin material, whose surfaces are rendered conductive by the deposition of a conductive--liquid film in electrostatic precipitators of the tube type, are grounded or otherwise connected to a terminal of the electrostatic power supply by a bibulous textile strip along the lower edges of the electrode adapted to collect conductive liquid.

3,793,803
PISTON ACTUATED AUTOMATIC DRAIN FILTER

Jon E. Winter, Lakewood, Colo., assignor to Wilkerson Corporation, Englewood, Calif.
Filed June 21, 1971, Ser. No. 155,111
Int. Cl. B01d *33/38*
U.S. Cl. 55—218 **3 Claims**

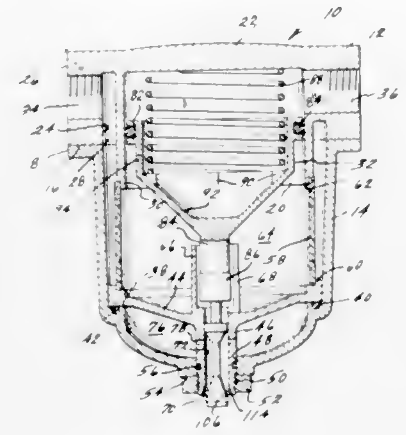
This invention relates to an air line filter of the type having a replaceable filter cartridge adapted to remove both entrained solids and fluids, the latter being dumped automatically by a

reduce the ability of the liquid to retain air, a tank for storing

3,793,807

3,793,809

piston-actuated drain valve each time the air flow shuts off. More specifically, the instant invention relates to an improved version of such filter in which one or more bypass passages



break the seal between the valve element and its seat so that the O-ring forming the seal is not drawn from its groove into a position where it will be damaged upon a downstream demand that returns the valve to closed position prematurely.

3,793,804
COLLECTOR ELECTRODE FOR ELECTROSTATIC PRECIPITATOR

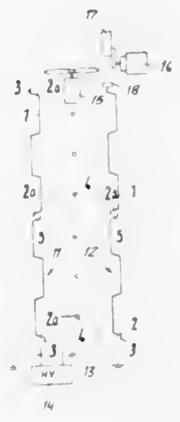
Walter Steuernagel, Frankfurt/Main, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 154,086, June 17, 1971. This application Apr. 17, 1972, Ser. No. 244,659

Claims priority, application Germany, Apr. 20, 1971, G 71 14 982.1

Int. Cl. B03c *3/45*

U.S. Cl. 55—112 **8 Claims**



A collector electrode for an electrostatic precipitator in the form of a sheet-metal strip reinforced by a channel structure in which the corrugations are in the form of flat trapezoid sections with open broad bases turned in opposite direction and running along the length of the strip. The strips have overlapping flanges where they adjoin and comprise at least three such trapezoidal sections.

3,793,805
METHOD AND APPARATUS FOR REMOVING AIR FROM A LIQUID

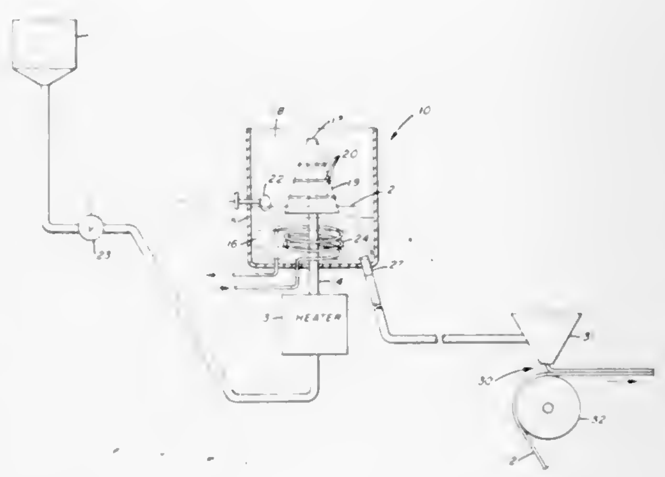
Edward P. Hoffman, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 13, 1971, Ser. No. 207,053

Int. Cl. B01d

U.S. Cl. 55—49 **10 Claims**

A method and apparatus for removing air from a liquid. The invention provides a heater for heating the liquid so as to reduce the ability of the liquid to retain air, a tank for storing an accumulation of the liquid which has been deaerated, and a means for delivery of the heated liquid into the tank. The delivery means comprises a vertical pipe exposing the hot liquid to an ambiance so that a substantial number of discrete bubbles in the heated liquid will accelerate toward and burst upon contact with the ambiance. The delivery means further includes a generally conically shaped member for cascading



the heated liquid in the form of a film so that the film of liquid is exposed to the ambiance to substantially rid the liquid of dissolved air. The invention further provides, in the tank, means for cooling the accumulation of deaerated liquid in such a way that the surface of the liquid in the tank is at a substantially higher temperature than the remainder of the liquid in the tank. The hotter surface liquid functions as a barrier to prevent reaerating of the liquid in the tank.

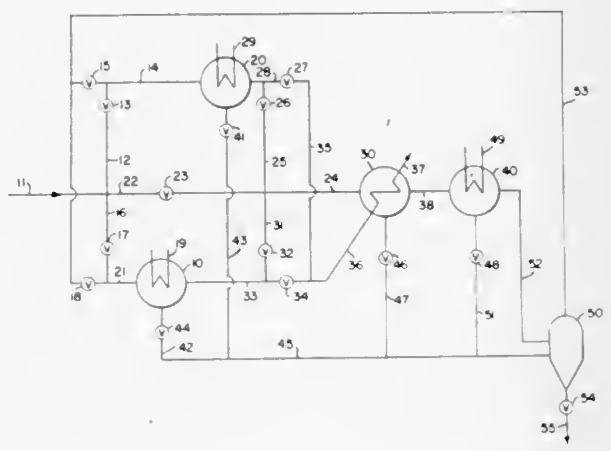
3,793,806
LOW TEMPERATURE REMOVAL OF MERCURY FROM GAS STREAMS

Louis Leonard Fornoff, Cedar Grove, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Sept. 25, 1972, Ser. No. 292,144

Int. Cl. B01d *5/00*

U.S. Cl. 55—72 **1 Claim**



The partial pressure of mercury as vapor in a gas stream is lowered to a maximum of less than 40 parts per billion by volume of mercury in a gas at one atmosphere and the product gas is substantially free of condensed mercury as mist by cooling a mercury-containing flowing gas stream to 0°F or below, providing that the gas stream also contains water vapor at a minimum partial pressure of 6×10^{-3} atmosphere and the cooling is effected by indirect cooling means wherein condensed water is collected as crystalline ice.

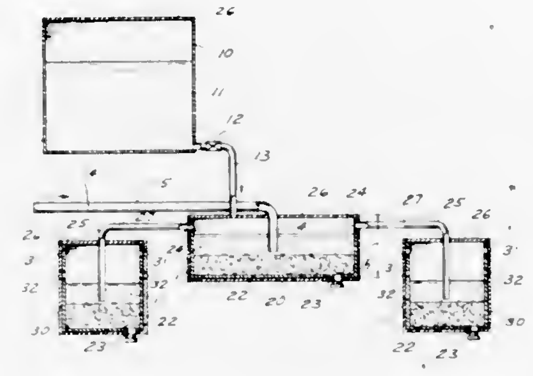
3,793,807
AUTOMOTIVE ENGINE EXHAUST PURIFIER

Gregory Prem Das, Los Angeles, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed June 27, 1972, Ser. No. 266,532

Int. Cl. B01d *47/00*

U.S. Cl. 55—93 **1 Claim**



A process of purifying the exhaust emissions of an automotive engine, by passing the exhaust gas through a series of tanks containing a mixture of saline solution and a solution of Tri-Sodium Phosphate. The tanks may be located adjacent the engine section of the automobile and behind the front headlight and fender section for optimum cooling.

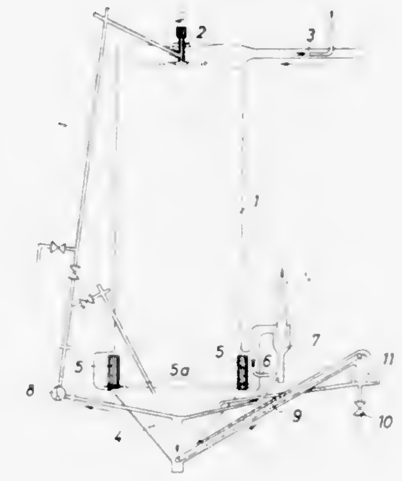
3,793,808
PROCESS FOR THE PURIFICATION OF GASES

Paul Ackermann, Moers, Germany, assignor to Polycarbona Chemie GmbH, Hamburg, Germany

Filed Dec. 13, 1971, Ser. No. 207,443

Int. Cl. B01d *47/06*

U.S. Cl. 55—89 **1 Claim**



A process for washing industrial waste gases which contain foam-forming substances comprises (1) atomizing an aqueous washing liquid with a centrifugal atomizer of Canadian Pat. No. 846,076 into 50–150μ diameter droplets for slowly descending in a tower containing the gas to be washed at a rate requiring greater than two seconds, (2) slowing the vertical descent of the gas relative to the liquid droplets for allowing the droplets to drop into a sump in the bottom of the tower, and (3) recirculating the aqueous washing liquid from the sump up to the atomizer in the top of the tower.

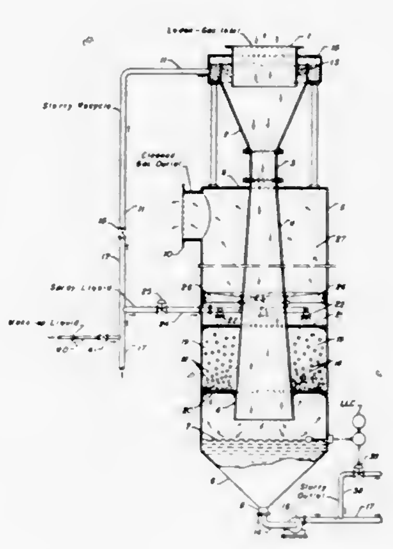
3,793,809
VENTRI-SPHERE HIGH ENERGY SCRUBBER

James P. Tomany, Darten, and George H. Cash, Wilton, both of Conn., assignors to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 824,365, May 5, 1969, which is a continuation of Ser. No. 625,260, March 22, 1967, abandoned. This application Dec. 21, 1972, Ser. No. 317,346

Int. Cl. B01d *47/02*

U.S. Cl. 55—91 **5 Claims**



An improved multiple stage and compact form of venturi type scrubber unit adapted for cleaning gaseous streams laden with extremely fine particulates, with such unit providing a downflow of the gaseous stream through a venturi throat section along with recycle slurry to effect high velocity wetting of entrained particles. The discharge of wetted gas and particles is, in turn, downwardly from an elongated diffuser section or energy regain tube toward a lower slurry collecting zone whereby the gaseous stream flow is caused to reverse 180° and then pass upwardly through loose light weight mobile packing maintained in between vertically spaced apart perforate retainer means to effect particulates and mist removal in the presence of a counter-currently flowing liquid stream being introduced above such removal zone. A preferred embodiment utilizes a flexible venturi throat section which is mechanically adjustable to provide a variable cross-sectional area that will be changed responsive to variations in gas and liquid volumes and in turn sustain a substantially constant pressure drop across such throat section. Also, the unit may incorporate a plurality of sloping vane means above the mobile packing zone to effect further liquid de-entrainment from the clean gas stream prior to its discharge from the unit.

3,793,810
DEFOAMING DEVICE FOR MEDICAL HUMIDIFIER

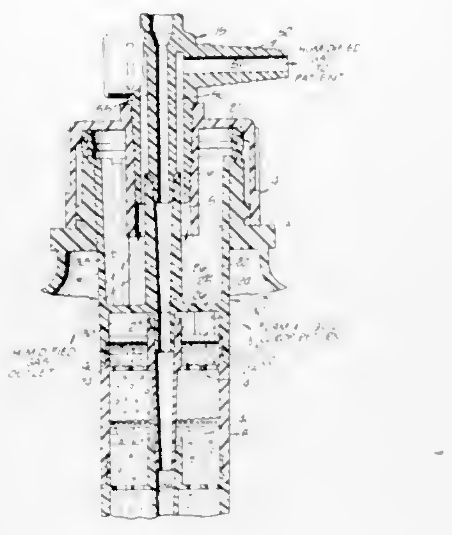
Charles J. McPhee, Sylmar, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed June 19, 1972, Ser. No. 264,350

Int. Cl. B01d *45/04*; **A61m** *15/00*

U.S. Cl. 55—255 **17 Claims**

A device for defoaming and separating liquid drops from a humidified gas supplied to a patient for breathing during inhalation therapy. The defoamer has a dual chambered partitioned housing with a separate window opening into each chamber. One chamber picks up foam and liquid drops and recycles them to a liquid reservoir in a supply bottle. The other chamber collects the defoamed humidified gas that is free of liquid drops and supplies it to a patient's breathing tube. The defoaming device fits inside the supply bottle and forms a connecting link between a gas-liquid mixing column in the bottle and an outlet port of the bottle.



3,793,811
FILTERS FOR SEPARATING DUST FROM AIR

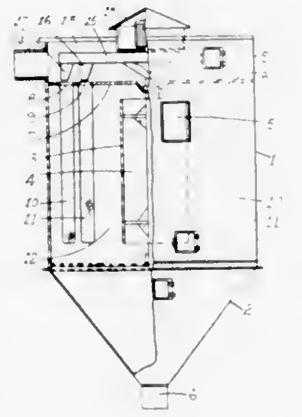
Ronald Frederick Bourne, Morningside, Transvaal, South Africa, assignor to The Asbestos Grading Equipment Company (South Africa) (Proprietary) Limited, Johannesburg, Transvaal, South Africa

Filed Apr. 28, 1972, Ser. No. 248,433

Claims priority, application South Africa, May 3, 1971, 2874

Int. Cl. B01d *46/04*

U.S. Cl. 55—294 **4 Claims**



This invention relates to industrial filters for separating solid particles entrained in a gas, particularly dust in air. The invention resides in the provision of a filter chamber in an outer annular region of a casing and a contaminated air inlet on a central region surrounded by the filter chamber, which is directly converse to normal arrangement for filters of this type. Circular rows of filter bags are located in the outer annular region and a rotary air jet is provided for creating sequential back pressure in the bags of the rows. By locating the filter chamber in the outer region of the casing a greater space is available for filter bags in a casing of given size than where the filter chamber is centrally located and improved efficiency of the filter is obtained.

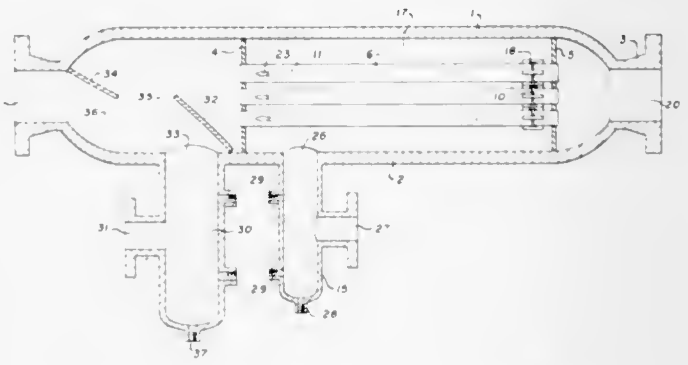
3,793,812
IN-LINE MULTITUBE CENTRIFUGAL SEPARATOR

Robin Burke Willis, 4166 Monaco, Corpus Christi, Tex. 78411

Continuation-in-part of Ser. No. 66,545, Aug. 24, 1970, abandoned. This application May 12, 1972, Ser. No. 252,900

Int. Cl. B01d *45/12*

U.S. Cl. 55—338 **1 Claim**



An in-line separator for removing entrained liquid from a pipeline gas flow is provided. The separator has a plurality of vortex tubes mounted within a common shell. Each vortex tube is formed with a single circumferential recycle gap at its outlet end. A hub, carrying vanes, is mounted in the inlet of each vortex tube. Each hub defines a recycling conduit connecting the outer chamber, defined between the shell and the vortex tubes, with the low pressure zone which exists along the longitudinal axis of the vortex tube. Centrifugal separation of the liquid from the gas occurs within each vortex tube, due to the twist given to the stream by the vanes. The separated liquid moves along the vortex tube wall to the recycle gap, through which it is sucked together with some gas. As the recycled steams slowly travel through the outer chamber from the gaps to the hub recycle conduits, the liquid drops out by gravity separation and is collected. The liquid-free gas returns to the main flow through the recycle conduits.

3,793,813
PLEATED FILTER ASSEMBLY

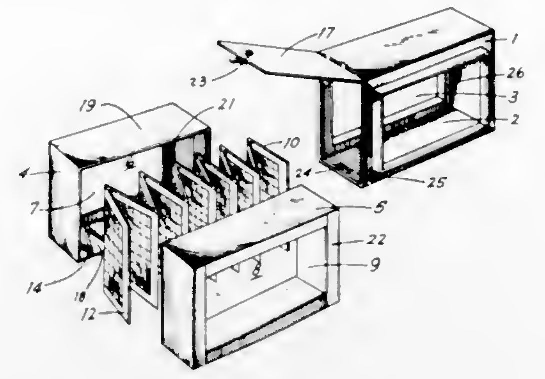
Robert L. McAllister, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed May 19, 1972, Ser. No. 254,873

Int. Cl. B01d *27/06*

U.S. Cl. 55—481 **3 Claims**

A filter assembly comprising an outer housing having upstream and downstream openings to permit fluid flow therethrough, an inner housing having an upstream and downstream opening therein to permit fluid flow therethrough, the inner housing being adapted for being



received by the outer housing, and a pleated filter medium disposed transverse the direction of fluid flow between the upstream and downstream openings, the pleated filter being adapted to be received by the inner housing.

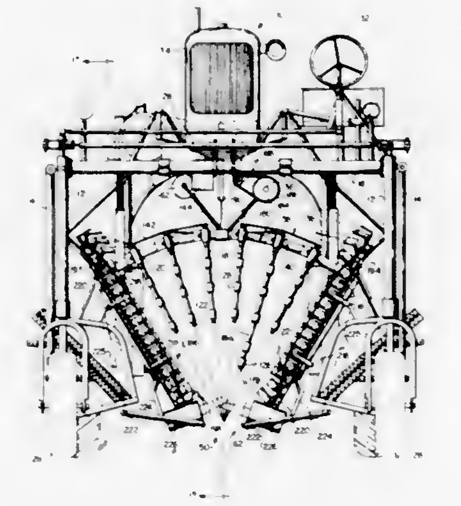
3,793,814
FRUIT HARVESTER

Roger Phillip Rohrbach, Raleigh, N.C., and Miroslav Rajnoch, Prague, Czechoslovakia, assignors to Research Corporation, New York, N.Y.

Filed Oct. 21, 1971, Ser. No. 191,194

Int. Cl. A01g *19/00*

U.S. Cl. 56—1 **6 Claims**



A high clearance tractor moves over a row of fruit bushes and carries an underslung floating harvester unit which has longitudinally extending flapper means that sets up vibrations in higher order vibrational modes over the entire profiles of the bushes to dislodge mature fruit which is caught about at ground level by catcher means carried by endless conveyors arranged vertically on the outsides of the flapper means, such conveyors running synchronously with the ground speed of the tractor so that the catcher means has zero velocity with respect to both the bushes and the ground. The catcher means conveys the fruit to fruit lugs removably arranged vertically in a cascade arrangement at the sides of the tractor.

3,793,815
TREE SHAKER

Guy O. Hughes, Marysville, Calif., assignor to John C. Woudstra Mid State Mfg. Co., Manteca, Calif.

Filed Jan. 29, 1973, Ser. No. 327,592

Int. Cl. A01g *19/00*

U.S. Cl. 56—328 TS **12 Claims**

Suspended from a forwardly projecting boom is a pair of fore and aft elongated tree gripping arms pivotally connected at their after ends. The forward ends of the tree gripping arms are movable between an open position and a closed position wherein the trunk of the tree is clamped. Dissimilar weights in each of the forward tree clamping ends of the arms are rotated at different velocities to produce random, non-repetitive, vibrational frequencies and amplitudes effective to dislodge the crop from the tree being shaken. A three point suspension allows the tree gripping arms to roll, within limits, about a central fore and aft axis so that the clamping jaws automatically conform to the attitude of the tree trunk being gripped. Elevation of the clamping jaws is controlled by lifting and lowering the boom. If desired, the shaker can be mounted on a self-propelled vehicle.

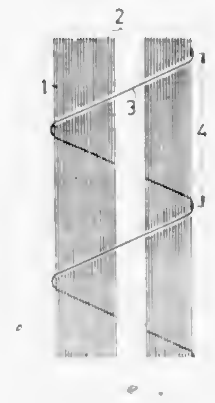
3,793,816
CONTINUOUS YARN TREATING METHOD

Mikio Kodama, Fujimagari, Japan, assignor to Fuji Spinning Co., Ltd., Tokyo, Japan

Filed Feb. 29, 1972, Ser. No. 230,436

Int. Cl. D06c *1/00;* **B65h** *51/00*

U.S. Cl. 57—164 **10 Claims**



An advancing sheet-like yarn group consisting of a number of parallel yarns is spirally wound by a holding yarn stronger than the parallel yarn and is subjected to treatment. The holding yarn is undone from the treated and advancing sheet-like yarn group while being wound up to a bobbin rotating about its axis and moving around the sheet-like yarn group.

3,793,817
AUXILIARY YARN START-UP WHEEL AND METHOD FOR DRAW FALSE TWIST MACHINES

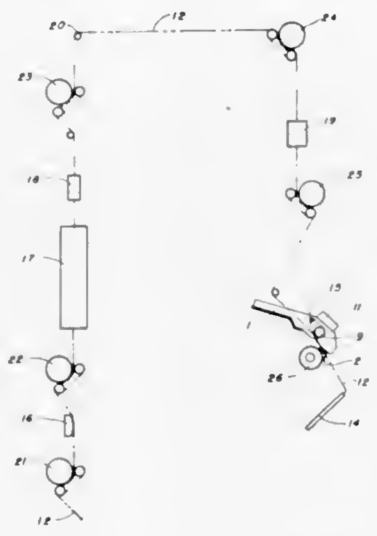
Charles William Beringer, and Marion Archer Wilder, Jr., both of Columbia, S.C., assignors to Allied Chemical Corporation, Morristown, N.J.

Filed June 12, 1972, Ser. No. 261,838

Int. Cl. D02g *1/02*

U.S. Cl. 57—34 HS **7 Claims**

This invention relates to an auxiliary yarn start-up wheel and method. The previously known auxiliary wheel consisted of a rotatable disc driven by the winder drive roll on the draw false twist machine, this disc in turn, by means of gears and a magnetic clutch, drives the auxiliary start-up wheel. The improvement is providing a weight to get better friction drive, providing a ceramic guide with multiple grooves, and providing at least a 4 pole magnet as part of the magnetic clutch. In the prior art method, the yarn passed over a simple wire guide and had contact with the rotating auxiliary wheel to slightly increase tension on the yarn that had been strung up through the threadpath of the machine. The yarn did not move. In the improved method, the yarn still does not move, but tension on the yarn can be increased at least two-fold by wrapping the yarn at least two and one-half times about the start-up wheel and the modified ceramic guide so the start-up wheel stops rotating but the magnetic clutch slips, applying torque to the wheel. By means of this method and improved start-up wheel, yarn begins to move as soon as the drive roll prior to false twist spindle is engaged. The prior art wheel and method did not move the yarn until the drive rolls both prior to and immediately after the false twist spindle were engaged.



3,793,818
DOFFING AND DONNING APPARATUS USABLE FOR TEXTILE MACHINES SUCH AS DRAW-TWISTERS

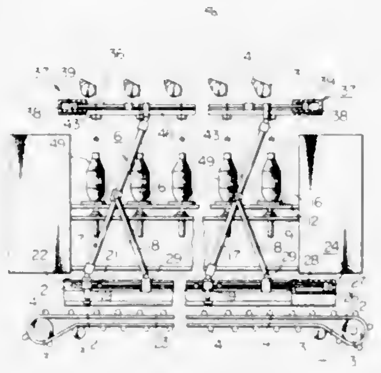
Yakichi Yamamoto, Kanazawa, Japan, assignor to Ishikawa Seisakusho Ltd., Ishikawa, Japan

Filed Mar. 10, 1972, Ser. No. 233,481

Claims priority, application Japan, Dec. 2, 1971, 46/98186

Int. Cl. D01h *9/00*

U.S. Cl. 57—52 **5 Claims**



Apparatus for doffing full cops mounted on spindles of a textile machine such as draw-twisters for synthetic fibers onto an intermittently circulatable conveyer mechanism of the zigzag pegs arrangement type and for donning of bare bobbins mounted on the conveyer mechanism onto the spindles by carrying them by pneumatically actuated resilient gripper assemblies which are moved along the prescribed routes by combination of vertical pantagraph motion of a lifting mechanism with horizontal pantagraph motion of a horizontal displacer mechanism.

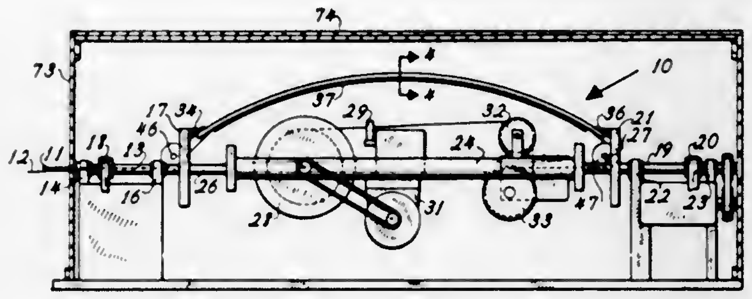
3,793,819
QUIET STRANDER

David D. Madalozzo, Tarboro, N.C.; Charles E. Koons, Freeman; Michael E. McGuire, Adrian, both of Mo., and Earl D. Jones, New York, N.Y., assignors to The Anaconda Company, New York, N.Y.

Filed Feb. 16, 1973, Ser. No. 333,105

Int. Cl. D07b *3/12;* **D01h** *7/90*

U.S. Cl. 57—58.52 **8 Claims**



For relatively quiet operation a strander is provided with a streamlined bow formed by joining two reinforced plastic members having elongated cross sections and being grooved to allow a passageway between them for the strand.

3,793,820
DEVICE FOR RINGLESS SPINNING OF FIBERS

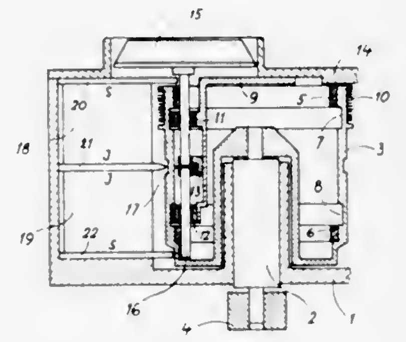
Jaroslav Rajnoha, Tyniste nad Orlici; Ladislav Bures, Usti nad Orlici; Josef Dolezal, Usti nad Orlici, and Miroslav Jungmann, Usti nad Orlici, all of Czechoslovakia, assignors to Elitex Zavody Textilnilio Shojuenstvi Generalin Reditelslvi, Liberec, Czechoslovakia

Filed Mar. 20, 1970, Ser. No. 21,428

Claims priority, application Czechoslovakia, Mar. 20, 1969, 1980-69

Int. Cl. D01h *1/12*

U.S. Cl. 57—58.89 **24 Claims**



A hollow rotary spinning chamber has a shaft fixed therewith and defining an axis of rotation for the chamber. Drive means engages the shaft for rotating it and thereby the spinning chamber. Magnetic means maintains the shaft in a predetermined operative position in lieu of bearings.

3,793,821
METHOD OF AND APPARATUS FOR REGULATING THE SPEED OF RING OR SPINDLE RAILS ASSOCIATED WITH TEXTILE MACHINES

Augustin Schafer, Ebersbach, Germany, assignor to Zinser-Textilmaschinen Gesellschaft mit beschrankter Haftung, Postfach, Ebersbach, Germany

Filed Sept. 8, 1971, Ser. No. 178,613

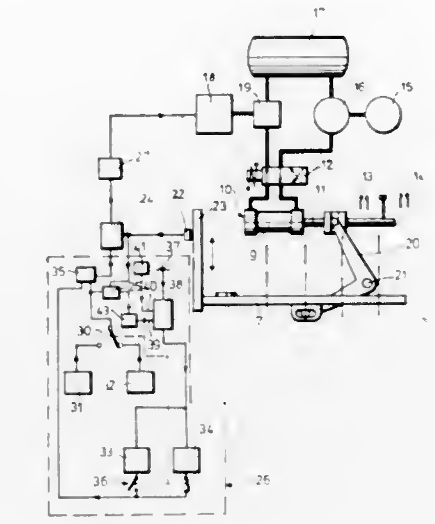
Claims priority, application Germany, Sept. 8, 1970, P 20 44 358.7

Int. Cl. D01h *1/24, 1/36*

U.S. Cl. 57—95 **11 Claims**

In textile machines, for obtaining a more uniform wound package on a bobbin supported by a spindle, the motion of the

reciprocating ring rail is controlled in such a manner that the level of the desired speed designed for the rail travel after reversal of direction, is temporarily increased for the duration of the deceleration and acceleration phases in and about the upper and lower reversal points of the ring rail travel.



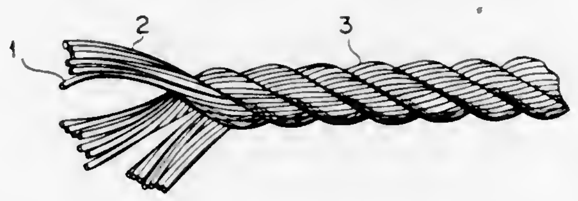
3,793,822
FISHING NET

Shoji Kawai, Tokyo, Japan, assignor to Momoi Fishing Net Manufacturing Co., Ltd., Hyogo-ken, Japan

Filed July 14, 1971, Ser. No. 162,441

Int. Cl. A01k *71/00, 73/00;* **D02g** *3/04*

U.S. Cl. 57—140 BY **10 Claims**



A fishing net formed of monofilaments 200 to 2,000 deniers thick which are prepared mainly from polyamide resin blended with polypropylene and, if desired, at least one selected from the group consisting of polyester resin, polyvinyl chloride and polyvinylidene chloride.

3,793,823
METHOD OF MAKING COMPLIANT SUSPENSION CABLE

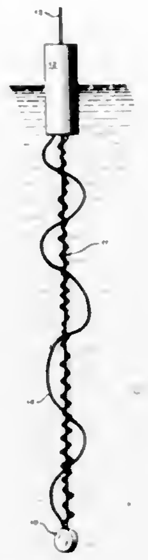
Charles V. Tallman, Rye Beach, N.H., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 37,074, May 14, 1970, Pat. No. 3,696,325. This application July 26, 1972, Ser. No. 275,128

Int. Cl. D02j *1/06*

U.S. Cl. 57—163 **4 Claims**

Compliant, nonstrumming, high strength composite cable and method of making thereof for a sonobuoy suspension system. Nonabsorbent relatively inelastic strands of textile yarn are bound onto an elastomeric warp strand by two counter wound helixes of textile stretch yarn. The inelastic



yarn forms random transverse loops along the cable by protruding outwardly through the openings between the helical windings.

3,793,824
METHOD FOR MANUFACTURING DIALS FOR WATCHES AND DIALS FOR WATCHES MANUFACTURED ACCORDING TO SAID METHOD

Andre Simon-Vermot, and Eric M. Hofer, both of Le Locle, Switzerland, assignors to Les Fabriques d'Assortiments Reunies, Neuchatel, Switzerland

Filed Aug. 23, 1972, Ser. No. 282,940

Int. Cl. G04b *39/00;* **C03b** *29/00*

U.S. Cl. 58—91 **8 Claims**

A glass watch dial is formed from a moldable glass batch comprising a mixture of glass-forming oxides, intermediate oxides, network-modifying oxides, and a devitrifying agent such as a metal oxide or a metal in colloidal dispersion, which is melted, and to which then is added a metal oxide capable of forming colored crystal nuclei of a synthetic mineral in the presence of the devitrifying agent, then the mass is cooled, the batch is molded to a dial and held at elevated temperature above its annealing point to permit the growth of crystallites from various minerals into the glass matrix to form a mineral similar in aspect, chemical composition and crystal structure to a semiprecious stone.

3,793,825
TIME DELAY GAS TURBINE STARTING SYSTEM WITH FUEL PRESSURE AND FLAME SENSING CIRCUITRY

Irwin C. Dickhart, Westland, and James E. Fenton, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 27, 1972, Ser. No. 221,325

Int. Cl. F02c *7/26*

U.S. Cl. 60—39.14 R **8 Claims**

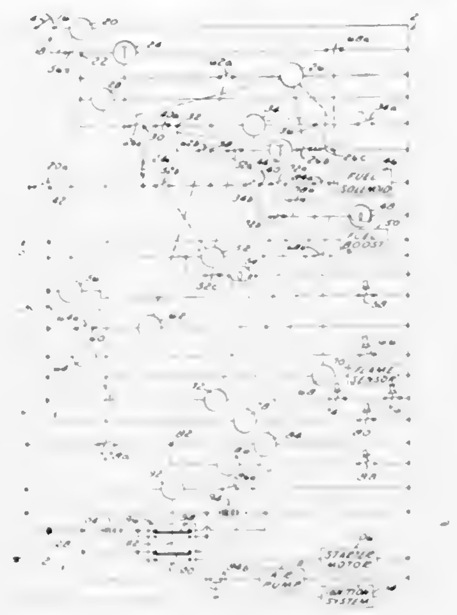
A fuel pressure sensing switch prevents actuation of a starter motor until after fuel pressure at the nozzle reaches a

predetermined level. This arrangement prevents air flow from

the cooling fluid from the plenum, a reduced flow area portion

produce braking when hydraulic pressure or power is available to assist such braking and also in the absence of such pres-

swing and tracton drive. The control valve also includes low flow circuit relief valve set at 2,000 psi and a 300 psi relief predetermined level. This arrangement prevents air flow from reaching a velocity at which ignition is difficult before adequate fuel is present. The electrical system also includes a control battery and a supplemental battery that are connected in parallel for normal system operation and recharging and are connected in series across the starter motor during starter motor operation.



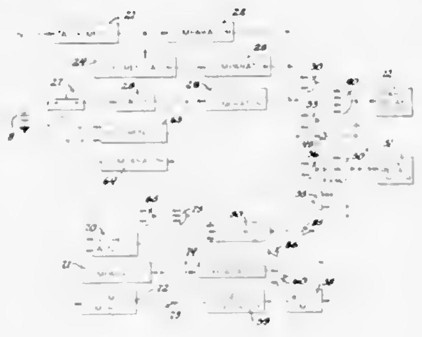
3,793,826
ELECTRONIC START CONTROL CIRCUIT FOR GAS TURBINE ENGINE

Bruce W. Holleboom, and Douglas W. Sweet, both of Flint, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 8, 1972, Ser. No. 313,552

Int. Cl. F02c *7/26*

U.S. Cl. 60—39.14 R **2 Claims**



An automatic start control circuit for a gas turbine engine which, upon activation of a start signal, engages a starter motor to accelerate the engine to a speed at which the engine will fire. Thermocouples, a speed sensor and various analog and logical elements combine to automatically disengage the starter when idle speed is reached, if acceleration falls below a critical value, if combustion temperature exceeds a critical value, if no "light-off" occurs or if a thermocouple fails.

3,793,827
STIFFENER FOR COMBUSTOR LINER

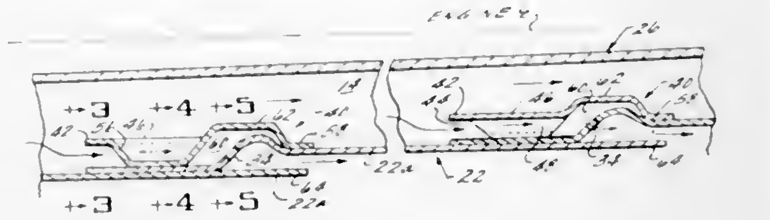
Edward E. Ekstedt, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Nov. 2, 1972, Ser. No. 303,197

Int. Cl. F02c *3/00*

U.S. Cl. 60—39.65 **12 Claims**

A combustor liner in a gas turbine engine is provided with a stiffener for disposition within a cooling fluid plenum circumscribing the liner. The stiffener engages and adds radial and circumferential stiffness to the liner. The stiffener includes a fluid inlet opening into the plenum for admitting a portion of the cooling fluid from the plenum, a reduced flow area portion wherein the fluid is accelerated and brought into heat exchanging engagement with the liner, and an outlet for exhausting the fluid. In one form, the outlet directs the cooling fluid through an aperture in the liner and into the combustion zone for the purpose of film-cooling a portion of the liner downstream from the aperture.



3,793,828
COMBUSTION SYSTEM DEFLECTOR PLATE

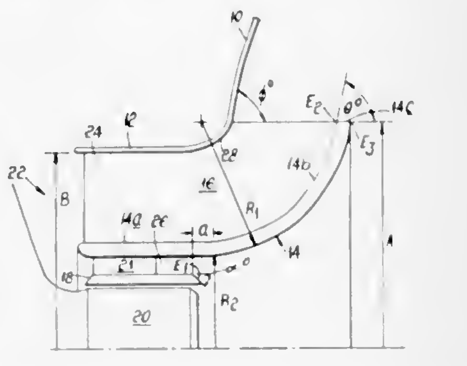
Allan Knight Chesters, Delft, Netherlands, assignor to The Secretary of State of Defence, London, England

Filed Sept. 27, 1971, Ser. No. 184,012

Claims priority, application Great Britain, Sept. 26, 1970, 45,977/70

Int. Cl. F02c *7/22*

U.S. Cl. 60—39.66 **5 Claims**



A gas turbine engine combustion device having an annular intake for the flow of primary air into the combustion chamber. The intake is divided by deflecting means into two annular ducts. One main duct being provided for the main flow of primary air through the combustion chamber, the other duct providing a flow of air which is attached to the innermost wall of the deflecting means by the Coanda effect.

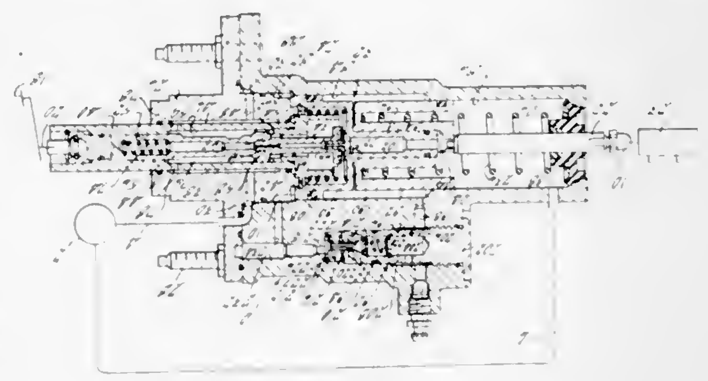
3,793,829
HYDRAULIC BOOSTER WITH PEDAL TRAVEL CONTROL

Kenneth B. Swanson, Bannister, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Oct. 2, 1972, Ser. No. 293,920

Int. Cl. F15b *7/00;* **F01b** *7/00, 7/10*

U.S. Cl. 60—547 **11 Claims**



A hydraulically operated booster brake mechanism which operates in response to movement of the brake pedal to produce braking when hydraulic pressure or power is available to assist such braking and also in the absence of such pressure and in which the ratio of pedal travel required at the foot pedal to afford displacement of the piston in the brake producing master cylinder is at one value when hydraulic pressure is available to assist braking and at another value in the absence of hydraulic pressure when braking must be produced by physical effort of the operator.

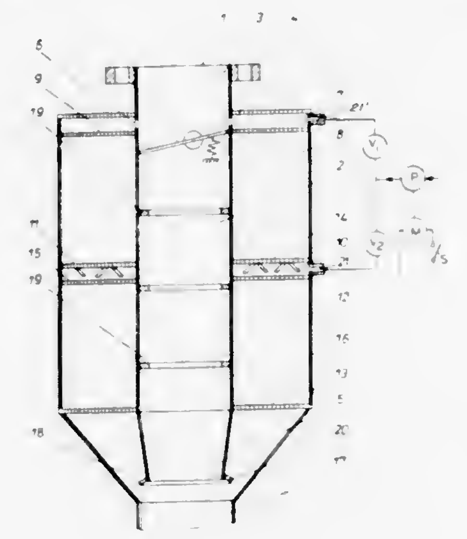
3,793,830
DEVICE FOR THE AFTER TREATMENT OF EXHAUST GASES OF AN INTERNAL COMBUSTION ENGINE

Paul August, Capellades 1, Barcelona 6, Spain

Filed May 19, 1972, Ser. No. 255,182

Int. Cl. F01n *3/14*

U.S. Cl. 60—288 **11 Claims**



A device for the treatment of exhaust gases leaving an internal combustion engine in which a main flow passage for the gases is surrounded by another passage having therein axially arranged treatment chambers containing catalyst material. The main flow passage is provided with a flow control valve which, at low engine speeds, diverts substantially all of the exhaust gases to the outer passage surrounding the main flow passage, while at higher speeds the valve deflects and permits an ever increasing amount of the exhaust gases to pass through the main flow passage. The main flow passage and the outlet end of the outer passage containing the catalyst chambers are coaxially arranged and taper inwardly so that there is a mingling of the gases from the passages at the discharge end of the device. The device is adapted for direct connection to the exhaust manifold of an engine and can be incorporated directly therein.

3,793,831
ELECTROLIC CONTROL VALVE

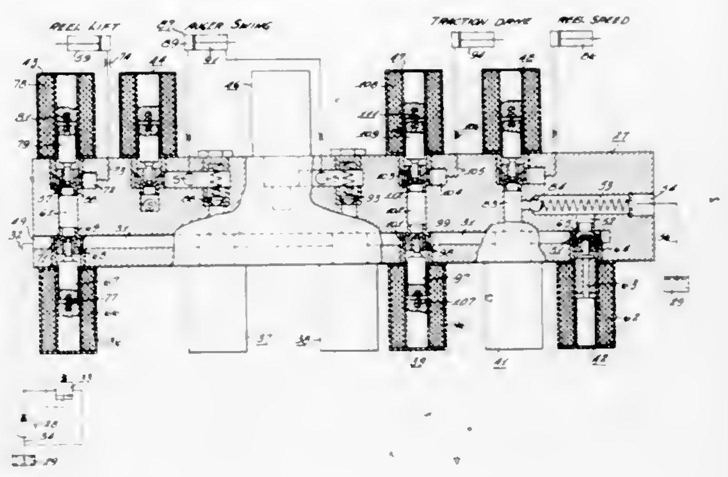
Ramkishan Khatti, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed June 8, 1972, Ser. No. 260,741

Int. Cl. F15b *21/08*

U.S. Cl. 60—471 **6 Claims**

A control valve consisting of two-way normally closed solenoid operated poppet valves and two-way normally open solenoid operated poppet valves. The normally closed solenoid operated valves are arranged to direct flow to and from a cylinder in the desired manner. For the control of each single acting cylinder, two normally closed solenoid operated valves are required, whereas, for a double acting cylinder, four normally closed solenoid operated and two check valves are needed. These sets of solenoid operated valves are incorporated in a single body or manifold to control the different functions on a combine such as reel height, reel speed, auger swing and tracton drive. The control valve also includes low flow circuit relief valve set at 2,000 psi and a 300 psi relief valve to satisfy maximum pressure conditions for reel speed operation. The valve is located near to a supply pump and the pump flow passes through the normally open two-way solenoid operated valve and back to sump to minimize pressure drop in neutral.



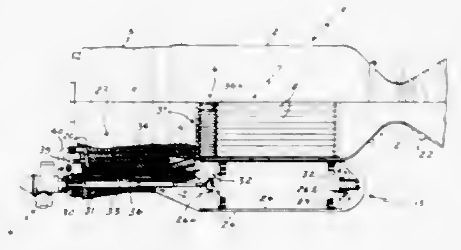
3,793,832
NUCLEAR ENGINE REACTOR ROCKET CORES

Calvin W. Moon, Greenhills, Ohio, assignor to The United States of America as represented by the Secretary of the Air force, Washington, D.C.

Filed July 23, 1968, Ser. No. 747,784

Int. Cl. G21d

U.S. Cl. 60—203 **4 Claims**



A nuclear rocket engine reactor core equipped with a series of coolant channels having hydraulic diameters that decrease in programmed proportion with increasing radial position from the core center to thereby reduce the required propellant coolant flow to a minimum during the aftercooling period occurring after reactor shutdown.

3,793,833
DEVICE FOR REDUCING HARMFUL CONSTITUENTS OF THE WASTE GASES IN INTERNAL COMBUSTION ENGINES OF AUTOMOBILES

Richard van Basshuysen, Kirschenweg, Germany, assignor to Audi Nsu Auto Union Aktiengesellschaft, Neckarsulm, Germany

Filed Nov. 12, 1971, Ser. No. 198,110

Claims priority, application Germany, Dec. 17, 1970, 2062220

Int. Cl. F02b *75/10*

U.S. Cl. 60—284 **3 Claims**

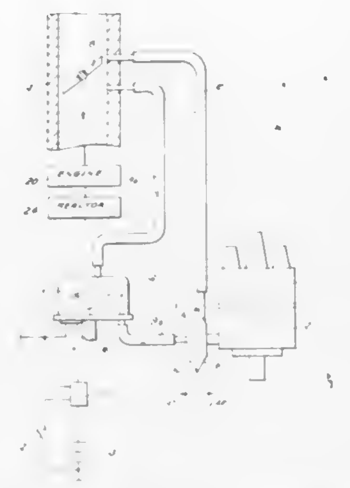
This invention relates to a device for reducing harmful waste gas components of automobile internal combustion engines by external ignition. A waste gas reactor is fitted on the

engine exhaust pipe, in which the unburnt waste gas com-

load carried thereby, which load, for example, may be a

inlet valve between the cooperating wall parts of the compres-

fuel manifold assembly, thereby supporting the bundle in the engine exhaust pipe, in which the unburnt waste gas components are burnt, with the addition of air, if necessary, and which is equipped with combustion time control that can be adjusted for a predetermined time on starting in the direction of retarded ignition by the diminished pressure in the suction duct.



3,793,834
DEVICE DRIVING A HEAVY BODY IN RECIPROCATING MOTION

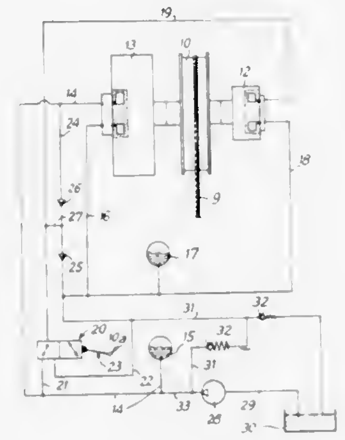
Louis E. Martin, Senlis, France, assignor to Societe Anonyme Poclain, (Oise), France

Filed Dec. 16, 1971, Ser. No. 208,666

Claims priority, application France, Dec. 22, 1970, 7046239; Nov. 23, 1971, 7141878

Int. Cl. F15b *1/02*

U.S. Cl. 60—413 **15 Claims**



The present invention relates to a device for driving a heavy body connected to a drive motor by a cable, whilst the forces transmitted to said body by the motor are alternately higher than and opposite the forces of gravity acting on this body, and lower than said forces of gravity, and a device antagonistic to said forces of gravity is permanently coupled to the drive motor. Said antagonistic device is constituted by a spring motor.

The invention is applicable to the production of an installation for pumping petroleum oil products.

3,793,835
VARIABLE RATE HYDRAULIC-PNEUMATIC WEIGHT CONTROL AND COMPENSATING APPARATUS

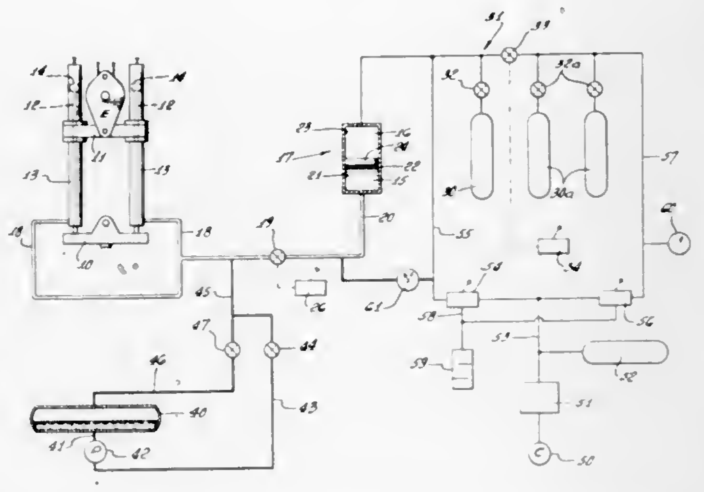
Edward Larralde, Santa Barbara, Calif., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed Feb. 2, 1972, Ser. No. 222,919

Int. Cl. F15b *1/02*

U.S. Cl. 60—413 **19 Claims**

Apparatus automatically compensating for relative vertical movement between a hoisting or supporting mechanism and a load carried thereby, which load, for example, may be a running string connected to a drill bit used in drilling a subaqueous well bore, the mechanism supporting the running string being mounted on a floating vessel positioned over the well bore. The compensating apparatus includes a cylinder and piston device containing a hydraulic fluid exerting a lifting or tensioning force on the running string, or other load, the pressure on the hydraulic fluid being maintained generally constant by a gaseous medium, despite relative axial movement between the cylinder and piston portions of the device, that might result from heaving of the vessel due to wind and wave action, or the lowering of the running or drilling string as the bit drills the hole. The volume of the gaseous medium for pressurizing the hydraulic fluid can be changed in order to vary the spring-like rate of the gaseous medium.



3,793,836
THERMODYNAMIC RECIPROCATING MACHINE COMPRISING A COMPRESSOR

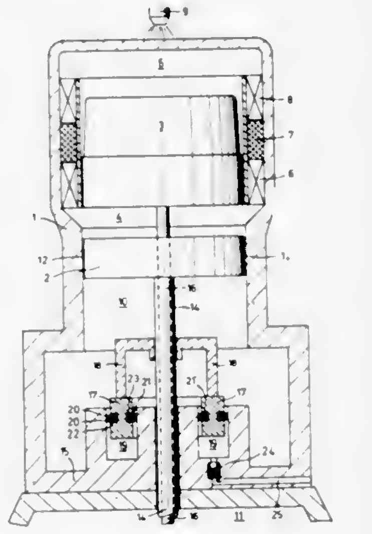
Jacobus Hubertus Abrahams, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed Apr. 21, 1972, Ser. No. 246,141

Claims priority, application Netherlands, May 4, 1971, 7106039

Int. Cl. F03g *7/06;* **F25b** *9/00*

U.S. Cl. 60—521 **5 Claims**



A thermodynamic reciprocating machine having an integral compressor in which at least one compression element is present within the buffer space and is connected to the piston-like member which bounds the buffer space or to the associated piston rod, which element can vary the volume of a compression space, at least one piston ring being present as an inlet valve between the cooperating wall parts of the compression element and the compression space, said ring being incorporated in a groove in the wall of the compression element or of the compression space, an open communication being always present between the compression space and the space in the groove behind the piston ring, the outlet valve which communicates with the compression space being accomodated in the wall of the compression space, the outlet being passed to the outside through a wall of the buffer space.

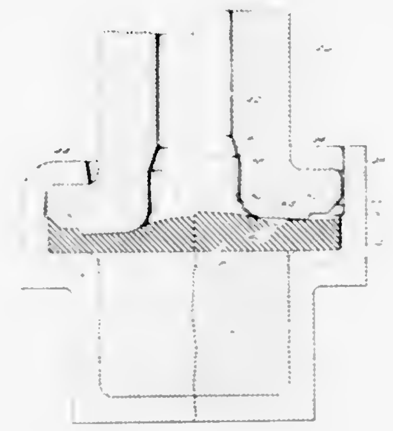
3,793,837
WAX ELEMENT DIAPHRAGM AND SEAL

William A. Biermann, Brookfield, and John S. Rice, Milwaukee, both of Wis., assignors to Controls Company of America, Schiller Park, Ill.

Filed Aug. 10, 1972, Ser. No. 279,467

Int. Cl. F03g *7/00;* **H01h** *71/16*

U.S. Cl. 60—527 **7 Claims**



The flanged end of the plunger guide which fits into the enlarged end of the wax element cup has a chamfer which seats against the internal shoulder when the clamping is completed. Inside the chamfer is a flat leading to a downwardly radiused clamp portion which develops maximum compression of the elastomeric diaphragm. The radius and the chamfer both force the elastomer to flow outwardly to effect a superior seal. The diaphragm face remote from the wax charge has a generally annular recess (which appears to dis-appear after clamping) to reduce the friction between the diaphragm and the guide to thereby facilitate stretching the diaphragm over a maximum area.

3,793,838
AUGMENTER FUEL INJECTION MOUNTING SYSTEM

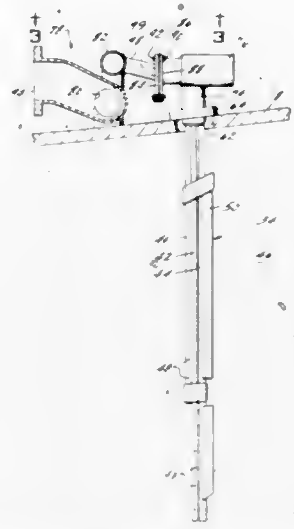
Dudley O. Nash, Forest Park, Ohio, assignor to General Electrical Company, Cincinnati, Ohio

Filed Sept. 5, 1972, Ser. No. 286,434

Int. Cl. F02c *3/04, 7/22*

U.S. Cl. 60—261 **15 Claims**

An augmenter fuel distribution system for a gas turbine engine includes a fuel manifold assembly mounted externally of the engine casing, a plurality of fuel injection spraybar bundles, a metering valve housing associated with one or more of the spraybar bundles, each housing including a mounting pad for mounting the housing and spraybar bundle directly to the fuel manifold assembly, thereby supporting the bundle in the radial direction, a seal and damper assembly which mounts to the casing and supports the bundle in the axial direction while permitting relative thermal expansion between the bundle and the casing.



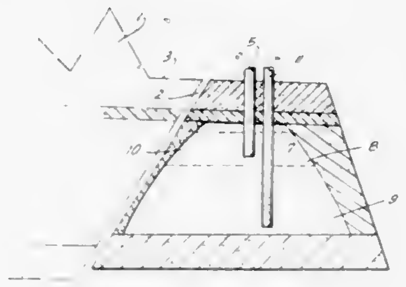
3,793,839
DEVICES AND THE ART OF PREVENTION OF DISTURBANCES IN THE TECTONICS OF THE EARTH'S CRUST

Emanuel M. Josephson, New York, N.Y., assignor to Irving Seidman, New York, N.Y.

Filed Mar. 18, 1971, Ser. No. 125,621

Int. Cl. E02d

U.S. Cl. 61—35 **12 Claims**



The purpose of this invention is to prevent earthquakes and other disturbances in the crust of the earth by averting loss of support to its structures by replacement of support lost by withdrawal or removal of substances contained in it at the point of the withdrawal or removal, wherever possible; and by the prevention of loss of substances in its structure that support it, where advisable or feasible. In the case of oil production, the withdrawn oil and the support that the oil structure gives overlying structures is effectively replaced by water, mud or other substances, introduced preferrably at the time and at the point of oil production into a level of the oil structure below the oil in amounts sufficient to maintain the initial bottom-hole pressure as well as the table level of water in overlying structures, without effecting to potability thereof.

3,793,840
MOBILE, ARCTIC DRILLING AND PRODUCTION PLATFORM

George E. Mott, Metairie, and James P. Wilbourn, New Orleans, both of La., assignors to Texaco Inc., New York, N.Y.

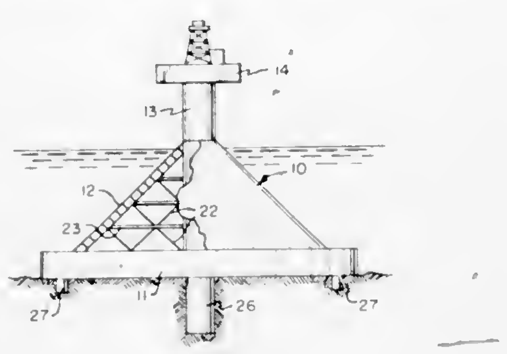
Filed Oct. 18, 1971, Ser. No. 189,972

Int. Cl. E02b *17/00*

U.S. Cl. 61—46.5 **5 Claims**

The invention relates to a marine platform adapted to be removably positioned at an offshore body of water, the surface

gun supported at the lower end of a pipe assembly extending be selectively connected into the cryogen gas circuit in such a of which is periodically subjected to sheet ice and floating ice masses. The platform includes a controllably buoyant foundation-like base at its lower end, which normally rests on the ocean floor. A shell-like body extends upwardly from said base and is defined on its external surface by a progressively decreasing cross sectional area from the body lower end, to a point adjacent the upper end. A work deck disposed at, and operably carried at the body upper end includes equipment necessary to function at said off-shore site. A caisson extending uprightly through the platform is partially embedded into the substratum beneath the platform, firmly anchoring the latter and protecting wells during and after a drilling operation.



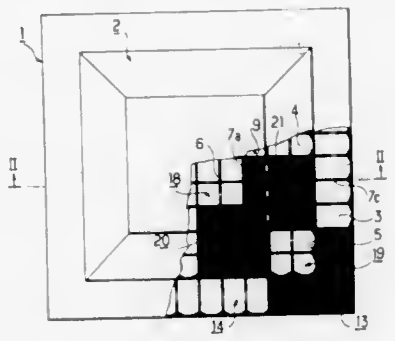
3,793,841
METHOD OF MAKING AND USING SOIL STABILIZER

Otto L. Dozsa, Palos Heights, Ill., assignor to United States Gypsum Company, Chicago, Ill.
Filed Jan. 25, 1971, Ser. No. 109,410
Int. Cl. B01j *2/00;* **C04b** *1/00;* **E02d** *3/12*
U.S. Cl. 61—36 R **7 Claims**

An agglomerate of CaO and $Ca(OH)_2$ the thickness of which does not exceed about 0.2 inches, characterized by the ability to disintegrate in the presence of water into particles sufficiently small as to stabilize soil. The agglomerate is produced by continuously compacting at room temperature a mixture of the two components wherein the amount of CaO is between 40 and 60 percent of the total weight.

3,793,842
SELF-STABILIZING SUBMARINE TANK

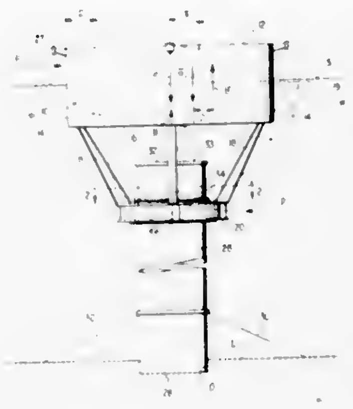
Roger Lacroix, Sceaux, France, assignor to Sea Tank Co., Paris, France
Filed Mar. 6, 1972, Ser. No. 231,933
Claims priority, application France, Mar. 5, 1971, 71.07723
Int. Cl. B65g *5/00;* **E02d** *27/38*
U.S. Cl. 61—46.5 **5 Claims**



A submarine tank formed of pre-stressed concrete comprises central cells and outward peripheral ballast cells. The cells are interconnected and can be filled with liquid hydrocarbons. Appropriate control means can be provided for effectuating the controlled submerging of the tank. Vertical pillars can be provided to remove any vertical force effect of swells. Lower stud members can be provided on the bottom of the tank.

3,793,843
FLOATING BREASTING PLATFORM

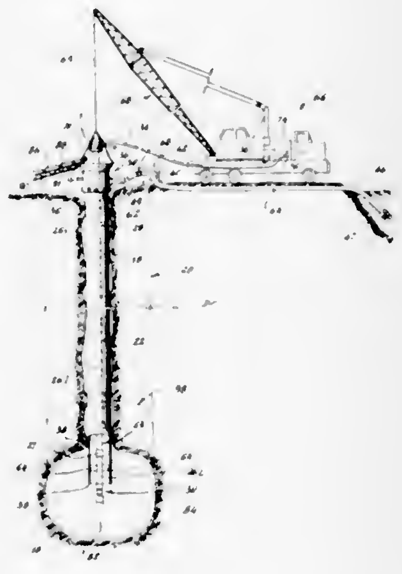
Arick S. Malkiel, 94-09 68th Ave., Forest Hills, N.Y. 11375
Filed Sept. 14, 1972, Ser. No. 289,116
Int. Cl. E02b *3/22;* **B63b** *21/00*
U.S. Cl. 61—46 **12 Claims**



A vessel-like floating platform, adapted for the breasting and berthing of transport vessels in a body of water at an offshore location and capable of resisting wave and impact forces and of adjusting to variations in water level, comprises a platform anchored or moored by a universal coupling to a vertical shaft embedded in the land surface underlying the body of water. The universal coupling comprises a downwardly extending outrigger structure which engages by means of a universal connection the surface of an annular member slidably mounted on the upper portion of the shaft, thereby enabling vertical, rotational, and angular movement of the platform and capability of adjusting to a position relative to prevailing wind, wave, and current forces for optimum in breasting the approaching vessels.

3,793,844
SYSTEM FOR INCREASING THE LOAD-BEARING CAPACITY OF SOIL

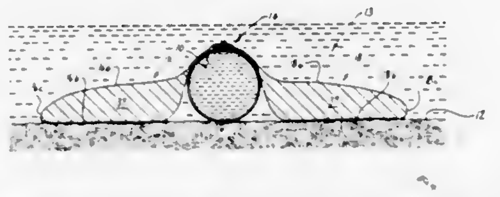
Stephen V. Chelminski, West Redding, Conn., assignor to Bolt Associates, Inc., Norwalk, Conn.
Division of Ser. No. 131,919, April 7, 1971, Pat. No. 3,707,848. This application Aug. 14, 1972, Ser. No. 280,157
Int. Cl. E02d *7/20*
U.S. Cl. 61—63 **5 Claims**



Process and system for increasing the load-bearing capacity of soil by producing load-bearing columns formed of densely compacted granular material, such as sand or gravel or of concrete. For producing each column, the granular material or concrete is fed down through a hollow member, and an air gun supported at the lower end of a pipe assembly extending down coaxially through the hollow member is actuated to produce powerful impulses to impel the soil outwardly away from the lower end of the hollow member to compact the soil and then to impel the granular material or concrete outwardly to distribute it into the resulting cavity formed in the compacted soil. When sufficient material has been distributed and compacted by the powerful impulses from the air gun, the hollow member and pipe assembly are withdrawn an increment of distance, and then the steps are repeated to distribute and compact more of the desired material at a level above the first deposit, and so forth, to create a column of such material. If desired to create an encased concrete column, the pipe assembly is withdrawn from the interior of the hollow member, which is then filled with concrete. To facilitate the initial insertion of the hollow member into the soil, water is jetted down through it while the air gun is actuated producing powerful impulses to impel the soil away from the lower end, and to compact the soil cylindrically about the descending member to enhance lateral support. A novel air gun energy source is adapted to be operated while embedded in soil, poured concrete, sand, grit, and similar hostile environments. Columns of more coarsely granular material can be produced in the soil to enable ground water to percolate up, the ground water being released by intense, repeated air gun impulses.

3,793,845
APPARATUS AND METHOD FOR ANCHORING SUBMERGED CONDUIT

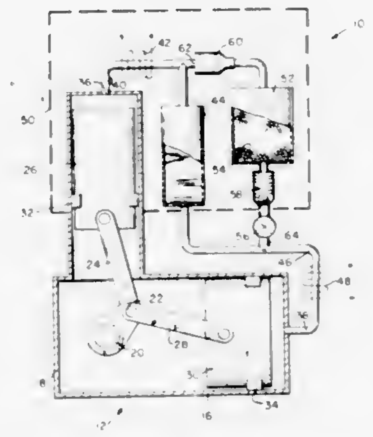
James M. Keith, Sunnyvale, Calif., assignor to Marcona Corporation, San Francisco, Calif.
Filed July 20, 1972, Ser. No. 273,447
Int. Cl. E02d *15/06*
U.S. Cl. 61—72.1 **12 Claims**



Elongate flexible envelope draped over submerged conduit defining elongate lobes along side the same which when partially filled with non-soluble particulate matter such as sand serves to anchor the conduit.

3,793,846
DECONTAMINATION METHOD AND APPARATUS FOR CRYOGENIC REFRIGERATORS

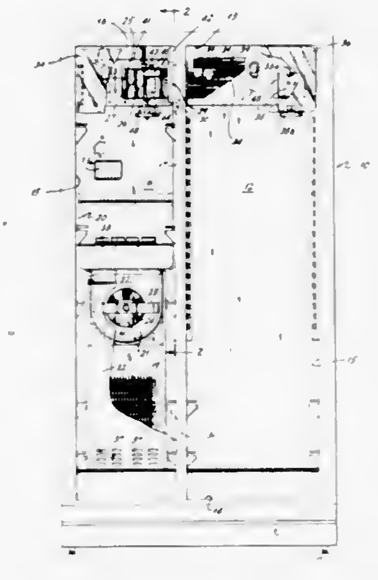
Axel G. Dehne, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Nov. 28, 1972, Ser. No. 310,199
Int. Cl. F25b *9/00*
U.S. Cl. 62—6 **13 Claims**



Cryogenic refrigerator system is provided with a contaminant adsorber in the cold region of the refrigerator which can be selectively connected into the cryogen gas circuit in such a position as to receive warm gas passing out of the regenerator to purge the regenerator into the adsorber.

3,793,847
REFRIGERATION APPARATUS

John A. Scarlett, and Eugene L. West, Jr., both of Richmond, Va., assignors to Philco-Ford Corporation, Blue Bell, Pa.
Filed Mar. 16, 1973, Ser. No. 341,891
Int. Cl. F25b
U.S. Cl. 62—190 **12 Claims**



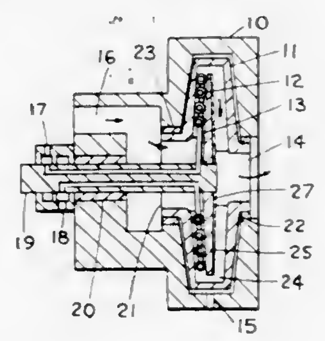
A dual-compartment refrigerator having a single evaporator, a single fan, and ducts associated therewith for directing air from within each compartment over the evaporator, and for returning the air to the compartments. Operation of the evaporator is under the control of a thermostat in the warmer, food storage compartment, and temperature of the colder, frozen storage compartment is established and maintained by a manually adjustable, compound damper effective to proportion air flow between the compartments and the evaporator. The compound damper includes a first portion adjustable to establish the desired temperature differential as between the compartments, and a second portion adjustable according to season, or to extremes of usage, to maintain desirable temperature levels within each compartment.

ERRATUM

For Class 62—315 see:
Patent No. 3,793,861

3,793,848
GAS COMPRESSOR

Michael Eskeli, 6220 Orchid Ln., Dallas, Tex. 75230
Filed Nov. 27, 1972, Ser. No. 309,909
Int. Cl. F25d *9/00*
U.S. Cl. 62—402 **3 Claims**



A method and apparatus for compressing gases, wherein a gas is compressed in a continuous flow centrifuge provided

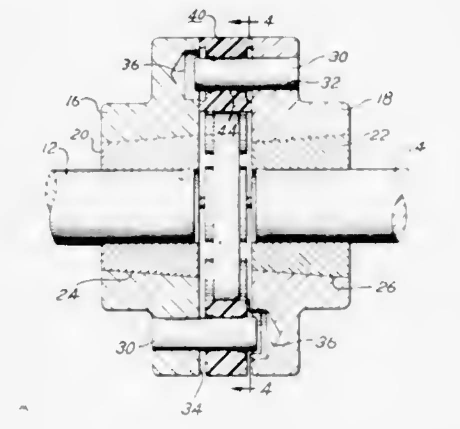
rollers. The knitted tapes leave the knitting machine at the

3,793,854

with cooling. The gas enters said centrifuge near axis of rotation, and leaves near axis of rotation, thus providing for low work input to the compressor. Gas to be compressed may be air, and the coolant may be water. Leaving gas after compression will have lower temperature than at compressor entry.

3,793,849
SHAFT COUPLING AND ELEMENT THEREFOR

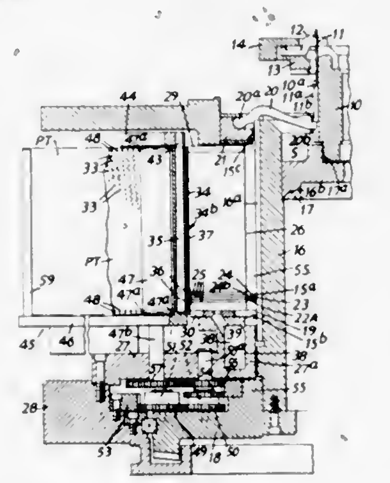
Holmes A. Downey, R.R. No. 3, Bremen, Ind.
Filed Nov. 4, 1971, Ser. No. 195,570
Int. Cl. F16d *3/78*
U.S. Cl. 64—13 **14 Claims**



A flexible coupling for connecting two shafts in end to end relation in which there are flanges for each of the shafts, a plurality of spaced pins secured in each of said flanges and projecting toward the other flange, and a flexible element of elastomeric material disposed between the flanges and having holes for receiving and gripping the pins of each of the two flanges. The flexible element, which is preferably constructed of polyurethane, contains bosses around each of the holes and an intervening area of lesser thickness for improved flexibility between the holes. Spacer protrusions are provided on opposite sides of the element for positioning the element between the two flanges.

3,793,850
PATTERNING SYSTEM FOR A MULTI-FEED CIRCULAR KNITTING MACHINE

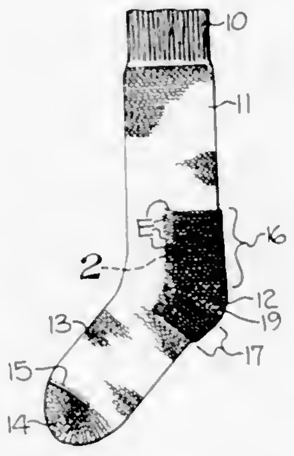
William James Wills-Moren, Stevington, and Walter Goadby, Evington, both of England, assignors to Camber International (England) Limited, Leicester, England
Filed July 6, 1971, Ser. No. 159,742
Claims priority, application Great Britain, July 16, 1970, 34465/70.
Int. Cl. D04b *15/68*
U.S. Cl. 66—50 R **5 Claims**



A multi-feed circular knitting machine equipped with needles selectively raised to different heights by jacks having patterning butts arranged to be acted upon by air-operated selector cams. The latter are in pairs stacked into housings, one in advance of each feed. The two cams of each pair are for raising needles, via jacks, to tucking and clearing heights respectively. To each stack of selector cams there is a block of fluidic elements with sensing orifices in alignment with channels of information carried by a punched tape or an apertured drum driven in time with the machine. The selector cams are pushed forward by low pressure air and retracted by induced vacuum. The jacks are in a cylinder larger than a cylinder accommodating the needles, movement transmitting and amplifying levers being provided between the two whereby short movements of the jacks are converted into longer movements of the needles.

3,793,851
BOOT SOCK

James L. Thorneburg, Statesville, N.C., assignor to Thorneburg Hosiery Mills, Inc., Statesville, N.C.
Filed May 19, 1972, Ser. No. 255,095
Int. Cl. D04b *9/46;* **A41b** *11/02*
U.S. Cl. 66—185 **7 Claims**

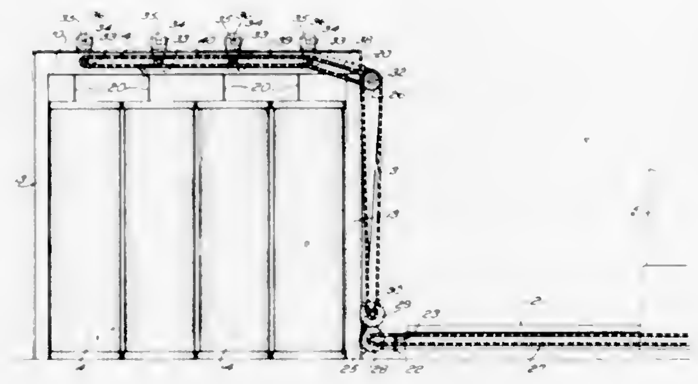


This sock is particularly adapted for use with western type boots in which the heel portion is enlarged to a greater extent than the heels of regular boots and shoes. The entire length of the leg, foot and heel portions of this sock are knit of one or more body yarns and a main terry yarn forms terry loops throughout either the entire inner surface of the sock or at least in the heel. An auxiliary terry yarn is knit in plated relationship with the main terry yarn in at least the heel portion and may be knit in the adjacent areas above and below the heel portion and forms additional terry loops to provide additional fabric thickness in the heel and adjacent areas so that the heel portion of the sock fills in the enlarged heel of the western boot. The yarns forming the terry loops are hydrophobic to wick any moisture from the inside of the sock and away from the foot of the wearer.

3,793,852
TENSION LET OFF DEVICE FOR A KNITTING MACHINE

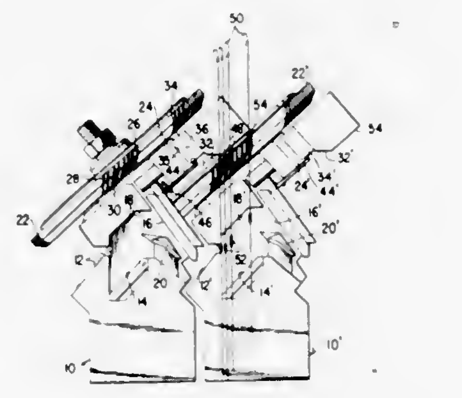
Edwin I. Adler, Providence, R.I., assignor to Atlas Braid Company, Cumberland, R.I.
Filed May 24, 1972, Ser. No. 256,430
Int. Cl. D04b *15/88*
U.S. Cl. 66—152 **8 Claims**

The device pertains to a knitting machine for knitting a plurality of narrow elastic tapes using elastic yarn. It comprises a rectangular supporting frame on vertical legs so that the frame straddles a plurality of rows of roving cans or bins. A pair of vertically contiguous rollers are mounted on the frame extending across each row of cans. The rollers in each pair are provided with meshing gears at one end so that they rotate in opposite directions. The lower roller of each pair is connected by a sprocket chain with the lower roller of the adjacent pair so that a single drive will drive all the rollers. A single upper roller at the front of the frame forms the drive for the other rollers. The knitted tapes leave the knitting machine at the bottom under tension and pass around a driven roller which is driven from the knitting machine drive. This roller is connected by a sprocket chain to a lower roller at the front of the frame which it drives at the same speed. The lower roller is connected by a sprocket chain to the front upper roller with a reduced gear drive which cuts the speed of the upper roller to half the speed of the lower roller. All the frame rollers, driven from the front upper roller operate at this reduced speed. The knitted tape passes around the lower front roller and up to the upper front roller. Then around this and through the pairs of rollers on the frame. Tension on the tapes is reduced by half at the upper front roller due to the reduced speed. As each tape reaches a predetermined roving can, it is directed downwardly from the rollers, releasing the remaining tension. Each tape passes through one or more pairs of rollers on the frame until its can is reached.



3,793,853
WHEEL-FEEDING CAM FOR CIRCULAR KNITTING MACHINES

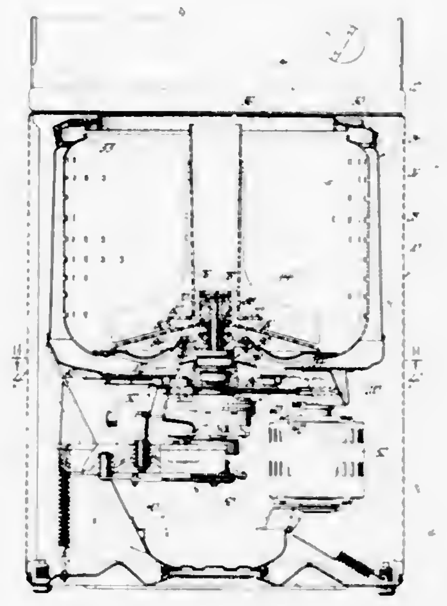
Lester Mishcon, Miami Beach, and Donald W. Reagan, Hialeah, both of Fla., assignors to The Singer Company, New York, N.Y.
Filed June 9, 1972, Ser. No. 261,456
Int. Cl. D04b *15/76*
U.S. Cl. 66—50 A **6 Claims**



A circular knitting machine with pattern wheels is provided with wheel-feeding cams which guide the butts of needles into pattern wheel slots. Each such wheel-feeding cam preferably includes an extension running parallel to a pattern wheel and effective to lock needle butts in their pattern wheel slots.

3,793,854
BULKHEAD MOUNTING ARRANGEMENT FOR TUB SEAL AND DRIVE MECHANISM

Byron L. Brucken, Miamisburg, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 13, 1972, Ser. No. 305,946
Int. Cl. D06f *23/04*
U.S. Cl. 68—23.7 **3 Claims**

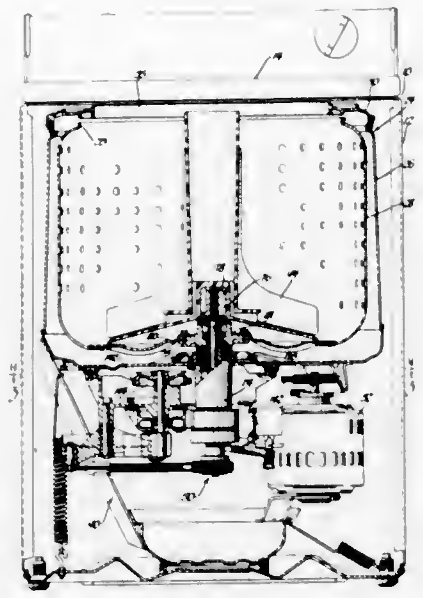


A domestic clothes washer has an agitator in a nested pair of tubs. The inner tub is rotatable and the outer tub is generally fixed against rotation and adapted to contain water. The outer tub includes a bottom bulkhead having brackets thereon for supporting an agitating and spinning drive mechanism therebelow. The bulkhead also has a central boss forming a pocket for directly mounting a water seal and a guide surface for centering the drive mechanism. The drive mechanism is substantially preassembled and properly oriented with respect to the clothes washer when it is attached to the brackets on the bulkhead. The portion of the mechanism for driving the inner tub and the agitator extends through the bulkhead in water-sealed relationship with the central boss by virtue of the water seal in the pocket.

3,793,855
BULKHEAD MOUNTING AND SEALING ARRANGEMENT FOR IMPROVED ROLLER DRIVE MECHANISM

Kenneth O. Sisson, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 13, 1972, Ser. No. 305,947
Int. Cl. D06f *23/04*
U.S. Cl. 68—23.7 **5 Claims**

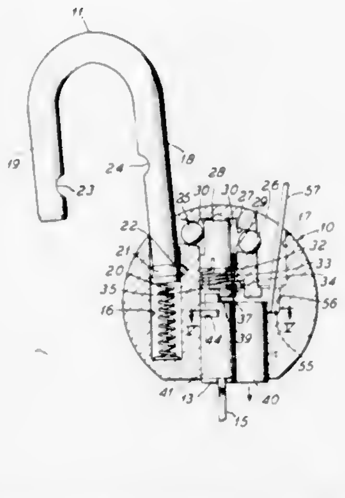
A domestic clothes washer has an agitator in a nested pair of tubs. The inner tub is rotatable and the outer tub is generally fixed against rotation and adapted to contain water. The outer tub includes a bottom bulkhead having brackets welded thereon for supporting an improved roller drive agitating and spinning mechanism therebelow. The drive mechanism is completely preassembled so that seals and operation of the mechanism may be pretested before the mechanism is supported beneath the outer tub. A central opening in the bulkhead is large enough to receive in preassembled form from below the seals and operating portions of the preassembled mechanism which normally repose within the outer tub. A central boss on the bulkhead forms a pocket around the central opening for sandwiching an O-ring between the



mechanism and the central opening to form a water seal. The boss also provides a guide surface for centering the drive mechanism.

3,793,856
PADLOCK AND KEY CYLINDER RELEASE

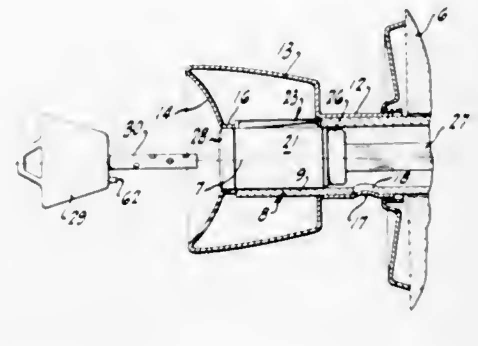
Guillermo W. Lippisch, Park Forest South, Ill., assignor to Junkunc Bros. American Lock Company, Crete, Ill.
Filed Oct. 13, 1972, Ser. No. 297,223
Int. Cl. E05b *9/04, 67/22*
U.S. Cl. 70—38 A **4 Claims**



Padlock having plunger releasably holding key cylinder to padlock casing and accommodating quick change of the key cylinder. The padlock casing has parallel bores for the shackle, one of which bores is of a lesser depth than the other. The key cylinder is carried in the casing for the lock between the bores and terminates beneath the bottom of the bore of lesser depth. The bore of lesser depth is counterbored to afford access to a plunger guided for movement transversely of the key cylinder and biased outwardly of the key cylinder into the counterbore to hold the key cylinder to the casing. A washer having a quadrant extending inwardly therefrom retains the key plug to the key cylinder. The surface of the key plug intercepts the plunger and prevents depression thereof and release of the key cylinder when the key plug is in a locked condition. A slot for the washer and quadrant affords access of the plunger to the key plug, to be depressed within the slot when the key plug is in an unlocked position. Access is afforded to the outer end of the plunger by a thin screwdriver or other tool upon removal of the short leg of the shackle from its bore.

3,793,857
REMOVABLE CYLINDER FOR A LOCK

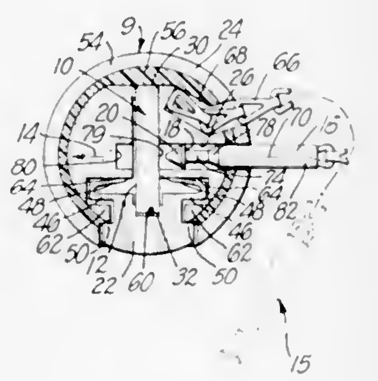
Ernest L. Schlage, Burlingame, Calif., assignor to Schlage Lock Company, Burlingame, Calif.
Filed Sept. 18, 1972, Ser. No. 290,124
Int. Cl. E05b *33/00*
U.S. Cl. 70—368 **7 Claims**



A lock includes a spindle tubular about an axis and having a wall opening. A knob is fastened on the spindle and has an aperture in axial alignment with the spindle. A cylinder body having a radially projecting tongue is disposed to slide in the spindle and move through the aperture except as obstructed by the tongue situated in the opening and confined by the marginal walls of the spindle and of the knob. The tongue can be moved radially into a non-obstructing position by a tool moved in an arcuate path to engage and move the tongue or a connector thereon. A key-actuated plug is rotatable within the body between a locked position and other positions and carries the tool from the locked position of the plug into the other positions, in which the tool engages and moves the tongue or the connector thereon.

3,793,858
CONNECTOR

Ralph W. Jones, c/o West Coast Chain Mfg. Co., 2242 E. Foothill Blvd., Pasadena, Calif. 91107
Filed Apr. 30, 1971, Ser. No. 139,015
Int. Cl. A44b *17/00, 15/00*
U.S. Cl. 70—457 **6 Claims**



A connector wherein a shaft member has projection means such as lip for engaging a forwardly facing edge of a strip to prevent rearward movement of the shaft member relative to the strip. Actuating means are provided for moving the strip from a normally closed position of engagement with the projection means to an open position of disengagement.

3,793,859
METHOD AND APPARATUS FOR CONTROLLING CROWN IN A PLATE ROLLING MILL

John D. Sterrett, Williamsville, and Alfred J. Baeslack, East Aurora, both of N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 10, 1972, Ser. No. 251,961
Int. Cl. B21h *37/00*
U.S. Cl. 72—8 **8 Claims**

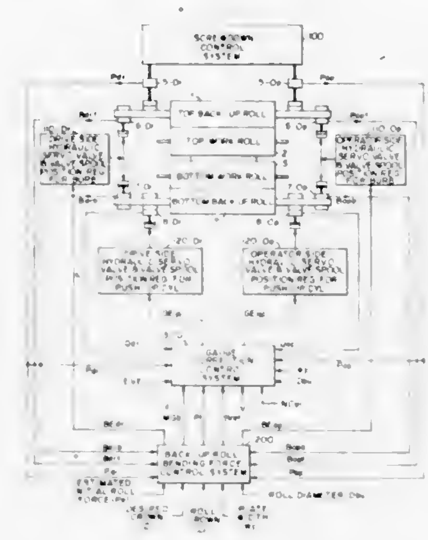
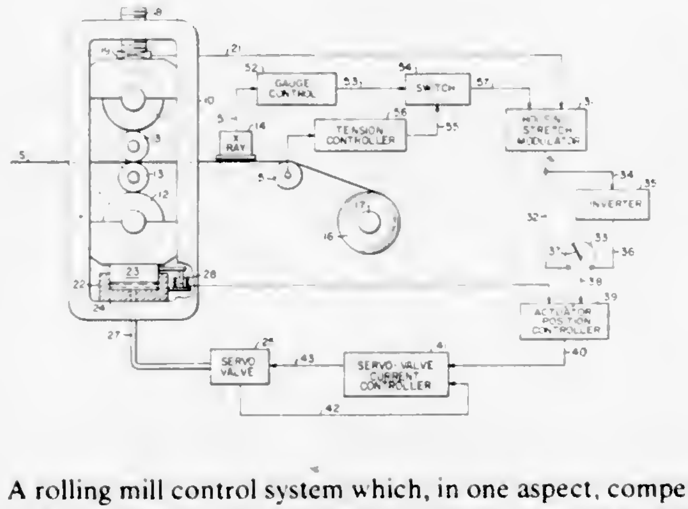


Plate width and roll diameter input signals are translated into roll and bending force spring constant representations which are multiplied by total roll and bending force signals, respectively, and added to desired roll and crown representations to produce a crown error signal. The error signal is proportionally integrated to provide a bending force reference signal which is employed to develop the proper roll bending forces to produce the desired crown.

3,793,860
SYSTEM TO COMPENSATE FOR ROLL ECCENTRICITY EFFECTS AND/OR TO SIMULATE A MILL WITH VARIABLE STRETCH CHARACTERISTICS

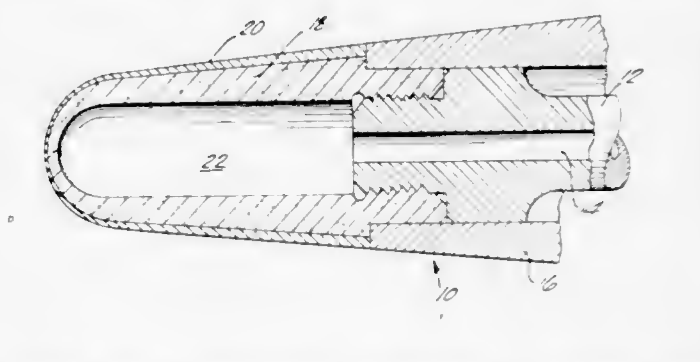
Antonio V. Silva, c/o Westinghouse Electric S.A. Caixe Postal 5156, San Paulo, Brazil
Filed Dec. 4, 1972, Ser. No. 312,178
Int. Cl. B21h *37/12*
U.S. Cl. 72—11 **16 Claims**



A rolling mill control system which, in one aspect, compensates for the effects of roll eccentricity during operation of the rolling mill. The control system includes circuitry which produces a control signal for rapid and accurate adjustments to hydraulic roll force actuators in a manner to prevent increases in the roll separating force. This circuitry further includes an outer gage control loop and/or tension control loop for automatic gage control of the rolling mill. According to another aspect of the disclosure, the control system simulates a rolling mill structure having variable spring constants whereby an operator may select a desired mode of rolling mill control. To simulate an infinitely stiff mill construction, the control system provides a control signal for rapid adjustments of the roll force actuators in a direction and by the exact amount to compensate for changes in the housing stretch. The control system simulates infinitely soft mill construction by rapid adjustments to the roll force actuator in a direction and by the exact amount to resist changes in the rolling force.

3,793,861
TRANSPIRATION COOLING STRUCTURE

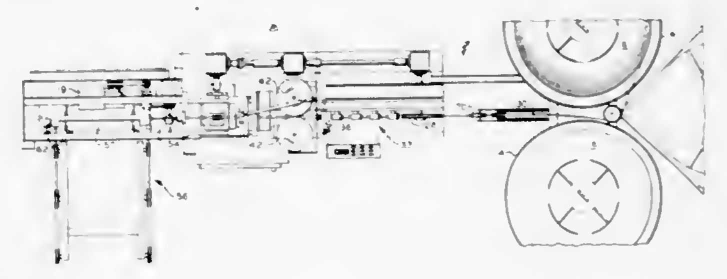
Kurt Burkhard, Irvine; Thomas G. Lee, Anaheim, and John R. Schuster, Fountain Valley, all of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.
Filed Mar. 3, 1972, Ser. No. 231,619
Int. Cl. F28c *1/00*
U.S. Cl. 62—315 **6 Claims**



A high surface temperature transpiration cooling structure that substantially reduces coolant requirements is described. It is a dual layer material consisting of a thin outer overlay of a high melting temperature, low thermal conductivity, porous ceramic material of high permeability applied on a thicker sintered metallic substrate of a high strength material of low permeability. A coolant is expelled through this structure and out the heated surface to keep the surface temperature below the overlay melting point. The inner layer controls coolant distribution and the outer layer buffers the inner layer without creating a high back pressure. This structure may be used whenever it may be subjected to a high heating environment.

3,793,862
METHOD AND APPARATUS FOR CONTINUOUSLY FORMING CONTOURED METAL STRIPS

William R. Eddy; Frank P. Richards, and James K. Thompson, all of Kansas City, Mo., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Aug. 30, 1972, Ser. No. 284,699
Int. Cl. B21d *55/00;* **B21b** *1/00*
U.S. Cl. 72—4 **19 Claims**



This invention resides in the method and apparatus for continuously forming contoured metal strips. In the invention a continuous metal strip package is maintained on a rotatable table, tension is placed on the continuous strip and the strip is fed from the strip package into a contouring zone at which location forces are exerted on the strip by at least one contouring roll set for continuously bending the strip to a preselected configuration. Forces are thereafter exerted on the contoured

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strip to straighten the strip to form a linear contoured continu-

3,793,865
MIXER FABRICATION

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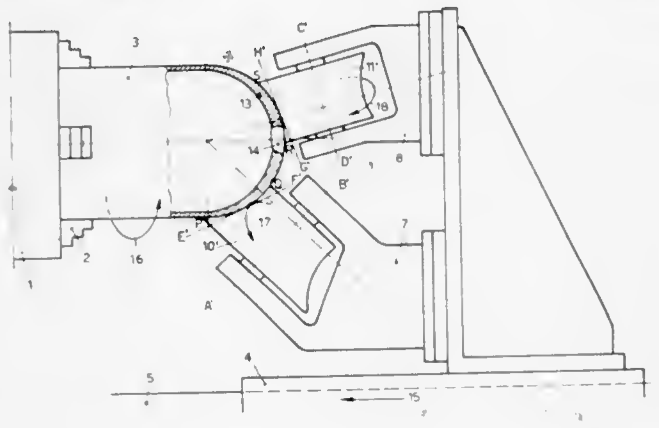
shafts extending substantially transversely of the driving racks, one of the shafts being drivingly engaged with one of the racks

somewhat less than the required final width so that during a final "pass" between a pair of main rolls the blank returns to strip to straighten the strip to form a linear contoured continuous strip and indent said strip at preselected locations. The continuous, linear contoured strip is thereafter severed at preselected locations and assembled for further handling.

3,793,863
DEVICE FOR THE MANUFACTURE OF METAL CYLINDERS

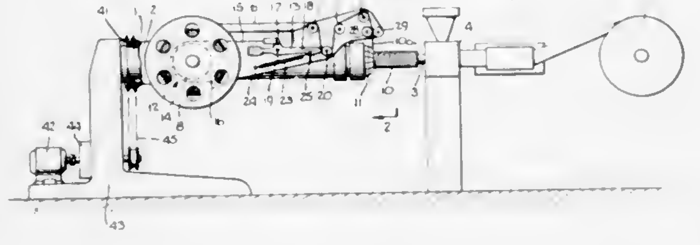
Diego Groppini, Via Stelvio, Dalmine, Italy
Filed July 3, 1972, Ser. No. 268,738
Claims priority, application Italy, July 9, 1971, 26804/71
Int. Cl. B21d *41/04*
U.S. Cl. 72—84 **7 Claims**



A device for manufacturing metal cylinders and in particular for closing one end of a tubular metallic piece, which comprises a chuck for holding the other end of the piece and a forming head with at least two idle rolls having a concave profile. In a first embodiment the axis of each roll lies in a plane passing through the axis of the piece to be worked. In a second embodiment the axis of each roll passes outside of the plane passing through the axis of the piece and through the median point of the arc of contact between roll and piece and preferably forms an angle comprised between 0° and 30° with the plane passing through the axis of the piece to be worked.

3,793,864
WAVEGUIDE WINDING MACHINE

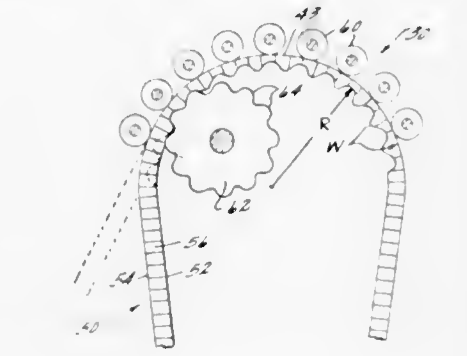
Antonio Ferrentino, Monza, Italy, assignor to Industrie Pirelli Societe per Azioni, Milan, Italy
Filed Nov. 8, 1972, Ser. No. 304,653
Claims priority, application Italy, Nov. 15, 1971, 31095/71
Int. Cl. B21d *11/08*
U.S. Cl. 72—136 **10 Claims**



Apparatus for manufacturing a waveguide having an inner wall formed by one or more helically wound, insulated straps wound on edge and an outer covering of insulating material, said apparatus comprising strap reels, feed rollers, reel brakes and strap tension devices mounted for rotation around a fixed, varying diameter mandrel on which the strap or straps are wound on edge and means for advancing the turns axially of the mandrel having a plurality of cam operated pistons for pushing the turns along the mandrel. The mandrel is followed by a covering insulation extruder and a collecting reel.

3,793,865
MIXER FABRICATION

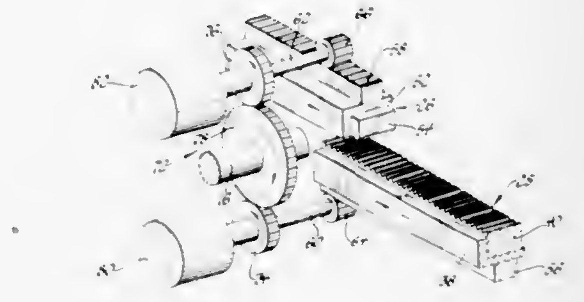
Roy A. Krabacher, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio
Filed July 5, 1972, Ser. No. 269,017
Int. Cl. B21d *47/00*
U.S. Cl. 72—197 **10 Claims**



A turbofan mixer is fabricated from a structural panel of the variety including substantially planar first and second walls and a filler material sandwiched therebetween. The mixer includes at least one acute angle formed by bending the structural panel about a portion of the first wall, whereby the first wall forms the interior and the second wall forms the exterior of the angle. The first and second walls are protected from crushing and stretching proximate the apex of the angle during the bending process by the prior or contemporaneous deformation of the aforementioned portion of the first wall into a form having a plurality of repetitive waves in the cross section thereof, whereby the first wall is reduced in length relative to the smooth outer wall. The first wall may be deformed by contact with a toothed roller or a reciprocable die or by other appropriate means.

3,793,866
GEAR FORMING MACHINES

Marvin R. Anderson, Grosse Pointe Shores, and Harald N. Jungesjo, Rochester, both of Mich., assignors to Anderson-Cook Incorporated, St. Clair Shores, Mich.
Filed Apr. 4, 1972, Ser. No. 240,544
Int. Cl. B21h *3/06*
U.S. Cl. 72—88 **3 Claims**

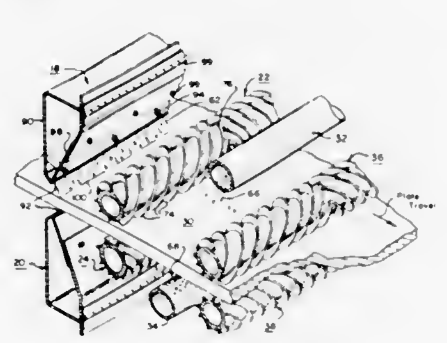


A machine for pressure forming teeth and the like on rotary workpieces including workpiece supporting means for rotatably supporting a workpiece, a pair of tool holders for tooth forming tools mounted for rectilinear movement in spaced, substantially parallel paths transversely of and on opposite sides of the rotary axis of the workpiece supported by the workpiece support means, and a drive assembly for simultaneously driving the tool holders in opposite directions along their respective paths. The drive assembly includes: (1) a pair of driving racks, one of the driving racks being secured to one of the tool holders and disposed parallel to the path of movement thereof, and the other of the driving racks being secured to the other of the tool holders and disposed parallel to the path of movement thereof, (2) a pair of spaced, rotatable

shafts extending substantially transversely of the driving racks, one of the shafts being drivingly engaged with one of the racks to cause rectilinear movement of the associated tool holder along its path of movement in response to rotation of the shaft, the other of the shafts being drivingly engaged with the other of the racks to cause rectilinear movement of the associated tool holder along its path of movement in response to rotation of the shaft, (3) a gear train engaged between the shafts to cause synchronous simultaneous rotation of the shafts and corresponding movement of the tool holders in opposite directions, and (4) power means for driving the shafts. Selectively adjustable deflection controlling means is provided for controlling deflection of the tool holders during a pressure forming operation.

3,793,867
APPARATUS FOR CONTINUOUSLY QUENCHING A HEATED METAL PLATE

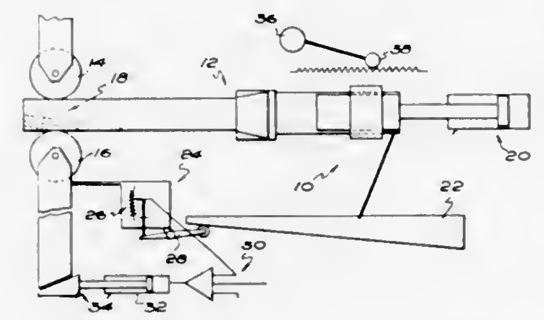
Franklin C. Safford, c/o Drever Company, Bethayres, Huntingdon Valley, Pa. 19006
Continuation-in-part of Ser. No. 182,724, Sept. 22, 1971. This application June 1, 1972, Ser. No. 258,722
Int. Cl. B21b *27/10, 45/02*
U.S. Cl. 72—201 **9 Claims**



An apparatus for continuously quenching a heated metal plate moving and restrained in a plane. A pair of quench headers are positioned above and below the plate each having a slot through which quench fluid is directed at an angle in the direction of plate movement. Beyond the impingement of the quench fluid on the plate are a pair of sral grooved rollers positioned and spaced apart engaging the top and bottom surfaces of the metal plate.

3,793,868
TAPER-ROLLING OF METAL

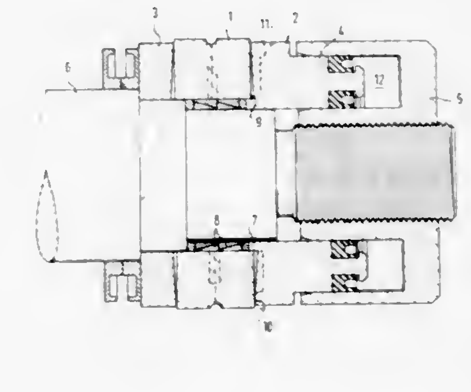
Alexander Ian Wilson, Sheffield, England, assignor to The Hille Engineering Company Limited, Sheffield, England
Filed Sept. 20, 1972, Ser. No. 290,657
Claims priority, application Great Britain, Sept. 24, 1971, 44745/71
Int. Cl. B21b *1/42*
U.S. Cl. 72—226 **10 Claims**



A method of taper rolling for producing leaf springs and the like, including the step of reducing the width of the deformable blank, between a pair of auxiliary rolls, to a width somewhat less than the required final width so that during a final "pass" between a pair of main rolls the blank returns to the required final width as it is brought to the required taper form.

3,793,869
ROLLING DEFORMATION OF WIRES AND SIMILAR ELONGATED ELEMENTS

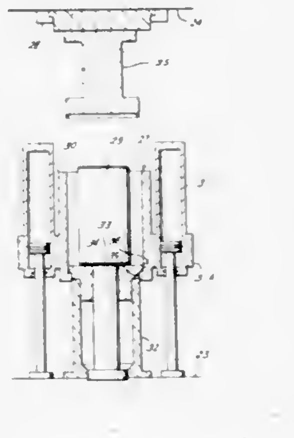
Walter Hufnagl, Lommelstrasse 9, Munich-Solln, and Paul von Sigriz, Haus 55, Sachsenkam/Bezirk, Tolz, both of Germany
Filed Mar. 15, 1972, Ser. No. 234,835
Claims priority, application Germany, Mar. 17, 1971, 2112966
Int. Cl. B21b *27/02*
U.S. Cl. 72—236 **27 Claims**



A wire or similar elongated element of metallic material is advanced between at least one pressure roller and at least one counter-roller and is engaged with the pressure roller under pressure to be rollingly deformed; the pressure roller may be profiled to form ribs, grooves or the like on the wire. The pressure acting from the wire on the roller frequently reaches such a force that it tends to destroy the pressure roller, and in accordance with the invention a counter-force is exerted upon the roller, to compensate for the force acting on the same from the wire so as to prevent its destruction.

3,793,870
PRESS

Herbert Allen, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.
Filed Mar. 29, 1972, Ser. No. 239,207
Int. Cl. B21c *23/00*
U.S. Cl. 72—255 **6 Claims**



There is disclosed a press for use in forming tubing by piercing a billet and then shearing a portion from the end of the pierced hole.

3,793,871
BLANK HOLDER DEVICE

Charles M. Kinghorn, Moraga, Calif., assignor to Kaiser Alu-

3,793,873
METHOD OF HOT FORMING OF HOLLOW MUSHROOM TYPE METALLIC PARTS

Tokushige Iwata; Nobuyoshi Hojyo; Tokushi Ando, and Masao

3,793,875
METHOD AND APPARATUS FOR SENSING THE PRESENCE OF THREADS ON A SURFACE

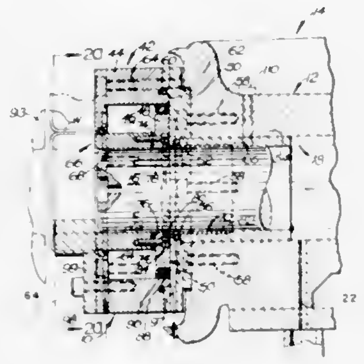
Walter J. Jurkiewicz, Philadelphia, Pa., assignor to

sensed. A leak is evidenced by development of a pressure differential across the first valve, and if the differential exceeds a predetermined value for a given time interval an alarm or reject circuit is actuated.

3,793,871

BLANK HOLDER DEVICE

Charles M. Kinghorn, Moraga, Calif., assignor to Kaiser Aluminum & Chemical Coorporation, Oakland, Calif.
Filed Feb. 27, 1973, Ser. No. 336,174
Int. Cl. B21d *24/04*
U.S. Cl. 72—349 11 Claims

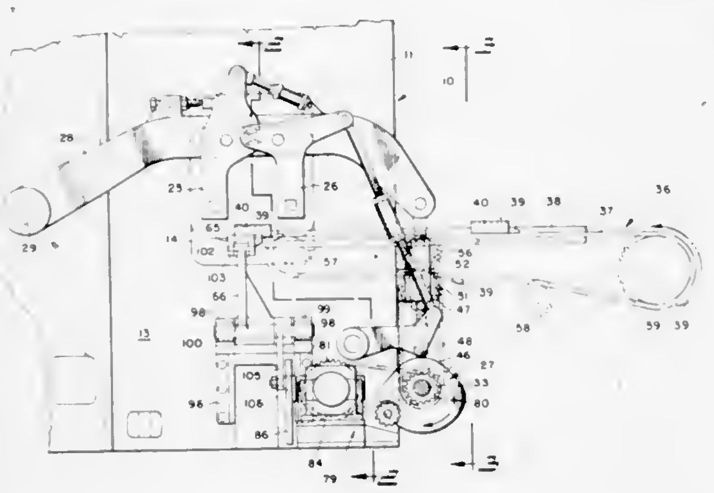


Improved multipiece cup holder sleeve device for deep drawing and ironing presses, wherein the various sections of the multipiece cup holder sleeve device are locked together in a unique fashion, while at the same time being so constructed and assembled as to require but the minimal fluid pressure, e.g. air pressure for activation and for exerting uniformly balanced and minimal working pressures against the bottoms of thin metallic cup-shaped workpieces prior to engagement by and movement of such a workpiece into the initial die of the press by the press ram or punch.

3,793,872

FORGING PRESS FEED MECHANISM

Warner C. Logan, Timberlake, Ohio, assignor to The Ajax Manufacturine Company, Cleveland, Ohio
Filed Sept. 2, 1971, Ser. No. 177,298
Int. Cl. B21d *43/10*
U.S. Cl. 72—422 17 Claims

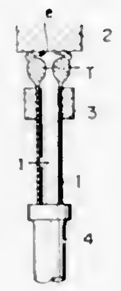


A vertical forging press feeding mechanism to transfer a heated billet from outside the press to the beam transfer pickup station including a conveyor for transporting heated billets and a stock loading arm for receiving the billets from said conveyor, the generally horizontally extending stock loading arm being mounted on two parallel levers adapted to be driven for oscillation in timed relationship to both the conveyor and the beam transfer mechanism, whereby the stock feed arm upon reception of the billet swings upwardly through a limited arcuate path to deliver such billet to the beam transfer pickup station and subsequently returns to a position adjacent the conveyor for repeating the feed cycle.

3,793,873

METHOD OF HOT FORMING OF HOLLOW MUSHROOM TYPE METALLIC PARTS

Tokushige Iwata; Nobuyoshi Hojyo; Tokushi Ando, and Masao Miwa, all of Kyoto, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha and Mitsubishi Jukogyo Kaisha, both of Tokyo, Japan
Filed June 1, 1972, Ser. No. 258,854
Claims priority, application Japan, June 10, 1971, 46-49548
Int. Cl. B21k *1/22*
U.S. Cl. 72—318 8 Claims

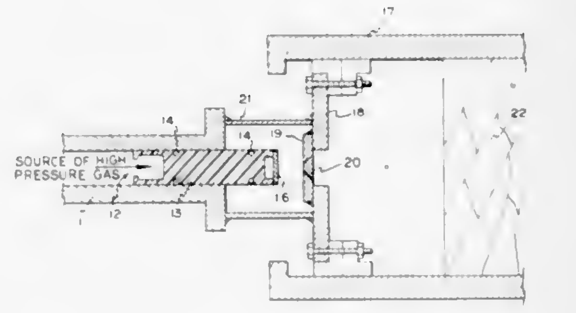


This invention relates to a method of hot forming from a blank pipe hollow mushroom type metallic parts having a hollow stem and a cap portion whose outer diameter is far larger than that of the blank pipe. By using a thin-walled pipe whose size corresponds to that of the hollow stem processing of the hollow stem can be omitted or minimized. More particularly, it relates to a method of hot forming hollow valves for engines or parts having a cap portion and hollow stem, the outer diameter of said cap portion being more than two or three times as large as that of the stem portion, by using a thin-walled pipe having a ratio between its outer diameter and its wall thickness of more than 3.5.

3,793,874

METHOD FOR DETERMINING FRACTURE TOUGHNESS USING SMALL SPECIMENS

Donald A. Shockey, Menlo Park, and Donald R. Curran, Palo Alto, both of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.
Filed Aug. 25, 1972, Ser. No. 283,785
Int. Cl. G01n *3/30*
U.S. Cl. 73—12 9 Claims

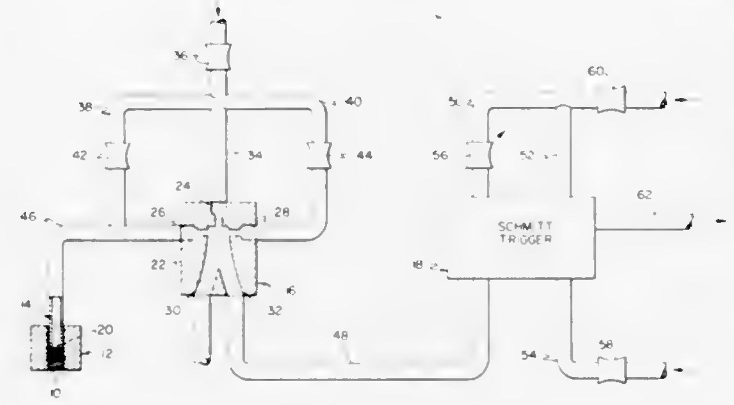


A method for determining the plane strain fracture toughness K_{Ic} of a material. A specimen of a material is impacted with a gas gun to produce flat plate impact and hence uniaxial strain. The specimen is recovered, sectioned and the size distribution of internal cracks determined. The specimen is then impacted again, sectioned, and the new crack size distribution determined. The old and new crack distributions are then compared to determine a_c, the critical crack half length of radius above which cracks grew and below which they did not. Knowing the tensile stress caused by the second impact and the critical crack half length, the fracture toughness is then calculated from the appropriate fracture mechanics expression.

3,793,875

METHOD AND APPARATUS FOR SENSING THE PRESENCE OF THREADS ON A SURFACE

Walter J. Jurkiewicz, Philadelphia, Pa., assignor to Robertshow Controls Company, Richmond, Va.
Filed Feb. 18, 1972, Ser. No. 227,538
Int. Cl. G01b *13/22*
U.S. Cl. 73—37.5 9 Claims



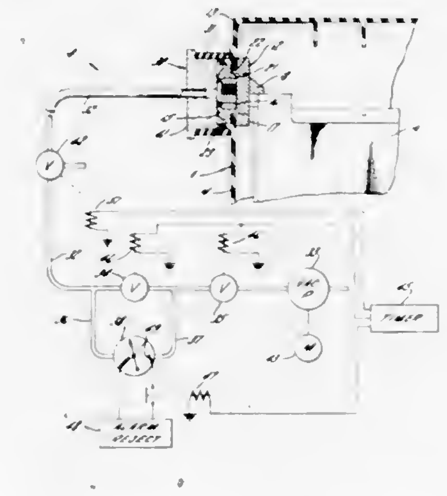
The method of determining the presence or absence of threads on a surface relies upon the difference in back pressure sensed by the probe of a fluidic system. Back pressure will be greater when the probe is inserted into an unthreaded bore or encompasses an unthreaded stud and will trigger an output indicating that no threads are present.

The apparatus for determining the presence or absence of threads on an object has no moving parts and includes a probe, a proportional center dump fluidic element connected to the probe and to a source of pressure, and a fluidic Schmitt trigger connected to amplify the output of the proportional element when the predetermined condition is sensed. Since the system operates on the difference in back pressure fed by the probe to the porportional element, it can be calibrated to generate an output signal indicating higher back pressure due to the absence of threads in a bore or on a stud.

3,793,876

BATTERY TERMINAL LEAK DETECTOR

Thomas L. Oswald, St. Paul, Minn., assignor to Gould Inc., Mendota Heights, Mich.
Filed Aug. 10, 1972, Ser. No. 279,377
Int. Cl. G01m *3/26*
U.S. Cl. 73—46 2 Claims

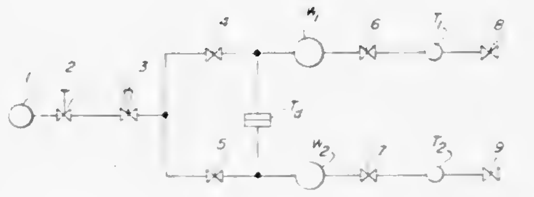


A leak detector including a head with a resilient lip that is fitted closely around a battery container terminal assembly that is connected by a line to a source of vacuum. A pair of valves in the lines are opened to evacuate the head and pull the lip into sealing engagement with the periphery of the terminal assembly, and then both valves are closed and the pressure differential, if any, across the valve closest to the head is sensed. A leak is evidenced by development of a pressure differential across the first valve, and if the differential exceeds a predetermined value for a given time interval an alarm or reject circuit is actuated.

3,793,877

AIR LEAKAGE DETECTOR, USING A DIRECT PRESSURE SYSTEM

Akira Fukuda, 2-22-8, Kasuga-cho, Nerima-ku, Tokyo, Japan
Continuation-in-part of Ser. No. 250,751, May 5, 1972. This application May 5, 1972, Ser. No. 250,752
Claims priority, application Japan, Nov. 12, 1971, 46-105636
Int. Cl. G01m *3/02*
U.S. Cl. 73—49.3 1 Claim

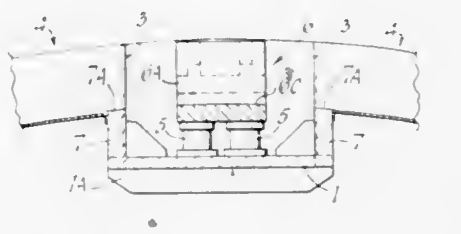


An object to be tested and a comparison object are placed in separate receptacles, the receptacles pressurized, isolated, and their pressure differential measured to detect small leaks in the test object. In order to determine larger leaks, a second pair of receptacles are provided which are later placed in communication with the first pair so that larger leaks may be detected. This application provides an additional pair of valves so that all receptacles are maintained at substantially the same pressure during the check for small leaks. The result of this arrangement is that the effect of small leaks in the valves between the two sets of receptacles is nulified.

3,793,878

LOAD SENSORS

John David Brunton, Denham, England, assignor to Taylor Woodrow Construction Limited, Southall, Middlesex, England
Filed Apr. 5, 1972, Ser. No. 241,210
Claims priority, application Great Britain, Apr. 7, 1971, 9000/71
Int. Cl. G01l *5/04*
U.S. Cl. 73—88.5 R 8 Claims



A load sensor that can be incorporated in a vessel that is to be circumferentially stressed by winding prestressing filaments or bands under tension around the vessel, the sensor being arranged to be mounted in a suitable cavity formed in the wall of the vessel at a zone such that the mouth of the cavity is bridged by prestressing filaments or bands when these are wound on to the vessel, and the sensor comprising a saddle member and the load sensing means serving, in use, to support the saddle member in the region of the mouth of the cavity such that prestressing filaments or bands bridging the mouth of the cavity apply loading to the saddle, which loading is sensed by the sensing means.

3,793,879

stantially 90° and a reverse force is applied to the apparatus to

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of the filaments in the yarn is detected by the needle point penetrating the yarn and as the needle is deflected through en-

3,793,885

DIAPHRGAM CONSTRUCTION FOR DIFFERENTIAL

3,793,879

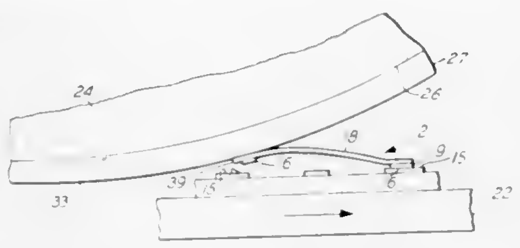
TESTING AND INCREASING BREAKDOWN VOLTAGE OF CROSSOVERS

William H. Fowler, Bethlehem, Pa., assignor to Western Electric Company Incorporated, New York, N.Y.

Filed June 19, 1972, Ser. No. 264,127

Int. Cl. G01n *3/08*

U.S. Cl. 73—95 **11 Claims**



Crossover conductors on thin film circuits are tested for mechanical weakness, and the voltage breakdown strength between the crossover conductors and underlying crossunder conductors is improved by using a resilient cylindrical surface to bring a tape coated with a pressure sensitive adhesive into rolling contact with the circuits. As the adhesively coated tape separates from the circuits, an adhesive force breaks mechanically weak crossover conductors from the circuits. The voltage breakdown strength of mechanically strong crossover conductors is improved by an increased separation between the crossover and the crossunder conductors.

3,793,880

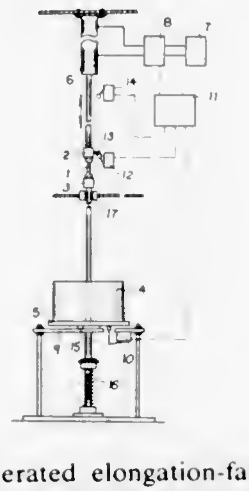
REPEATING ELONGATION-FATIGUE TESTING MACHINE OF ELASTIC MATERIALS UNDER A CONSTANT LOAD

Nagatoshi Sugi, Yokohama; Hiichiro Yoshikawa, Kamakura, and Hideo Isokawa, Kawasaki, all of Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

Filed Sept. 15, 1972, Ser. No. 289,310

Int. Cl. G01n *3/32*

U.S. Cl. 73—100 **4 Claims**



A hydraulically operated elongation-fatigue machine for testing elastic materials. The machine includes a hydraulic and mechanical reciprocating drive system actuated by limit switches and solenoid valve.

3,793,881

APPARATUS FOR TESTING HOLDING CAPACITY OF SHEET MATERIAL

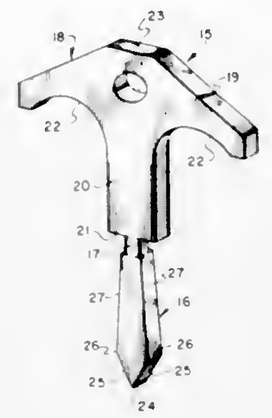
Robert L. Hallock, Jr., 48 Rockland Ave., Larchmont, N.Y. 10538

Filed Mar. 9, 1973, Ser. No. 339,789

Int. Cl. G01n *3/00*

U.S. Cl. 73—102 **4 Claims**

An apparatus for piercing sheet material and forming an elongated slot therein after which the apparatus is turned substantially 90° and a reverse force is applied to the apparatus to test the holding capacity of the sheet material. If the holding capacity exceeds a predetermined value, the apparatus tears the sheet material in a direction normal to the slot and the apparatus is removed from the material. If the holding capacity of the sheet material does not exceed the predetermined value, such sheet material is removed.



3,793,882

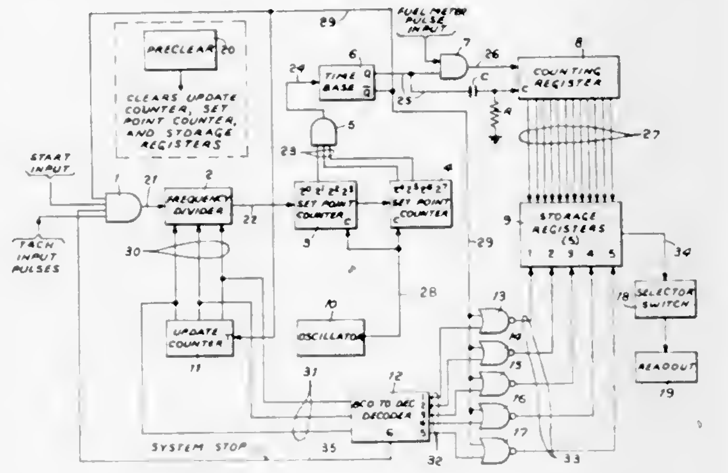
MEASURING FUEL CONSUMPTION

Eugene F. Holben, Haddonfield, N.J., assignor to Conoflow Corporation, Blenheim, N.J.

Filed Oct. 20, 1971, Ser. No. 190,838

Int. Cl. G01m *15/00*

U.S. Cl. 73—113 **9 Claims**



Apparatus and methods are described for measuring fuel consumption of an engine accelerating at constant load. The arrangements disclosed provide for detecting a plurality of predetermined engine rpm speeds and for generating a condition when each of said speeds is reached. In response to these conditions, the arrangements register and store an indication of the quantity of fuel per unit time being consumed at each of the plurality of speeds. The arrangements are controlled so that the measurements are sequentially made during acceleration of the engine, and so that the measurements can be selectably read out at a later time.

3,793,883

YARN ENTANGLEMENT TESTER

Arthur M. Goldfarb, Abington; James Litterio, Levittown, and John H. Roth, Langhorne, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

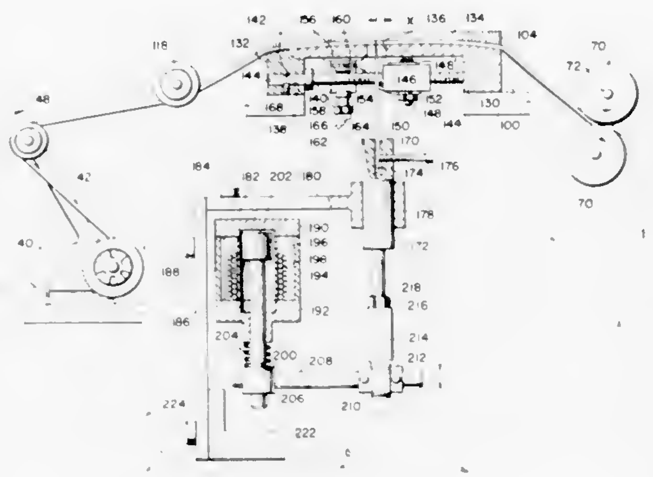
Filed Apr. 19, 1972, Ser. No. 245,340

Int. Cl. G01n *33/36*

U.S. Cl. 73—160 **5 Claims**

A yarn entanglement tester using a needle placed in intermingling obstruction of a traveling yarn. The intermingling

of the filaments in the yarn is detected by the needle point penetrating the yarn and as the needle is deflected through engagement of an entanglement, it makes a contact closure completing a resistive circuit which in turn activates a solenoid coil to retract its core, which carries the needle, thus removing the needle from the yarn. Simultaneously, a count is made on a totalizing counter and once the circuit is opened by the needle being fully retracted, a spring action reinserts the needle into the fiber. The operational cycle of the detector is on the order of milliseconds. The tester is composed of two main units; a control display and testing assembly and a control unit assembly containing counting circuit control relays.



3,793,884

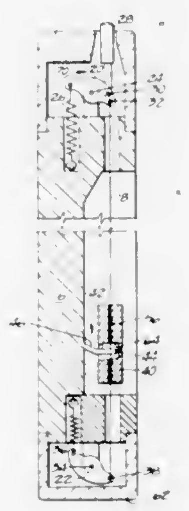
LIQUID LEVEL MEASURING DEVICE

Thomas A. Fling, 155 Jackson, No. 905, San Francisco, Calif. 94111, and William F. Fling, 351 S. Fuller Ave., Los Angeles, Calif. 90036

Filed Dec. 27, 1972, Ser. No. 318,744

Int. Cl. G01f *23/06*

U.S. Cl. 73—315 **2 Claims**



A liquid level measuring device is provided with a frame. A float member within the frame and a gripper member partially within the float member both surround a guide. Contact edges of the gripper member engage the guide. Means connected to the guide selectively disengage the gripper member from the guide.

3,793,885

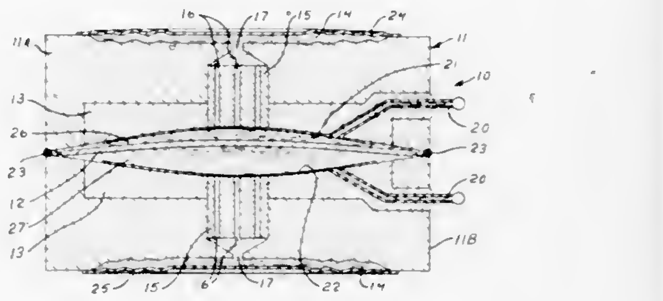
DIAPHRGAM CONSTRUCTION FOR DIFFERENTIAL PRESSURE TRANSDUCER

Roger L. Frick, Minneapolis, Minn., assignor to Rosemount Inc., Eden Prairie, Mich.

Filed Sept. 5, 1972, Ser. No. 286,287

Int. Cl. G01l *9/12*

U.S. Cl. 73—398 C **12 Claims**



A diaphragm construction for a differential pressure transducer wherein the diaphragm is deflected under pressure, and which has means around the periphery thereof to isolate the diaphragm stresses from the mounting portion of the diaphragm.

3,793,886

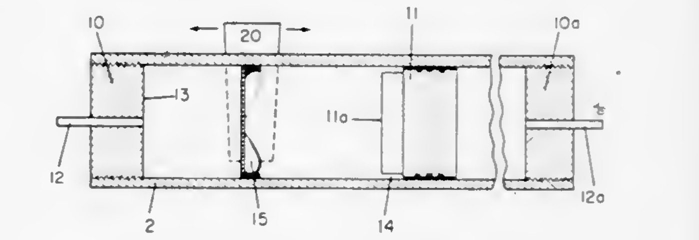
CELL FOR COLLECTING AND MIXING FLUIDS

Gary W. Rosenwald, Tulsa, Okla., assignor to Cities Service Oil Company, Tulsa, Okla.

Filed Aug. 2, 1972, Ser. No. 277,441

Int. Cl. G01n *1/10*

U.S. Cl. 73—421 R **7 Claims**



Apparatus is disclosed for homogeneously blending a crude mixture of fluids prior to analysis of the mixture for accurately determining the quantity of each component therein.

3,793,887

ISOKINETIC SAMPLING PROBE

Richard D. Anderson, Southgate; Nicolas A. Azelborn, Ypsilanti, and Wallace R. Wade, Farmington, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 5, 1972, Ser. No. 312,419

Int. Cl. G01r *1/24*

U.S. Cl. 73—421.5 R **10 Claims**

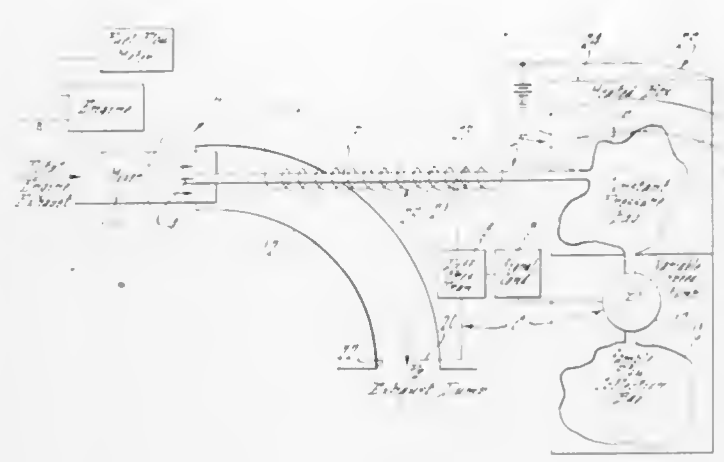
A sampling and handling system for the exhaust of an automotive engine whereby emissions flowing through a through-duct are mixed, extracted through an isokinetic

maintains the thermometer case and the ring member in

3,793,891

ROTARY CENTRIFUGAL SPEED-RESPONSIVE

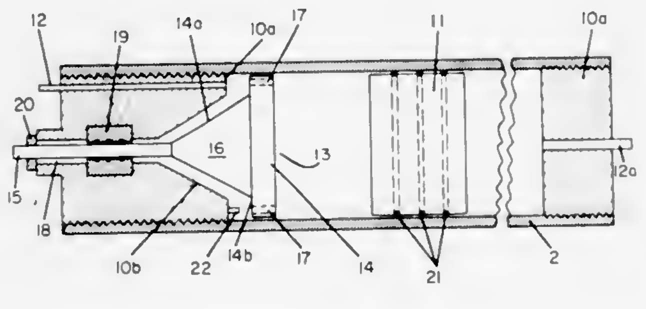
ing provided in the body of the brake assembly or cylinder by probe, and maintained heated until analysis of the sampled gases is completed. A variable speed pump means is utilized to



equalize the instantaneous pressure drop through the probe with the instantaneous pressure drop through the exhaust duct.

3,793,888
CELL FOR COLLECTING AND MIXING FLUIDS

Gary W. Rosenwald, Tulsa, Okla., assignor to Cities Service Oil Company, Tulsa, Okla.
Filed Aug. 2, 1972, Ser. No. 277,442
Int. Cl. G01n *1/14*
U.S. Cl. 73—421 R **8 Claims**

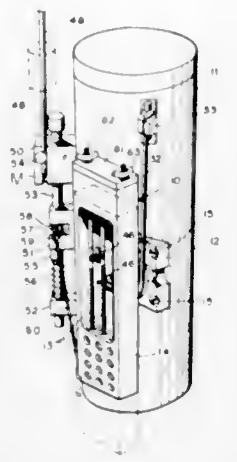


Apparatus for collecting a sample of fluid which includes a piston slidable in a cylinder and displacable by the sample. A mixing element is provided within the cylinder. The piston, mixing element and end wall of the cylinder are all so configured that virtually no dead space remains when the piston is slid toward the inlet end wall prior to a sample being taken.

3,793,889
THERMOMETER REVERSING APPARATUS

Shale J. Niskin, 5535 N. W. 7th Ave., Miami, Fla. 33127
Filed Feb. 7, 1973, Ser. No. 330,268
Int. Cl. G01n *1/10*
U.S. Cl. 73—425.4 R **5 Claims**

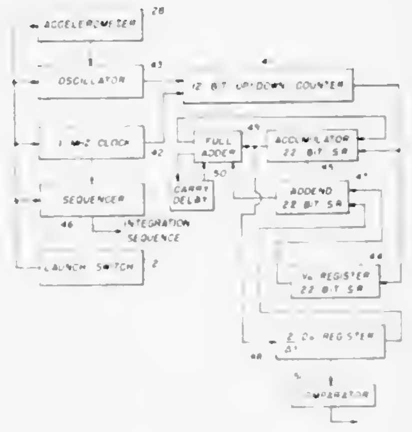
A thermometer reversing apparatus having a case for containing thermometers therein rotatably and releasably secured to a rotatable ring member that is mounted on a mounting member which in turn is mounted on a water sampler bottle. A pair of bolts which are secured to the ring member have heads received by enlarged openings in the thermometer case which upon sliding into smaller communicating openings locks the case to the ring member by means of a retractable locking pin that is mounted on the ring member and is slid into an opening in the thermometer case. A rotatable stop member which maintains the thermometer case and the ring member in locked position by preventing the sliding of the locking pin out



of the opening in the thermometer case may be rotated to permit release of the locking pin and the thermometer case to be removed from the rotatable ring member.

3,793,890
DIGITAL ELECTRONIC INTEGRATING ACCELEROMETER

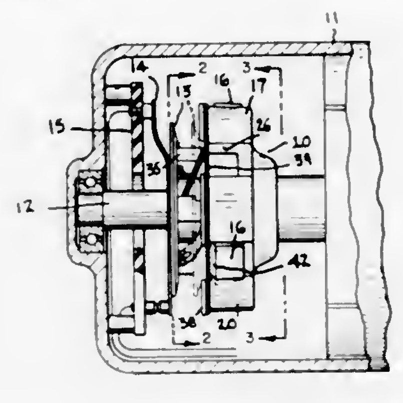
Matthew E. Anderson, Ontario, and Stephen L. Redmond, China Lake, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 22, 1972, Ser. No. 255,746
Int. Cl. G01p *15/08*
U.S. Cl. 73—490 **11 Claims**



An acceleration signal is integrated over a determinable time period to develop a digital count which is a function of velocity; that signal is then again integrated over an identical time period to produce a digital count as a function of the distance traveled during the acceleration periods. The distance signal is compared to a reference signal to determine whether a missile, for example, undergoing the detected acceleration has traveled a sufficient distance from its launching site,or vehicle such as an aircraft, to be safely armed for detonation. A digital distance signal equal to the reference signal affects arming of the missile by aligning an explosive train, for example, for detonation. First and second interlocks in the system are responsive to a ready-to-launch signal and an initial minimum acceleration signal, respectively, to ready the system for arming. The final step of arming is accomplished by a cam driven into arming position by simultaneously actuated drive members which are pivotably attached to the arming cam. If only one of the two drive members is actuated by a spurious signal, for example, the cam is pivotably displaced and locked into a non-armed position.

3,793,891
ROTARY CENTRIFUGAL SPEED-RESPONSIVE CONTROL DEVICE

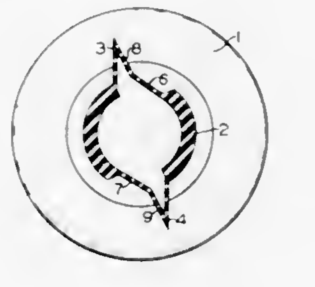
Joseph Greenhut, 3333 Warrenville Center Rd., Shaker Heights, Ohio 44122
Filed Sept. 11, 1972, Ser. No. 287,755
Int. Cl. H01h *35/10*
U.S. Cl. 73—538 **17 Claims**



A control-actuating centrifugal speed-responsive device for mounting on the shaft or other rotatable member of the device whose speed is to be monitored or controlled. The device includes a disk-shaped conical spring, preferably of the snap-action type, which is loosely retained or supported in the body of the device so as to have knife-edge pivotal movement in its operative sequence. Circumferentially spaced weights are secured to the peripheral portion of the spring to actuate the spring in response to centrifugal forces and cause retraction of a control-engaging shoe which is operatively secured to the spring and normally projected or extended by the spring in the static position of the device to either engage or disengage from the control being actuated. Recesses are provided in the body of the device for containing the weights for the purpose of limiting excessive excursion of the weights resulting from the centrifugal forces to which they are subjected. A stabilizer member or plate is secured to the shoe in position to underlie the spring and provide a stabilizing support for the spring when the shoe is in its spring-urged projected position. The axial spacing between the shoe and the stabilizer member is predetermined to effect pretensioning of the spring when it is in the static position, so that increased stability of the spring is achieved and operating characteristics of the device can be established with greater precision.

3,793,892
BELLOWS-TYPE DUST BOOT WITH EXPANDABLE SLEEVE

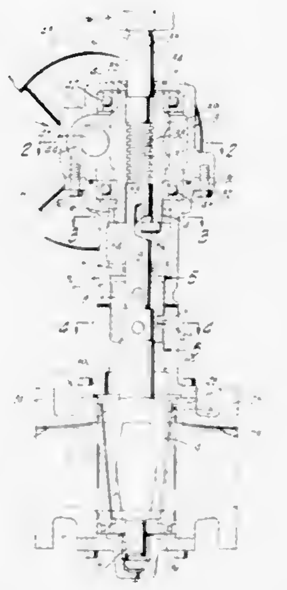
Hans-Peter Liebig, Bernhausen, and Gunter Umbach, Stuttgart, both of Germany, assignors to Westinghouse Bremsen-Und Apparatebau GmbH, Hannover, Germany
Filed Feb. 8, 1973, Ser. No. 330,584
Int. Cl. F16j *15/32*
U.S. Cl. 74—18.2 **9 Claims**



This invention relates to a bellows-type replaceable dust boot through which extends a brake rod of a tread brake assembly or a brake cylinder. One end of this bellows-type boot is secured in coaxial surrounding relation to a brake rod opening provided in the body of the brake assembly or cylinder by any suitable means. Since a clevis is carried at the exterior end of the brake or piston rod, in order to provide for sliding the other or smaller end of the dust boot over this clevis, the adjacent end of the bellows has integral therewith and extending therefrom a semi-split expandable sleeve for sealing engagement, when assembled and subsequent to the passing therethrough of the clevis, with the peripheral surface of the brake rod. This expandable sleeve comprises a pair of resilient semi-circular members the longitudinally extending adjacent edges of which are integrally connected by a resilient V-shaped foldable member. These V-shaped members are thus expandable to provide for the passage of the smaller end of the dust boot over the clevis. The thickness of one longitudinal edge of each semi-circular member is substantially less than the thickness of the remainder of the member to provide for receiving therein the corresponding resilient V-shaped foldable member which is retained therein by a suitable means such as, for example, a clamp in the form of a thin rectangular metallic strip disposed about the pair of semi-circular members with the opposite ends of this strip secured one to the other by any suitable means.

3,793,893
VALVE ACTUATING MEANS

Irving J. Heinen, Lakewood, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.
Filed July 10, 1972, Ser. No. 270,339
Int. Cl. F16h *21/00*
U.S. Cl. 74—22 **12 Claims**

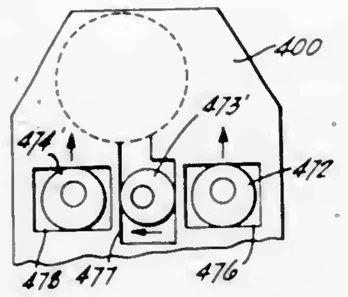


Actuating means for a valve, particularly of the plug type, which is movable between operative positions by successive modes of movement, one being axially and another rotationally, wherein a rotatably driven nut is in threaded engagement with a valve stem, a cam controlled device acting respectively at predetermined positions of the nut to permit relative movement of the nut so as to move the stem in the axial mode, and to connect the nut and stem for unitary rotation so as to move the stem in the rotational mode, guiding means being provided for the stem, so that it cannot be moved in a subsequent mode until the prior mode has first been completed.

3,793,894
MECHANICAL MECHANISM

Paul Greskovics, Manhattan Beach, Calif., assignor to Litton Business Systems, Inc., New York, N.Y.
Division of Ser. No. 50,063, June 26, 1970, Pat. No. 3,698,628.
This application Sept. 11, 1972, Ser. No. 270,601
Int. Cl. F16h *25/14, 27/08*
U.S. Cl. 74—55 **19 Claims**

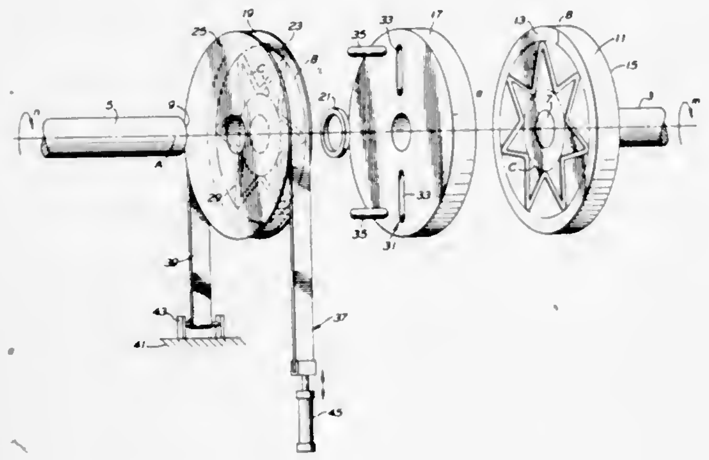
A cash register is provided with an accumulator and a display. On ADD cycles of the cash register, the accumulator is moved in one direction to engage the digit tape by a pair of eccentrics, and on TOTAL cycles, it is moved in another direction by another eccentric to transfer digital information



to the display. Control of the eccentrics is provided by an axially movable timing gear which provides a modified geneva-type mechanical movement.

3,793,895
POWER TRANSMITTING DEVICE

Herbert L. Wright, 190 N. Cleveland Ave., Mogadore, Ohio 44260
Filed May 18, 1973, Ser. No. 361,488
Int. Cl. F16h *21/12*
U.S. Cl. 74—63 **17 Claims**

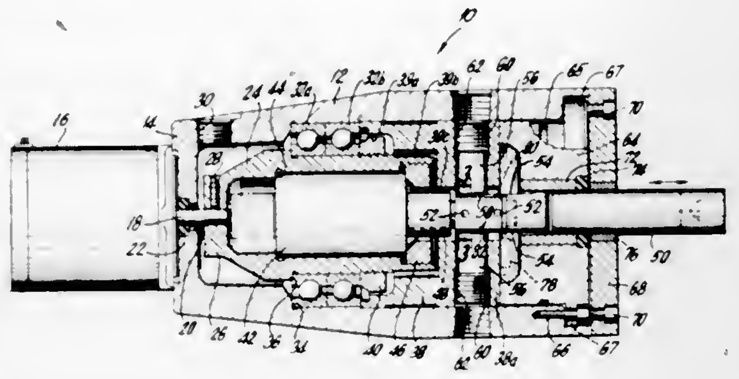


A power transmitting device in a small compact unit that produces angular velocity of the output shaft as a function of the angular velocity of the input shaft comprising axially aligned input and output shafts, a drive disk mounted on the input shaft, a driven disk mounted on the output shaft adjacent to the drive disk, and a control disk loosely mounted on the output shaft adjacent the driven disk, a set of astroite-shaped grooves formed in the drive and control disks, means spanning the driven disk and riding in the astroite-shaped grooves in the control disk and driven disk to join them together and provide for smooth, uninterrupted power transmission.

3,793,896
INCREMENTAL LINEAR POSITIONING APPARATUS

Robert B. Price, Delanson, and Richard N. Hosterman, Elnora, both of N.Y., assignors to Numicon, Inc., Delanson, N.Y.
Filed Sept. 6, 1972, Ser. No. 286,769
Int. Cl. F16h *27/02*
U.S. Cl. 74—89.15 **14 Claims**

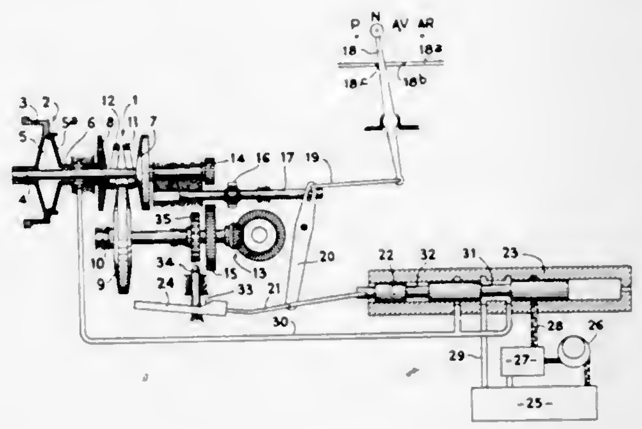
For use in the machine tool arts, an attachment is provided permitting the linear positioning in very small increments of either a workpiece or a machine element. A generally tubular outer housing supports a stepping motor having an output shaft that is coupled to an internally positioned motion changing device such as a ball-nut assembly. The rotary movement of the stepping motor is converted into small axial movements of the lead screw by the ball-nut assembly. Means within the housing constrain the output shaft of the ball-nut assembly to linear movement.



The aforementioned abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,793,897
TRANSMISSION ASSEMBLY IN PARTICULAR FOR A VEHICLE

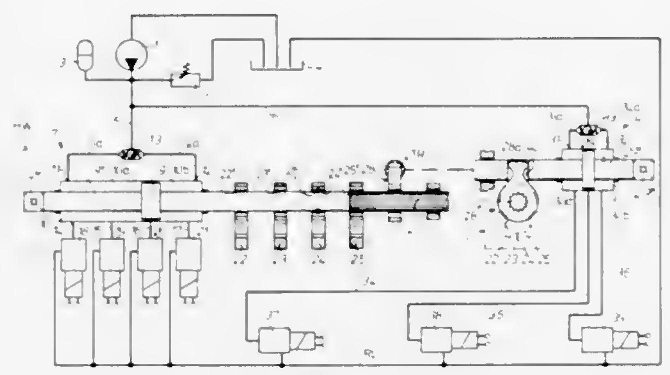
Armand Froumajou, Pontoise, France, assignor to Automobile Peugeot, Paris and Regie National Des Usines Renault, Billancourt, both of, France
Filed Sept. 29, 1972, Ser. No. 293,565
Claims priority, application France, Nov. 15, 1971, 71.41289
Int. Cl. F16h *15/08*
U.S. Cl. 74—199 **3 Claims**



Transmission assembly comprising a coupling device, a friction speed variator including a hydraulic actuating device and an input shaft driven by the coupling device and an output shaft, two gears respectively integral with the input shaft and output shaft, motion-reversing gear means capable of engaging the two gears for reverse speed operation of the transmission assembly, and control means comprising valve means controlling the hydraulic actuating device and a manually-controlled selector lever for shifting the motion-reversing gear means and shifting the valve. The selector lever is capable of occupying at least three positions namely a neutral position, a forward speed position and reverse speed position and passes through an intermediate position between neutral position and reverse speed position in which intermediate position the valve brings the hydraulic actuating device into action.

3,793,898
GEAR SHIFTING ASSEMBLY FOR CHANGE-SPEED TRANSMISSIONS

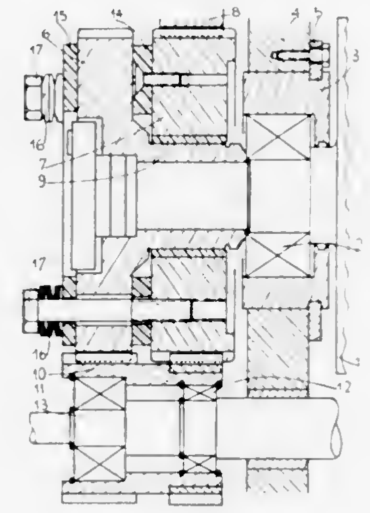
Helmut Espenschied, Ludwigsburg; Georg Rothfuss, Ditzingen, and Joseph Sauer, Schwieberdingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed May 8, 1972, Ser. No. 250,956
Claims priority, application Germany, May 18, 1971, 2124624
Int. Cl. F16h *5/06, 3/08*
U.S. Cl. 74—335 **37 Claims**



A gear shifting assembly for change-speed transmissions of the type having several shifting members which are actuatable to thereby set the transmission to a desired speed position employs two fluid-operated motors the first of which can move a displacing member into register with a selected shifting member and the second of which thereupon actuates the selected shifting member by way of the displacing member. The admission of a pressurized fluid to and the evacuation of fluid from the cylinders of the motors is regulated by a system of valves which are operated by pressurized fluid or by an electronic control unit.

3,793,899
APPARATUS FOR ANGULAR AND AXIAL REGULATION OF A PRINTING CYLINDER

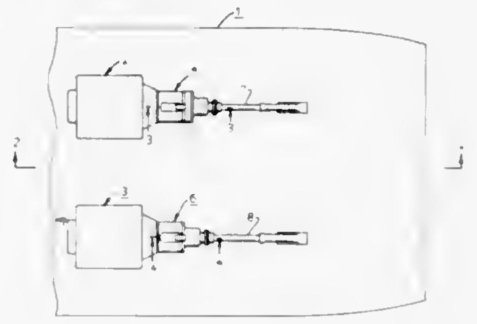
Louis Bourbonnaud, Nantes, France, assignor to Societe Creusot-Hovie, Paris, France
Filed Sept. 11, 1972, Ser. No. 288,070
Int. Cl. F16h *35/06, 55/18*
U.S. Cl. 74—397 **5 Claims**



A device for the angular and axial setting of a printing machine cylinder which is axially displaceable by a control means comprises a pair of coaxial cylindrical pinions whose teeth are set at different angles, one pinion being solid with the cylinder and the other pinion being freely mounted relative thereto, engaged by a pinion assembly of the machine and coupled to the one pinion by a sliding friction coupling, the two pinions being engaged by a freely axially adjustable double pinion which provides an angular control and a link with the axial control.

3,793,900
MARINE PROPULSION UNIT

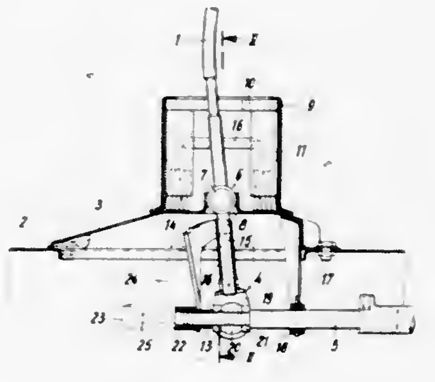
Carl I. Benson, Jr., Raynham, Mass., assignor to Paragon Gears, Incorporated, Taunton, Mass.
Filed Oct. 2, 1972, Ser. No. 294,288
Int. Cl. F16h *1/20, 57/02*
U.S. Cl. 74—413 **4 Claims**



One of a pair of twin propeller drive shafts has an internal ring gear in mesh with a pinion on a first power shaft; and the other propeller drive shaft has a duplicate internal ring gear and is driven by means of a duplicate pinion which is secured to a second power shaft and axially spaced from said duplicate ring gear, and by means of a reverse idler having one gear section in mesh with the duplicate pinion and another gear section in mesh with the duplicate ring gear.

3,793,901
SHIFTING MECHANISM FOR AUTOMATIC TRANSMISSIONS OF VEHICLES

Robert Muller, Korntal, and Karl Sommerer, Stuttgart-Zuffenhausen, both of Germany, assignors to Dr. Ing. h.c.F. Porsche KG, Stuttgart-Zuffenohusen, Germany
Filed Oct. 13, 1971, Ser. No. 188,875
Claims priority, application Germany, Oct. 14, 1970, 2050395
Int. Cl. G05g *9/12;* **F16h** *57/06*
U.S. Cl. 74—473 R **17 Claims**



A shifting mechanism for automatic change-speed transmissions of vehicles in which an actuating lever is connected with a shifting linkage and serves for the selection of the individual drive speeds by the use of a template of essentially Y-shape, within which the actuating lever is guided; the park and reverse speed positions are thereby arranged on opposite sides of the remaining shifting positions for the forward drive and the neutral position arranged therebetween.

3,793,902
DRIVE ARRANGEMENT

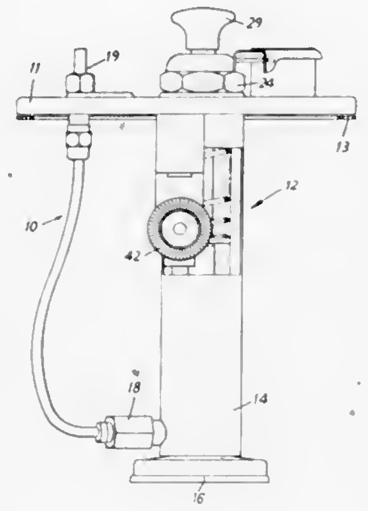
Max Edward Grantham, Plympton, Plymouth Devon, England, assignor to Tecalemit (Engineering) Limited, Devon, England

Filed Oct. 18, 1972, Ser. No. 298,610

Claims priority, application Great Britain, Oct. 18, 1971, 48445/71

Int. Cl. F16h *21/18*

U.S. Cl. 74—50 **2 Claims**



A drive arrangement for converting rotary motion to linear motion in which a rotating member co-operates with a co-operating member on a follower member, the follower moving along a line transverse to the axis of rotation of the rotating member and the co-operating member moving transversely both to the line and the axis of rotation.

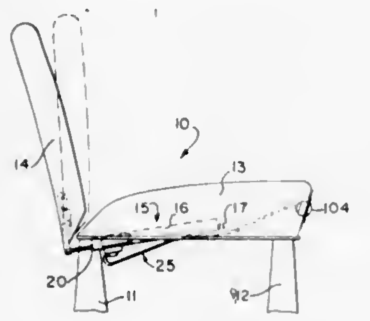
3,793,903
MECHANISM FOR SEAT ADJUSTMENT

Ronald C. Pellman, Trumbull, Conn., assignor to American Standard Products, Inc., Hartford, Conn.

Filed June 13, 1972, Ser. No. 262,372

Int. Cl. A47c *1/02;* **B60m** *1/06;* **G05g** *5/22*

U.S. Cl. 74—531 **33 Claims**



A mechanism for controlling the positioning and motion of two relatively movable parts, such as a pivoted chair back and a chair seat for aircraft, busses, etc., comprising a slide bar having a lock device for holding it in any adjusted position, the lock device being releasable by a manually actuated control. The lock device includes a one-way override, which enables the slide bar to be moved in response to a force applied by its connection to a seat back when the seat is urged towards upright position. A spring acts on the slide bar to move it and the seat to seat-upright position, and a pneumatic cylinder is connected to the slide bar to control its velocity, to avoid slapping the back of the seat's occupant by the seat back upon actuation of the control for the lock device. Adjustable limit stops are provided to determine the range of movement of the slide bar, and hence of the seat back. The mechanism is entirely mechanical, except for the noted pneumatic cylinder.

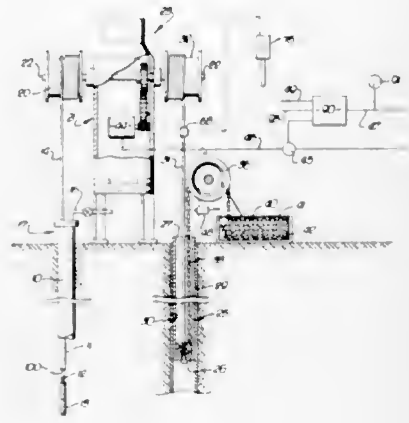
3,793,904
WELL PUMPING CONTROL

Donovan B. Grable, 2515 San Francisco Ave., Long Beach, Calif. 90806

Filed June 14, 1972, Ser. No. 262,605

Int. Cl. G05g *1/00*

U.S. Cl. 74—590 **15 Claims**



A vertically reciprocable well pump is adjustably counterbalanced at the well head by adding metallic weights to a holder moving up and down, or removing weights from the holder. The pump may comprise a walking beam to which an adjustable counter-balancing assembly is connected at the side of the beam pivot opposite the hourshead; and the counterbalancing assembly may extend underground.

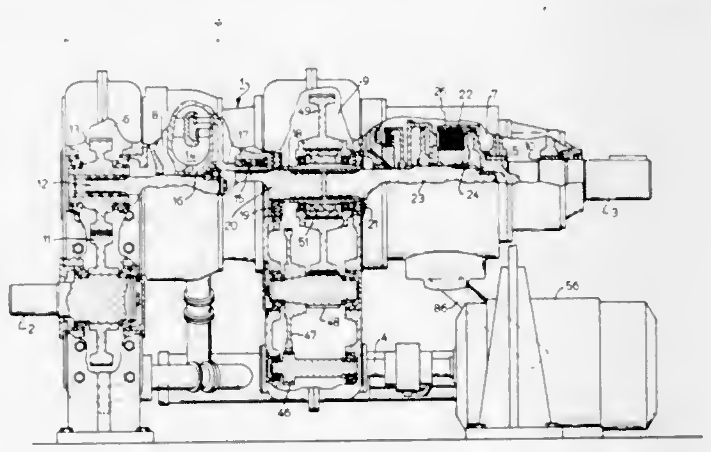
3,793,905
GAS TURBINE STARTING AND AUXILIARY TURNING MECHANISM

James B. Black, Roscoe, and Bradford K. Shull, Rockford, both of Ill., assignors to Twin Disc Incorporated, Racine, Wis.

Filed Aug. 14, 1972, Ser. No. 280,441

Int. Cl. F16h *37/06*

U.S. Cl. 74—661 **7 Claims**



A double input-single output power transmitting mechanism is utilized to accelerate the rotor of a gas turbine from standstill to initial operating speed, and to continue rotation of the rotor at slow speed during cooling after fuel shut-off. A friction clutch transmits both the starting torque and the slow speed turning torque to the turbine rotor.

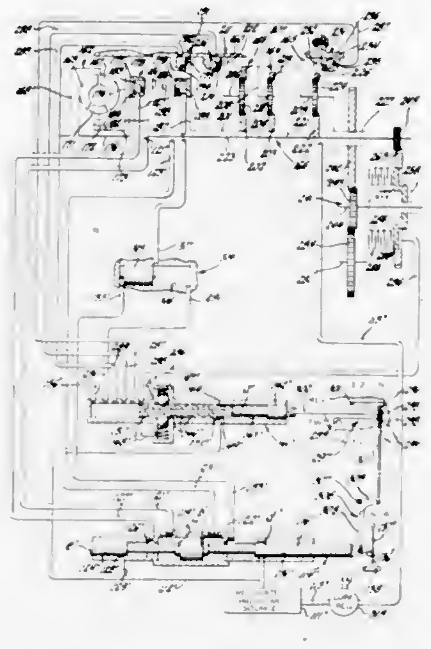
3,793,906
MAIN AND BYPASS GEAR TRAIN TRANSMISSION

Russell C. Williams, Pearce, Ariz., and Marion D. Smith, Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 10, 1972, Ser. No. 295,966

Int. Cl. F16h *3/02, 37/00, 37/06*

U.S. Cl. 74—745 **11 Claims**



A multiratio transmission having a main gear unit having multiratio gearing selectively providing a plurality of forward ratio gearing drives to a primary output shaft and driving in bypass drive relation to the ratio gearing a secondary output shaft and bypass ratio drop box gearing connecting the primary output shaft by continuously meshing primary gearing to the final drive shaft to provide the main gear unit ratio drives and selectively connecting the secondary output shaft by secondary low ratio bypass gearing to the final drive shaft to provide lowest ratio forward drive. One modification has a main gear unit having a forward and reverse planetary gear unit having a forward and reverse secondary output shaft and a multiratio gear unit connected in series selectively providing a plurality of forward and reverse ratio drives to a main gear unit primary output shaft and a drop box gear unit having continuously meshing gearing connecting the primary output shaft to a final drive shaft to provide a plurality of forward and reverse ratio drives and selectively connecting said secondary output shaft which is in bypass drive relation to said multiratio gear unit through a lower reduction ratio gearing to the final drive shaft to provide a lower forward and a lower reverse ratio drive. Another modification has a main gear unit having a pair of input clutches driving a compounded planetary gear unit selectively providing a plurality of forward and a plurality of reverse ratio drives to a primary output shaft and a secondary output shaft and drop box gearing having continuously meshing gearing connecting the primary output shaft to a final drive shaft to provide the forward and reverse ratio drives provided by the main gear unit and selectively connecting the secondary output in bypass relation with the main gearing at a lower ratio to provide a lower ratio forward drive and providing with the main gearing a lower reverse drive.

3,793,907
TORQUE TRANSMISSION DEVICE

Kenya Nakamura, Okazaki, and Nobuo Fukuma, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan

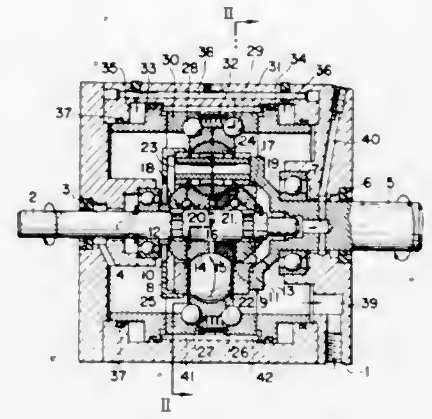
Filed Apr. 12, 1972, Ser. No. 243,379

Claims priority, application Japan, Apr. 19, 1971, 46/24478

Int. Cl. F16h *13/06, 15/50, 15/26*

U.S. Cl. 74—798 **9 Claims**

In a torque transmission device, an input shaft and an output shaft are disposed in axial alignment within a casing and combine with a pair of inner rings concentrically secured on the input shaft, an outer ring encircling the inner rings, and transmitting elements disposed between and in contact with the inner rings and the outer ring, to form a planetary mechanism. The transmitting elements are operatively engaged with the output shaft. By applying hydraulic pressure to the outer ring the frictional contact between the transmitting elements and the outer ring and inner rings can be varied. Therefore, a large rotating force can be transmitted at a reduced speed by the utilization of friction transmission. The inner rings are of the split type and are located on the input shaft between a pair of supporting plates. Notches are formed in the inner rings and the supporting plates and contain balls which facilitate the transmission of power between the input shaft and the transmitting elements. A servomechanism, located within the casing outwardly of the outer rings, provides the variation in the application of hydraulic pressure to the outer ring in accordance with the variation in speed or torque between the input and output shafts.



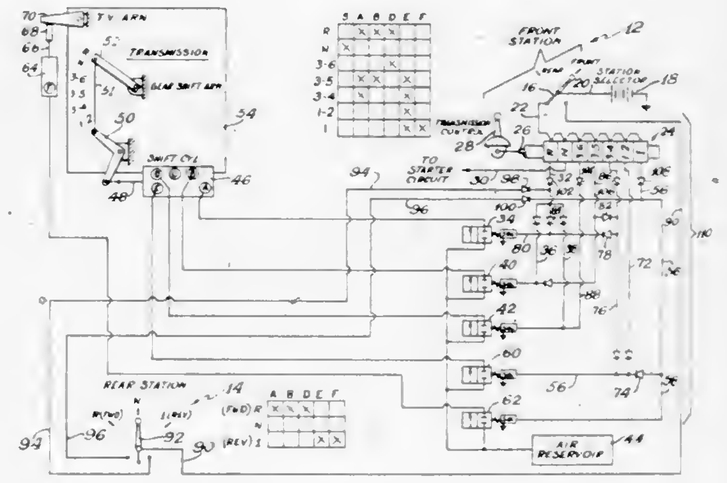
3,793,908
ELECTRIC PNEUMATIC SHIFT CONTROL

Robert G. Luft, Wildwood, and LeRoy G. Halvorson, Ingleside, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Apr. 13, 1972, Ser. No. 243,722

Int. Cl. B60k *21/00*

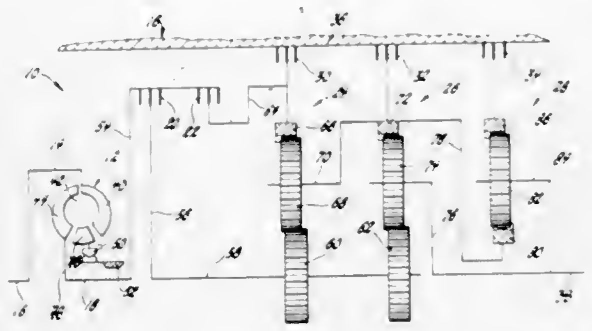
U.S. Cl. 74—870 **7 Claims**



A means for controlling a transmission from either one of a pair of operator stations. A multi-position cylinder conditions the transmission for a given direction of travel and speed range. Air pressure is directed to various chambers within the cylinder to achieve the desired position by a plurality of solenoid-operated valves. The valves are selectively energized by a circuit means, including a switch means located in each of the operator stations. A selector switch in one station selectively connects one of the switch means with a source of electrical energy.

3,793,909
TRANSMISSION

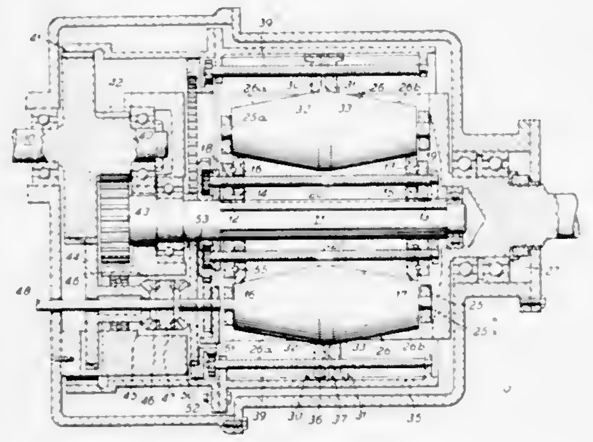
Stanley W. Herman, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Continuation of Ser. No. 883,203, Dec. 8, 1969, abandoned. This application Oct. 8, 1971, Ser. No. 187,816
Int. Cl. F16h *3/44, 57/10*
U.S. Cl. 74—759 **5 Claims**



A transmission providing three (3) forward and two (2) reverse speed ratios, including a torque converter unit, input and output shafts, three planetary gear sets, a brake operatively connected to the ring gear of each gear set, interconnecting carriers and connector members, and a pair of disc-type clutches, the driving discs of both clutches being actuated by the torque converter output, with the driven discs of one clutch being connected to an input shaft on which the sun gears of two of the gear sets are mounted, and the driven discs of the other clutch being connected to the ring gear of one of the two aforementioned gear sets, the various speed ratios being determined by selective engagement of the brakes and clutches.

3,793,910
VARIABLE SPEED FRICTION DRIVE

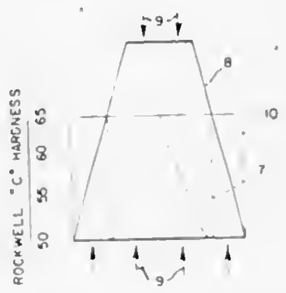
Algirdas L. Nasvytis, 10823 Magnolia, Cleveland, Ohio 44106
Filed Oct. 2, 1972, Ser. No. 294,016
Int. Cl. F16h *15/50, 37/06*
U.S. Cl. 74—796 **9 Claims**



A variable speed planetary transmission in which a plurality of drive components are constructed in the form of interfaced conical friction members mounted for rotation about parallel axes and axially and radially relatively manipulatable to provide variable ratio gearing members. A preferred embodiment embodies planet rollers of a double conical configuration in rolling contact with mating rollers of reverse conical configuration and in which axial control means are provided for manipulating the axial positions of the cooperating conical members to provide a variable speed connection between sun and ring gear members. A further embodiment of the invention provides a differential variable speed drive wherein multiconical epicyclic transmission elements are employed to provide a varying output smoothly infinitely adjustable from a high forward speed downwardly through zero output to reverse speed, all without requiring a variation in the speed of rotation to the input shaft of the transmission.

3,793,911
EXTRUSION DIE AND METHOD FOR MAKING THE SAME

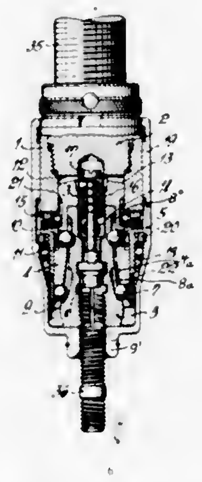
Francis Joseph Fuchs, Jr., and Peruvemba Swaminatha Venkatesan, both of Princeton, N.J., assignors to Western Electric Company Incorporated, New York, N.Y.
Division of Ser. No. 150,496, June 7, 1971. This application Oct. 2, 1972, Ser. No. 293,886
Int. Cl. B21k *5/20*
U.S. Cl. 76—107 R **5 Claims**



Rod-extruding die has toughness gradient increasing from the throat end to entrance end, and hardness or compressive strength gradient increasing from entrance end to throat end. Die may be cut (1) from non-uniformly work-hardened billet, (2) from non-uniformly-quenched heat-treatable billet, (3) from sintered billet produced by cofiring plural layers of sinterable powders having different post-sintering characteristics of toughness and hardness and arranged to provide toughness and hardness gradient in billet, (4) from billet produced by brazing plural elements having different characteristics of toughness and hardness and arranged to provide toughness and hardness gradient in billet. Die may also be formed by molding and compacting plural layers of sinterable powder material having different post-sintering toughness and compressive strength characteristics, in the form of the die, and cosintering to produce the die, the layers being arranged to provide a toughness and a hardness gradient in the die.

3,793,912
STUD DRIVER

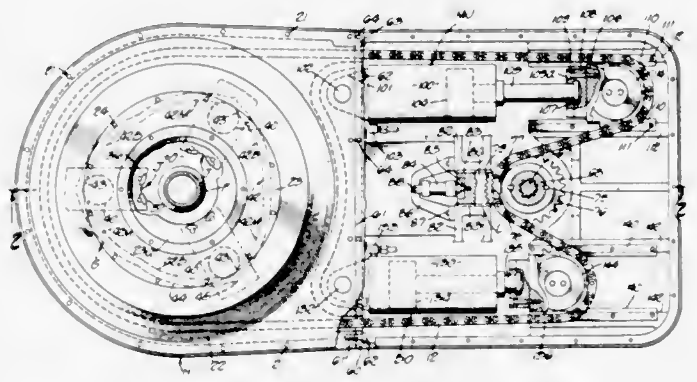
Otto Bilz, Vogelsangstr. 8, Nellingen, Germany
Filed July 8, 1971, Ser. No. 160,605
Claims priority, application Germany, Aug. 12, 1970, 7030226
Int. Cl. B25b *19/00*
U.S. Cl. 81—52.3 **22 Claims**



A stud driver of a collet type in which the internally threaded front ends of the collet jaws are already in a substantially closed position when one end of a stud, the other end of which is held in a nonrotating position, is inserted between the jaws by being automatically screwed therein for a certain distance by the rotation of the collet, whereupon the stud will be rotated by the collet for screwing its other end into a workpiece. When this other end has been screwed for a certain distance into the workpiece, the forward movement of the rotating collet shaft is stopped by a stop on the machine, and the collet jaws although further rotated by the shaft are separated from the latter insofar as the stud, while being further screwed for a certain distance into the workpiece, will draw the jaws out of a coupling on the shaft so that the further rotation of the jaws and thus also the screwing of the stud into the workpiece will then be immediately stopped. When the collet is then withdrawn by the shaft from the stud, the collet jaws will again close immediately. They will then again be rotatably connected to the shaft due to the axial pressure which is exerted by a new stud upon the closed ends of the jaws for starting to screw this stud between the jaws.

3,793,913
REVERSE STOP FOR POWER TONGS

Carl Alfred Wilms, La Habra, Calif., assignor to Byron Jackson, Inc., Long Beach, Calif.
Continuation-in-part of Ser. No. 134,661, April 16, 1971, Pat. No. 3,706,243. This application Jan. 7, 1972, Ser. No. 216,085The portion of the term of this patent subsequent to Dec. 19, 1989, has been disclaimed.
Int. Cl. B25b *17/00*
U.S. Cl. 81—57.18 **3 Claims**

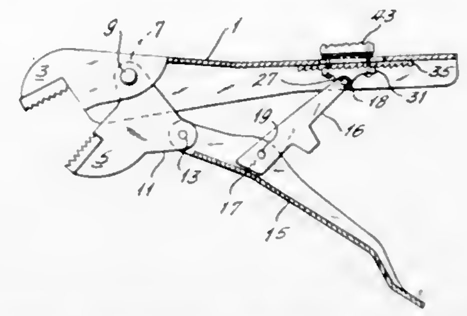


A power tong for making up and breaking out pipe joints, in which pipe gripping jaws are actuated to pipe gripping positions from retracted positions responsive to relative rotation in either direction between a jaw carrying member and an actuator member, and the jaws are retracted upon reverse relative rotation in the opposite direction and reverse stop means are provided to prevent reverse relative rotation of said members past the positions at which the jaws are retracted. The reverse stop means includes alternately postionable stops carried by one of the members engageable with alternately spaced stops on the other member to limit reverse relative rotation.

3,793,914
VISE GRIP PLIERS

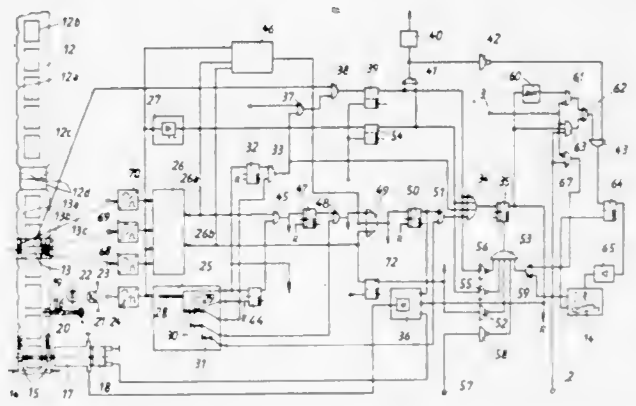
Hosea W. Helms, 7750 Bartold Apt. 87, Maplewood, Mo. 63143
Filed June 14, 1972, Ser. No. 262,789
Int. Cl. B26b *7/12*
U.S. Cl. 81—378 **10 Claims**

Vise grip pliers are provided with an improved quick-action adjustment for the operating handle fulcrum bar, consisting of a transversely serrated rack on an inner surface of the jaw handle member, a mating serrated block pivotally connected to the end of the fulcrum bar and movable lengthwise of the serrated bar, a control tab on the outside of the handle member rigidly connected through the handle member to the serrated block, and a spring biasing the control tab and the serrated block outwardly, the latter into position-fixing engagement with the serrated bar, disengagement for movement lengthwise of the bar being effected by thumb pressure on the tab and sliding it lengthwise of the handle to a selected position. A fine adjustment is provided by movably mounting the rack on the handle member and controlling the movement of the rack with an eccentric cam.



3,793,915
FILM CUTTING APPARATUS

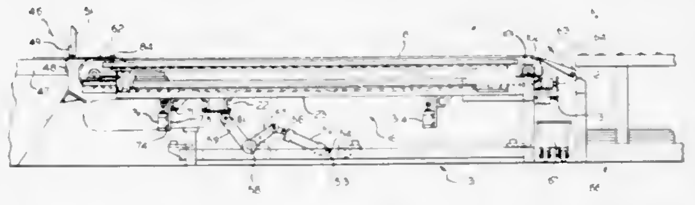
Friedrich Hujer, Grunwald, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Sept. 28, 1971, Ser. No. 184,497
Claims priority, application Germany, Sept. 30, 1970, 2048094
Int. Cl. B26d *5/24*
U.S. Cl. 83—62 **28 Claims**



Film has first markings indicating properly exposed negatives and second markings indicating glued sections. Length of film following a previous cut is measured; following a predetermined length, passage of next first marking past a scanner causes activation of cutting means along frame line. Film transport then restarted. Sensing of second marking also initiates cutting along frame line, but no subsequent film transport.

3,793,916
FEEDBACK CONVEYOR SYSTEM

David J. Jarman, Box 181 R.R. No. 3, Aurora, Ind. 47001
Filed July 26, 1972, Ser. No. 275,316
Int. Cl. B26d *7/06, 7/16*
U.S. Cl. 83—155 **22 Claims**



Material handling conveyor systems for use in cooperation with shear equipment. The conveyor system can be controlled to feedback or return sheared portions of the plates to the shear operator for further shearing operations.

3,793,917

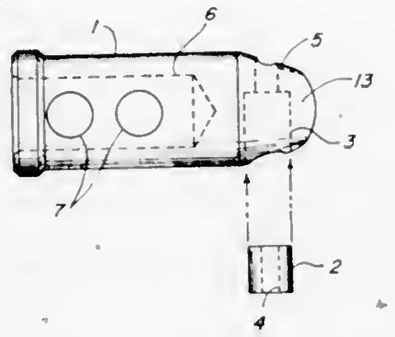
ROTARY FILAMENT CUTTER

Thomas A. Flower, 109 Lakeview Ave., Colonial Heights, Va. 23834, and Noel York Rothmayer, 2 Spring Garden Dr., Madison, N.J. 07940

Continuation-in-part of Ser. No. 91,802, Nov. 23, 1970, abandoned. This application Nov. 13, 1972, Ser. No. 306,226

Int. Cl. B23d *31/00, 35/00*

U.S. Cl. 83—199 **1 Claim**



A rotary filament cutter is disclosed having a rotating cylindrical cutting element within a stationary cylindrical cutting housing. These two elements, in conjunction with driving means, cut filaments moving in any type of filament string-up process.

3,793,918

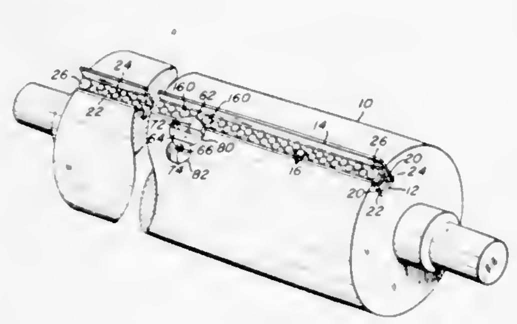
CROSS PERFORATING BLADE LOCK

Harold W. Huffman, 2100 John Gary Rd., Fairfield, Ohio 45011

Filed Oct. 12, 1971, Ser. No. 188,080

Int. Cl. B26d *1/12*

U.S. Cl. 83—698 **38 Claims**



The perforating or cutting blade of the blade cylinder of a press, collator, or similar machine, is locked in a blade channel by means of a multiplicity of clamp members in the form of floating rollers which, by means of a single clamp actuator, are caused to impinge at a plurality of locations along the length of the blade for quickly, accurately, and uniformly clamping the blade in locked, operative position within the blade channel.

3,793,919

CUTTING DEVICE, PARTICULARLY FOR POSITIONING FASTENERS

Roger M. Lefebvre, Saint-Ame, France, assignor to Societe Francaise D'Agrafage Industriel, Vosges, France

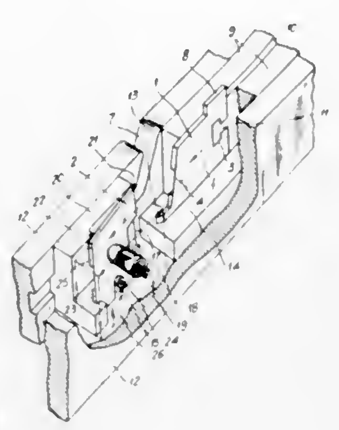
Filed Dec. 17, 1971, Ser. No. 209,084

Claims priority, application France, Dec. 31, 1970, 70.47546

Int. Cl. B23d *35/00*

U.S. Cl. 83—583 **4 Claims**

A cutting device for use in a fastener handling machine. The device comprises a cutter blade and a counter blade each having respective cutting surfaces which interact when the cutter blade is moved towards the counter blade to produce a shearing action. The counter blade is spring urged against a fixed support and is movable laterally with respect to the direction of movement of the cutter blade and against the spring force by an inclined face on the cutter whereby the cutting edge of the counter blade is guided across the cutting edge of the cutter blade to produce a shearing action.



3,793,920

PROCESS FOR MAKING A CONDUCTIVE-MIX ELECTRICAL INITIATOR

Carl P. Sheran, Bloomingdale, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 16, 1972, Ser. No. 307,002

Int. Cl. C06b *21/02*

U.S. Cl. 86—1 R **15 Claims**

A conductive-mix electrical initiator is made more energy-sensitive by applying to at least one electrode surface therein which is to be adjacent the conductive ignition charge, e.g., the end surface of the electrode seated within the initiator body, a coating which increases the resistance of the initiator. Preferably, the coating is applied by chemical or electrochemical conversion coating of the surface, e.g., by acid chromate treatment or a light anodic oxidation.

3,793,921

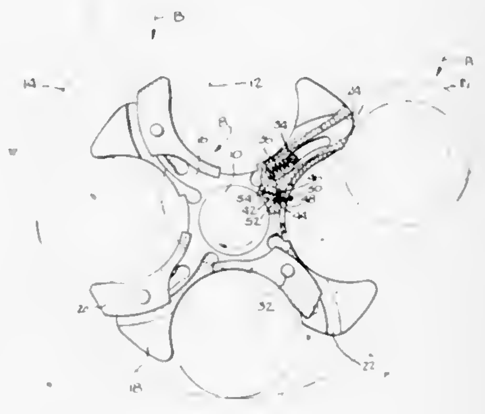
SPROCKET ASSEMBLY

Otto H. Meier, Shelburne, and Douglas P. Tassie, St. George, both of Vt., assignors to General Electric Company, Burlington, Vt.

Filed Oct. 12, 1972, Ser. No. 296,799

Int. Cl. F41d *9/02*

U.S. Cl. 89—33 CA **16 Claims**



A sprocket assembly has a sliding cusp on each tooth to increase and decrease the spacing between adjacent teeth. The position of the cusp is controlled by the round and the angular orientation of the tooth.

3,793,922

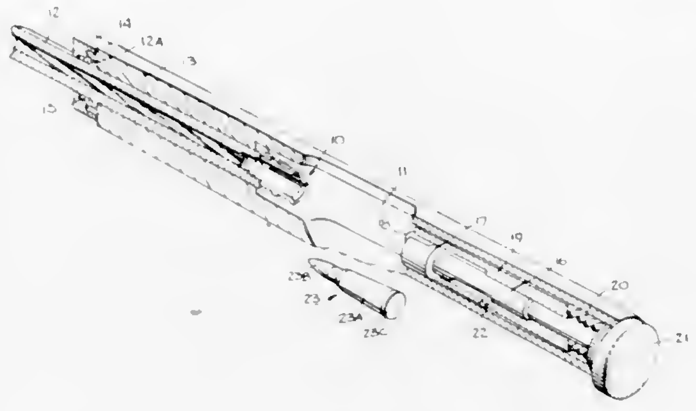
COLLET-CHAMBER RETARDING SYSTEM FOR WEAPONS

Robert H. Angell, 514 E. 88th St., New York, N.Y. 10028, and Robert S. Frielich, 396 Broome St., New York, N.Y. 10013

Filed Jan. 22, 1973, Ser. No. 325,306

Int. Cl. F41d *3/00;* **F41c** *21/12;* **F41f** *17/00*

U.S. Cl. 89—180 **9 Claims**



A weapon whose barrel terminates in cartridge-receiving chamber which, in the firing state, is surrounded by the sleeve of a breech-closing mechanism. The chamber is longitudinally slotted to define a set of flexible fingers extending rearwardly from an unslotted forward section. When the cartridge is fired, the resultant high gas pressure therein causes momentary dilation of the casing, which then presses outwardly against the forward section of the chamber and the set of fingers in the rear section threof. The pressure exerted by the casing against the forward section of the chamber produces a gas seal preventing the escape of gas into the breech of the weapon, while the pressure exerted against the set of fingers causes deflection thereof, whereby the fingers or clips associated therewith frictionally engage the inner surface of the surrounding sleeve to lock the breech-closing mechanism and to retard the release thereof until the gas pressure has diminished to a safe level, permitting the casing to contract to assume its original state.

3,793,923

RADIAL PISTON HYDRAULIC MACHINES

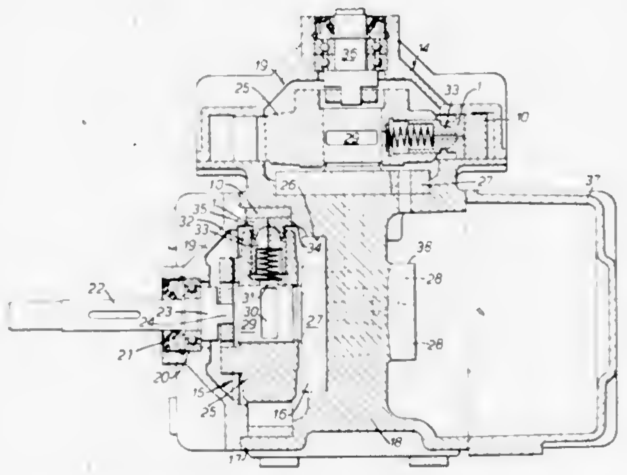
John Cambridge Smith, Cheltenham, Great Britain, assignor to Hydro-Mite Limited, Gloucestershire, Great Britain

Filed Dec. 3, 1971, Ser. No. 204,643

Claims priority, application Great Britain, Dec. 5, 1970, 57878/70

Int. Cl. F01b *13/06*

U.S. Cl. 91—488 **4 Claims**



A slipper and cam track for a radial piston hydraulic machine have engaging generally part-cylindrical and cylindrical surfaces respectively. The engaging slipper surface is relieved over its central area to give clearance between itself and the cam track, either by being of greater radius of curvature than the cam track or having a flat. The slipper bearing surface is also formed with oil pressure and relief grooving.

3,793,924

FLUID-TRAVERSED FLOW PISTON UNIT

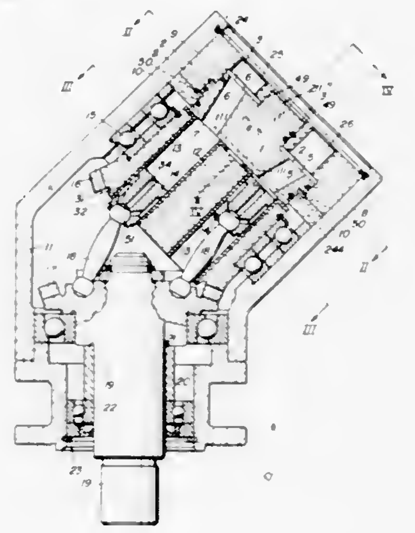
Karl Eickmann, 2420 Isshiki Hayama-machi, Kanagawa-ken, Japan

Filed Oct. 15, 1971, Ser. No. 189,598

Claims priority, application Austria, Oct. 22, 1970, 1954/70

Int. Cl. F01b *13/04*

U.S. Cl. 91—487 **3 Claims**



Fluid-traversed flow piston unit, having a housing and pistons for moving in cylinders of an axially mounted rotor and having a control body for controlling the induction with fluid of the cylinders. A coupling body is mounted in a recess of the housing or of a housing part for axial movement. The coupling body is provided with shoulders and at least one eccentric extension so that at least one radial eccentrically extending fluid pressure chamber is formed between the shoulders and a wall of the recess of the housing. In this manner the fluid in the fluid pressure chamber presses the coupling body against the rotor.

3,793,925

FLUID PRESSURE-OPERATED PISTON/CYLINDER UNITS

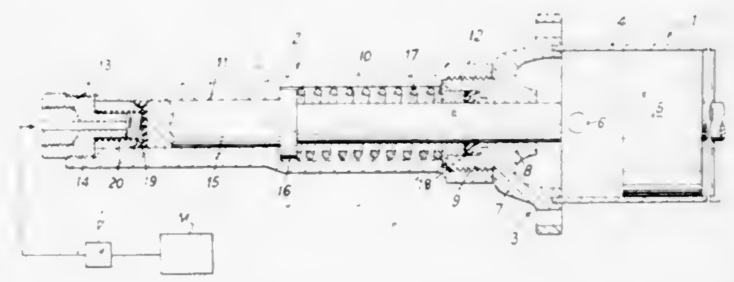
Stanley Collin, Fleckney, England, assignor to Livingston and Doughty Limited, Leicestershire, England

Filed June 15, 1972, Ser. No. 262,968

Claims priority, application Great Britain, June 15, 1971, 27906/71

Int. Cl. F01b *31/14;* **F15b** *15/24*

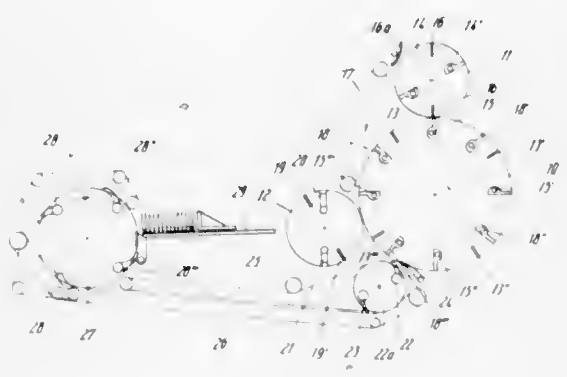
U.S. Cl. 92—13.1 **3 Claims**



The stroke of the piston of a pneumatic piston/cylinder unit is controlled by an auxiliary hydraulic piston/cylinder unit fitted to the base end of the main unit. Auxiliary piston is projected into main cylinder under static hydraulic pressure so that base position of main piston is determined by abutment with auxiliary piston. Adjustment of static pressure varies base position and hence stroke of main piston.

3,793,926
APPARATUS FOR FOLDING OF ENVELOPE BLANKS

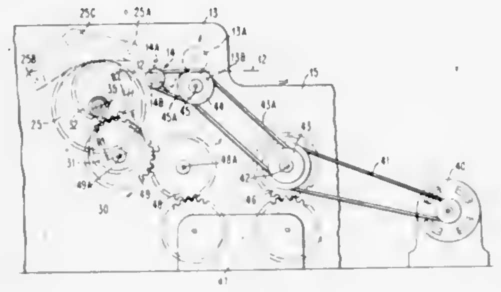
Karl-Heinz Honsel, Heidelberger Weg 15, Bielefeld, Germany
Filed Feb. 22, 1972, Ser. No. 228,398
Claims priority, application Germany, Feb. 23, 1971, 2108484
Int. Cl. B31b *21/00*
U.S. Cl. 93—62 **13 Claims**



A plurality of folding stations are provided, corresponding in number to the plurality of folding operations to be carried out on a blank and including an initial station and a terminal station. Rotary folding grippers and folding blades are provided on the respective folding stations and drive means serves for rotating the grippers and blades of the initial folding station so as to effect folding of a blank in one direction, and the grippers and blades of all other folding stations so as to effect folding of the blank in an opposite direction. Removing devices remove folded blanks from the terminal folding station.

3,793,927
BAG MAKING MACHINE

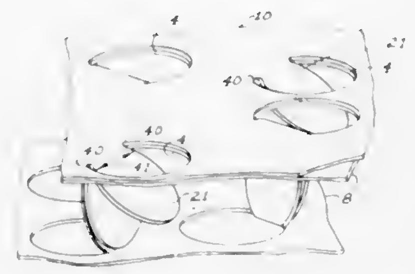
Albert Emond, 41 Windward Dr., Newburgh, N.Y. 12550
Filed May 18, 1972, Ser. No. 254,758
Int. Cl. B31b *1/16, 1/64*
U.S. Cl. 93—33 H **35 Claims**



This patent discloses apparatus for forming bags from a web of heat sealable stock, such as thermoplastic, the apparatus including feed rolls for feeding, at a constant predetermined rate, the web of stock over a sealing cylinder. The sealing cylinder includes a combination reciprocating knife and sealing member for severing the web transversely of its length while sealing areas of the plys along both of the severed edges. By driving the sealing cylinder with eliptical gears and at the proper timed relation, the velocity of the web across the cylinder is reduced, relative to the web feed, during engagement of the web with the sealing and severing knife, the rotation of the cylinder being faster during the remaining portion of one revolution in which the sealing cylinder is not effecting a seal or severance of the web.

3,793,928
PAPER BOARD CONNECTING METHOD

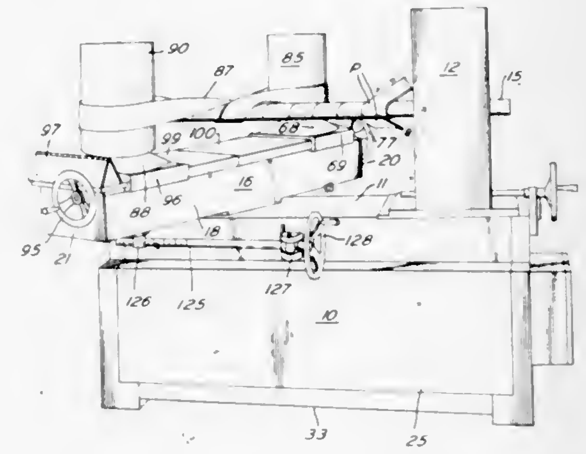
William A. Wootten, 425 Via Carta, Palos Verdes Estates, Calif. 90274
Filed Sept. 7, 1971, Ser. No. 178,183
Int. Cl. B31f *5/02*
U.S. Cl. 93—1.1 **12 Claims**



The combining of two flat fiber or paper board panels with partial perforations is effected by the employment of similarly perforated auxiliary sheets or tapes, the partial perforation areas or tabs of which are deflected or bent into the perforations of two or more panels to make a connection between them.

3,793,929
SPIRAL TUBE WINDING MACHINE

Joseph Snyderman, Philadelphia, Pa., assignor to John Eppler Machine Works, Inc., Philadelphia, Pa.
Filed Sept. 12, 1972, Ser. No. 288,370
Int. Cl. B31c *3/00*
U.S. Cl. 93—80 **7 Claims**

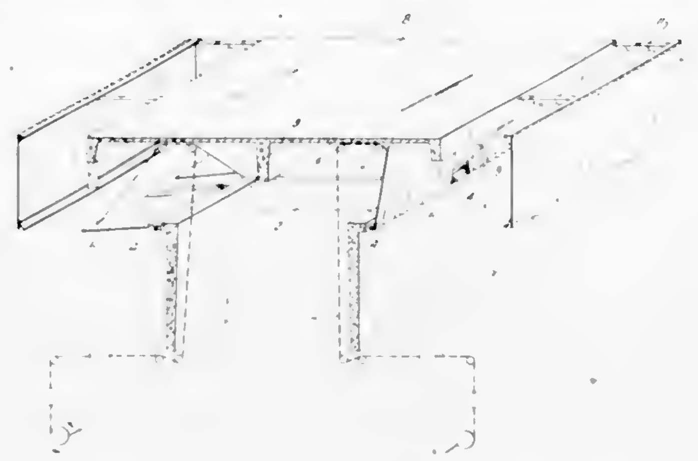


A spiral tube winding machine is disclosed having an improved heavy duty drive for the drum cylinders which through a belt winds a spiral tube onto a mandrel. The positions of the drum cylinders are adjustable to accommodate different sizes of mandrels and tubes and the driving mechanism accommodates itself to such adjustment without the necessity for removing and replacing gears in the driving mechanism.

3,793,930
ADJUSTABLE DEFLECTOR MADE OF PREFABRICATED REINFORCED CONCRETE MEMBERS

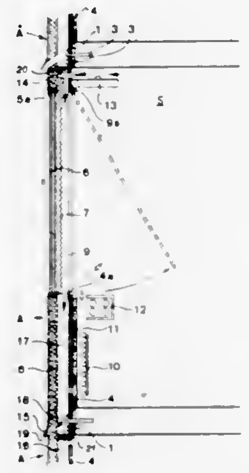
Petre B. Constantinescu; Stefan Barthon; Constantin Dumitrescu, and Mihail Alexandrescu, all of Bucarest, Romania, assignors to Institutul de Proiectari Al Industriei USOARE, Bucharest, Romania
Filed Mar. 9, 1972, Ser. No. 233,163
Int. Cl. F24f *7/02*
U.S. Cl. 98—42 **3 Claims**

A vent for an industrial building has a support structure case from reinforced concrete and having a pair of vertical beams provided with swingable covers along the upper edges thereof. A deflector plate is spaced above the beams and overhangs the latter while vertical wind screens are provided with spacing from the outer edges of the deflector slab and are secured thereto.



3,793,931
WINDOW FACADE ELEMENT

Ernst Wild, Im Gehren 8712, Stafa, Switzerland
Filed Aug. 21, 1972, Ser. No. 282,549
Claims priority, application Switzerland, Aug. 30, 1971, 12673/71
Int. Cl. E06b *7/02*
U.S. Cl. 98—95 **8 Claims**

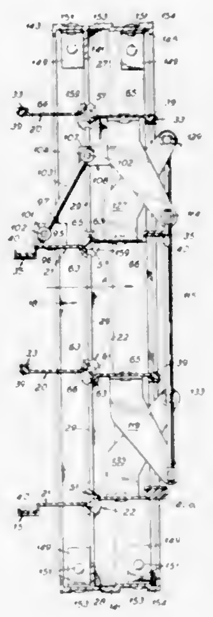


A window facade element for a building equipped with an overpressure aeration or air climatizing installation, comprising an outside facade component and an inside facade component arranged in spaced relationship from one another. Both components extend over the entire surface of the window facade element and each has a respective window opening covered with glass. An air compartment is formed between both facade components which contains a shutter element at the region of the window openings, and such compartment communicates with an air inlet opening at the inner component and an air outlet opening at the outer component. These air inlet and outlet openings are arranged along opposite horizontally extending boundary portions or edges of the inner and outer components.

3,793,932
AIR DAMPER

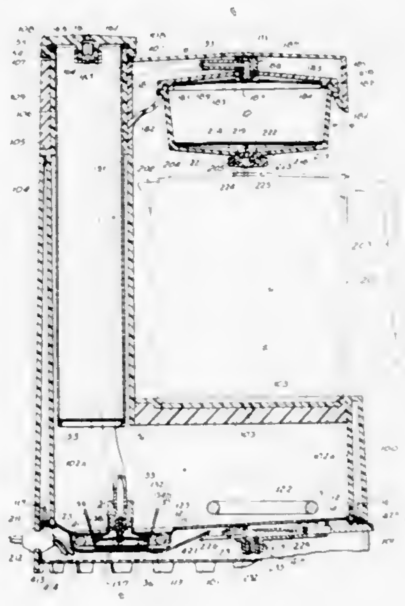
Sherwin S. Tarnoff, Northbrook, Ill., assignor to Air Balance, Inc., Chicago, Ill.
Filed Mar. 30, 1972, Ser. No. 239,659
Int. Cl. F24f *13/00*
U.S. Cl. 98—110 **10 Claims**

An air damper is formed with first and second sets of extruded aluminum blades pivotally mounted in a frame formed of extruded aluminum frame members with longitudinally extending channel means of different widths along the longitudinal edges of the respective blades. The different width channel means nest in a sealing relationship with one another and seal with the frame when the blades pivot to a closed position from an open position. The method of manufacture of the air damper includes the steps of severing predetermined lengths of blades and frame members from long aluminum extrusions preshaped for the blades and frame members, partially erecting a frame from frame members, alternating and pivotally mounting the first and second blades in the partial frame, completing the frame, and interconnecting the first and second blades with a linkage means to close the narrower width channel means first with the frame and then to follow and close thereon the wider width channel means to provide the nested sealing relationship between the blades of the first and second sets.



3,793,933
COFFEE INFUSION APPARATUS AND METHOD

Robert L. Weber, 49 Clapboard Rd., New Canaan, Conn. 06840
Filed Nov. 19, 1971, Ser. No. 200,300
Int. Cl. A47j *31/24*
U.S. Cl. 99—283 **5 Claims**



A coffee infusor consisting of a self-contained appliance providing for filtering water to purify and condition it before or after heating, heating it in a closed container to generate

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pressure to move it, controlled communication from the closed heating chamber to a coffee infusion chamber for timed infusion, where the heated water is contacted with coffee grounds and passed from the infusion chamber to a receptacle to collect the finished coffee infusion.

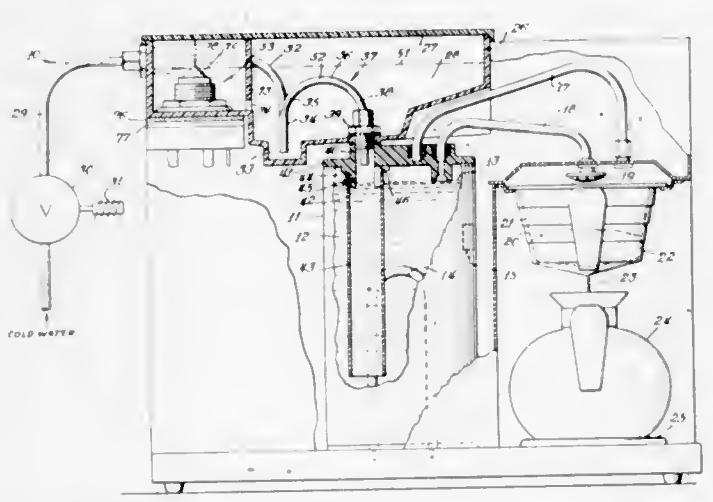
3,793,934
AUTOMATIC COFFEE MAKER WITH LIQUID LEVEL SENSOR AND SIPHON CONTROL

John C. Martin, Springfield, Ill., assignor to Bunn-O-Matic Corporation, Springfield, Ill.

Filed Dec. 15, 1972, Ser. No. 315,409

Int. Cl. A23f *1/08*

U.S. Cl. 99—282 **19 Claims**



Cold water is supplied to a basin until it reaches a liquid level sensor and then is siphoned from the basin into a hot water tank from which hot water is siphoned for coffee brewing purposes. Various cold water siphon arrangements are provided together with various means for varying the volume of cold water supplied to the basin.

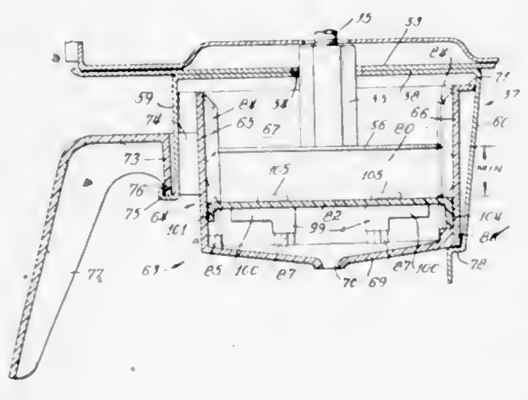
3,793,935
COFFEE MAKING MACHINE CONVERTIBLE BETWEEN FUNNEL-FILTER OPERATION AND POUCH PACK OPERATION

John C. Martin, Springfield, Ill., assignor to Bunn-O-Matic Corporation, Springfield, Ill.

Filed May 11, 1972, Ser. No. 252,269

Int. Cl. A47j *31/00, 31/34*

U.S. Cl. 99—295 **7 Claims**



Coffee making machine can be used with a ground coffee funnel-filter combination or a funnel-pouch pack combination on provision of an adapter.

When used in the funnel-pouch pack mode a spray head assembly bears against a ground coffee pouch positionable at different levels in a funnel to force hot water through the pouch for maximum brewing efficiency. A valve in the air vent line is closed when the cold water supply valve is opened to force the hot water to flow through the ground coffee pouch. Except for the ground coffee receiving apparatus, the spray head and the valve in the air vent line, essentially the remaining apparatus is common to both systems.

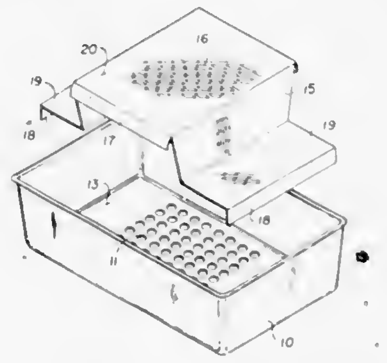
3,793,936
CAMPING TOASTER

John Alexander Wills, Vernon, B. C., Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed May 15, 1972, Ser. No. 244,967

Int. Cl. A47j *37/08*

U.S. Cl. 99—339 **1 Claim**



A device for cooking toast over a gas burner or flame consisting of a rectangular pan with holes in the bottom, and a wire screen member for holding the bread, said wire screen resting on the top of the sides of pan, in the area directly above the pan holes.

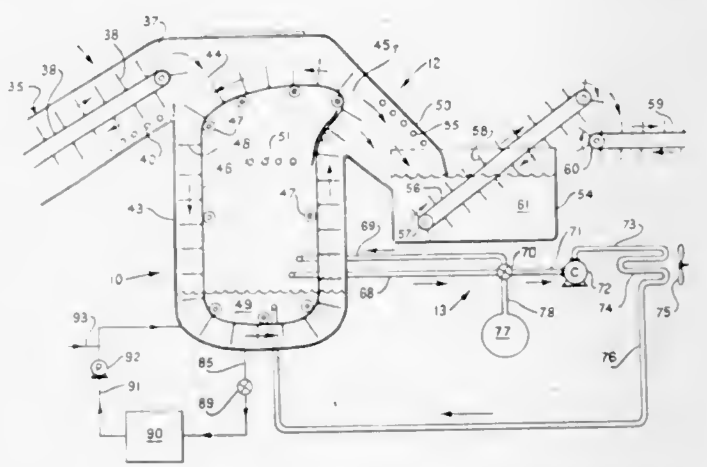
3,793,937
LIQUID TREATMENT AND EXTRACTION APPARATUS

Samuel P. Lipoma, P.O. Box 1064, Delano, Calif. 93215

Filed Oct. 13, 1971, Ser. No. 188,857

Int. Cl. A23n *15/00;* **F25d** *17/02*

U.S. Cl. 99—355 **7 Claims**



Apparatus and method for treating food and other products with volatile fluorocarbons employing liquid seals to prevent loss of fluorocarbon vapor.

3,793,938
APPARATUS FOR PRODUCING TUBULAR WAFFLE SHAPES

Franz Haas, 25-A1210 Gerstlgasse, Vienna, Austria

Filed Dec. 13, 1971, Ser. No. 207,475

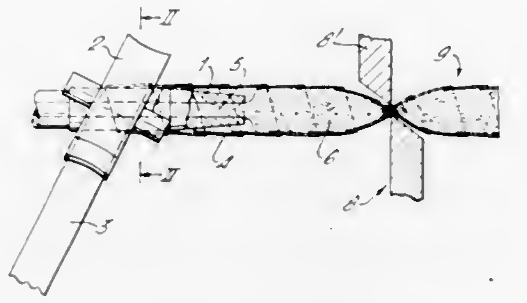
Claims priority, application Austria, Dec. 17, 1970, 11367/70; June 14, 1971, 5104/71

Int. Cl. A21c *9/06;* **B65h** *54/02*

U.S. Cl. 99—450.6 **7 Claims**

An apparatus for producing tubular waffle shapes from a strip of waffle material wound helically on a mandrel in

edgewise overlapping relationship, and contacted by steam before overlapping to adhesively bind the adjacent convolutions. The overlapping edges are pressed together by a guide roller to assure good adhesion and the tubular waffle shape is completely filled with a creamy substance and is cut into



predetermined lengths before hardening. The guide roller is mounted to feed the strip obliquely on the winding mandrel and also exerts pressure against the overlapping edges of adjacent convolutions and advances the wound body on the mandrel.

3,793,939
INSTALLATION FOR STERILIZING PACKAGES FILLED WITH MATERIALS, ESPECIALLY FOODSTUFFS OR SEMI-LUXURIES

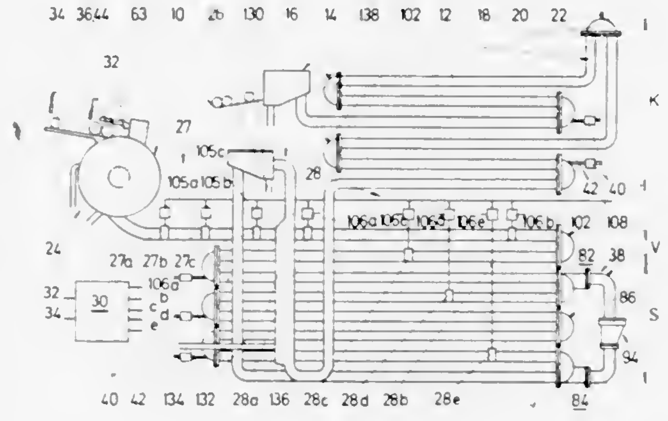
Werner Wieser, Kreuzlingen, and Emil Munz, Bottighofen, both of Switzerland, assignors to Hero Conserven Lenzburg, Lenzburg, Switzerland

Filed Oct. 21, 1971, Ser. No. 191,239

Claims priority, application Switzerland, Sept. 28, 1971, 14093/71

Int. Cl. A23l *3/08;* **B65b** *55/22, 61/28*

U.S. Cl. 99—483 **49 Claims**



An installation for the sterilization of packages filled with materials, especially with foodstuffs or semi-luxuries, wherein such installation is equipped with a conveying channel which extends between an inlet sluice and a free outlet, this conveying channel possessing a pre-heating zone, a sterilization zone and a cooling zone. The packages are transported through the conveying channel solely by means of a throughflowing fluid medium serving as an energy transmission agent. The conveying channel extends through such a tortuous or twisted path and through such elevational positions that the pressure at the sterilization zone is greater than at the pre-heating zone and cooling zone. The pre-heating zone and the sterilization zone collectively possess their own heatable fluid medium circulation system which is separated by a pressure sluice from the fluid medium circulation system of the cooling zone.

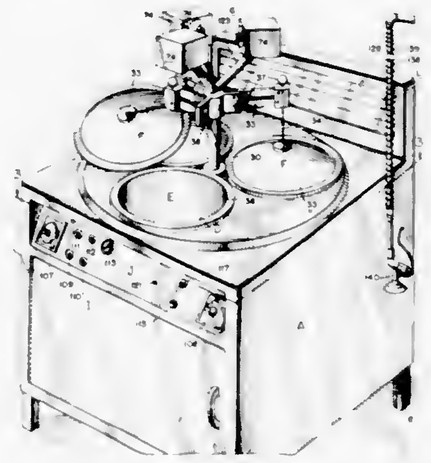
3,793,940
APPARATUS FOR COOKING FOOD IN HOT NON-AQUEOUS LIQUIDS UNDER PRESSURE

Charles Jere Albright, 919 N. Michigan Ave., Chicago, Ill. 60610; Clifford E. Fitch, Sr., and Clifford Fitch, Jr., both of P.O. Box 221, South Holland, Ill. 60473

Filed Dec. 1, 1969, Ser. No. 881,230

Int. Cl. A47j *37/12*

U.S. Cl. 99—408 **23 Claims**



The essential concept of this invention basically involves the improved structuring and operative arrangement of a multiple-receptacle apparatus for the pressurized cooking of food in hot, non-aqueous liquid, wherein the food is inserted into and removed from a receptacle cooking compartment when it is essentially drained of the hot liquid and free of pressure.

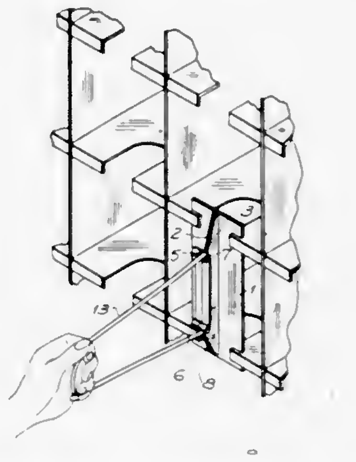
3,793,941
DEVICE FOR AIDING IN THE BUNDLING OF MAIL

Herbert J. Potts, 5967 W. 215th St., Fairview Park, Ohio 44126, and Godfrey L. Larson, 6514 W. 83rd St., Shawnee Mission, Kans. 65204

Filed Dec. 8, 1971, Ser. No. 205,954

Int. Cl. B65b *13/00*

U.S. Cl. 100—1 **12 Claims**

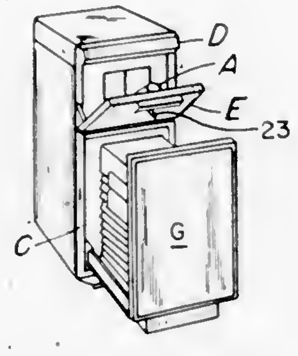


A device for aiding in the bundling of mail having a base portion which may be applied to a support that may be part of a mail sorting case or a wall adjacent thereto. The device includes a base or foundation material having outwardly extending parts on which is formed a plurality of spaced rounded portions to which an elastic band may be applied. Preferably, the device has two pairs of such rounded portions so that the device may be utilized either by a right or left handed postal clerk. In practice, the elastic band is pulled outwardly with one hand and a bundle of mail is inserted in the expanded band with the other hand. The band is then released to permit it to contract around the package of mail. The elastic band may be removed from the device by a slight twist of the bundle of mail. When the sorting case is used as a support, the device may be easily applied thereto and released therefrom.

3,793,942
SPRAY ACTUATOR FOR REFUSE COMPACTOR

Leonard J. Martiniak, Waukesha, and Marlin L. Race, Elm Grove, both of Wis., assignors to General Electric Company, Louisville, Ky.

Filed July 25, 1972, Ser. No. 275,092
Int. Cl. B30b *15/30*
U.S. Cl. 100—73 9 Claims

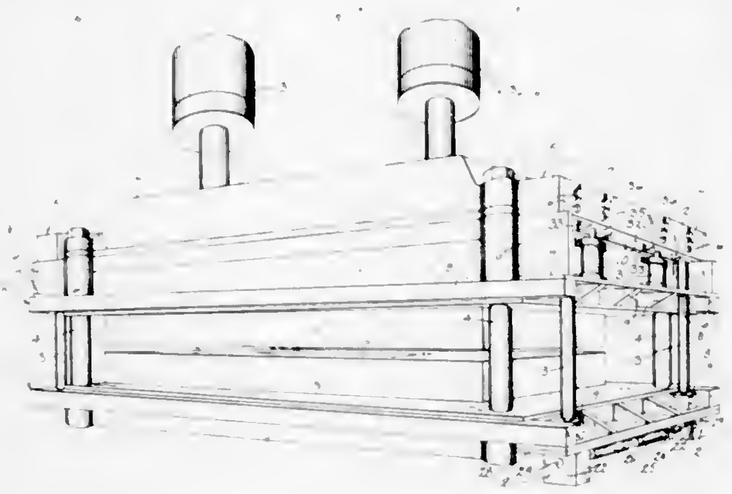


Manual operating means is controlled externally and is used to open the flow control or spray valve of a deodorant or disinfectant containing aerosol container that is carried within an upper access chamber of a refuse compactor. The container may be mounted on the inside of a swingable access door that opens through a front wall of the compactor above upper reaches of a refuse compartment or on a wall member within the access compartment. The manual actuating means has an outside mounting for operation from or adjacent to the door.

3,793,943
HYDRAULIC PRESS

Elmer E. Olson, Nashotah, Wis., assignor to G. B. Lewis Company, Watertown, Wis.

Filed Aug. 10, 1972, Ser. No. 279,462
Int. Cl. B30b *1/32*
U.S. Cl. 100—269 R 13 Claims

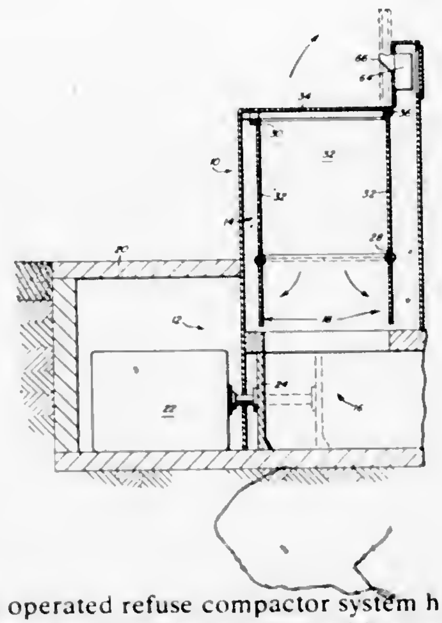


An apparatus for increasing the force exerted by a hydraulic press. A pair of headers are mounted on the upper platen of the press and rods extend downwardly from each header and carry blocks that are adapted to be received within pockets in the lower platen. When the upper platen is lowered toward the lower platen and the cooperating dies carried by the platens engage the workpiece, the blocks are automatically locked within the pockets to integrally connect the headers to the lower platen. Auxilliary cylinders mounted on the upper platen exert an upward force against the headers forcing the headers upwardly and thereby increasing the force applied to the workpiece.

3,793,944
COIN OPERATED REFUSE COMPACTOR SYSTEM

Allan M. Grubich, Star Rt. C, Box 24, Camdenton, Mo. 65020, and James E. Potter, IV, 200 Broadview, Columbia, Mo. 65201

Filed July 5, 1972, Ser. No. 269,191
Int. Cl. B30b *15/30*
U.S. Cl. 100—53 12 Claims



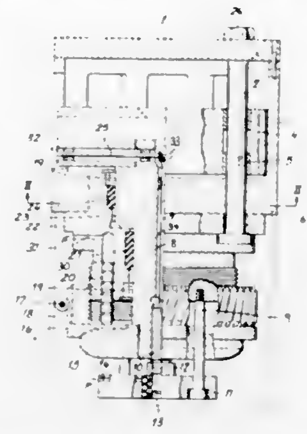
A coin operated refuse compactor system having a conventional compacting device provided with a receiving portion, and an arrangement for guiding refuse to this receiving portion. At least one pivotally mounted door is arranged for selectively blocking the guiding arrangement and retaining refuse therein. Advantageously, this door is arranged in an outlet opening of the guiding arrangement, while a covering door is arranged in a guiding arrangement inlet opening. A linkage is connected to the door and the covering door for positioning the door in an outlet opening blocking position when the covering door is in an inlet opening uncovering position, and conversely positioning the door in an outlet opening unblocking position when the covering door is in an inlet opening covering position. A, for example, electrically operated lock is provided for normally locking the covering door in an inlet opening covering position, while a coin operated switch is connected to the lock for selectively releasing the covering door in the presence of a coin in the coin operated device. Simultaneously with the release of the covering door is the actuation of a time delay which will eventually actuate a linear motor of the compacting device. The outlet door will open upon closing of the inlet door so as to release the refuse into the receiving portion of the compacting device for being compacted by same.

3,793,945
HYDRAULIC PRESS WITH BOX- AND COLUMN-TYPE FRAME

Edmund Nowak, Warszawa, Poland, assignor to Przedsiebiorstwo Doswiadczalne Pras Automatycznych i Tloczników "Ponar-Hydomat", Warsaw, Poland

Filed Dec. 23, 1971, Ser. No. 211,280
Claims priority, application Poland, Jan. 5, 1971, 145476
Int. Cl. B30b *1/32*
U.S. Cl. 100—257 8 Claims

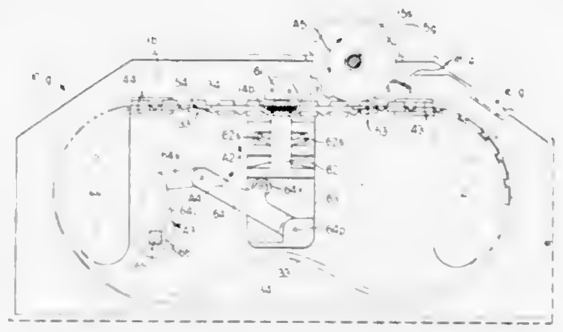
A hydraulic power press has a box-shaped frame whose top defines a work space with a bedplate received in that frame, the frame bottom being rigid with a hydraulic cylinder whose piston carries the bedplate. Frame and cylinder are interconnected by columns guiding the bedplate within the frame. The piston has a downwardly projecting rod terminating in an annular flange forming a shoulder which coacts with a set of plungers within the cylinder adapted to be pressurized for moving the piston with the bedplate downwardly. The upper limit of the working stroke of the piston is defined by a rotatable ring threadedly engaging the lower end of the cylinder to form an adjustable abutment for the piston flange. The lower limit of the return stroke is determined by a stud, projecting downwardly from the piston, which on descending coacts with the body of a slide valve whose mounting is fixedly suspended from the cylinder and which, besides cutting off the flow of pressure fluid to the downwardly acting plungers, also cushions the descent of the piston. The stud is threadedly lodged in the piston and can be rotated by a bevel-gear transmission inside the bedplate and the piston for adjusting the lower and of the piston stroke.



3,793,946
EMBOSSER HAVING COOPERATING ENDLESS INDICIA CARRIERS DISPLACEABLE RELATIVE TO ONE ANOTHER

Wilbur L. Sheffield, Westwood, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Sept. 1, 1971, Ser. No. 176,833
Int. Cl. B41j *5/30*
U.S. Cl. 101—18 17 Claims



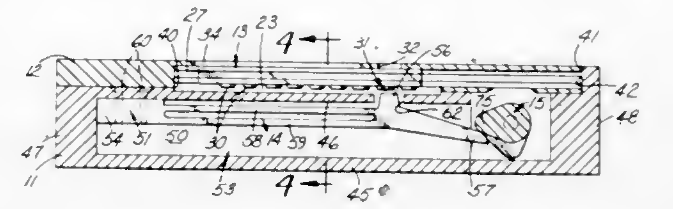
Method and apparatus for the multiple, simultaneous embossment of flexible materials using complementary, character-forming inner and outer bands for each character to be embossed. There is one pair of bands per stage, including an outer, control band and a relatively flexible inner, follower band. Within each stage, the bands are brought into registration with each other in advance of an embossing position but are permitted to move in unregistered contact towards the registration position as the bands are advanced. Beyond the registration position, the bands are separated to accomodate the material to be embossed. In one embodiment, the bands are formed by blocks with respective raised and recessed characters for the inner and outer bands. The blocks are linked together and are hinged in the case of the inner bands.

3,793,947
SEQUENTIAL HAMMER IMPRINTER

Charles W. McVey, Eastlake, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Apr. 13, 1972, Ser. No. 243,718
Int. Cl. B41g *47/46*
U.S. Cl. 101—93 MN 4 Claims

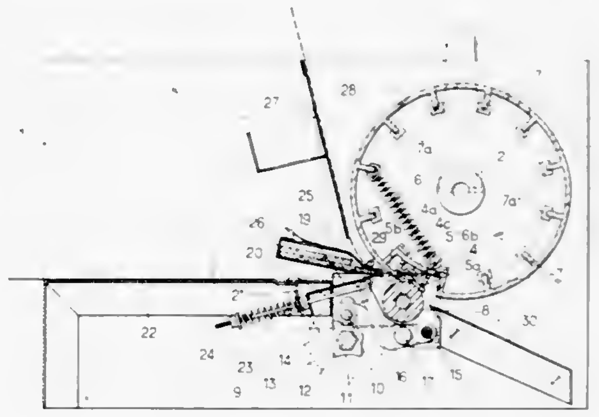
An impact printer with character carrying slides each selectively movable to position their characters one at a time in a printing station. A rotary cam sequentially deflects and releases a plurality of hammers to impact an imprintable form sequentially against the characters positioned in the printing stations. Substantially all of the components are formed of plastic to provide a compact and inexpensive structure.



3,793,948
HECTOGRAPHIC DUPLICATING MACHINE

Charles Andre Hugonnier, 93 Rue de Prony, Paris, France

Filed June 26, 1972, Ser. No. 266,397
Claims priority, application France, July 26, 1971, 71.27322
Int. Cl. B41l *11/08, 23/12;* **B41m** *5/02*
U.S. Cl. 101—132.5 7 Claims

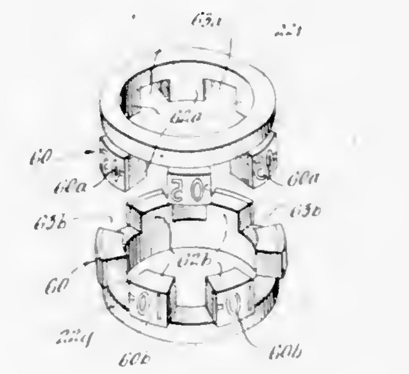


Hectographic duplicator comprises a master clamp formed by one edge of a groove in the pressure cylinder of the duplicator and a bar seated in said groove, together with a stationary moistening pad cooperating with a moistening table adapted to be retracted away from the pad at the end of each operating cycle.

3,793,949
PRINTING EQUIPMENT

Richard O. Rohwedder, 120 Riders Ln., Fairfield, Conn. 06430

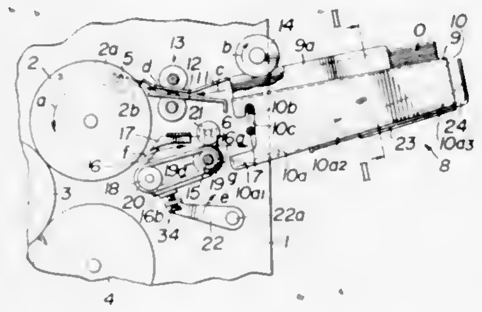
Filed Feb. 2, 1973, Ser. No. 329,031
Int. Cl. B41j *5/14*
U.S. Cl. 101—375 6 Claims



There is disclosed a printing mechanism including a wheel for printing on strip material. The wheel is made of two annular portions having interfitting teeth-bearing print symbols. The interfitting portions are interchangeable for the printing of dates, prices and the like.

3,793,950
COMBINATION NEW MASTER SUPPLY AND USED MASTER RECEIVING ASSEMBLY

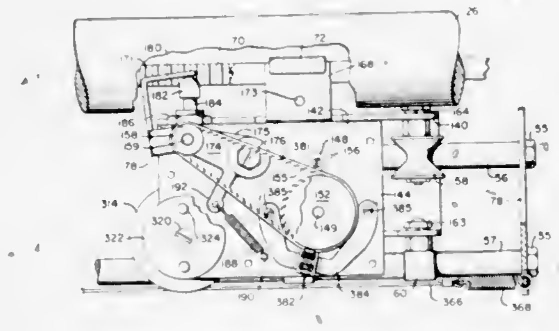
Tamaki Kaneko, and Katsumi Mizuno, both of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 67,045, Aug. 26, 1970, abandoned. This application Oct. 19, 1972, Ser. No. 299,090
Claims priority, application Japan, Sept. 4, 1969, 44-70167
Int. Cl. B41f *7/00, 7/02*
U.S. Cl. 101—142 **2 Claims**



A used master plate receiving tray device for rotary offset printing machines comprising a receiving tray which is disposed below and formed integrally with a master plate supply tray on which a plurality of master plates to be automatically supplied to the master cylinder of the machine are piled in a stack. A used master plate is automatically removed from the master cylinder and slipped into the receiving tray.

3,793,951
SIGNAL RESPONSIVE BELT PRINTER

Ronald S. Denley, Niles, Ill., assignor to Teletype Corporation, Skokie, Ill.
Filed June 15, 1971, Ser. No. 153,312
Int. Cl. B41j *1/60*
U.S. Cl. 101—111 **18 Claims**



A first solenoid angularly and incrementally moves a sprocket wheel spacingly to translocate a carriage for an endless belt of the printer to a printing station in a horizontal succession thereof. A second solenoid, in response to a carriage return signal, disables transmission of the force of the first solenoid to the carriage, and effects shunting of such force, through an interposer, to a mechanism for incrementally drawing a web from a supply coil a distance equal to line spacing.

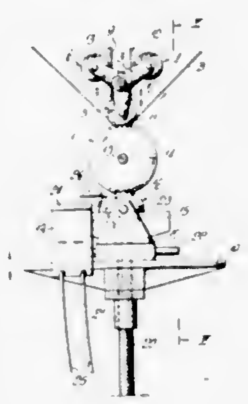
A rockable bail is adapted releaseably to secure the coil in a seat on a pivoted gate which is arranged for opening and closing a coil chamber in the printer. A pair of spreadable spaced apart bail extensions project from opposed arms of the bail and are aligned when untensioned to provide an axis for rotation for holding the coil in its seat. When spread, the extensions permit coil replacement in said seat. A pair of cams which are integral with a bracket defining the seat are followed by the arms of the bail when rocked for controlling the condition of the extensions.

The belt of the printer is trained about an impactor and a sprocket wheel mounted on the carriage. A stepping motor is adapted, through the agency of a sprocket wheel, to align successive selected dies, carried longitudinally of the belt, for image transfer by the impactor at successive printing stations. A bracket supported by the carriage rocks in response to a third solenoid for driving the impactor into a printing mode in which the belt is tensioned. Restoration of the impactor to a non-print mode eases belt tension and thereby facilitates belt adjustment for die alignment for printing.

A replaceable cartridge has an endless ribbon disposed between the belt and the web for printing. An inking roller carried in the cartridge is coupled to carriage movement during carriage translocation between line start and carriage return positions and for driving the ribbon. A clutch uncouples the inking roller during carriage return to the line start position.

3,793,952
CONVERTIBLE PRINTING MECHANISM FOR INTAGLIO AND FLEXOGRAPHIC PRINTING

Richard Neumann, Lengerich, and Rolf Heidenmann, Auf Der Lienenburg, both of Germany, assignors to Windmoller & Holschee, Munsterstrasse, Germany
Filed July 25, 1972, Ser. No. 274,989
Int. Cl. B41f *9/18, 13/18*
U.S. Cl. 101—157 **8 Claims**



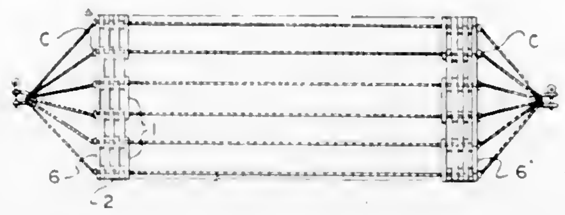
A printing mechanism for printing presses is adapted to be converted from intaglio to flexographic printing and vice versa by providing a lifting platform below a replaceable plate cylinder. The platform supports a liftable ink trough, a displaceable frame for a screen cylinder, and a displaceable doctor device. A selected one of at least two impression cylinders supported in a mounting can be applied to the plate cylinder depending on whether a resilient surface is required for the impression cylinder for intaglio printing or a steel surface for flexographic printing.

3,793,953
BLASTING MAT

Douglas L. Lewis, Sudbury, Ontario, Canada, assignor to Sudbury Blasting Mats Limited, Sudbury, Ontario, Canada
Filed May 24, 1972, Ser. No. 256,264
Claims priority, application Canada, Aug. 31, 1971, 121814
Int. Cl. F42d *5/00*
U.S. Cl. 102—22 **8 Claims**

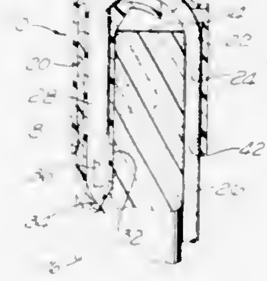
A blasting mat formed of a plurality of plates of resilient material arranged on edge in side-by-side relationship in contiguous rows with the rows interconnected and with the plates in each row spaced apart; flexible means is threaded through

the spaced plates and the spaced plates are secured on the flexible means so that there is sufficient movement of the plate edges when the mat is flexed to reduce the spaces between the plates at the area of flexure of the mat.



3,793,954
DYNAMITE DETONATOR ASSEMBLY

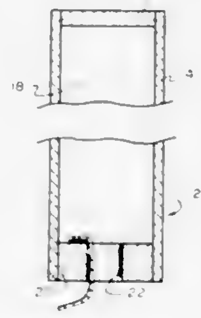
Mack S. Johnston, 26 Hitching Post Dr., Rolling Hills, Calif. 90274
Filed Mar. 24, 1972, Ser. No. 237,851
Int. Cl. F42b *3/10, 3/18*
U.S. Cl. 102—28 R **12 Claims**



A detonator assembly for sticks of dynamite which includes a cup-like housing having a pointed tubular prong therein which contains a detonator, whereby when the housing is forced onto the end of the dynamite, the prong with the detonator therein becomes embedded in the dynamite. In one embodiment, the detonator is activated by a powder fuse which extends from the housing, and in another embodiment it is activated electrically through conductors which extend from the housing. The electrical embodiment also includes bypass filter means for preventing the detonator from being prematurely activated by extraneous alternating electro-magnetic impulses.

3,793,955
BUZZING PYROTECHNIC DEVICE AND METHOD

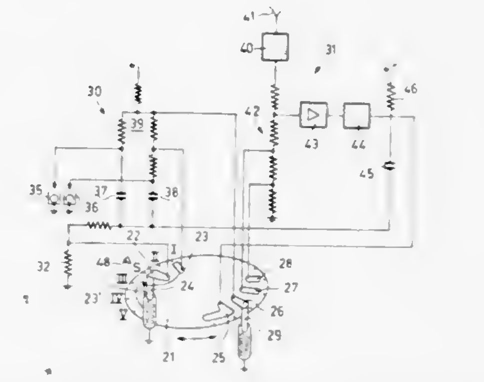
George Klecak, 75 Lafayette, North Babylon, N.Y. 11703
Filed May 2, 1972, Ser. No. 249,631
Int. Cl. C06d *1/00*
U.S. Cl. 102—31 **5 Claims**



A pyrotechnic device and method for producing same which produces a novel buzzing sound effect, the device comprising a closed reaction chamber filled with a pyrotechnic whistling composition, the reaction chamber being vented or choked to produce the buzzing sound effect.

3,793,956
SWITCHING ARRANGEMENT FOR ELECTRICAL FUSES

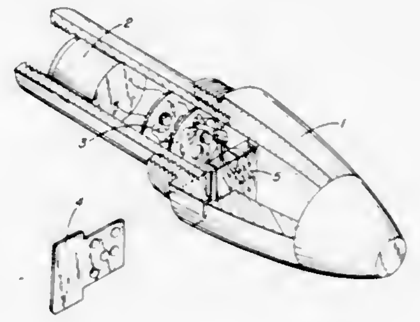
Lennart John Nordgren, Vallingby, Sweden, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 7, 1972, Ser. No. 216,064
Claims priority, application Sweden, Feb. 2, 1971, 1291/71
Int. Cl. F42c *11/00, 13/00, 19/06*
U.S. Cl. 102—70.2 R **9 Claims**



A reversible switching arrangement for a projectile capable of being detonated upon impact with a target on the one hand and at a predetermined distance from the target on the other hand. The arrangement comprises an hermetically sealed envelope adapted to be mounted at the nose of the projectile. The envelope comprises a nose and an abutting base section, that are rotated about the longitudinal axis of the projectile relative to each other to switch between the impact and the proximity fuse circuits.

3,793,957
GUN LAUNCHED, DIGITAL, VARIABLE TIME FUZE

Lilburn Grady Stout, Falmouth; Robert F. Butler, and James Allen Morris, both of King George, all of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jan. 18, 1972, Ser. No. 218,808
Int. Cl. F42c *13/00, 11/06, 19/06*
U.S. Cl. 102—70.2 R **5 Claims**



A variable time fuze for a gun launched projectile comprises a digital electronic counter which is preset by insertion of a coded key into a slot within which are spring loaded contacts. The number which is preset in the counter depends on the pattern of conductive and non-conductive areas inscribed on the key. A clock circuit provides pulses to the counter which initiates a squib-firing network when the preset number is reached. Time delay circuits are provided to prevent accidental firing of the squib, to strobe the preset number into the counter and to allow the counter to stabilize before application of the clock pulses.

3,793,958

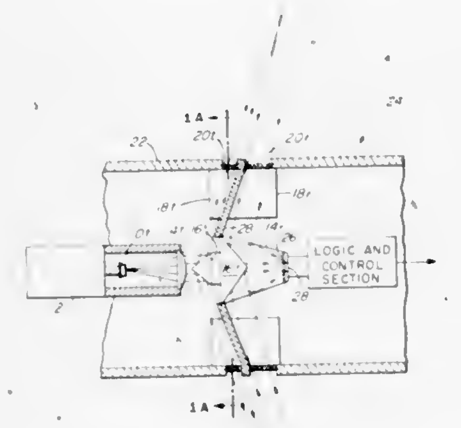
OPTICAL FUSING ARRANGEMENT

Jon G. Holt, Woburn; Gary G. Hayward, and Irving Goldstein, both of Lexington, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed June 22, 1972, Ser. No. 265,130

Int. Cl. F42c *13/02, 11/00*

U.S. Cl. 102—70.2 P **6 Claims**



An improved optical sensor, together with logic and control circuitry to improve reliability, is shown to provide a fusing arrangement for a missile. The sensor, which may be active or passive, includes a number of reflecting wedges affixed to the missile in such a manner that hollow, but complete, conical detecting fields are formed without detracting from the structural integrity of the missile. The logic and control circuitry includes means for differentiating between true target signals and noise signals to detonate ordance carried by the missile only in response to true target signals.

3,793,959

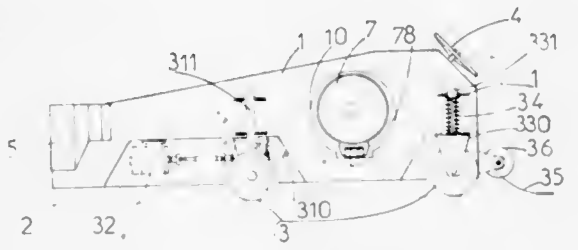
AUTOMOTIVE TRUCK FOR MOVING LOADS ON A MOBILE PLATFORM

Pierre Leuenberger, Nantes, France, assignor to Creusot-Loire, Paris, France

Filed Jan. 30, 1973, Ser. No. 328,088

Int. Cl. B61f *13/00*

U.S. Cl. 104—1 R **10 Claims**



An automotive truck including a motive and orientable wheel and movable over a support surface, the truck being slidable freely at a fixed orientation relative to a beam parallel to the surface, the beam being displaceable over the surface parallel to itself by the truck.

3,793,960

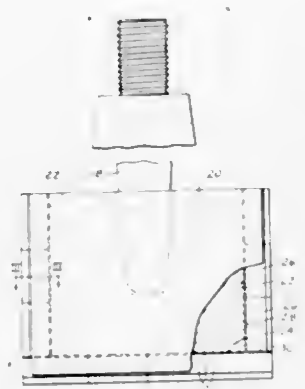
TAMPER FOOT

Robert J. McKenry, Windber, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed Sept. 12, 1972, Ser. No. 288,395

Int. Cl. E01b *27/16*

U.S. Cl. 104—10 **8 Claims**



A plate adapted for being fixed to the end of a tamper arm and having a groove extending across the leading edge and up the side edges and in which blocks of a hard wear resistant material, such as a cemented hard metal carbide, are mounted and secured in place as by brazing.

3,793,961

SYSTEM FOR THE CONVEYANCE OF PASSENGERS OR GOODS USING A CONTINUOUS AND FAST BELT

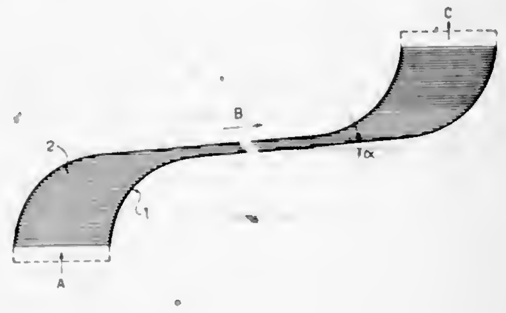
Rolando Salvadorini, Corso Corsica 2, Turin, Italy

Filed Dec. 27, 1971, Ser. No. 212,175

Claims priority, application Italy, Dec. 28, 1970, 71300/70; Jan. 25, 1971, 67248/71; Apr. 16, 1971, 68254/71

Int. Cl. B65g *17/06*

U.S. Cl. 104—25 **17 Claims**



A system for the continuous conveyance of passengers and/or goods, consisting of at least one continuous belt having portions moving at different speeds, more particularly at least two end portions moving at a very low speed for the getting on and off of passengers and at least one intermediate portion moving at constant and high speed, or a plurality of high speed portions separated by low speed portions. The changes in speed may be obtained by changing the system width, and then the loading plane of the belt consists of strips connected at their ends to vertical pins so that said strips and the direction of motion may have different relative slopes, or the changes in speed may be obtained by changing the thickness of the system, which is supported by guided articulations moving along guides at variable distance. The system may also comprise a second continuous belt moving at constant and high speed, which is flanked along the whole or part of its run by said first belt, which forms a system for getting on and off said second belt.

3,793,962

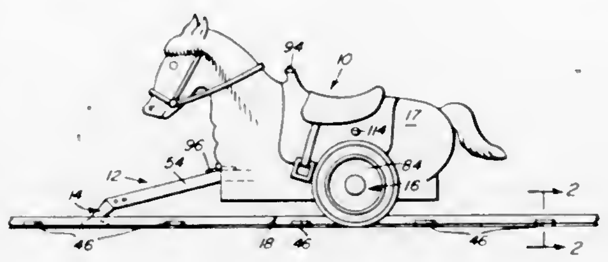
AMUSEMENT RIDE

Robert C. Sights, 5515 Green Forrest Dr., Jacksonville, Fla. 32210

Filed Dec. 1, 1971, Ser. No. 203,779

Int. Cl. A63g *15/00*

U.S. Cl. 104—61 **12 Claims**



An amusement ride having a frame, electrically conductive wheels for engaging a track for partially supporting the frame and guiding same about a path of movement, and wheels connected to the frame for moving the frame about the path of movement. The wheels contact a surface on which the track is resting. An electric motor is mounted on the frame for receiving electric power from the track. The track has a longitudinally extending track member defining a substantially circular cross section, a chamber, and a longitudinally extending slot communicating with the chamber. A filler material is arranged in the chamber opposite the slot for providing a flat bed. Wires are mounted on the flat bed and extend with the track member for forming an electrical conductor and rails for the electrically conductive wheels to ride on. A body member is mounted on the frame and arranged for selective cyclical movement toward and away from the frame by a device including a cam and a cam follower mounted on a pivotal lever for selective engagement with the cam.

3,793,963

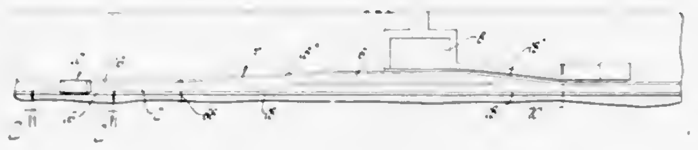
TRANSPORTATION SYSTEM AND VEHICLE THEREFORE

John J. Mooney, Englewood; Frank E. Marshman, Boulder, and Richard H. Donlon, Littleton, all of Colo., assignors to Transportation Technology, Inc., Denver, Colo.

Filed Apr. 19, 1972, Ser. No. 245,414

Int. Cl. E01b *25/12*

U.S. Cl. 104—130 **27 Claims**



A transportation system including a vehicle guideway system having a main line, a branch line diverging from the main line, and a pair of fixed switching rails at the junction of the main and branch lines, including a main line switching rail following the main line past the junction and a branch line switching rail following the branch line past the junction. A vehicle traveling over the guideway includes a pair of switch members, one of which is movable between an active position in which it can engage the main line switching rail to cause the vehicle to follow the main line past the junction, and an inactive position in which it cannot engage a switching rail, the other of the switch members being movable between an active position in which it can engage the branch line switching rail to cause the vehicle to follow the branch line past the junction, and an inactive position in which it cannot engage a switching rail. The switch members are connected together by a switch mechanism operable to cause one of the switch members to move from its active to inactive position in response to movement of the other switch member from its inactive to active position. The switch mechanism includes over-center locking means connected with the switch members for locking the active switch member against movement from the active position in response to a force exerted on the switch member.

3,793,964

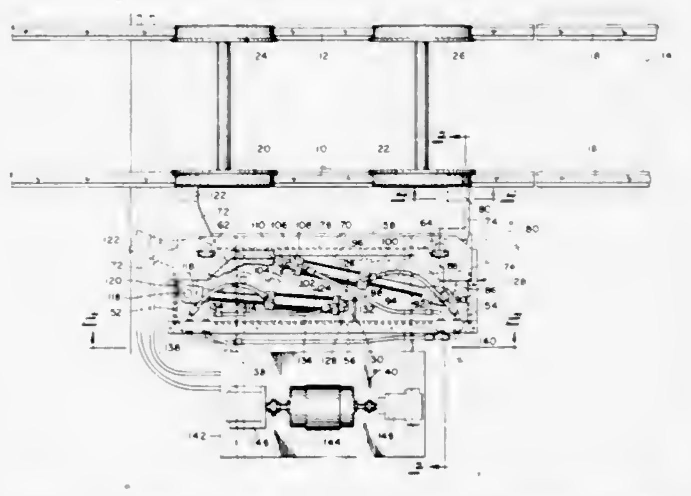
RAILROAD CAR SPOTTING AND WHEEL LOCKING APPARATUS

Edward E. Cheek, Cleveland Heights, and Raymond H. Sabin, Willoughby, both of Ohio, assignors to McDowell-Wellman Engineering Company, Cleveland, Ohio

Filed Mar. 20, 1972, Ser. No. 235,950

Int. Cl. B61b *13/12, 15/00;* **B61j** *3/12*

U.S. Cl. 104—162 **8 Claims**



There is provided a railroad car spotting and wheel locking assembly for coaction between a pair of railroad car wheels and the rail on which the wheels are supported. The apparatus is characterized by a housing and a pair of spaced oppositely acting wheel engaging chock arms pivotally mounted in the housing for movement in a horizontal plane. Means such as hydraulic means are provided for moving the chock arms into and out of wheel locking engagement. An advantage of the present apparatus is that it can be used to effect limited movement of the railroad car or a train of railroad cars to more accurately spot the car and thus cars attached thereto for car unloading operation.

3,793,965

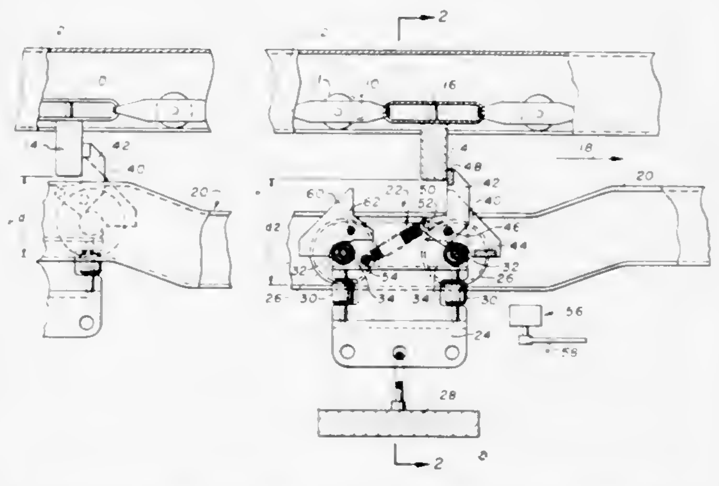
ACCUMULATING LOAD TROLLEY AND CONVEYOR SYSTEM

Raymond Lewis Winters, Abilene, Kans., assignor to The Ehrsam Company, Abilene, Kans.

Filed Aug. 17, 1972, Ser. No. 281,589

Int. Cl. F04b *3/00*

U.S. Cl. 104—172 S **20 Claims**



A conveyor system of the power-and-free type having an accumulation capability is provided. A trolley track extends in

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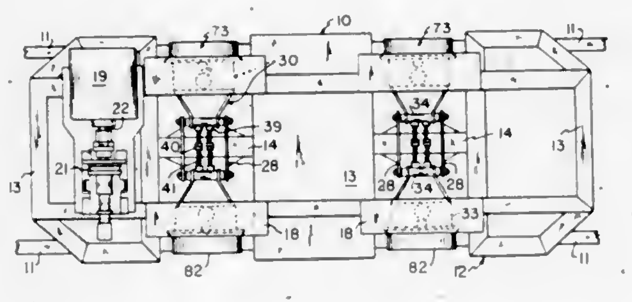
end of which presses against the presser bar to urge the presser juxtaposition with an endless driving means and the relative spacing therebetween is varied to provide a drive region and an accumulation region. A load trolley for use in the system includes a first drive member having an unyieldable drive position relative to the trolley for driving engagement with the driving means and a second drive member having a yieldable drive position relative to the trolley. The relative positions of the first and second trolley drive members and the system driving means are such that the driving means drivingly contacts at least the unyieldable first drive member along the driving region of the trolley track and contacts only the second yieldable drive member along the accumulation region of the trolley track. The yieldable drive member is preferably a spring biased dog. Stop means selectively interposable in the trolley path at the accumulation region prevent advancement of the load trolley and the yieldable drive member yields to the increased force of the driving means to permit its passage relative thereto.

3,793,966
RESILIENTLY SUSPENDED RAILWAY VEHICLE
Jon R. Swoager, Imperial, Pa., assignor to Automation Equipment, Inc., Imperial, Pa.

Filed Apr. 7, 1972, Ser. No. 241,975
Int. Cl. B61c *7/00, 9/42;* **B61d** *11/00*
U.S. Cl. 105—178 **10 Claims**

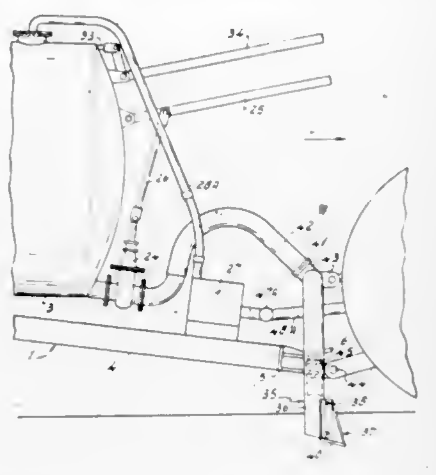


A railway vehicle having independently suspended wheel assemblies and drive means: the suspension means includes a frame member transversely movable and pivotally mounted at its inboard end to the undercarriage of the vehicle. The frame member includes at its outboard end a trunnion in which a mounting plate is pivotably received. A motor is mounted to the inboard side of the plate and includes a shaft passing through an opening in the plate to which is secured a flanged wheel assembly. A tracked spring assembly is secured to the trunnion and outboard side of the undercarriage and is adapted for transverse and vertical movement with the frame member.

3,793,967
MANURE SPREADER
Pieter van den Berg, Wilson, N.C., assignor to The Lely Corporation, Wilson, N.C.

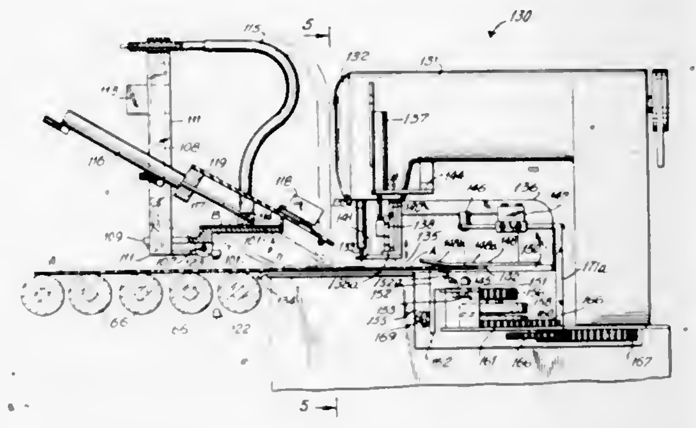
Filed June 28, 1971, Ser. No. 157,467
Int. Cl. A01c *23/02*
U.S. Cl. 111—7 **9 Claims**

A manure spreader comprising a frame movable over the ground and a container mounted on said frame. A dispensing device is provided for supplying liquid manure from the container to an area under the ground surface. The dispenser has coupling points by means of which it is attachable to the three-point hitch of a tractor or other propelling vehicle.



3,793,968
FABRIC JOINING AND SEWING DEVICE
Aubrey G. Beazley, El Paso, Tex., assignor to Farah Manufacturing Company, El Paso, Tex.

Division of Ser. No. 5,809, Jan. 26, 1970, Pat. No. 3,611,957.
This application Sept. 9, 1971, Ser. No. 178,860
Int. Cl. D05b *33/02*
U.S. Cl. 112—121.29 **12 Claims**



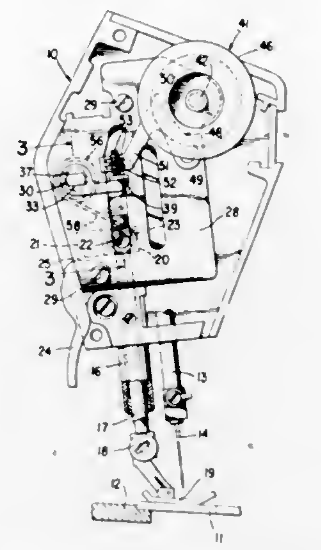
A device for transferring, joining and sewing a pair of fabric workpieces is disclosed wherein one workpiece is held by suitable vacuum means and transferred into contact with the second workpiece whereupon the workpieces are clamped to a movable sewing table which advances the workpieces as a sewing machine forms a line of stitch joining the two workpieces together.

3,793,969
PRESSER BAR PRESSURE CONTROL MODULES
Kenneth D. Adams, Madison, N.J., assignor to The Singer Company, New York, N.Y.

Filed Oct. 3, 1972, Ser. No. 294,725
Int. Cl. D05b *29/02*
U.S. Cl. 112—235 **4 Claims**

A presser bar pressure control module which is mounted on a plate separable from the head of the sewing machine containing the presser bar. A mounting plate supports a cam and cam follower operatively connected with a pivotable lever attached to a stud also journaled on the mounting plate. The end of the stud protruding through the other side of the mounting plate is attached to one end of a resilient member the other

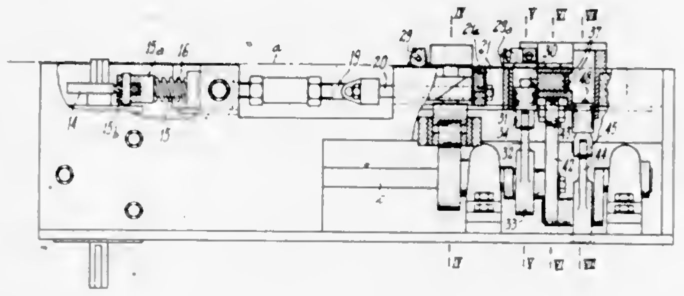
end of which presses against the presser bar to urge the presser foot attached thereto into contact with the work material.



Turning the cam alters the torque impressed on the resilient member thereby to alter the force which the presser foot exerts on the work material.

3,793,970
MACHINE FOR MAKING SPOUTS AND FIXING SAME IN CONTAINERS
Luigi Martinotti, Turin, Italy, assignor to Brinil S.A., Fribourg, Switzerland

Filed Jan. 25, 1972, Ser. No. 220,598
Claims priority, application Switzerland, Feb. 10, 1971, 1988/71
Int. Cl. B21d *54/04*
U.S. Cl. 113—1 H **10 Claims**

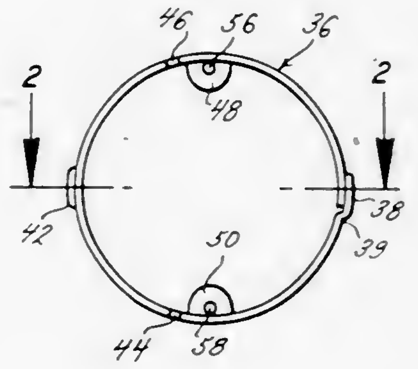


This machine for punching, cutting and shaping pouring spouts from a metal band for miscellaneous packings comprises essentially a single shaft, connected through a bevel gear to the driving motor of the packing machine, for performing the various operations, including punching a preferably square-shaped hole engageable by a pin for feeding the metal band through the machine, such pin being pivotally mounted and driven with a horizontal reciprocating motion. Punch and die means are operated for cutting portions of the band for permitting the subsequent folding of the side wings of the spout. Other means are provided for punching into the band projecting lugs to be used for securing the spout to the packing.

3,793,971
METHOD OF MAKING COLLAR
Louis E. Mueller, Tenton, Mo., assignor to Mac-Fab Products, Inc., St. Louis, Mo.

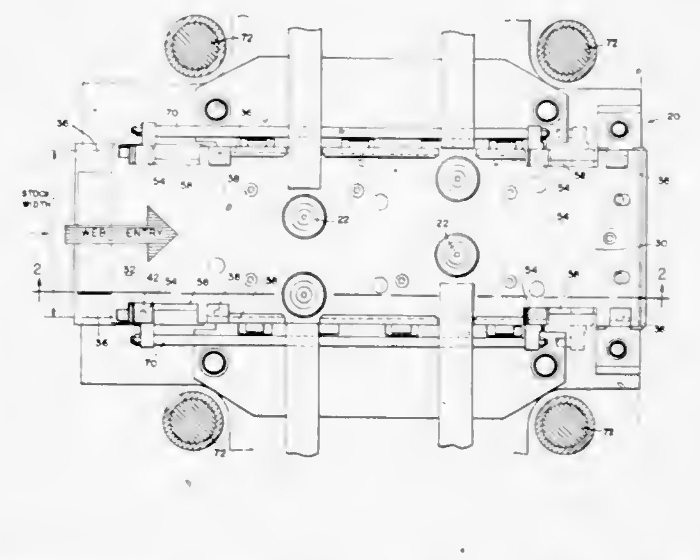
Filed Apr. 13, 1972, Ser. No. 243,648
Int. Cl. B21d *51/10*
U.S. Cl. 113—1 G **15 Claims**

A collar, for a plural-cell duct, is formed by punching generally-aligned slots in the opposite edges of an elongated piece of sheet metal stock, punching those slots so they are elongated and narrow and so the inner ends thereof extend toward but stop short of each other to define one end of a blank which remains attached to the piece of sheet metal stock by a narrow connecting portion, punching a notch in the one end of the blank adjacent the outer end of one of the slots and thus adjacent one edge of the blank, forming an offset at the one edge of the blank and displacing that offset outwardly of the outer surface of the blank and extending that offset along the one edge of the blank from the notch to the opposite end of the blank, forming arcuate portions at the opposite edges of the blank which have radii of curvature approaching the radius of curvature to be given the collar while leaving the central portion of the blank essentially flat, severing the connecting portion to free the blank from the piece of sheet metal stock, bending the central portion of the blank inwardly and moving the opposite edge of the blank toward the one edge and into position in engagement with the inner surface of the offset at the one edge of the blank, and welding the outer surface of the opposite edge of the blank to the inner surface of the offset to permanently convert the blank into a collar of cylindrical configuration.



3,793,972
METHOD AND APPARATUS FOR FEEDING A SHEET METAL WEB
Stanley J. Miller, Crystal Lake, Ill., assignor to Natonal Can Corporation, Chicago, Ill.

Filed Aug. 4, 1972, Ser. No. 278,041
Int. Cl. B21d *43/02*
U.S. Cl. 113—113 **5 Claims**



Method and apparatus are provided for precise feeding of a heavy and springy sheet metal web to and through a press for blanking and drawing metal cups therefrom. A preferred embodiment has a pair of fixed pneumatically actuated gripping members positioned along the edge of the web path and a corresponding pair of movable pneumatically actuated gripping members similarly positioned. The movable gripping members grip the web edges when moving from first positions to second positions downstream. The fixed gripping members grip the web as the movable gripping members return to their first positions. Operation of the gripping members is timed with the reciprocating operation of male blank-draw punches vis-a-vis cooperating female dies.

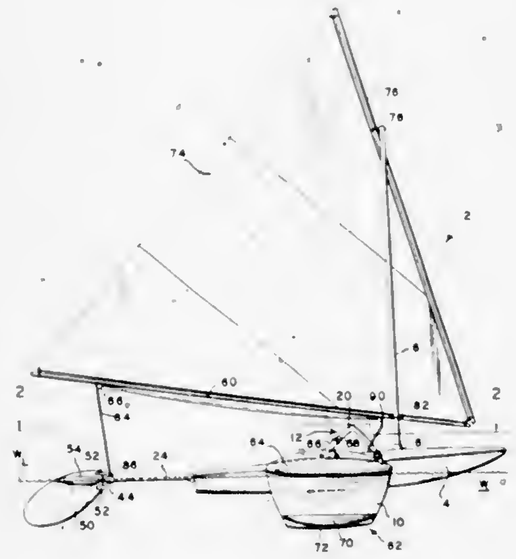
3,793,973
SAILING CRAFT WITH STABILIZING FOIL AND ADJUSTABLE RUDDER

George W. Patterson, 118 Valley Rd., New Canaan, Conn. 06840

Filed Aug. 5, 1971, Ser. No. 169,426

Int. Cl. B63b *35/00*

U.S. Cl. 114—39 **9 Claims**



A sailing craft including a paddle board hull carrying a sail and having an outrigger mounted canted foil equipped with a fin for added stability. The craft is sailed by a person lying prone on the hull and a longitudinally adjustable rudder is attached to the hull and is manipulated with the feet to steer the craft.

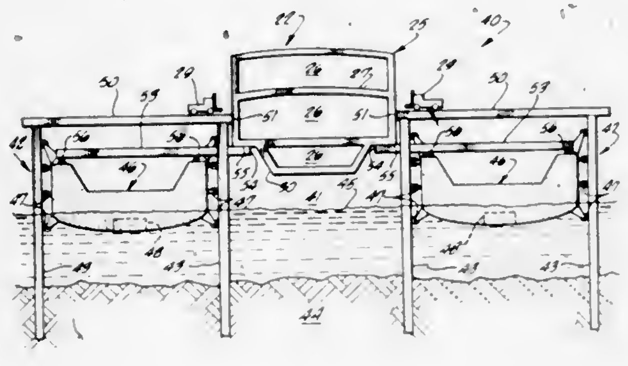
3,793,974
MARINE TRANSPORT

John J. Bylo, 7272 Willoughby Ave., Los Angeles, Calif. 90046

Continuation-in-part of Ser. No. 794,938, Jan. 29, 1969, abandoned. This application Oct. 7, 1971, Ser. No. 187,537

Int. Cl. B63b *35/44*

U.S. Cl. 114—43.5 **23 Claims**



An integrated marine transport system for joint or separate commercial and military uses in which a plurality of cargo containers, each sized to define the entire cargo carrying space of a vessel, are each separably mated with cooperatively configured vessels provided for moving the containers from port to port. The system also includes dock facilities configured to mate with the cargo containers and to receive and to discharge the containers directly from and to the vessels. The system also includes in-port vessels for transferring the containers from the port-to-port vessels to the docks. Also described is a novel docking arrangement useful in conjunction with the vessels and the cargo containers to provide port and cargo handling facilities in undeveloped areas.

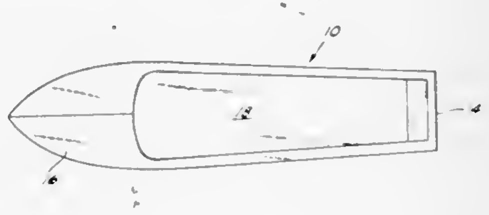
3,793,975
REINFORCED CONCRETE BOAT HULL

Raymond A. Duff, 1333 S. Baker, Santa Ana, Calif. 92707

Continuation-in-part of Ser. No. 851,961, Aug. 21, 1969, Pat. No. 3,664,287. This application Mar. 11, 1971, Ser. No. 123,269

Int. Cl. B63b *3/00, 5/14*

U.S. Cl. 114—65 A **17 Claims**



A boat having a hull formed of a plurality of alternate, integrally bonded layers of a novel cementatious material and fiber-reinforced epoxy resin, and a method of constructing a concrete and fiber-reinforced epoxy resin boat hull are disclosed. The hull is a unitary structure comprised of a plurality of layers of the cementatious material having an integrally bonded layer of fiber-reinforced epoxy resin interspaced between adjacent layers of the cementatious material. The cementatious material is an admixture of hydraulic cement, aggregate, epoxy resin, water reducing additive, and sufficient water to harden the cement. Also, the hull can have an exterior resinous surface coating integrally bonded to it to enhance its appearance and serviceability.

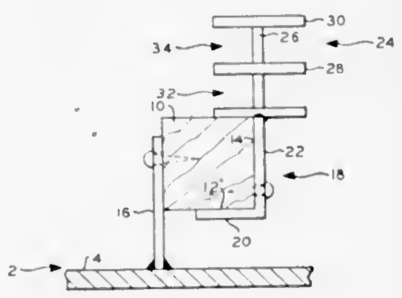
3,793,976
MULTILAYERED, INSULATED FLUID TANK AND STRUCTURE

Earl E. Kleinmann, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 29, 1973, Ser. No. 327,736

Int. Cl. B63b *25/16*

U.S. Cl. 114—74 A **10 Claims**



A multilayered, insulated fluid tank having supporting elements for maintaining the tank spaced from the structure and holding elements for attaching the multilayers of the tank one to the other and yet provide for some movement of the tank. Elongated attaching elements attach the various tank sections together to provide a continuous interior surface.

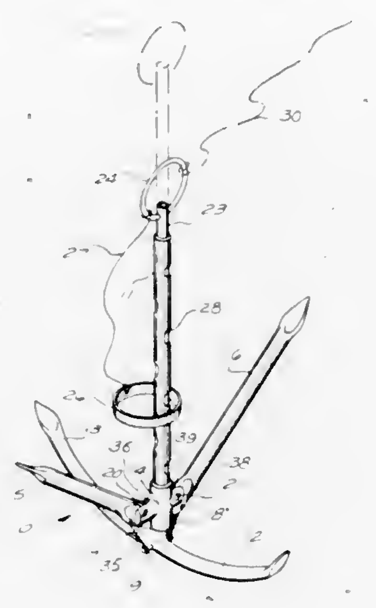
3,793,977
VESSEL ANCHOR

Charles O. Ziegler, East Marion, N.Y., assignor to Herman Kanfer, Plainview, N.Y.

Filed Dec. 6, 1972, Ser. No. 312,741

Int. Cl. B63b *21/46*

U.S. Cl. 114—208 **6 Claims**



An anchor for a vessel includes a tubular shank having a plurality of holes, a pair of flukes extending in opposite directions from one of its ends, and a pair of holes which support a pin between and perpendicular to the flukes. Above the holes, the shank rigidly supports a coupler to which there is pivotally connected, one on each of opposite sides of the shank, a pair of flukes. Each of the pair of flukes is free to pivot within a plane passing through the axis of the pin and the shank. Further, the axis about which each fluke pivots is near an end of the fluke and the end is normally caused to abut the shank by a tension spring connecting the fluke to the pin. Thus, the pivotable flukes normally extend away from the shank at a predetermined angle. In addition, the inside of the shank slidably supports a tubular member having a plurality of holes and a link passing through one of its ends. The link is connected, via the inside of the tubular member and shank, by a tension spring to the pin. Thus, the tubular member and the link are resiliently coupled to the shank. When the anchor is dropped, the vessel's motion is absorbed by the resilient coupling, thereby preventing the vessel from drifting, and water flowing through the plurality of holes keeps the moving parts free of mud. When the anchor is out of the water, the pivotable flukes may be moved parallel to the shank and a ring which is connected by a line to the link may be slipped over them to prevent their opening, thereby permitting the anchor to lay on a deck without having upwardly projecting flukes.

3,793,978
EXPLOSIVELY ACTUATED UNDERWATER ANCHOR LINE CUTTER

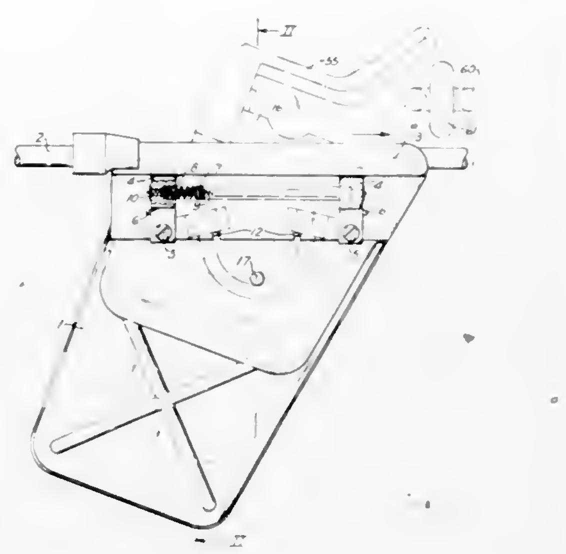
Ernest E. Temple, Murrysville, and Joseph L. Giebel, Pittsburgh, both of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Division of Ser. No. 193,381, Oct. 28, 1971. This application Mar. 7, 1973, Ser. No. 338,994

Int. Cl. B63b *9/00*

U.S. Cl. 114—221 A **5 Claims**

The frame of a chain cutter is mounted in a housing on a stabilizing fin. The fin is held on a sweep line by a pair of pivoted lugs that can be released from the line by pulling back on a spring between the lugs. Attached to the front of the cutter frame is an anvil forming with the frame a chain-receiving recess. A barrel in the frame contains a piston for driving a chisel forward through the chain link in the recess. The piston is hollow and contains a cartridge holder provided with an axial passage having a breech block in its rear end. A plunger, slidably mounted in the breech block and in an opening in the frame behind it, carries a firing pin on its front end. The frame is provided with means, actuated by a mine anchor line in the chain-receiving recess, for suddenly increasing water pressure to drive the plunger and firing pin ahead.



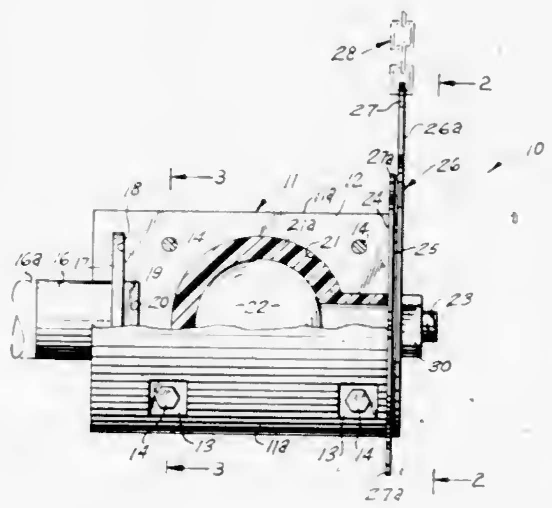
3,793,979
PROPELLER HITCH DEVICE

Hayes J. Trosclair, 530 Fos Ave., Harvey, La. 70058

Filed Aug. 17, 1973, Ser. No. 389,116

Int. Cl. B63h

U.S. Cl. 115—.5 R **3 Claims**



This device is for the purpose of retaining a boat propeller, the device being attached to the propeller shaft, by an extending shank portion embedded within a housing, the housing having on its interior a ball attached shaft riding within a bearing, the external portion of the device including a cutting disc and a rope holder.

3,793,980
MARINE PROPULSION SYSTEM

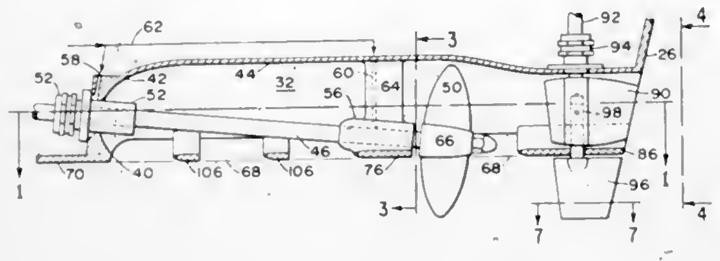
Peter M. Sherman, Stuart, Fla., assignor to Hydrodynamic Development Corp., Salem, Mass.

Filed Dec. 30, 1971, Ser. No. 214,337

Int. Cl. B63h *5/16*

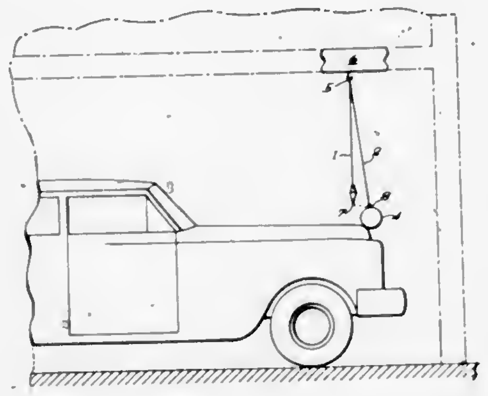
U.S. Cl. 115—39 **30 Claims**

A propulsion system for high speed planing hulls, employing a tunnel-mounted propeller of the supercavitating type in conjunction with means for causing the propeller to operate partly submerged at planing speeds and, aided by the tunnel, to operate fully-submerged with great effectiveness at low hull speed to enable the propeller to develop ample thrust to drive the craft up to and into planing speed.



3,793,981
PARKING AID

Meredith P. Sparks, 5129 Granada, Coral Gables, Fla. 33146
Filed Sept. 25, 1972, Ser. No. 291,554
Int. Cl. B60q
U.S. Cl. 116—28 R **5 Claims**

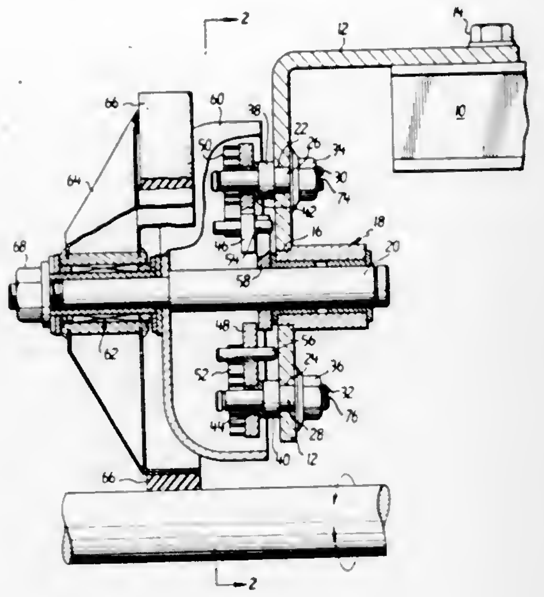


This invention relates to a device for positioning a moving vehicle in a parking space of limited size. The device is suspended from an overhead support, and comprises in combination a plumb line extending downwardly to a level slightly above the heighth of the moving vehicle and a second line having attached at the lower end a brusher which barely touches the surface of the vehicle when the vehicle passes beneath the brusher, and moves forward as the vehicle is advanced into position.

3,793,982
REVERSE MOTION ALARM

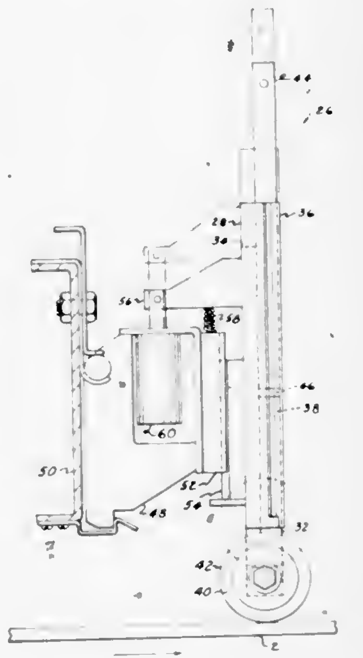
Edwin R. Peterson, 3109 Bogus Basin Rd., Boise, Idaho 83702
Filed Apr. 2, 1973, Ser. No. 346,976
Int. Cl. B60g *5/00*
U.S. Cl. 116—60 **4 Claims**

A reverse motion alarm, which may be mounted anywhere on a vehicle or machine in proximity to a rotating or translating member whose direction of rotation changes with the direction of motion of the vehicle or machine, may include a friction wheel driven by the rotating or translating member, a shaft-mounted overrunning clutch which transmits rotation in one direction only, a cam driven through the clutch and a spring biased clapper mechanism actuated by the cam which rings a bell upon reverse movement of the vehicle or machine.



3,793,983
APPARATUS FOR MARKING FLAT GLASS

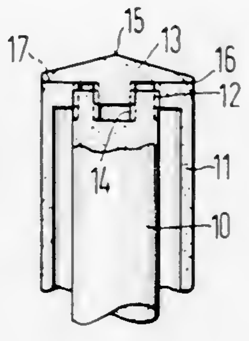
John Shelestak, Bairdford, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Apr. 20, 1972, Ser. No. 245,918
Int. Cl. B05c *1/02*
U.S. Cl. 118—7 **8 Claims**



Disclosed herein are apparatus and methods for marking the location of defects in a moving ribbon or sheets of flat glass and, in particular, apparatus which comprises a marking material holder and transfer wheel assembly which is suitably supported above said ribbon or sheets of glass and arranged to be rapidly actuated into and out of contact with the glass to mark the location of defects therein.

3,793,984
APPARATUS FOR THE PRODUCTION OF CLOSED END TUBES OF SEMICONDUCTOR MATERIAL

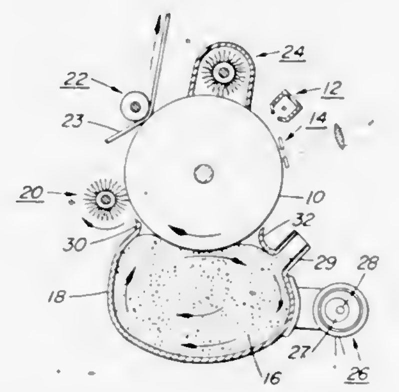
Andreas Kasper, Garching-Hochbrueck, and Wolfgang Dietze, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Nov. 13, 1972, Ser. No. 306,011
Claims priority, application Germany, Nov. 24, 1971, 2158257
Int. Cl. C23c *13/08*
U.S. Cl. 118—48 **5 Claims**



In apparatus for producing semiconductor tubes by means of depositing semiconductor material from a gaseous atmosphere onto a heated receiver body, the receiver body consists of a concentric assembly of inner and outer conductive members connected at one end by means of cooperating screw threads on the two members, and a conical end cap member covering the end of the assembly and forming a smooth continuous surface with the exterior of the outer member.

3,793,985
IMAGING SYSTEM

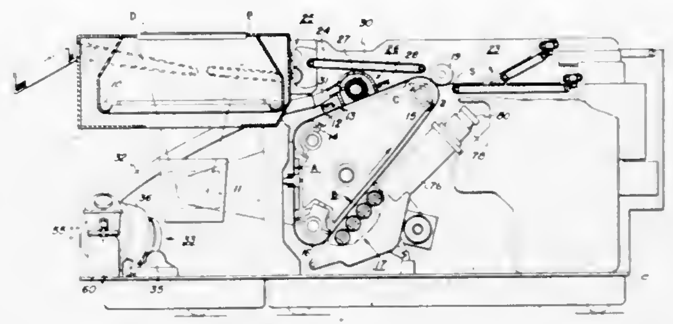
Robert J. Hagenbach, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Division of Ser. No. 567,475, July 25, 1966, Pat. No. 3,574,660. This application Dec. 30, 1969, Ser. No. 1,906
Int. Cl. G03g *13/08*
U.S. Cl. 118—637 **7 Claims**



Electrostatic latent images are developed by developer material in a chamber having a curved bottom surface by transmitting to the developer material in contact with the chamber sufficient oscillatory energy to circulate a stream of the developer material in an orbital path in a substantially vertical plane, the oscillatory energy having an axis of oscillation perpendicular to the vertical plane and contacting the upper periphery of the stream of developer material with a surface bearing an electrostatic latent image.

3,793,986
TONER RECLAIMING SYSTEM FOR ELECTROSTATIC PRINTING MACHINES

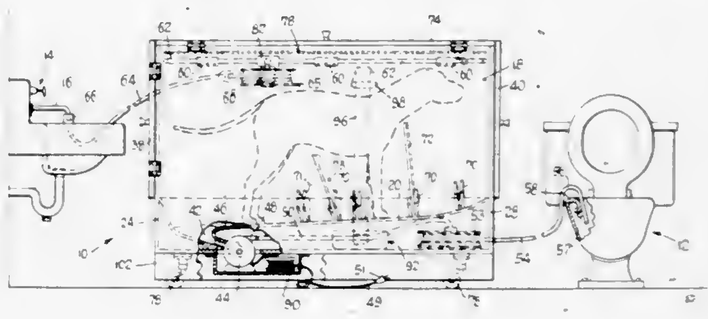
Salvatore Latone, 23 Brentwood Dr., Rochester, N.Y. 14624
Filed June 11, 1971, Ser. No. 152,136
Int. Cl. G03g *13/08*
U.S. Cl. 118—637 **3 Claims**



A toner powder reclaiming system for use in conjunction with a photoreceptor cleaning device in an electrostatic reproduction machine, the system including a particle separator in the path of movement of air flow containing toner particles and defined by ducts arranged to receive the particles from the cleaning device. After the toner particles have become separated, they are directed to a plurality of receptacles, may be removed from the machine and used to return the toner particles back into the machine for reuse.

3,793,987
DOMESTIC APPLIANCE FOR PETS

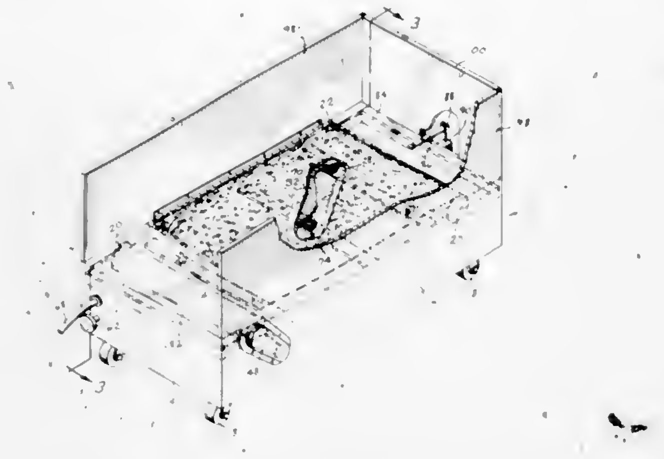
Crosby U. Rogers, 355 Silver Hill Rd., Easton, Conn. 06612
Filed Feb. 5, 1973, Ser. No. 329,600
Int. Cl. A01k *29/00*
U.S. Cl. 119—1 **17 Claims**



A domestic appliance for use in homes, apartments, condominiums and the like to eliminate the need for taking a pet outside. The appliance serves to facilitate washing the pet, and also serves as a convenient toilet therefor. It comprises a small enclosure or housing with entrance and exit doors, the housing having a bottom wall sloped toward one area where a drain opening is arranged to remove liquid and solids from the low bottom wall area by means of a retractable flexible hose which is adapted to extend over the rim of a toilet flush bowl. Inside the housing there is disposed a series of water jets which are connected to one end of another hose, the other end of which has a fitting for attachment to a bathroom sink faucet. The appliance is so arranged that it can be used either as a pet bath, or as a pet waste disposal apparatus, in which latter case the inside of the housing can be sprayed clean by means of the water jets, and the pump actuated to remove the rinse water and solids, so as to dispose of the same into the flush bowl. The top of the housing additionally has a grill and doors which latter can be opened to permit the owner to observe the pet while it is inside.

3,793,988
ANIMAL TOILET

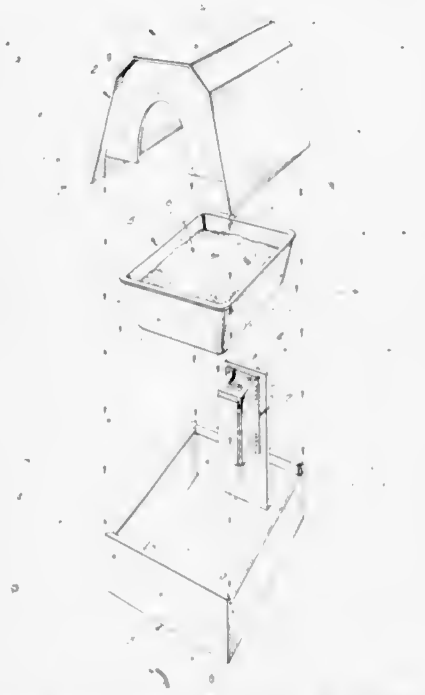
Robert S. Traeger, Rochester, Ind., assignor to KLT Industries, Inc., Rochester, Ind.
Filed Oct. 24, 1972, Ser. No. 300,110
Int. Cl. A01k *29/00*
U.S. Cl. 119—1 **7 Claims**



A toilet or waste disposal means for the excreta of an animal in which the excreta is carried upon a conveyor belt with the solid matter thereof being deposited in a suitable receptacle and the belt thereafter being sprayed by a suitable cleaning fluid to cleanse the belt of any urine or remaining excreta adhering to the belt.

3,793,989
DEODORIZED PET RELIEF STATION

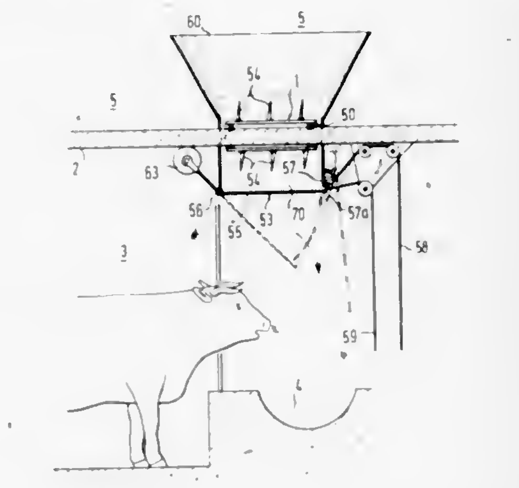
Thomas L. Clark, 12444 Wood Manor, Dallas, Tex. 75234
Filed Jan. 15, 1973, Ser. No. 323,764
Int. Cl. A01k *29/00*
U.S. Cl. 119—1 **4 Claims**



A pet house including means for distributing deodorizer throughout the pet house and means for retaining the odors and deodorizer smell within the confines of the pet house. An electric powered fan may circulate and distribute deodorizer. Deodorant may be a solid, a semi-solid, or a liquid deodorizer fed through a wick from a container supplied with liquid deodorant, or deodorizer may be automatically dispensed by a timed aerosol dispenser. The top of the pet house which is removeable serves to retain the odors and deodorizer smell within the pet house and to prevent contamination of the ambient atmosphere. Removal of the top of the pet house affords ready access to the interior of the pet house for purposes of cleaning, changing cat litter absorbent material, changing batteries in the deodorizer unit, and adding deodorant. The deodorizer unit is attached to the inside of the pet house.

3,793,990
APPARATUS FOR MECHANICALLY DISTRIBUTING FEED TO ANIMAL FEEDING STATIONS IN A BARN

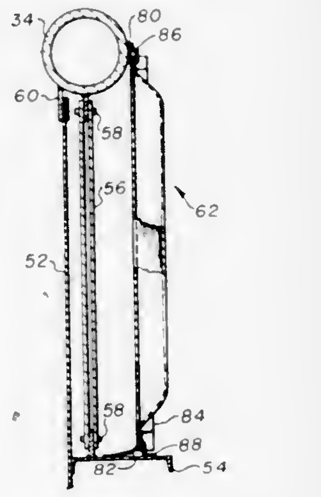
Ernst Weichel, Postfach 30, Heiningen, Germany
Filed Feb. 22, 1971, Ser. No. 117,241
Claims priority, application Germany, Feb. 21, 1970, 2008141
Int. Cl. A01k *5/02*
U.S. Cl. 119—56 R **24 Claims**



In an apparatus for mechanically distributing feed to spaced animal feeding stations in a barn and the like, an endless belt or chain conveyor is positioned within a housing so that at least its sides and bottom are enclosed and the housing forms a trough through which feed is delivered to the feeding stations. Longitudinally and transversely spaced prong-like extensions are secured to the conveyor and they depend from the lower surface of the conveyor to almost the bottom of the trough so that the extensions move the feed through the trough. The bottom surface of the trough is pivotally connected to the remainder of the housing for selectively discharging feed to the feeding stations.

3,793,991
EXPANSION PLATE

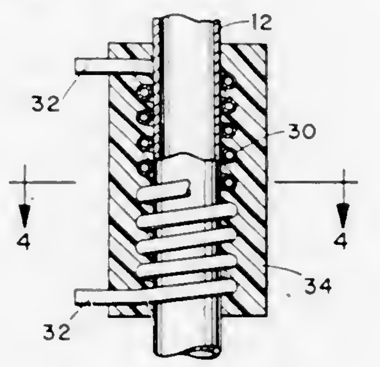
Byron Joseph Round, Simsbury, and Eizens Abolins, Windsor, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.
Filed Dec. 26, 1972, Ser. No. 318,332
Int. Cl. F22b *37/24*
U.S. Cl. 122—6 A **6 Claims**



An expansion plate or sheet comprises a plurality of panels in sealed side-by-side relation, each panel including a sheet, or sheets, which extend continuously substantially the full distance between two adjacent walls for connection in airtight relationship therewith and most of said panels include at least one elongated depression therein which extends much of the distance between the two adjacent walls.

3,793,992
ACCESSORY WATER HEATER FOR A GAS-FIRED WATER HEATER

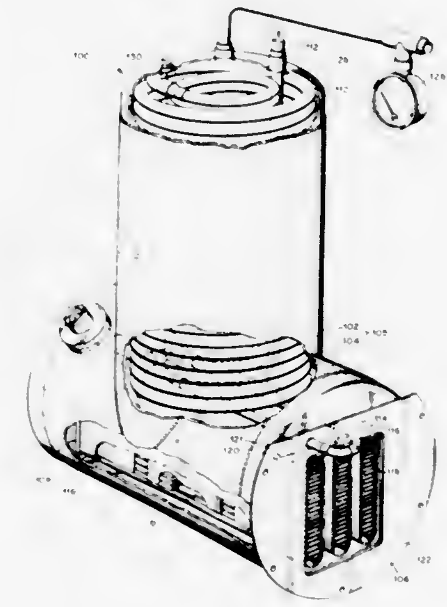
Fidencio G. Marquez, 619 Ocean Blvd., Coronado, Calif. 92118
Filed July 26, 1972, Ser. No. 275,197
Int. Cl. F22d *1/24*
U.S. Cl. 122—20 B **3 Claims**



An attachment or accessory water heater for mounting on the exhaust gas flue of a gas-fired water heater such as those sold for domestic use. There is usually a considerable space above domestic water heaters as ordinarily installed and the exhaust gas flue of such heaters ordinarily traverses this space. It is proposed bu this invention to use much of the heat otherwise dissipated through the exhaust flue to preheat, or superheat, the water. The accessory heater is essentially a heat exchanger conduit of considerable capacity capable of encircling the exhaust flue and having means for connection in series in the piping of the main heater, the conduit having thermal insulation to inhibit loss of heat to the atmosphere.

3,793,993
VAPOR GENERATOR AND CONTROL THEREFOR

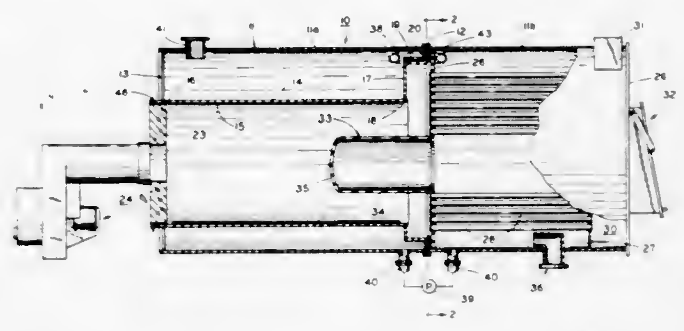
William P. Teagan, Acton, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.
Filed Sept. 1, 1972, Ser. No. 285,629
Int. Cl. F22b *1/02*
U.S. Cl. 122—33 **11 Claims**



The vapor generator provides a uniform and controllable heat input for vaporizing organic working fluid in a vapor engine. A fluid-tight enclosure is partially filled with a heat transfer fluid for transferring heat from a heat source to organic working fluid conducted through the enclosure in a convoluted tube. A simplified pressure responsive temperature control apparatus provides safe and accurate operation.

3,793,994
BOILER

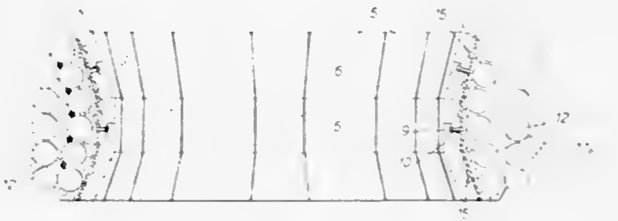
Ove M. Olsen, 2720 Park Pl., Evanston, Ill. 62001
Filed June 14, 1972, Ser. No. 262,782
Int. Cl. F22b *9/08*
U.S. Cl. 122—52 **9 Claims**



A boiler for use with oil or gas employs a two part cylindrical shell housing a combustion and primary heat recovery section mounted in one part and a bank of heat exchange tubes forming a secondary heat recovery section mounted in the other part. The combustion section consists of a completely immersed, large diameter firing tube in which combustion occurs and which constitutes the primary heat recovery section of the boiler. The bank of heat exchange tubes which carry the hot exhaust gases from the combustion chamber to the stack surround a closed end, tubular primary heat surface extender which extends into and is in substantial alignment with the firing tube.

3,793,995
QUARL BURNER

William Brown Black, Renwold, Kilbarchan Rd., Bridge of Weir, Renfrewshire, Scotland
Filed June 30, 1972, Ser. No. 268,149
Int. Cl. F22b *37/20*
U.S. Cl. 122—235 B **4 Claims**



A flame-injection throat for a boiler is lined by shaped refractory tiles adjacent edges of which are complementarily rabbetted to interfit. Some of the tiles have in their front faces recesses from which extend rearwardly through the rear faces of the tiles through-openings for the passage of the shanks of bolts fast with tubes disposed in banks at each of two opposed sides of the throat. The tubes are out of contact with one another and the tube axes are normal or substantially normal to the throat axis. The tube lengths flanking the tiles at said opposed sides of the throat are fully embedded in refractory cement which anchors the tiles in place. Locking nuts are secured in the bolt shanks in said recesses and the latter are flush filled with refractory cement.

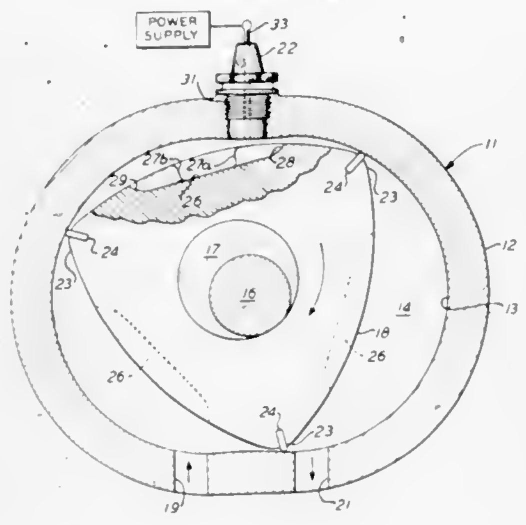
3,793,996
ROTARY COMBUSTION ENGINE WITH IMPROVED FIRING SYSTEM

Arthur M. Scheerer, Sarasota, Fla., assignor to Curtiss-Wright Corporation, Wood Ridge, N.J.

Filed July 18, 1972, Ser. No. 272,854

Int. Cl. F02b *53/12*

U.S. Cl. 123—8.09 **9 Claims**



A rotary engine having a special spark plug with a single electrode flush with the inner surface of the trochoidal housing and firing to a selected portion of the rotor surface at approximate times.

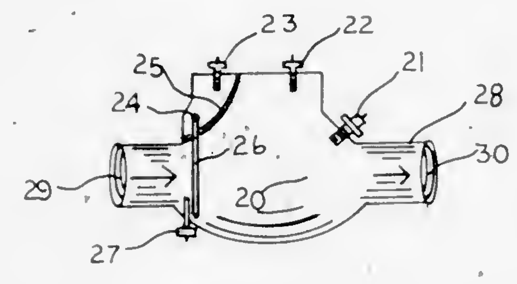
3,793,997
ENGINE LIQUID FLOW INDICATING DEVICE MEANS

Philip Michael Banner, 28-Oxford Rd., Massapequa, N.Y. 11758

Filed Dec. 15, 1971, Ser. No. 208,072

Int. Cl. G01m *15/00*

U.S. Cl. 123—41.15 **7 Claims**



Liquid flow sensors connected to an engine or power means requiring liquid cooling. Sensors measure liquid flow velocity and volume factors on a visual flow gauge in increments of low, medium and high volume readouts in conjunction with a warning means, for liquid flow and pressure indication.

3,793,998
ROTARY ENGINE

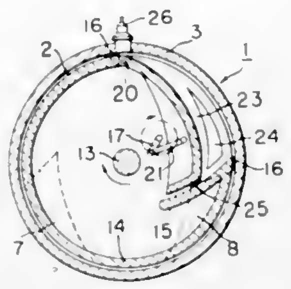
Minoru Yokoi, and Yoshiko Yokoi, both of No. 9-9 Miyamaecho, Hakodate-shi, Japan

Filed June 12, 1972, Ser. No. 261,802

Int. Cl. F01c *9/00*

U.S. Cl. 123—43 R **3 Claims**

A rotary engine comprising a hollow cylindrical casing and a hollow cylindrical rotor accommodated in said casing in rotatable fashion. An opening is provided in the cylindrical wall of the rotor, said opening being provided with a curved bulkhead extending inward along one side-edge thereof. A piston member with a surface shaped in a circular arc having a curvature identical with the surface of the rotor is pivoted on the opposite side-edge of the opening. A crankshaft is connected with said piston member and rotates relative to said rotor so that the piston member is oscillated to form a combustion chamber between the piston member and the casing.



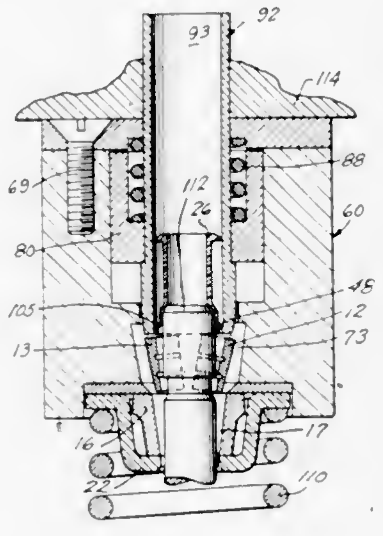
3,793,999
VALVE SPRING CAP-LOCK ASSEMBLY AND METHOD AND TOOL FOR ASSEMBLY ONTO A VALVE STEM

Donald J. Seiler, Mentor; John H. Shalaty, Wickliffe, and Frederick V. Anderson, Willoughby, all of Ohio, assignors to TRW Inc., Cleveland, Ohio

Filed June 30, 1971, Ser. No. 158,255

Int. Cl. F02l *3/10;* **B23p** *13/00*

U.S. Cl. 123—90.67 **26 Claims**



This invention provides a tool and method for assembling a valve spring retainer cap and lock onto the end of a valve stem with the valve spring in place and a retainer cap and lock assembly held together by a deformable plastic tube.

3,794,000
FUEL SYSTEM FOR SEPARATING VOLATILE FUEL FROM GASOLINE

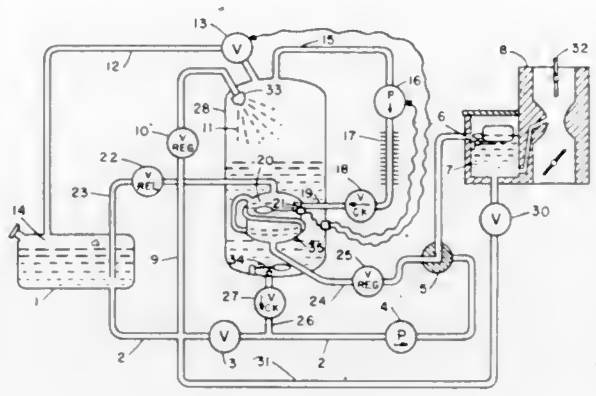
Raymond E. Hodgkinson, Seabrook, Tex., assignor to Ethyl Corporation, Richmond, Va.

Filed Sept. 17, 1971, Ser. No. 181,415

Int. Cl. F02m *15/00*

U.S. Cl. 123—133 **13 Claims**

A dual fuel system for a gasoline-fueled internal combustion engine wherein the volatile portion of gasoline is vaporized in a chamber, compressed and condensed into a tank positioned within the vaporizing chamber whereby the heat of condensation is utilized to aid vaporization and any leaks in the tank are safely contained in the vaporizing chamber. The condensed volatile portion of the gasoline is delivered to the engine during start and warm-up and gasoline is delivered the remainder of the time. Means are provided to vent the vaporizing chamber and drain the volatile-depleted fuel to the gasoline line. Operation in this manner reduces exhaust hydrocarbon and carbon monoxide emissions.



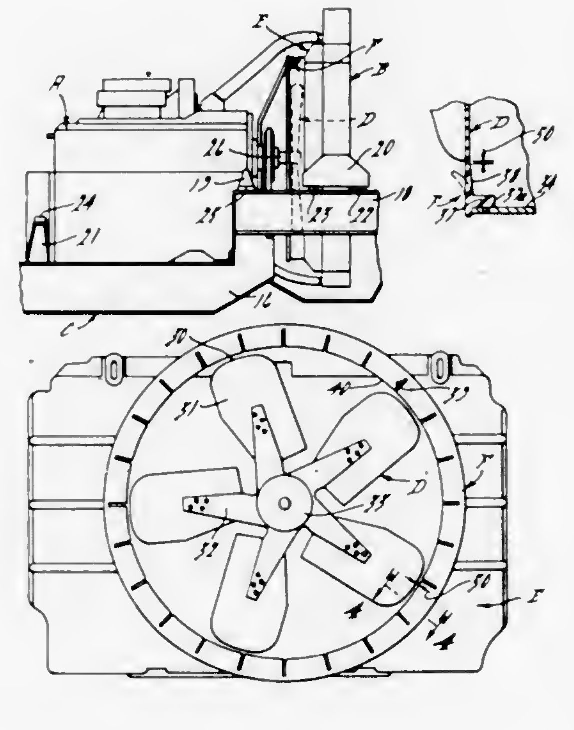
3,794,001
VARIABLE TIP CLEARANCE ENGINE COOLING FAN SHROUD

Philip L. Birch, Detroit, and Robert W. Morrison, Westland, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 2, 1973, Ser. No. 337,516

Int. Cl. F01p *7/02, 11/10*

U.S. Cl. 123—41.05 **7 Claims**



A fan & shroud assembly for use in cooling a radiator of an internal combustion engine. The assembly has a resilient insert forming part of a fan shroud which functions to vary the clearance between the shroud and fan blade tips in response to the velocity of air flow induced by the fan. The shroud yields to increasing air velocity to obtain said clearance-variation and accompanying improved efficiency.

3,794,002
PULSE GENERATOR FOR CONTROLLING THE VALVES OF AN INTERNAL COMBUSTION ENGINE

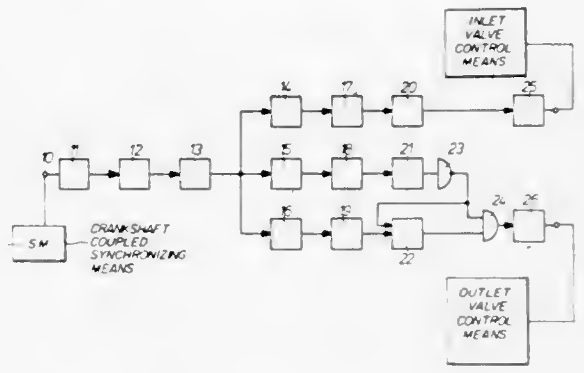
Wolf Wessel, Schwieberdingen, Germany, assignor to Robert Bosch, GmbH, Stuttgart, Germany

Filed Apr. 22, 1971, Ser. No. 136,322

Claims priority, application Germany, Apr. 30, 1970, 2021276

Int. Cl. F01l *9/04;* **F02d** *31/00*

U.S. Cl. 123—90.11 **18 Claims**


INLET VALVE CONTROL MEANS
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SM
CRANKSHAFT COUPLED SYNCHRONIZING MEANS
OUTLET VALVE CONTROL MEANS

A pulse generator rotating synchronously with the crank shaft of the engine feeds pulses to a bistable multivibrator, the output of which is conductive to an integrator through a monostable multivibrator. The integrator output is fed to a further pulse generator for generating pulses of variable keying ratio independent of engine speed, the further pulse generator comprising an impedance convertor, a storage capacitor, and a voltage-time transducer. This arrangement operates one valve of one cylinder of the engine. Additional valves can be operated by two further pulse generators for each valve, the output of the first of the two additional pulse generators being used to deliver the pulses for the second of the two further pulse generators so as to prevent simultaneous operation of the inlet and outlet valves.

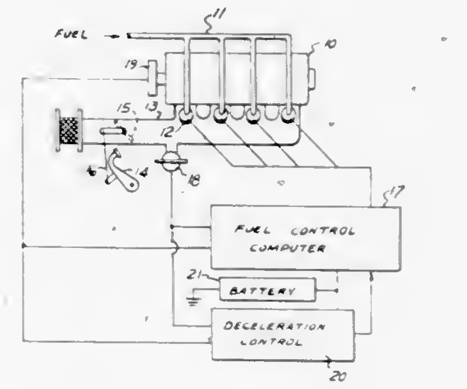
3,794,003
PRESSURE DEPENDENT DECELERATION CUTOFF FOR AN INTERNAL COMBUSTION ENGINE FUEL DELIVERY SYSTEM

Junuthula N. Reddy, Horseheads, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jan. 13, 1972, Ser. No. 217,569

Int. Cl. F02m *51/00*

U.S. Cl. 123—97 B **26 Claims**



This invention relates to an electronic deceleration control, responsive to engine operating condition sensors, cooperating with an electronic fuel control computer for an internal combustion engine for curtailing or terminating the fuel delivery to the engine under selected engine operating conditions indicating an operator's demand for deceleration. The deceleration control restores normal fuel delivery to the engine in response

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of selected engine operating conditions in-

gine wherein the fluid flow is air flow through the intake

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warning system employs series switches to control an electri-

cylinder are joined to the corresponding terminals of an ignito a second set of selected engine operating conditions indicating the demand for deceleration has been terminated. The inventive control responds to signals indicative of the engine speed and the intake manifold absolute pressure, and computes the first time derivative of the intake manifold pressure, giving an immediate indication of the deceleration demand independent of throttle position or a minimum manifold pressure. This control system, cooperating with an electronic fuel injection control system for an internal combustion engine, substantially reduces the exhaust emissions during the period of deceleration.

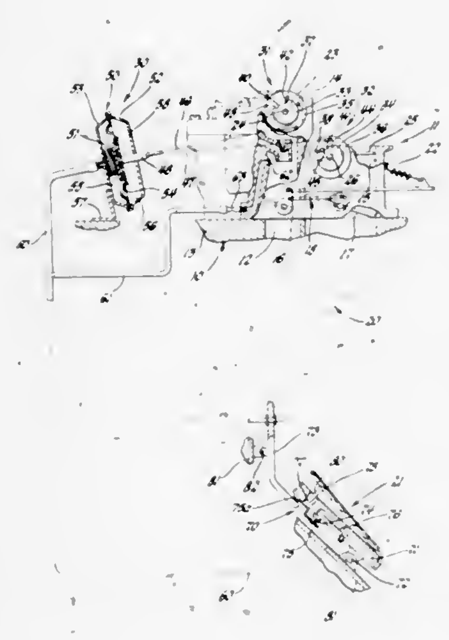
3,794,004
THROTTLE PEDAL CONTROLLED THROTTLE OVERRIDE SYSTEM

Donald D. Stoltman, Henrietta, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 11, 1972, Ser. No. 313,780

Int. Cl. F02m *13/06, 1/12, 9/08*

U.S. Cl. 123—97 B **3 Claims**



A throttle override system for the internal combustion engine of a vehicle wherein the choke valves and the air valves of the carburetor of the engine are connected to the diaphragm of a vacuum motor, the vacuum side of the vacuum motor being connected to a port in the throat of the carburetor and to the inlet of a normally closed bleed valve that is opened by depression of the accelerator pedal of the vehicle.

3,794,005
FLUIDIC FUEL INJECTION SYSTEM UTILIZING SIMPLIFIED FLUIDIC COMPUTATION ELEMENT

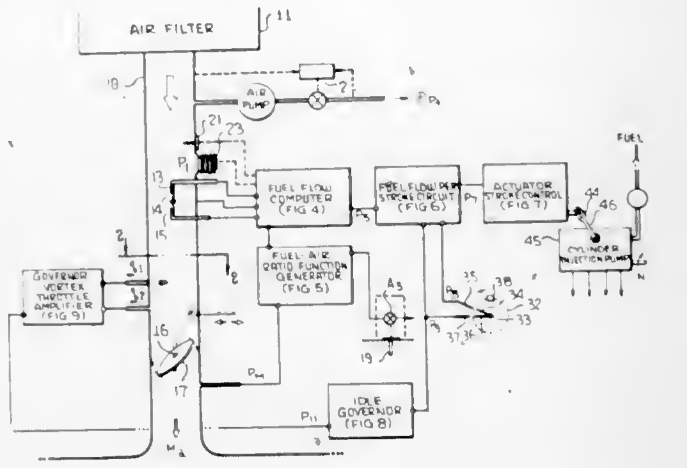
Robert F. Turek, Silver Spring, Md., assignor to Bowles Fluidics Corporation, Silver Spring, Md.

Filed Sept. 17, 1971, Ser. No. 181,531

Int. Cl. F02m *69/00*

U.S. Cl. 123—119 R **8 Claims**

Fluidic computation is simplified in a system wherein one of plural input parameters is a fluid flow which is to be multiplied by the sum of the other parameters. The primary computation element is a parallel flow sensor in which a fluid sensing jet is issued from within and parallel to the fluid flow and is received as a linear function of the fluid flow. The effects of other input parameters are included by utilizing each to vary the supply pressure for the sensing jet to thereby sum the effects of these parameters and multiply the sum by the fluid flow. In a preferred embodiment, the computation element is utilized in a fluidic fuel injection control for an internal combustion engine wherein the fluid flow is air flow through the intake manifold and the other input parameters include fuel-to-air ratio, inlet air pressure, inlet temperature and engine temperature. The resulting output signal represents the required fuel flow which is then modified by fluidic circuitry to deliver the proper quantity of fuel per cylinder stroke.


AIR FILTER
11
18
AIR PUMP
21
23
13
14
15
2
FUEL FLOW COMPUTER (FIG 4)
FUEL FLOW PER STROKE CIRCUIT (FIG 6)
ACTUATOR STROKE CONTROL (FIG 7)
FUEL
44
46
45
CYLINDER INJECTION PUMP
FUEL-AIR RATIO FUNCTION GENERATOR (FIG 5)
GOVERNOR VORTEX THROTTLE AMPLIFIER (FIG 9)
16
17
19
35
38
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32
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37
36
IDLE GOVERNOR (FIG 8)

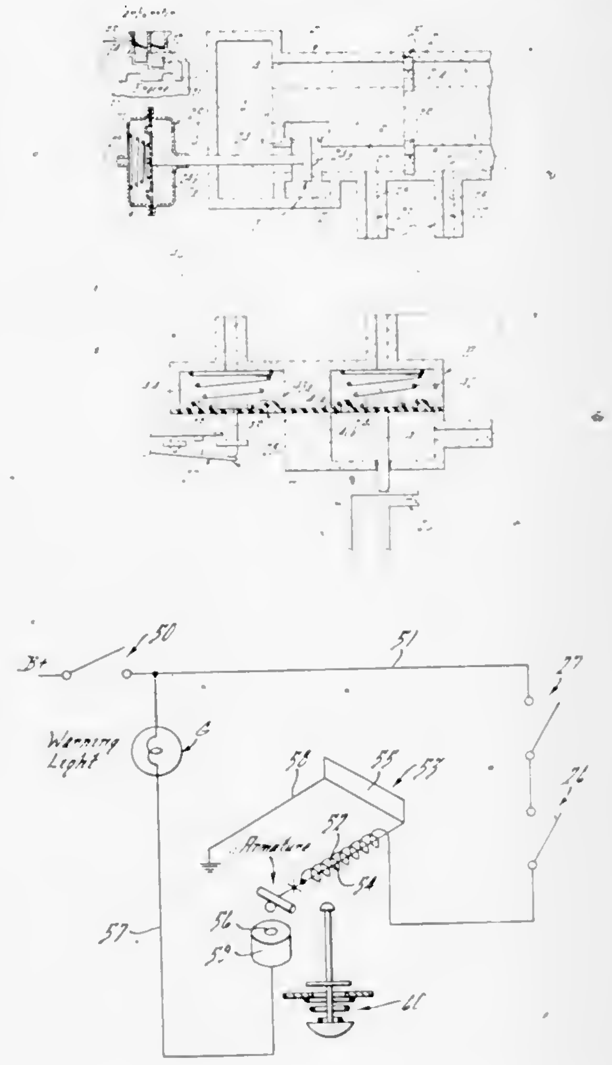
3,794,006
EGR WARNING SYSTEM

Gary F. Woodward, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 5, 1972, Ser. No. 312,390

Int. Cl. F02m *25/06*

U.S. Cl. 123—119 A **6 Claims**



An exhaust gas recirculation system for an internal combustion engine is provided with a warning system for indicating to the driver of a vehicle a failure of recirculation. The warning system employs series switches to control an electrical circuit for energizing an indicator; one switch is subject to an engine vacuum signal serving also to control admission of exhaust gas recirculation. Another switch is subject to differential pressures on opposite sides of a restrictor in the recirculation flow to sense a failure of recirculation.

3,794,007
PROCESS AND APPARATUS FOR MULTI-FUEL OPERATION OF AN AIR-COMPRESSING AND AUTO-IGNITING INJECTION INTERNAL COMBUSTION ENGINE

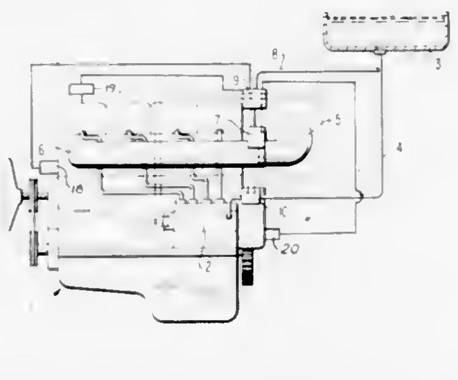
Horst Hardenberg, Stuttgart, and Gerhard Frankle, Grunbach, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Mar. 27, 1972, Ser. No. 238,336

Claims priority, application Germany, Mar. 27, 1971, 2115001

Int. Cl. F02m *31/04;* **F02n** *17/00*

U.S. Cl. 123—122 D **38 Claims**



A method and apparatus for the operation of an air-compressing and auto-igniting injection-type internal combustion engine for multi-fuel operation in which a flame-suction-air heater, known as such, for cold-starting operation is started during the operation of the engine under load with poorly ignitable fuels such as gasoline; the engine is thereby of the type which has a relatively low compression ratio for self-igniting fuel operation.

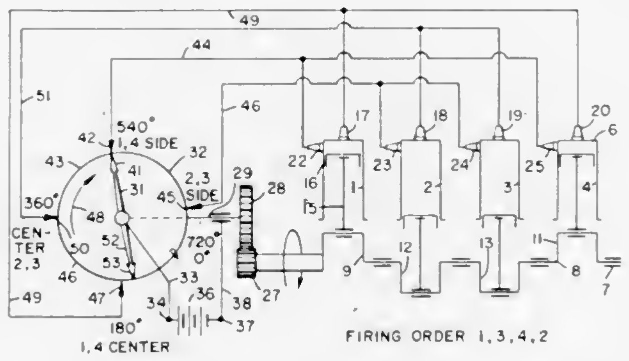
3,794,008
SPARK IGNITION SYSTEM

Clinton S. Mathews, Oakland, Calif., assignor to De Laval Turbine California, Inc., Oakland, Calif.

Filed May 18, 1972, Ser. No. 254,747

Int. Cl. F02p *5/04, 3/06*

U.S. Cl. 123—148 DS **4 Claims**



A spark ignition system is designed for a two-stroke or four-stroke cycle internal combustion engine and having first and second cylinders with pistons arriving at the combustion dead center position and the non-combustion dead center position thereof simultaneously. First and second sparkplugs in each cylinder are joined to the corresponding terminals of an ignition distributor energizing one of the sparkplugs in one cylinder at an effective cycle time and simultaneously energizing the corresponding sparkplug in the other cylinder at an ineffective cycle time. Both remaining sparkplugs are similarly energized. The two sparkplugs in any cylinder are fired effectively once each cycle but a few degrees of engine rotation apart.

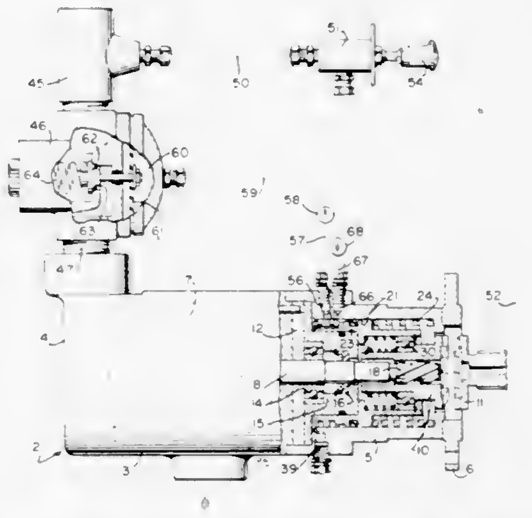
3,794,009
AIR STARTER

Thomas C. Wenrich, Charlotte, N.C., and Emanuel G. Spyradakis, Sayre, Pa., assignors to Ingersoll-Rand Company, Woodcliffe Lake, N.J.

Filed Sept. 5, 1972, Ser. No. 286,160

Int. Cl. F02n *7/08*

U.S. Cl. 123—179 F **6 Claims**



A fluid-operated starter containing a fluid-operated piston that moves the starter clutch into an engagement position, a valve for opening and closing the supply line to the starter motor and the piston cooperating with a means that opens the valve upon the arrival of the piston at its extended position and closes the valve upon the arrival of the piston at its retracted position.

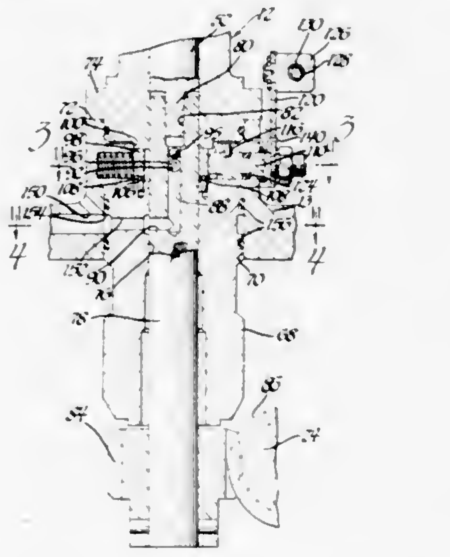
3,794,010
ROTARY ENGINE OIL METERING PUMP

James D. Palma, and Robert E. Morgan, both of Grand Rapids, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 20, 1972, Ser. No. 308,050

Int. Cl. F01n *1/02;* **F16n** *13/20*

U.S. Cl. 123—196 R **3 Claims**



A rotary engine is provided with an oil metering pump having a shaft rotatably mounted in the pump's body that is driven by the engine and has an expansible pump chamber which is contracted and expanded by a plunger that is mounted for reciprocal movement in a radial direction in the shaft. A ring arranged about the pump shaft effects reciprocating motion of the plunger as the shaft turns with the plunger stroke varied by varying the eccentricity of the ring in accordance with engine throttle opening. A single oil supply port in the pump's body is connected via an oil inlet-oil outlet port in the pump shaft to the pump chamber as the chamber is expanding as the shaft turns and this oil inlet-oil-outlet port thereafter connects the chamber as it contracts to one oil delivery port in the pump's body and then another all during one complete pump shaft revolution.

3,794,011

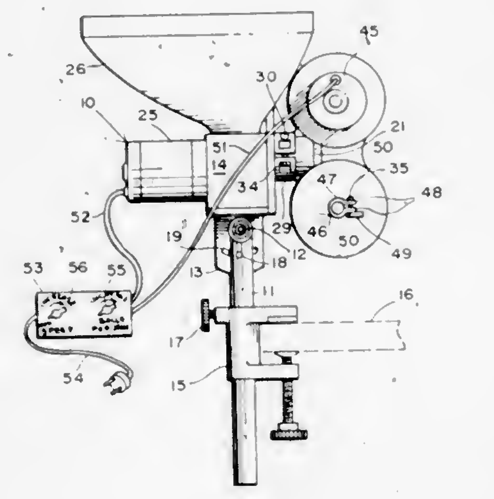
BALL PROJECTING DEVICE WITH SPIN PRODUCING MECHANISM

Joseph E. Newgarden, Jr., 10931-Griffing Blvd., Biscayne Park, Fla. 33161

Filed Apr. 6, 1973, Ser. No. 348,712

Int. Cl. F41b *3/04*

U.S. Cl. 124—1 **2 Claims**



A table tennis robot for serving table tennis balls at a predetermined rates of ejection and varying amounts of spin. The device is provided with an impeller that feeds the balls individually into a tapered passageway so that each ball comes into contact with a pair of wheels or discs with roughened outer surfaces, one of which is powered by a motor while the other is free wheeling with a brake attachment to cause variation of the amount of spin applied to a ball. The powered wheel or disc and the free wheeling wheel are on a manually rotatable carriage and they engage the ball between their roughened peripheries and eject the ball with the powered wheel adding spin to the ball.

3,794,012

ARCHERY BOW WITH COLLAPSIBLE BOW ARM REST

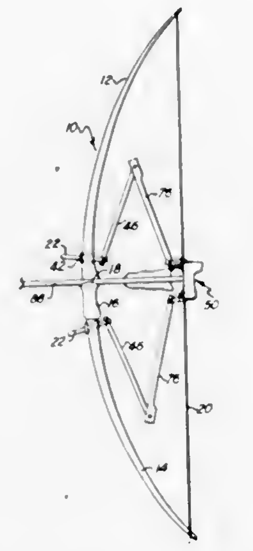
James C. Ramsey, P.O. Box 36, Lincoln, N. Mex. 88338

Filed Jan. 29, 1973, Ser. No. 327,870

Int. Cl. F41b *5/00*

U.S. Cl. 124—24 R **29 Claims**

Two collapsible bow arm rests extending between upper and lower limbs of a bow and a pull handle assembly located rearwardly of the bow mid-portion that is releasably mounted to a bow string secured to the ends of the bow. Each bow arm rest includes a front beam and a back beam, the back of the front beam being pivoted to the front of the back beam. The front of each front beam is pivoted by a pivotal connection to a butt plate assembly that is secured to a bow limb. Each butt plate assembly includes a butt plate that bears against the rear surface of a bow limb. The back of each back beam is pivoted to the pull handle assembly. A locking arrangement is provided that locks the front and back beams against relative movement when they are aligned. The butt plate assemblies are mounted to the bow limbs for forward-rearward adjustment to correspondingly adjust the forward-rearward position of the pivotal connections between the butt plate assemblies and the front beams. The butt plates are adjustably mounted on the remainder of the butt plate assemblies to enable the butt plates to bear flush against the rear surfaces of the bow limbs. The front and back beams are folded away from the forward-rearward center line of the bow-bow string assembly when the bow is undrawn and the beams are so dimensioned that the junctures between the backs of the front beams and the fronts of the back beams are either adjacent the bow limbs or the bow string when the beams are folded. Flexible grasping fingers attached to the front beam releasably grasp the bow limbs or the bow string when the beams are folded.



3,794,013

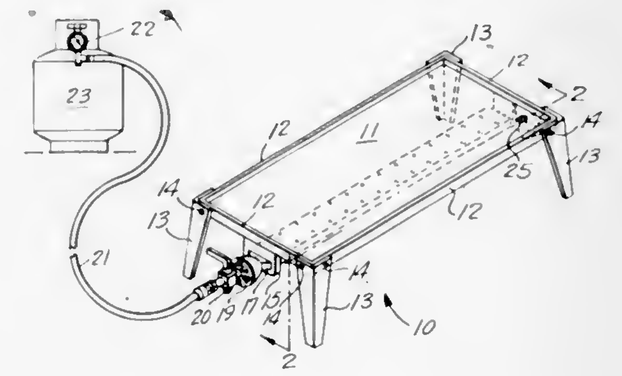
PORTABLE GAS GRILL

Orville C. Upton, 7421-Vandenberg, Sacramento, Calif. 95820

Filed May 15, 1972, Ser. No. 253,048

Int. Cl. F24c *3/08*

U.S. Cl. 126—40 **1 Claim**



A portable gas grill to permit outdoor cooking consists of a grill plate supported on removable legs and having a gas burner suspended therebeneath. The grill plate has a drain to drain the collected grease therefrom. A portable gas tank containing liquified petroleum gas is attached to the burner with a flexible hose to provide a source of gas for the burner regardless of the location of the burner.

3,794,014

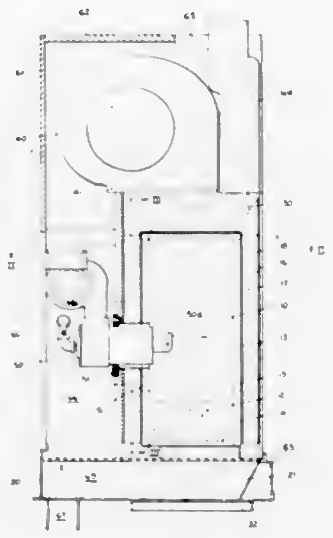
HOT-AIR FURNACE

Dan B. McVickar, and Adolf Wolf, both of Holland, Mich., assignors to Lear Siegler, Inc., Holland, Mich.

Filed Nov. 26, 1971, Ser. No. 202,126

Int. Cl. F24h *3/10*

U.S. Cl. 126—110 AA **8 Claims**



A hot-air furnace comprising a cylindrical combustion chamber with a plurality of apertures in the lower end of the combustion chamber wall through which flame jets are radially discharged into a flue chamber having a plurality of radiating vertical fins. An air chamber wall with a plurality of radiating vertical fins disposed therein surrounds the flue chamber. A novel blower means is in communication with one end of the air chamber.

3,794,015

IMMERSION-HEATER DIP TUBE

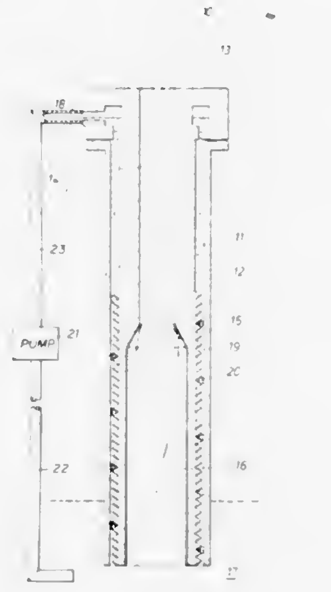
Helmut Vietz, Kamp-Lintfort, Germany, assignor to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany

Filed Nov. 4, 1971, Ser. No. 195,756

Claims priority, application Germany, Nov. 6, 1970, P 20 54 642.3

Int. Cl. F24h *1/24*

U.S. Cl. 126—360 A **14 Claims**



A heater comprises two concentric vertical tubes having a flame projecting down in the inner tube with the lower end of at least one of the tubes immersed in a tank of liquid, as a salt solution or an acid solution to be evaporated, condensed, and recirculated in the annulus between the tubes. Helical spiral vanes are formed in the annulus for delaying and spinning a thin, consistent film of the liquid over the contiguous surfaces of the tubes for producing considerably decreased operating temperatures of the tubes resulting in greatly decreased corrosion of and deposit formation on the heater.

3,794,016

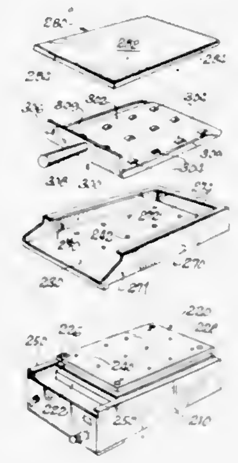
STEAM INJECTOR AND SPATULA

Chester J. Binks, La Grange, and Joseph M. Moser, Des Plaines, both of Ill., assignors to Restaurant Technology, Inc., Oak Brook, Ill.

Filed Apr. 3, 1972, Ser. No. 240,348

Int. Cl. F24d *1/00*

U.S. Cl. 126—369 **7 Claims**



A steam injector for steaming food products, such as the heels and crowns of buns. The steam injector incorporates a platen covered by a relatively rigid clamping plate enclosing steam forming chambers and passages in the platen, and a relatively flexible, thin cover plate overlying the clamping plate. The clamping and cover plates define orifices through which steam jets upwardly into an overlying steaming chamber. The steaming chamber includes side and back flanges which are integral with the cover plate and is topped by a top plate to define an open front. A juxtaposed removable spatula is formed to provide the front wall of the steaming chamber and to support bun portions to be steamed. The base of the spatula defines steam passages ordered similarly to the steam orifices and provides crowned diffuser members overlying the orifices to baffle and diffuse the steam jetting through the steam passages.

3,794,017

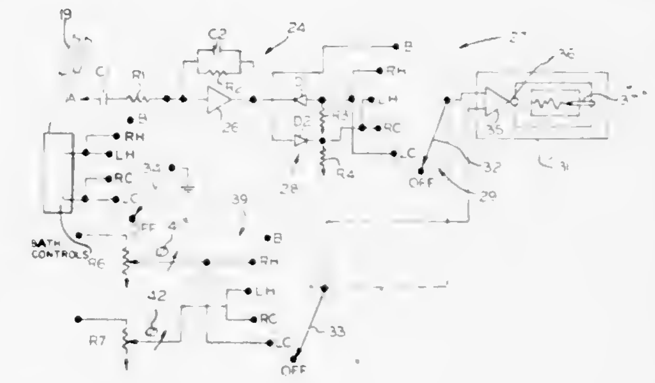
AUTOMATIC VELOCITY COMPONENT SELECTOR FOR ELECTRONYSTAGMOGRAPHS

Gerald H. Servos, 21 W. 254 Crescent Blvd., Glen Ellyn, Ill. 60137

Filed Jan. 8, 1971, Ser. No. 104,936

Int. Cl. A61b *5/05*

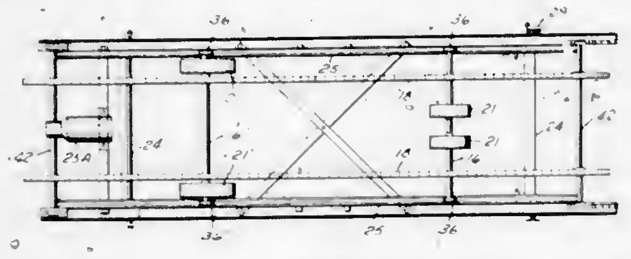
U.S. Cl. 128—2.1 R **7 Claims**



An improved apparatus for recording the velocity components in electronystagmographs. The eye position signals obtained from sensors attached to a patient undergoing nystagmus tests are coupled to a differentiator. The output of the differentiator is attached, through switch means, to a pen actuated recorder to provide an analog recording of the velocity derivative under desired test conditions. Means are provided to readily set the pen to zero at a mid-graph location, at a top-graph location and at a bottom-graph location thereby enabling the positive and negative velocity components to be shown on the entire graph scale.

3,794,018
MASSAGE DEVICE

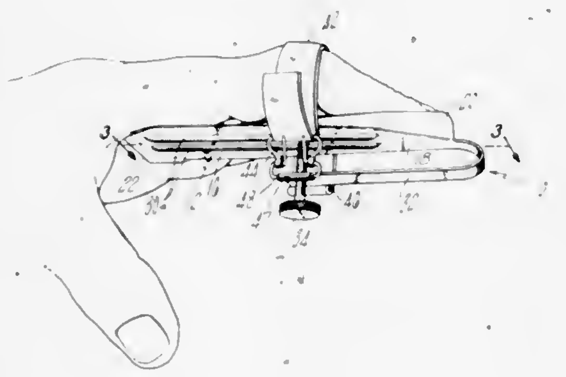
Jacob Repko, RD3 Pine Rd., Conneaut Lake, Pa. 16316
Filed Jan. 28, 1972, Ser. No. 221,511
Int. Cl. A61h *11/00*
U.S. Cl. 128—58 **7 Claims**



A massage table having a frame supported on sprockets which carry a continuous chain. Rollers are supported on said chain. The table top has slots in it and a pad supported above said table top. The rollers extend up through the slots and engage the bottom of the pad. The chain carries the rollers completely through their orbit and the rollers deform the pad and thereby massage the person resting on the pad. The table top is adjustable toward and away from the table to adjust the vigor of the massage.

3,794,019
FINGER SUPPORT

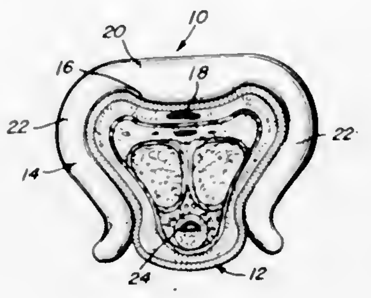
Gerald David Ritland, and Harold Kirk Watson, both of 85 Jefferson St., Hartford, Conn. 06106
Filed Jan. 29, 1973, Ser. No. 327,477
Int. Cl. A61f *5/04*
U.S. Cl. 128—77 **7 Claims**



A finger support for finger joint contractures and finger straightening. A one-piece sheet metal finger support includes a base member, an extension member and a strap member applied to the joint to be straightened and an adjustable screw engageable with the base for applying a vernierly adjustable force to the finger joint.

3,794,020
ANATOMICAL DEVICE

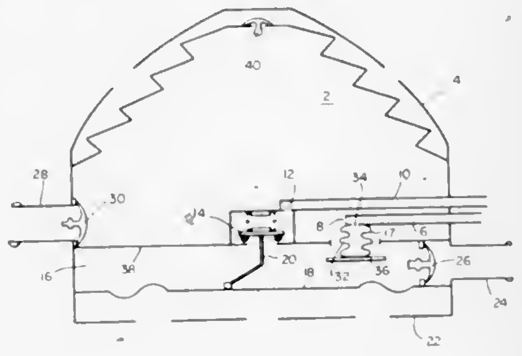
Richard P. Bagby, Rt. 1, Box 176, Templeton, Calif. 93465
Filed June 16, 1972, Ser. No. 263,657
Int. Cl. A61f *5/00*
U.S. Cl. 128—79 **17 Claims**



An anatomical device adapted for attachment to a penis has a rigid frame in the form of a U-shaped member having a substantially planar back portion and converging leg portions extending codirectionally from the back portion. A longitudinally extending projection is connected to the U-shaped member and arranged parallel with the back portion and extending codirectionally with respect to the leg portions for applying local pressure to the dorsal vein of the penis. The U-shaped member may have two segments, one segment having walls defining a longitudinally extending cavity and the other segment having a longitudinally extending member slidably arranged in the cavity to permit the device to be adjusted for easy application or removal. The cavity and longitudinally extending member substantially form the back portion of the U-shaped member. One of the segments is provided with a catch member extending into the cavity, and the other segment is provided with a plurality of ratchet teeth arranged to engage the catch member. The pressure exerted on the leg portions by an enlarged penis causes the ratchet teeth and catch to lock at a predetermined position relative to one another.

3,794,021
DUAL MODE MIXED GAS BREATHING APPARATUS

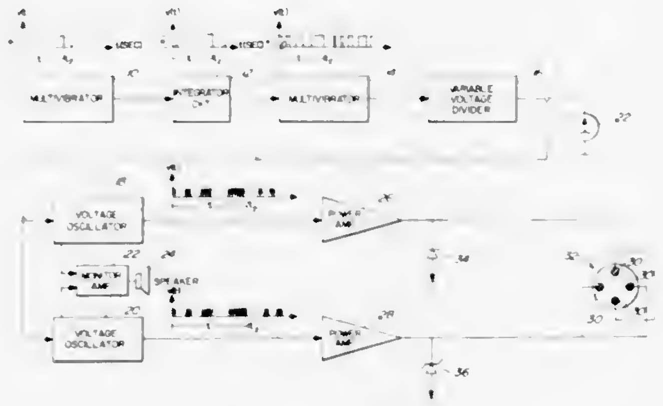
Christian J. Lambertsen, 217 Glen Rd., Ardmore, Pa. 19003
Filed Nov. 3, 1971, Ser. No. 195,199
Int. Cl. A62b *7/04*
U.S. Cl. 128—142.2 **7 Claims**



Breathing apparatus, including provisions for carbon dioxide scrubbing and rebreathing, wherein basic resting oxygen supply is maintained by constant mass flow of an oxygen-containing gas, and oxygen in a ventilating gas in excess of the basic requirement is provided, in each inhalation cycle, by a demand valve actuated by collapse of a flexible gas storage chamber, the expansion of which is limited to normal exhalation volume for a predetermined level of physical exertion and means for dumping the exhalation volume in excess of that amount and sub-assemblies of such apparatus. By utilizing, as the demand supplied gas, a gas leaner in oxygen than that supplied at a constant mass flow rate, the tendency to oxygen toxicity during periods of exertion is reduced. Preferably, the system includes a flow-responsive, fail-safe valve to inactivate the rebreather circuit upon failure of the constant mass flow supply.

3,794,022
DUAL OSCILLATOR, VARIABLE PULSE DURATION ELECTROTHERAPEUTIC DEVICE

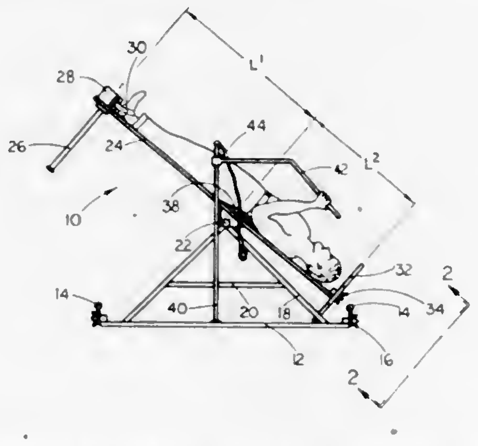
Edward P. Nawracaj, 3914 W. 47th St., Chicago, Ill. 60632, and Henry Greit, 3527 W. 80th St., Chicago, Ill. 60652
Filed June 30, 1972, Ser. No. 267,956
Int. Cl. A61n *1/36*
U.S. Cl. 128—422 **6 Claims**



A first multi-vibrator produces square wave pulses of constant voltage for a 15 second period with a three second "off" interval in between each pulse. The 15 second pulses are converted into ramp pulses of the same period and interval. The ramp pulses are used to control a second multivibrator which produces a series of constant voltage square wave pulses during the 15 second period. Each succeeding square wave pulse during the 15 second period is of a slightly longer duration so that there is a constant increase in the time duration of the square wave pulses during each 15 second period. The cycle is repeated after the 3 second "off" interval between the 15 second pulse periods. The varying square wave pulses are used to trigger separate 4KHZ and 6KHZ voltage oscillators. Each oscillator produces output pulses at their respective frequencies of the same duration and interval as the square wave inputs. The frequency pulses are amplified by separate amplifiers and the amplified pulses are applied by a body probe to the patient. Zener diodes are provided at the output of each amplifiers to limit the maximum possible voltage that may be applied to the patient.

3,794,023
THERAPEUTIC APPARATUS FOR THE RETARDATION OF EMPHYSEMA

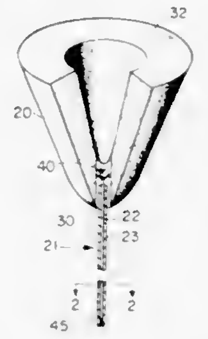
Charles J. Bradley, 3 Madeza Ave., Ross, Calif. 94957
Filed Mar. 21, 1973, Ser. No. 343,215
Int. Cl. A61f *5/00*
U.S. Cl. 128—68 **5 Claims**



An emphysema retarding apparatus comprising a tilt board on which a patient may position himself at a rather steep angle of inclination with his head lowermost. A handle bar extending generally parallel to the head end of the board provides leverage to enable a patient to lower and raise the board from and to a generally horizontal position, with little effort, due in part to a container of counterweights. An adjustable stop at the head end controls the maximum angle of inclination.

3,794,024
CATAMENIAL WETNESS INDICATOR

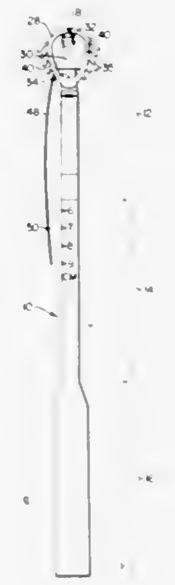
Darrel Dayfield Kokx, and Grace Lechner Smith, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed May 17, 1972, Ser. No. 254,018
Int. Cl. A61f *13/20*
U.S. Cl. 128—285 **10 Claims**



An indicator in contact with the absorbent body of a catamenial device. The indicator "reads" the wetness of the absorbent body and translates the wetness into a signal which can be sensed without removing the catamenial device.

3,794,025
INTRAUTERINE DEVICE SADDLE INSERTER

Irwin S. Lerner, Greenwich, Conn., assignor to A. H. Robins Company, Incorporated, Richmond, Va.
Filed Oct. 7, 1971, Ser. No. 187,332
Int. Cl. A61f *5/46*
U.S. Cl. 128—130 **5 Claims**



An improved inserter for an intrauterine contraceptive device, or IUD, comprising an elongated body having a saddle shaped IUD retainer at the outer end thereof to firmly retain the IUD on the inserter for proper, high fundal positioning of the IUD yet permit easy disengagement and withdrawal of the inserter after IUD positioning by rotation and withdrawal along a line coincident with the path of insertion.

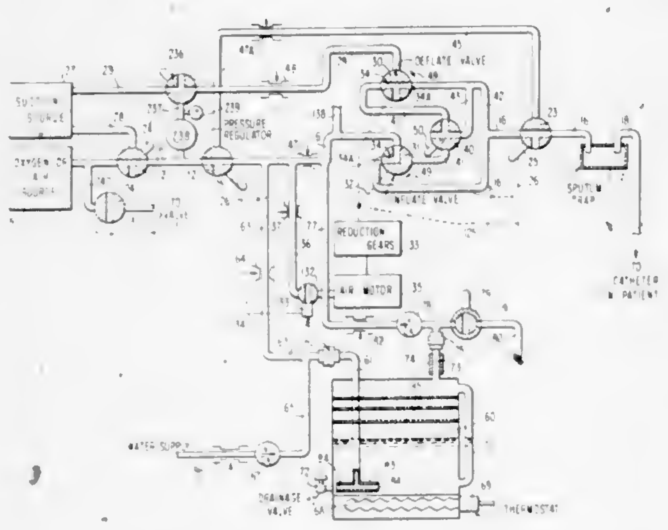
3,794,026
VENTILATING APPARATUS EMBODYING SELECTIVE VOLUME OR PRESSURE OPERATION AND CATHETER MEANS FOR USE THEREWITH

Harry Barry Jacobs, 116-13 Vantage Hill Rd., Reston, Va. 22070

Continuation-in-part of Ser. No. 162,944, July 15, 1971, which is a continuation-in-part of Ser. No. 59,206, July 29, 1970, Pat. No. 3,682,166. This application Aug. 3, 1972, Ser. No. 277,628

Int. Cl. A61m *16/00*

U.S. Cl. 128—145.8 **31 Claims**



A ventilating and resuscitator system for emergency and non-emergency uses which provides selective pressure or volume modes of operation. The control of flow of inflating pressurized gas, under pressures between 20 and 100 psi, is subject to either manual control or automatic control wherein the automatic control takes over ventilation or is responsive to the conditions of the patient. In the automatic mode, pressure responsive means such as pressure switches, which are responsive to the minimum or negative maximum as well as positive pressure variations in the thoracic intrapulmonary region, are utilized to program and control the inflation and deflation cycles. In addition, alarm means are provided to warn the attending personnel of patient failure, and to automatically secure a flow of breathing gas to the patient, overriding other control means. There is also provided means whereby, at desired intervals, the patient obtains ventilation effects equivalent to "sigh" type inhale and exhale cycles. The arrangement further provides a triple lumen catheter, preferably of total diameter of 0.5 to 2.0 millimeters, a flow line connected to each lumen, a pressure monitoring line and a valving system interconnecting the two minor flow lines and the pressure monitoring line whereby each minor flow line is alternately and cyclically connected to the pressure monitoring line. This arrangement maintains the pressure monitoring line free of mucous and other body secretions. While the invention is preferably practiced with a new triple lumen catheter means, other catheter means may be used. A novel inserter for the triple lumen catheter is also disclosed.

3,794,027
ANIMAL ANESTHESIA MACHINE

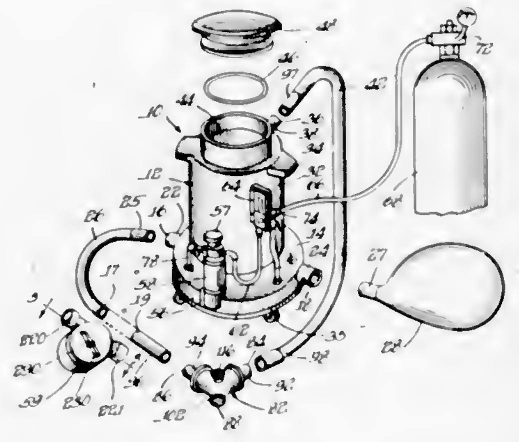
Donald W. Johnson, Wooster, Ohio, assignor to Snyder Manufacturing Company, Inc., New Philadelphia, Ohio

Continuation of Ser. No. 685,755, Nov. 27, 1967, abandoned. This application June 29, 1970, Ser. No. 50,850

Int. Cl. A61m *17/00*

U.S. Cl. 128—188 **2 Claims**

A central molded canister contains a centrally positioned charge of carbon dioxide absorbent. Located beneath the absorbent is a chamber having an outlet and two inlets and a further passageway connected to a rebreathing bag. A source of oxygen connects through a valve assembly to each of the inlets by two separate lines. One of these lines contains a first vaporizer. Leading from the outlet is a line which connects with a breathing tube and then returns to an inlet in the cannister above the carbon dioxide absorbent. A second vaporizer is connected to this line between the chamber outlet and the breathing tube. The second vaporizer comprises an inlet and an outlet communicating with a chamber. Two apertures are also located in the chamber. A jar is attached to the chamber and contains anesthetic liquid. A wick divides the jar into two sections, each communicating with one of the apertures. A vane is pivotally mounted in the chamber and is pivotal between a first position wherein the inlet and outlet communicate directly through the chamber, and a second position wherein the inlet communicates with one of the apertures, through the first section of the jar, through the wick, through the other aperture and then to the outlet.



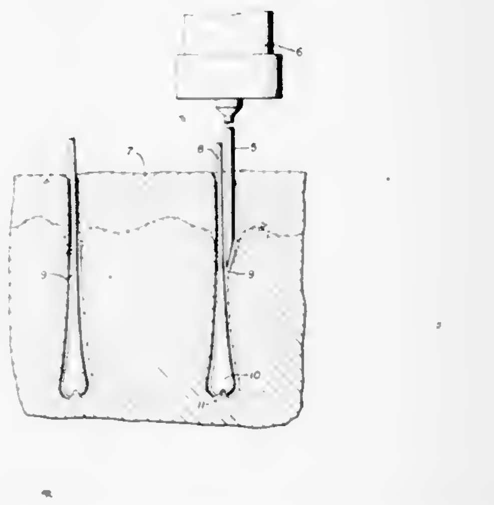
3,794,028
METHOD FOR INJECTING CHEMICALS INTO THE PAPILLA FOR DEPILATION

Robert C. Mueller, 6245 Renwick No. 261, Houston, Tex. 77036, and Amos C. Griffin, 1800 Holcombe Blvd., No. 116, Houston, Tex. 77025

Continuation-in-part of Ser. No. 175,068, Aug. 26, 1971, abandoned. This application Feb. 27, 1973, Ser. No. 336,222

Int. Cl. A61b *17/00;* **A61m** *5/00*

U.S. Cl. 128—216 **9 Claims**



The invention disclosed provides a method of depilation in human mammal by injecting a dose of chemical depilatory solution into hair follicle such to permanently destroy hair growth at that location. Injection of the chemical depilatory solution may be effected by means of a hypodermic syringe for penetrating beneath the skin surface and for dispensing effective dosage amounts of the depilatory solution into the follicle.

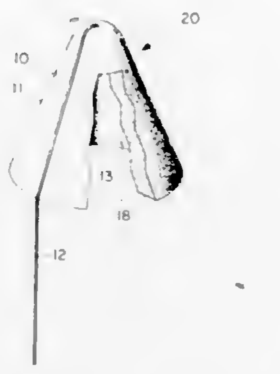
3,794,029
COMPLIANT CONFORMABLE TAMPON

Bernard A. Dulle, Montgomery, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Aug. 18, 1971, Ser. No. 172,694

Int. Cl. A61f *13/20*

U.S. Cl. 128—285 **24 Claims**



An open celled mensesphilic polyurethane foam tampon having a transverse periphery large enough to substantially coincide with the periphery of the vagina and a shape modulus of compression which allows it to be deformed by the vertical pressures exerted by the vagina whereby the tampon spreads laterally to more completely establish contact with the walls of the vagina, and having a material modulus of compression such that surface irregularities on the vaginal wall compress the tampon slightly so that the tampon surface substantially conforms to the irregularities of the vaginal walls.

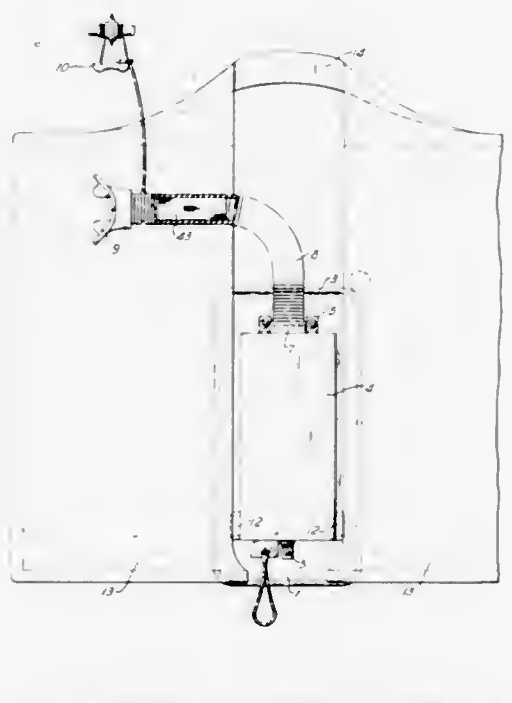
3,794,030
EMERGENCY BREATHING APPARATUS

Harry N. Cotabish, Allison Park; Layton A. Wise, Washington, and Elmer E. Buban, Monroeville, all of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Division of Ser. No. 12,201, Feb. 19, 1970. This application Nov. 5, 1971, Ser. No. 195,907

Int. Cl. A61m *15/00*

U.S. Cl. 128—202 **5 Claims**



In emergency breathing apparatus a case has a back section and a removable front cover section that are normally held together. Inside the case an airregenerating canister is secured to the back section and has a port in one end, to which a flexible breathing hose is connected. The opposite end of the canister is provided with an opening in each side, each of which is connected with an opening in one end of a breathing bag extending along that side of the canister. The hose and bags normally are folded within the case. The other ends of the bags are connected by means formed to extend around the back of the neck of a user of the apparatus to suspend the bags over his chest when they are removed from the case, with the canister between the bags.

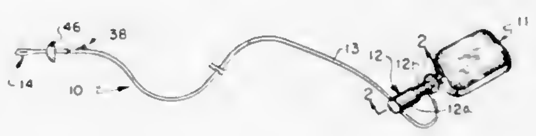
3,794,031
ELECTRIC DOUCHE

Leonard Bloom, Towson, Md., assignor to Jerome I. Rebold, Timonium, Md., a part interest

Filed Mar. 28, 1972, Ser. No. 238,912

Int. Cl. A61m *1/00*

U.S. Cl. 128—230 **8 Claims**



An electric douche has a generally cylindrical housing that may be quickly coupled to the neck portion of a douche bag. The housing contains a motor-driven pump for drawing the douching fluid out of the bag and discharging the same through a hose having a nozzle on its other end. A low-voltage switch is located substantially on the end of the hose, adjacent to the nozzle, for remote control of the electric douche.

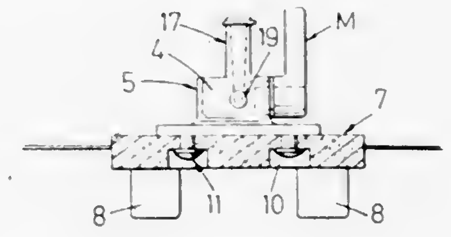
3,794,032
SUPPORTING CUFF FOR TRANSFUSIONS OR PERFUSIONS

Rene Derouineau, Moulin de Pelissey B. P. No. 2, Gradignan, France

Filed Feb. 22, 1972, Ser. No. 227,826

Int. Cl. A61m *5/00*

U.S. Cl. 128—214 R **4 Claims**



Supporting cuff for transfusions or perfusions held in place on the patient's limb and supporting a removable block comprising three nozzles positioned at 90° to one another in the same plane and controlled by a three-way cock, the nozzles corresponding respectively to two female inlets which receive the liquid from the bottles and one male outlet for distributing the liquid, the male receiving the mouthpiece of a catheter tube or of an intravenous nylon tube, the three-way cock permitting either to stop the injection or to distribute in successions the liquids from one of the bottles. The catheter tube or the intravenous nylon tube includes a loop or slack enabling the patient to move his limb.

3,794,033
DISPOSABLE DIAPER WITH CENTER CONSTRICTION

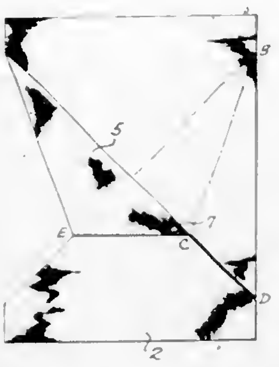
Arthur Sensor Ryan, Kelso, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Mar. 1, 1972, Ser. No. 230,571

Int. Cl. A41b *13/02*

U.S. Cl. 128—284 **2 Claims**

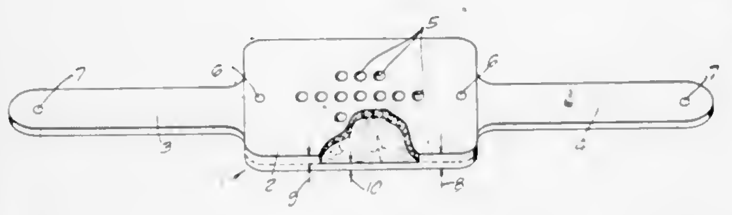
A contoured disposable diaper is formed from a generally rectangular flat pad wherein a pair of slits are positioned in the sides and the resulting flaps are folded over and bonded to form a constricted center portion. By appropriately positioning the slits, the overall asymmetrical shape of the diaper can



be determined based on anatomical size while at the same time placing more absorbent material in the critical areas of severe wetting.

3,794,034
ODOR REDUCTANT BODY WASTE PAD

John Leslie Jones, Sr., 1070 Glen Oaks Blvd., Pasadena, Calif. 91105
Continuation of Ser. No. 131,884, April 7, 1971, abandoned. This application Feb. 27, 1973, Ser. No. 336,270
Int. Cl. A61f *13/16*
U.S. Cl. 128—290 R **11 Claims**

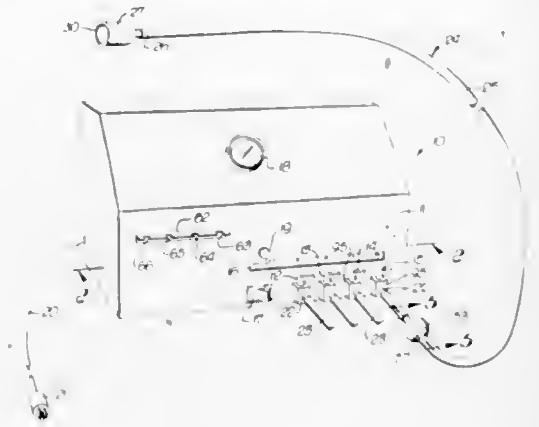


A substantial proportion or all of the total thickness of an unused single use, disposable body waste fluid absorbent pad, such as a sanitary napkin and a baby diaper, combines a water soluble, weakly acidic buffered solid composition having a pH range of 3.5 to 6.0, with a waste fluid absorbent pad. The absorbent pad of wood pulp is impregnated with a dry buffered non-hygroscopic, non-toxic, solid, acid composition having an aqueous pH range of 3.5 to 6.0. The wood pulp pad structure density can range from the macerated loose random fiber of typical density 1.5–2.5 lbs/cu. ft. of the commonly sold commercial fluffed wood pulp absorbent pad sanitary menstrual napkins, to that of a 9–10 pound weight absorbent tissue paper sheet typically embodied in the menstrual napkin of the U.S. Pat. No. 3,532,097, issued Oct. 6, 1970. The controlled acid pH of the buffered absorbent pad, when the pad is wet with body waste fluids, e.g., menstrual fluids or urine of infants, inhibits the rapid formation of free ammonia gas and volatile amine compounds from urea, uric acid, amino acids and peptones by bacterial and enzyme action, and forms nonvolatile salts of the basic compounds. The buffered pH range is not irritating to the user's skin.

3,794,035
SUCTION SYSTEM FOR SKIN TREATMENT

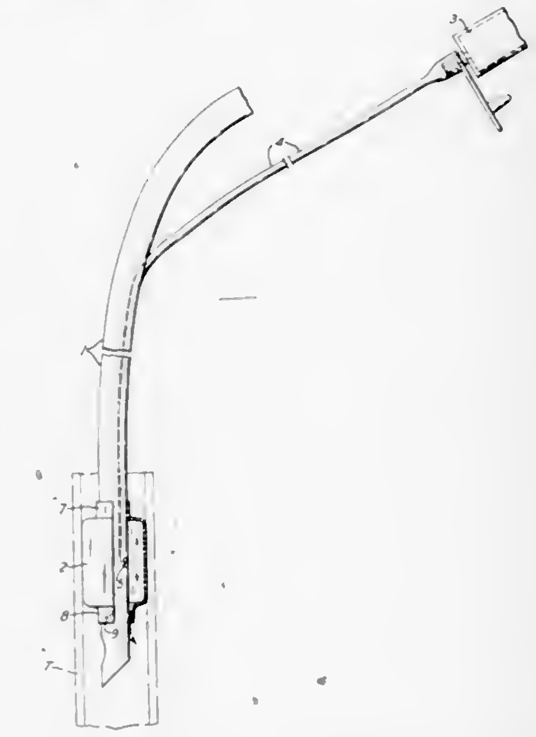
Natalie S. Brenner, 5514 Wilshire Blvd., Los Angeles, Calif. 90036
Filed Mar. 7, 1972, Ser. No. 232,581
Int. Cl. A61m *1/00*
U.S. Cl. 128—300 **7 Claims**

A power operated vacuum pump unit has a chamber connected to a vacuum pump maintained under negative pressure. There are four separate shut-off valves all connected to the chamber in each of which a fixed pressure is pre-set at amounts differing one from another, all of which are accessible from one side of a housing for the operating unit. There are a series of tubes having one end connected to each of the respective shut-off valves. Each tube is adapted at its other end to receive a glass or plastic suction applicator. Intermediate opposite ends of each tube is a transparent hollow spherical container having a beaded extension on each of two opposite sides for sealed engagement with a section of the respective tubing. In each spherical container is a mass of medical gauze serving as a filter for dirt laden liquids passing from the applicator end to the chamber.



3,794,036
PRESSURE REGULATED INFLATABLE CUFF FOR AN ENDOTRACHEAL OR TRACHEOSTOMY TUBE

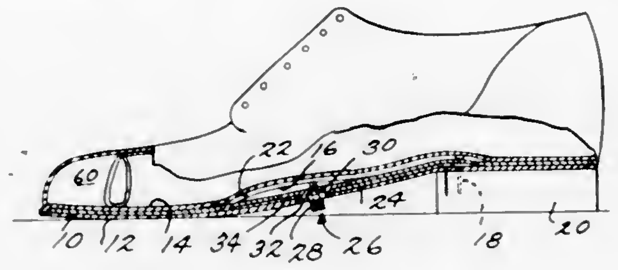
Robert G. Carroll, 240 Melwood St., Pittsburgh, Pa. 15213
Filed Aug. 2, 1972, Ser. No. 277,316
Int. Cl. A61m *25/00*
U.S. Cl. 128—351 **5 Claims**



An elastic cuff encircles a tracheostomy or endotracheal tube near its distal end and has opposite ends fitting tightly against the tube, with the proximal end of the cuff sealed to the tube. A tubule with a distal end opening into the inside of the cuff extends therefrom outwardly along the tube and has an outer end for air under pressure for inflating the cuff. The distal end of the cuff forms a check valve stretchable radially away from the tube by excessive air pressure in the cuff if the air delivered thereto through said tubule results in a pressure drop across the valve exceeding a predetermined amount, whereupon the pressure drop will be reduced to that predetermined amount.

3,794,037
ADJUSTABLE ARCH SUPPORT FOR A SHOE

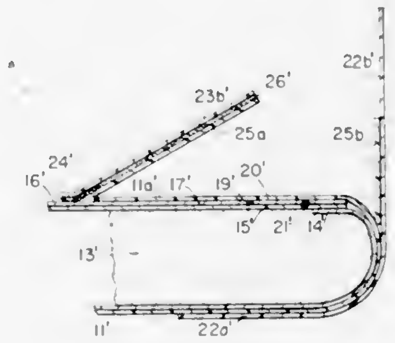
William M. Matteson, 2208-10 North St., Nacogdoches, Tex. 15961
Continuation-in-part of Ser. No. 32,327, Apr. 27, 1970, Pat. No. 3,667,743, which is a continuation-in-part of Ser. No. 877,753, Nov. 18, 1969, abandoned.
Filed Apr. 3, 1972, Ser. No. 240,772
Int. Cl. A41f *5/14*
U.S. Cl. 128—597 **8 Claims**



A shoe is provided with an adjustable arch support which is constructed to permit ready adjustment of the height and curvature of an arch formed on the insole of the shoe. An adjustment screw means is positioned to be rotated for lifting and lowering at least one arch-forming plate means located under the insole of the shoe. Downward pressure through the adjustment screw means is distributed by a pressure distribution plate positioned above the outsole of the shoe and secured at its rear end to the heel portion of the shoe. The adjustment screw means may be a accessible from the bottom, or inside of the shoe. The adjustable arch support may be included in a safety shoe construction.

3,794,038
DISPOSABLE DIAPER WITH TAPE FASTENER HAVING A RELEASE LINER WHICH ALSO PROVIDES A MEANS TO GRIP AND REMOVE THE TOPSHEET

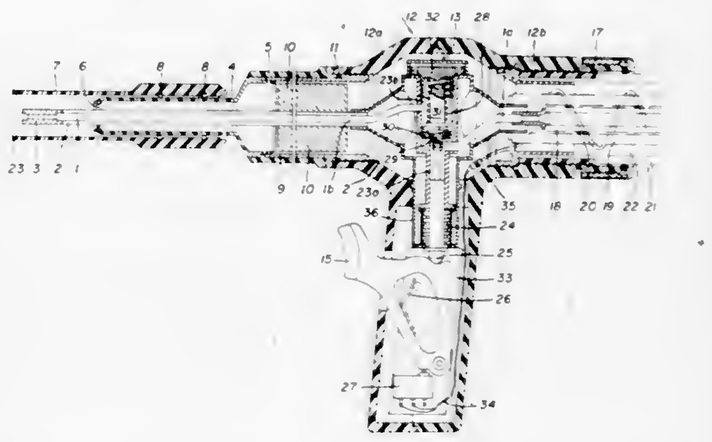
Kenneth B. Buell, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Oct. 16, 1972, Ser. No. 298,142
Int. Cl. A41b *13/02*
U.S. Cl. 128—287 **19 Claims**



A disposable diaper is provided with a pressure-sensitive tape fastener. The tape is affixed at one end to the liquid retaining backsheet of the diaper and the other end is superposed on a release liner of a generally conventional design from which the tape may be stripped immediately prior to diaper application. The release liner for the tape overlies a portion of the face of the diaper. A first portion of the release liner is secured to the topsheet of the diaper and a second portion thereof is essentially unattached, providing a means to grasp the liner. At least the portion of the topsheet secured to the release liner is releasably secured to the remainder of the diaper so that it may be removed therefrom (after the soiled diaper is removed from the wearer) by gripping and pulling on the unattached portion of the release liner.

3,794,039
APPARATUS FOR CRYOSURGERY

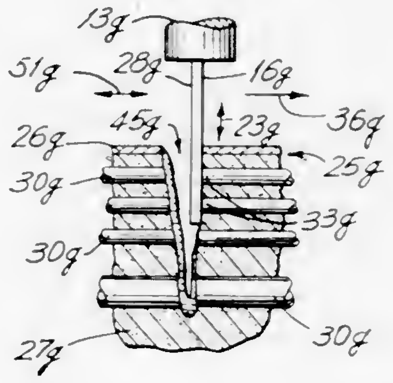
Paul Kollner, and Ewald Duczek, both of Wolfratshausen, Germany, assignors to Linde Aktiengesellschaft, Munich, Germany
Filed Oct. 26, 1970, Ser. No. 83,740
Claims priority, application Germany, Oct. 25, 1969, P 19 53 835.3
Int. Cl. A61f *7/00;* **A61b** *17/36;* **F25d** *3/10*
U.S. Cl. 128—303.1 **35 Claims**



An apparatus for cryosurgery wherein the probe includes a grip member having a hollow cryogenic coolant feed line supported by said grip member open at the tip thereof and connected at one end to the cryogenic coolant supply for transmitting coolant to impinge directly upon the tissue to be frozen. A return line open at the tip thereof and concentrically disposed around the feed line forms a space therebetween, with means communicating said space to suction means for returning vaporized coolant from the feed supply line. The open end of the feed supply line is recessed with respect to the corresponding open end of the return line, allowing a cryogenic coolant to impinge directly upon the tissue to be frozen, while vaporized coolant is returned through the return line.

3,794,040
ULTRASONIC SURGICAL PROCEDURES

Lewis Balamuth, New York, N.Y., assignor to Ultrasonic Systems, Inc., Farmingdale, N.Y.
Division of Ser. No. 678,649, Oct. 27, 1967, Pat. No. 3,636,943. This application Sept. 10, 1971, Ser. No. 179,459
Int. Cl. A61b *17/12, 19/00*
U.S. Cl. 128—303.1 **21 Claims**



The method and apparatus of the invention use ultrasonic energy in the form of mechanical vibrations transmitted by a tool member to close of small severed blood vessels, such as in humans, by the formation of closures at the terminal portions thereof, and stop what is called "oozes," that requires constant mopping or cleaning techniques during an operation.

This tool member may be in the form of a knife ultrasonically vibrated to simulateously sever and close off respective terminal portions of the severed blood vessels while performing surgical procedures. The tool member, of a proper configuration, may also join together layers of tissue, including the walls of unsevered blood vessels, and with respect to the latter is foreseen as replacing the "tying off" of arteries and veins currently necessary in surgery.

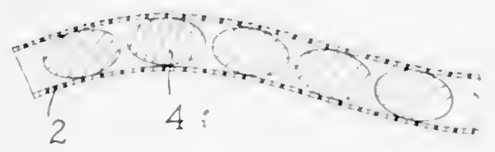
3,794,041
GASTROINTESTINAL CATHETER

Ephraim H. Frei, and Shmuel Yerushalmi, both of Rehovot, Israel, assignors to Yeda Research and Development Co. Ltd., Rehovot, Israel

Filed Nov. 30, 1971, Ser. No. 203,138

Int. Cl. A61m *25/00*

U.S. Cl. 128—348 **2 Claims**



A gastrointestinal catheter of elongated shape, flexible and including ferromagnetic material enabling it, when inserted into the cavity of a body part, to be attracted by a magnet external of the body in order to manipulate the body part with the catheter. In the described embodiments, the ferromagnetic material is in the form of beads enclosed within a tube of inert resilient material, or strung on a string and coated with inert material.

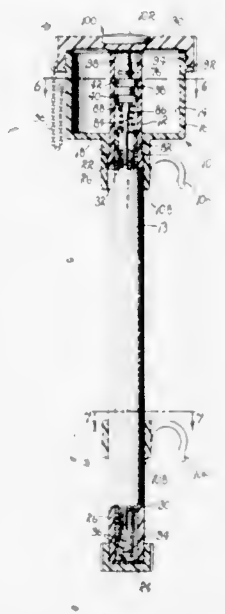
3,794,042
PORTABLE CATHETER UNIT

Robert J. De Klotz, 4552 N. Wilson, and Kendall B. Holmes, 4766 N. Palm, both of Fresno, Calif. 93704

Filed Apr. 27, 1972, Ser. No. 248,088

Int. Cl. A61l *3/00*; **A61m** *25/02*

U.S. Cl. 128—349 R **1 Claim**



A portable catheter unit particularly suited for use by a paraplegic patient in performing self-catheterization. The unit is characterized by a catheter, of a type having a tubular body terminated in a ported head, and a fluid discharge port communicating with the head, through the tubular body, for discharging a flow of fluid conducted from a penetrated collection of the fluid; a manipulatable valve for controlling the flow of fluid conducted through the catheter's discharge port; a coupling for uniting the catheter with a bag receiver; and a portable sterilizer, including a confined fluid sterilant, for simultaneously receiving, supporting and sterilizing the catheter during intervals occurring between periods of catheterization, and an audible timer for alerting the paraplegic at the termination of each interval, whereby self-catheterization of the paraplegic is facilitated.

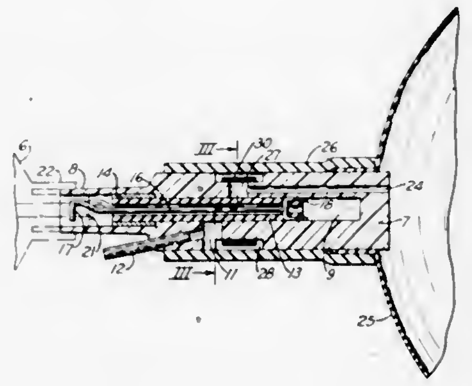
3,794,043
ENDOTRACHEAL TUBE WITH INFLATABLE CUFF AND CHECK VALVE

Gerald E. McGinnis, Monroeville, Pa., assignor to Lanz Medical Products Company, Monroeville, Pa.

Filed Nov. 8, 1972, Ser. No. 304,604

Int. Cl. A61m *16/00, 25/02*

U.S. Cl. 128—349 BV **7 Claims**



One end of an endotracheal tube is encircled by an inflatable cuff, to which is connected a tubule that extends toward the opposite end of the tube and into a valve housing having an air inlet bore from which passages extend to the tubule and to an inflatable member. The bore contains valve means normally closing the adjacent ends of said passages, and means for opening the valve to admit air under pressure to those passages or release it therefrom. The valve housing also has a bypass connecting the two passages and closed by a check valve preventing escape of air from the cuff to the inflatable member in case the outside of the cuff is subjected to sudden pressure.

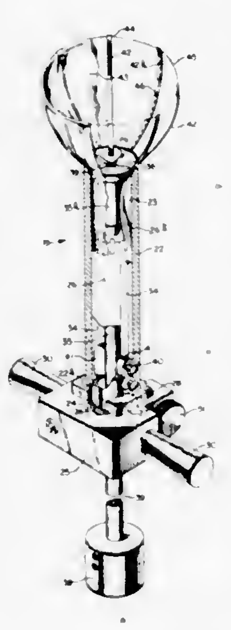
3,794,044
DELIVERY FORCEPS

William O. Vennard, and Arthur L. Decker, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Oct. 20, 1971, Ser. No. 190,779

Int. Cl. A61b *17/44*

U.S. Cl. 128—352 **11 Claims**



A method and apparatus for assisting in the delivery of a fetus from a womb which includes surrounding the upper portion of the head of the fetus with a plurality of flexible fingers contoured generally to the shape of the fetus's head and securing the fingers to the fetus and then applying a pull to the fingers to assist in the delivery of the fetus from the womb. A thin membrane may be provided to interconnect the fingers whereby a vacuum may be applied to further secure the fingers and membrane to the head of the fetus.

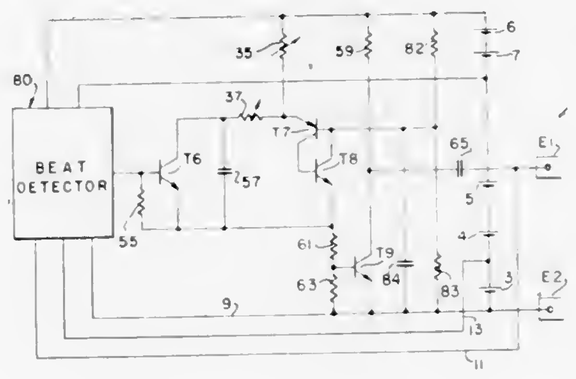
3,794,045
PASSIVE HYSTERESIS CIRCUIT DEMAND PACER

Sherwood S. Thaler, Lexington, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Dec. 6, 1971, Ser. No. 205,196

Int. Cl. A61n *1/36*

U.S. Cl. 128—419 P **14 Claims**



There is disclosed a demand pacer which exhibits rate hysteresis without requiring additional active elements. The reference potential, to which the voltage across a timing capacitor is compared, is derived from the tap on a voltage divider, with an additional capacitor being connected across one branch of the voltage divider. Whenever the voltage across the timing capacitor exceeds the reference voltage, the pacer is triggered and the capacitor in the voltage divider circuit discharges slightly. This lowers the reference voltage so that the escape interval is shortened. The escape interval gets shorter and shorter during successive cycles when stimulating pulses are generated until a lower limit is reached. If successive spontaneous beats are detected, the capacitor continuously charges until the escape interval is at the maximum limit. It requires 2–6 seconds for the escape interval to change from one extreme to the other.

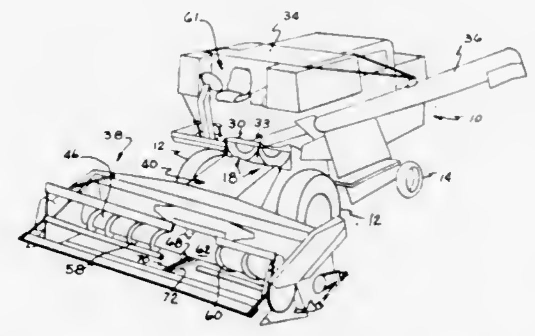
3,794,046
HEADER CROP DIVIDER FOR AN AXIAL FLOW COMBINE HAVING SIDE-BY-SIDE AXIAL FLOW UNITS

Cornelis Gerardus Muijs, Brugge, Belgium, assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Aug. 27, 1971, Ser. No. 175,484

Int. Cl. A01f *7/06*

U.S. Cl. 130—27 T **4 Claims**



An axial flow combine having side-by-side axial flow units in which cutting means are provided on the transverse consolidated auger of the header to cut the crop material to be fed to the side-by-side axial flow units into discrete streams, one stream of material for each of the side-by-side units.

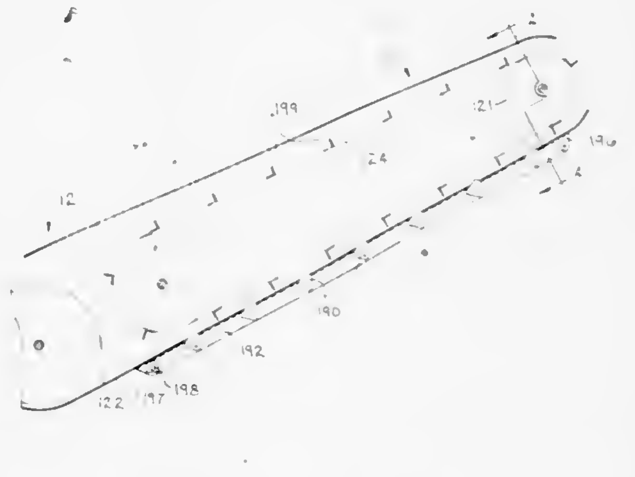
3,794,047
CROP FEEDING MEANS FOR AN AXIAL FLOW COMBINE HAVING SIDE BY SIDE THRESHING UNITS

Frans Jozef De Coene, Zedelgem, Belgium, and Edward William Rowland Hill, Lancaster, Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Aug. 27, 1971, Ser. No. 175,522

Int. Cl. A01f *7/06*

U.S. Cl. 130—27 T **8 Claims**



Crop feeding means for a combine having two or more axial flow type threshing and separating means, each comprising a generally horizontal and cylinderical casing with longitudinally extending concaves and grates and a rotor on an axial shaft within the cylindrical casing having rasp bars and blades cooperating with the concaves and grates, respectively, to thresh and separate grain from crop material. On the forward end of each shaft are auger flights for feeding crops to the rasp bar bearing rotor and the concaves. A sloping surface extends downwardly and forwardly from mid-portions of the auger flights to the bottom wall of the crop elevator. The crop is delivered by a crop elevator to the sloping surface for directing the crop upwardly into mid-portions of the auger flights. In one form of this invention a beater is disposed above a portion of the sloping surface, the beater facilitating the feeding of crop material from the crop elevator to the auger flights on the rotor shaft. The beater is provided with knife sections which cooperate with stationary sections facilitating the splitting of the crop material so that it may be more easily fed into the threshing and separating means. In another form of this invention the crop elevator is provided with means to sever and/or chop the material as it is being conveyed and away from the header.

3,794,048
WRAPPING ROD-LIKE SMOKING ARTICLES

Desmond Walter Molins, and Tom Rowlands, both of London, England, assignors to Molins Limited, London, England

Filed Sept. 15, 1971, Ser. No. 180,724

Claims priority, application Great Britain, Sept. 17, 1970, 44522/70

Int. Cl. A24c *5/58*

U.S. Cl. 131—94 **20 Claims**

This invention concerns making a smokable article including a tubular part, the tubular part being made by winding a

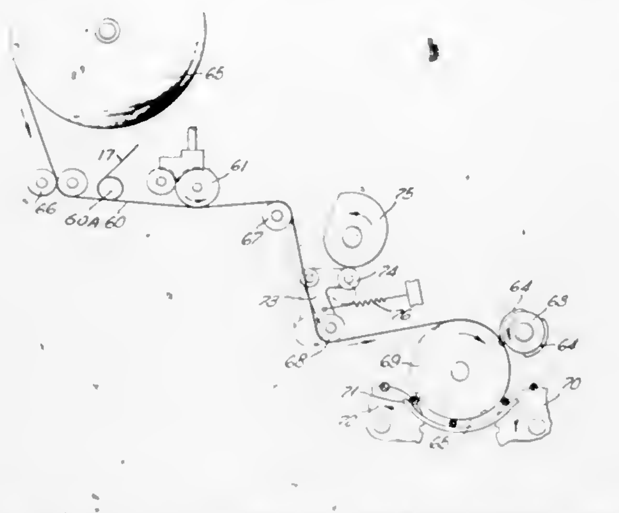
strip of sheet material in a helix with each successive turn

3,794,050

3,794,052

3,794,054

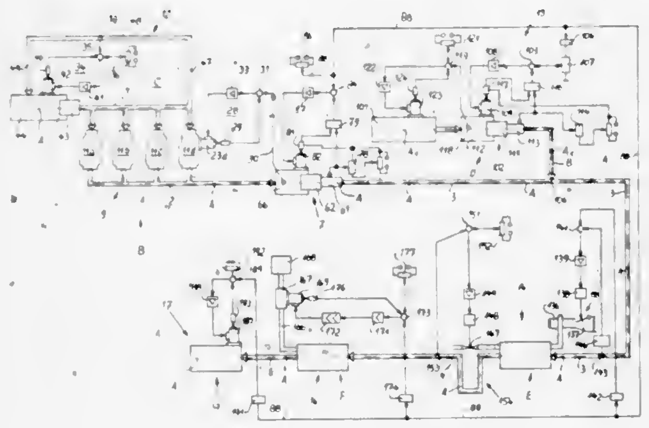
strip of sheet material in a helix with each successive turn overlapping the previous one. The invention is especially applicable to the manufacture of cigars, the helically wound tubular part being a final overwrapping of reconstituted tobacco sheet.



3,794,049
METHOD AND APPARATUS FOR PROCESSING TOBACCO

Waldemar Wochnowski, Hamburg-Meiendorf, Germany, assignor to Hauni-Werke Korber & Co. KG, Hamburg, Germany

Filed Mar. 2, 1972, Ser. No. 231,251
Claims priority, application Germany, Mar. 13, 1971, P 21 12 211.2
Int. Cl. A24b *07/14*
U.S. Cl. 131—135 **29 Claims**



A tobacco processing apparatus wherein a battery of shredding machines delivers tobacco shreds to a hopper from which a constant stream of tobacco shreds is being withdrawn by an adjustable weighing device. The tobacco stream is conveyed past a series of treating units including a drying unit, a flavoring unit and a storing unit. A main set value potentiometer is adjustable to produce signals which are used for delayed adjustment of the treating units, for direct adjustment of the weighing device and for indirect and/or direct adjustment of one of the shredding machines. Each treating unit is further adjustable by an auxiliary set value potentiometer. A second type of tobacco is being mixed with tobacco shreds at a rate which varies in response to signals from the main set value potentiometer.

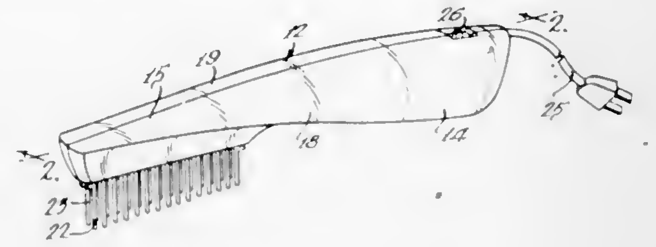
ERRATUM

For Class 132—5 see:
Patent No. 3,794,933

3,794,050
POWER DRIVEN HAIR COMBING APPLIANCE

George P. Gallanis, Westchester, and Ikuo I. Komatsu, Glen Ellyn, both of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Filed May 8, 1972, Ser. No. 251,748
Int. Cl. A45d *24/00*
U.S. Cl. 132—11 A **18 Claims**

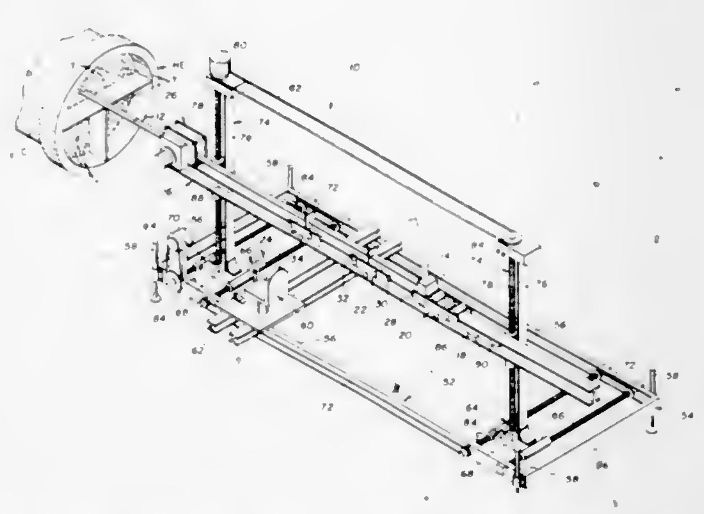


Apparatus for untangling hair including a pair of closely spaced comb members which are reciprocated in an out of phase relationship to create wave motion in hair for the purpose of untangling it. The combs are detachably mounted with respect to the reciprocating mechanism and are simple, molded plastic elements having guiding and supporting portions which detachably secure to the reciprocating mechanism. The teeth of the combs being thickened to prevent oscillation or vibration and to permit the delivery of substantial amounts of power in moving or flexing the locks of hair by the reciprocating mechanism.

3,794,051
TUBE CLEANING SYSTEM

Charles O. Lee, Jr., Long Beach, and Earis Ray Shanklin, Torrance, both of Calif., assignors to Hydro-Vel Services, Inc., Monahans, Tex.

Filed Sept. 17, 1970, Ser. No. 73,130
Int. Cl. B08b *3/02, 9/02*
U.S. Cl. 134—46 **5 Claims**

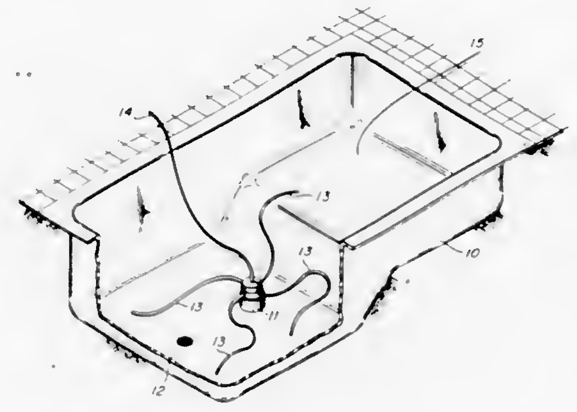


In a tube cleaning system, a pair of long, straight, small diameter, thin wall lances extend in parallel from a common cleaning fluid manifold to a pair of spray discharge heads. The lances are automatically moved into, through, and out of a pair of heat exchanger tubes by a lance drive system. The lance drive system comprises structure for moving the lances through the tubes and for simultaneously applying straightening forces thereto, apparatus for controlling both the extent of movement of the lances and the flow of cleaning fluid through the lances, and circuitry for automatically reversing and re-reversing the direction of movement of the lances upon engagement of either lance with an obstruction in its respective tube. The lance drive system is mounted on a frame which includes structure for aligning the lances with a pair of heat exchanger tubes prior to each operating cycle of the tube cleaning system.

3,794,052
POOL-CLEANING APPARATUS

Robert L. Koble, Jr., 4211 E. Desert Cove Rd., Phoenix, Ariz. 85028, and John M. Goettl, 1639 W. Indianola Ave., Phoenix, Ariz. 85015

Continuation-in-part of Ser. No. 53,468, July 9, 1970, abandoned. This application Jan. 17, 1972, Ser. No. 218,353
Int. Cl. B08b *9/08*
U.S. Cl. 134—167 R **3 Claims**

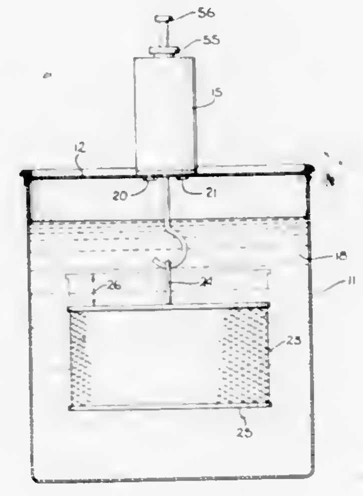


A swimming pool cleaning apparatus comprising a water distributor having a weight means for holding said water distributor on the bottom of a swimming pool; a passage means in said distributor for receiving water under pressure; a plurality of flexible substantially equally spaced apart pressure operated sinuously movable tubes communicating with said passage means and extending generally radially from said distributor and from the center of said weight means; a water supply tube extending upwardly generally concentrically above the center of said weight means and communicating with said passage means; said weight means having relative buoyant means thereabove; said apparatus usable relative to a method of the invention for collecting relatively heavy debris concentrically around said weight means and in close proximity thereto.

3,794,053
CLEANING APPARATUS

Otho Jones, 1438 W. 132rd St., Gardena, Calif. 90249

Filed Oct. 18, 1971, Ser. No. 190,062
Int. Cl. B08b *3/04*
U.S. Cl. 134—141 **5 Claims**

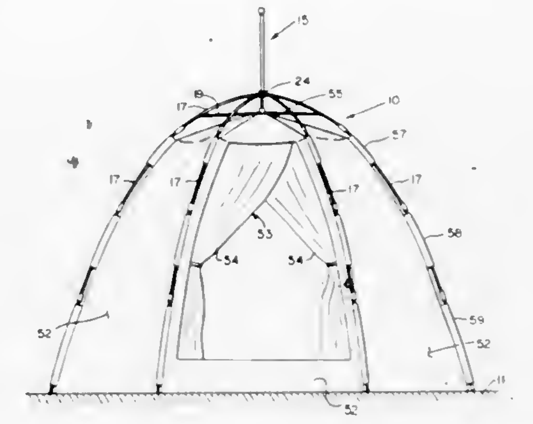


A cleaning apparatus is disclosed herein having a tank for holding a solvent solution and a lid for covering the tank. An agitating mechanism is carried on the lid including a vertically movable hook for detachably supporting a basket adapted to hold parts for cleaning. The agitating mechanism includes a pneumatic operated piston and cylinder assemblage for actuating the hook in an up-and-down manner.

3,794,054
INVERSE UMBRELLA TENT

Paul J. Watts, 285 E. Ninetta Cir., Orem, Utah 84057

Filed Nov. 1, 1971, Ser. No. 194,237
Int. Cl. A45f *1/04*
U.S. Cl. 135—2 **12 Claims**

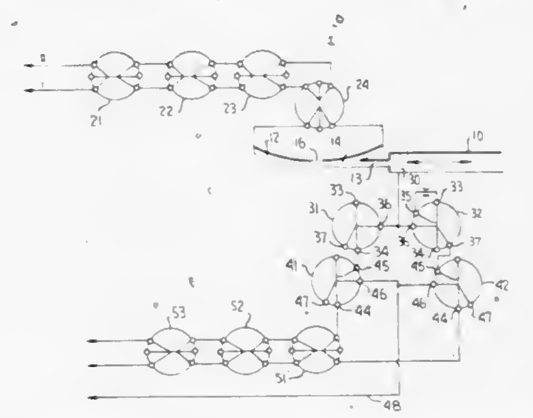


A tent or collapsible shelter of the umbrella tent-type. The tent includes, in one lightweight package, a foldable frame and a tent cover affixed to the frame. In one embodiment, the tent frame includes a vertical erecting rod located at the apex of the tent frame and flexible, segmented tent poles pivotably connected at the upper ends to a sleeve section which is, in turn, slidable on the erecting rod. The tent cover is attached to the tent poles near the ground, is slidably connected to an intermediate section of the tent poles and is connected at the top to the sleeve section at the base of the erecting rod. In this manner, the tent cover is tautly affixed to the tent frame in an erected position and is loosely affixed to the tent frame in a collapsed position. The sections of the segmented tent pole are connected to one another in the collapsed state and are elastically urged into an intercoupling engagement to form a rigid support upon erection.

3,794,055
TECHNIQUES FOR BI-DIRECTIONAL FLUID SIGNAL TRANSMISSION

Larry R. Moore, and Robert F. Turek, both of Silver Spring, Md., assignors to Bowles Fluidics Corporation, Silver Spring, Md.

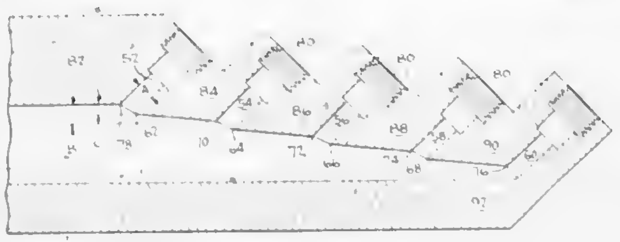
Filed Feb. 15, 1972, Ser. No. 226,791
Int. Cl. F15c *1/12;* **E03b** *1/00*
U.S. Cl. 137—1 **18 Claims**



Reliable bi-directional transmission of binary fluid signals over a single transmission path is achieved by utilizing opposite polarity pressure pulses to represent respective binary states. A novel fluid transceiver includes a common passage connected to the transmission path to both receive and transmit positive and negative pressure signals. Detection of received signals is effected either within the transceiver element or at a tap in the transmission path proximate the transceiver. Means are disclosed to compensate the signal detector for continuous ambient flow through the transmission path.

3,794,056
FLUIDIC PULSE AND FLOW DIVIDER

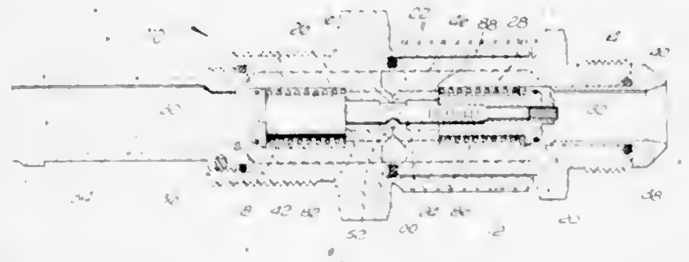
Raymond W. Warren, 7925 Falstaff Rd., McLean, Va. 22101
Filed Nov. 17, 1972, Ser. No. 307,718
Int. Cl. E03b
U.S. Cl. 137—561 A **8 Claims**



A fluidic pulse and flow divider which has a single input and a plurality of outlet channels which communicate with the input and are disposed at an acute angle with respect to the fluid flow in the entrance section to provide a plurality of fan-outs exiting toward one side of the device. The combined area of the outlets is equal to the area of the entrance flow straightening section to eliminate reflection of waves. The area of the entrance section itself is smoothly reduced before each successive outlet channel by an amount equal to the area of the preceding output channel.

3,794,057
SAFETY BREAKAWAY FLUID COUPLING

Everett H. Badger, La Habra, Calif., assignor to Textron Inc., Providence, R.I.
Filed June 26, 1972, Ser. No. 266,179
Int. Cl. F16k *17/36, 17/40*
U.S. Cl. 137—68 **10 Claims**

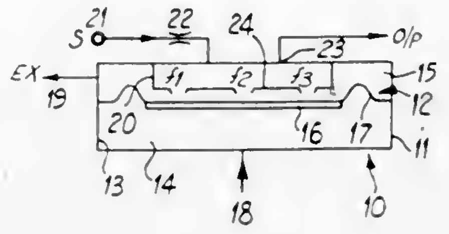


A fluid coupling assembly having a pair of housing parts which are held together by a prestressed solid bolt. The poppet valves are disposed at each end of the bolt and are spring-loaded toward respective valve seats. One of the body parts has a reduced area portion which will fracture upon application thereto of a force directed transverse to the longitudinal axis of the body parts (a side-load force) of a predetermined magnitude. The solid bolt has a reduced cross-sectional area and will fracture upon application thereto of a tensile or side-load force of a predetermined magnitude. The side-load forces and tensile forces may hereinafter be referred to as non-compressive forces even though such forces may include components compressive in nature. Upon the application of an appropriate force, both the body and the prestressed bolt will sequentially fracture releasing the poppets allowing them to engage the seats and thereby close a fluid flow path through the coupling assembly.

3,794,058
PNEUMATIC AMPLIFIERS

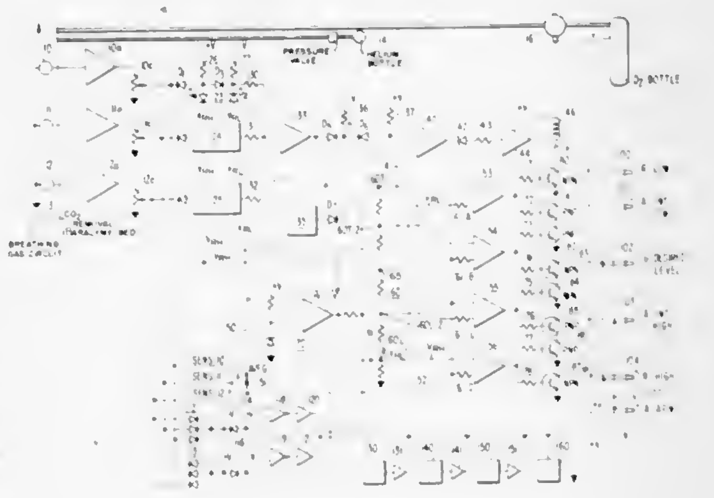
John Terence Riley, Bank St., Walshaw, Bury, England
Filed Feb. 9, 1972, Ser. No. 224,838
Claims priority, application Great Britain, Feb. 11, 1971, 4439/71; Feb. 11, 1971, 4440/71
Int. Cl. G05d *16/06*
U.S. Cl. 137—82 **9 Claims**

There is described a pneumatic amplifier comprising a housing, a diaphragm dividing the housing into first and second chambers, an inlet port to the first chamber for receiving an input signal, an exhaust port from the second chamber, a manifold in the second chamber, an inlet port to the manifold for a supply of pressure air, and an outlet from the manifold for an amplified output signal, the manifold having at least one axially offset orifice confronting the diaphragm. The amplified output signal is used to control the position of a movable member, for example a valve member. A feed-back connection may be provided between the movable member and the amplifier and a setting device may control the input signal.



3,794,059
ELECTRONIC MONITORING CONTROL AND DISPLAY APPARATUS FOR BREATHING GAS SYSTEM

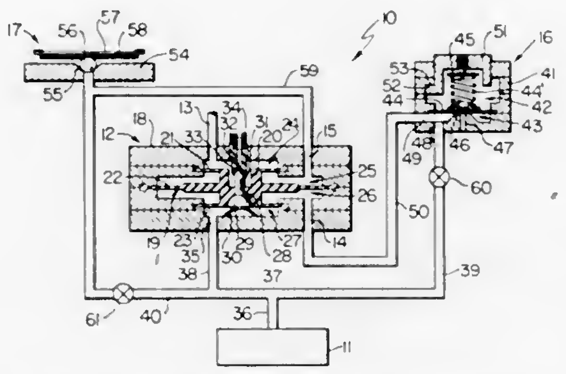
John F. Burt, Jr., Glenside, Pa., assignor to Biomarine Industries, Inc., Devon, Pa.
Filed May 27, 1970, Ser. No. 40,890
Int. Cl. G05d *11/00*
U.S. Cl. 137—93 **8 Claims**



There is disclosed an electronic monitoring, control and display system for breathing gas system, as for example, in a self-contained underwater breathing apparatus. The output voltage of one or more galvanic partial oxygen pressure sensors, after being compensated for temperature variation, is amplified, limited and averaged and (1) periodically compared with a first reference voltage level to determine whether make up oxygen is to be supplied to the breathing system and (2) compared with a plurality of stepped reference voltage levels, an intermediate level in the steps being the said first reference voltage level. Such plurality of stepped voltage levels are used in a plurality of comparator circuits along with logic circuitry and a bank of display lamps to digitize the conditioned signal voltage from the sensors, the logic circuitry permitting the energization of only one lamp to the exclusion of all others (except an alarm lamp) to eliminate any ambiguity or need for interpretation in the display to the user. In a preferred arrangement a plurality of lamps of the miniature type are housed in a straight row within a waterproof housing which is adapted for securement to the wrist of the diver.

3,794,060
PNEUMATIC CONTROL SYSTEM AND METHOD OF OPERATING THE SAME OR THE LIKE

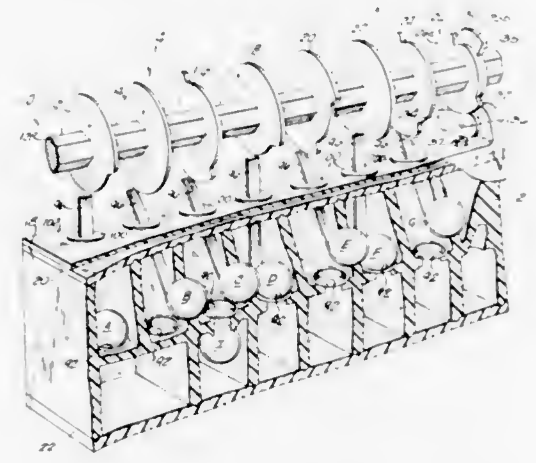
Charles H. Perkins, Richmond, Va., assignor to Robertshaw Controls Company, Richmond, Va.
Division of Ser. No. 81,828, Oct. 19, 1970, Pat. No. 5,683,949. This application June 21, 1972, Ser. No. 265,111
Int. Cl. G05d *16/00*
U.S. Cl. 137—14 **9 Claims**



Passage defining means interconnecting a source of pneumatic fluid to a pneumatically operated control device. Flow control variable restrictor means is disposed in the passage defining means intermediate the source and the control device whereby the passage defining means has a part thereof disposed between the restrictor means and the control device. A variable vent means is interconnected to the part of the passage defining means and is responsive to pressure in that part of the passage defining means. The flow control variable restriction means tends to maintain a substantially constant pneumatic flow in the part of the passage defining means even though the pressure in the part of the passage defining means varies and/or the pressure of the pneumatic source varies.

3,794,061
WATER SOFTENER VALVE

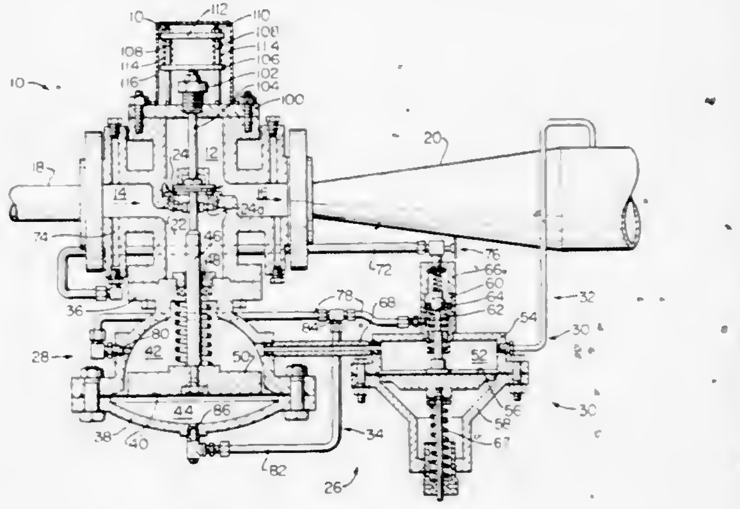
John F. Horvath, Milwaukee, Wis., and Chester R. Nickols, Sycamore, Ill., assignors to Aqua-Chem, Inc., Milwaukee, Wis.
Filed Nov. 8, 1971, Ser. No. 196,621
Int. Cl. C02b *1/22*
U.S. Cl. 137—330 **8 Claims**



A water softener control valve has a number of cam operated valves each of which includes a ball located at a port. A lever is associated with each ball and lever movement by the cams unseats the balls to open the ports. The ports are located in a common, generally horizontal wall and internal generally vertical walls associated with the ports define channeling through which water is directed in achieving the service, backwash, brine slow rinse, and fast rinse cycles of the water softener, and in addition the brine tank water refill after the mineral bed of the water softener has been regenerated. Water pressure urges the balls toward their respective ports and holds the balls seated in the ports. One port is exposed, during the regeneration portion of the water softener program, to both return flow from the mineral tank on one side of the port and service flow to the service outlet on the other side. That port has a ball on both sides of the port to insure closure of the port and isolation of the flow on both sides of the port.

3,794,062
FLUID PRESSURE REDUCING VALVE

Jay P. AuWerter, 23726 Laureldale, Shaker Heights, Ohio 44120
Filed Aug. 17, 1972, Ser. No. 281,289
Int. Cl. F16k *31/365*
U.S. Cl. 137—488 **5 Claims**

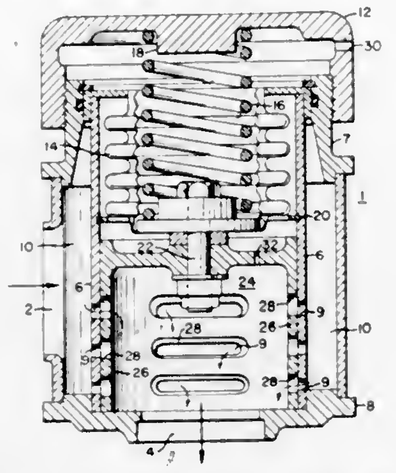


A self-contained, pilot operated valve is disclosed which is adapted to be interposed in a fluid flow line to reduce the pressure therein from one level upstream of the valve to a desired lower level downstream of the valve. The reducing valve is fluid pressure responsive, employs system fluid as a normally closed reducing valve having fluid flow characteristics across the valve and valve seat thereof of a normally open reducing valve. The normally open flow is obtained by seating the flow control valve element against its valve seat in the direction opposite the direction of fluid flow through the valve, and the normally closed characteristic is achieved by applying a force on the valve element sufficient to seat the valve element when the downstream pressure is at the desired level.

3,794,063
REFRIGERANT THROTTLING VALVE

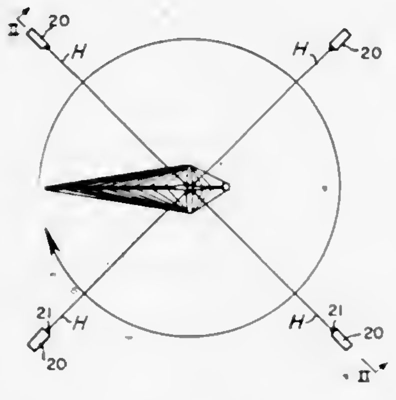
Michael O. Carroll, Rosemont, and Lawrence J. Shirek, Minneapolis, both of Minn., assignors to Thermo King Corporation, Minneapolis, Minn.
Filed Jan. 23, 1973, Ser. No. 325,967
Int. Cl. F16k *17/34*
U.S. Cl. 137—505.26 **4 Claims**

This invention relates to a fluid pressure regulating valve that may be used for a refrigeration system and which includes an inlet, an outlet, and a first interface member therebetween having a plurality of fluid ports. Slidably disposed to be movable relative to the first member is a second interface member, the walls of which also include a plurality of fluid ports. The configuration of the respective fluid ports of the first interface member is different relative to the configuration of the respective ports of the second interface member to thereby perform throttling of the fluid passing therethrough in non-linear



fashion to thus regulate the valve output as the movable member moves from fully open to fully closed valve position.

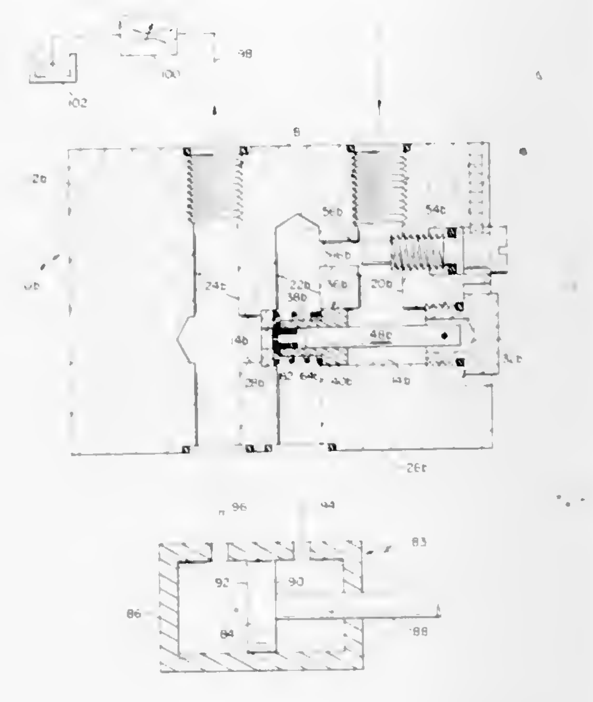
3,794,064
COUNTERWEIGHTED TOWER IRRIGATOR
Stephen D. Newell, Du Bois, Pa., assignor to Alco Standard Corporation, Valley Forge, Pa.
Filed June 30, 1972, Ser. No. 268,100
Int. Cl. B05b *3/00*
U.S. Cl. 137—615 **21 Claims**



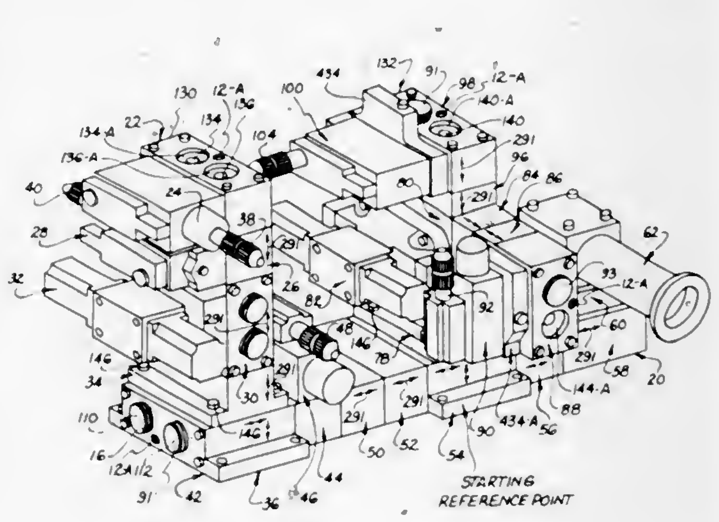
A rotatable irrigating apparatus for dispensing water or other liquids over a large crop area has a central column or turret from which a sectioned pipe member carrying a liquid dispensing truss arm assembly extends radially outwardly for covering a large crop area or acreage during a 360° rotation thereof. The weight of the arm assembly is substantially balanced by an aligned, oppositely positioned and radially extending, relatively shorter length, sectioned counterweight truss that represents a non-spraying frame structure. The arm assembly as well as the counterweight assembly are connected at spaced intervals along their upper reaches by opposed tension gravity cables to a top or surmounting end portion of the column and are connected at more closely spaced intervals along their sides by tension wind cables to a cross-extending support arm that is carried by a lower end portion of the column or turret. Also, the upper end portion of the column has a relatively rotatably mounted anchor collar that is connected by guy or anchor cables to stationary ground anchor or tieing means.

3,794,065
VALVING
James M. Denker, Scituate, Mass., assignor to Nutron Corporation, Hingham, Mass.
Filed Mar. 1, 1972, Ser. No. 230,561
Int. Cl. G05d *7/00*
U.S. Cl. 137—117 **10 Claims**

A fluid valve comprising first and second interior chambers, a valve bore extending between the chambers, an exit port in a wall of the first chamber generally opposite the valve bore, a piston including a first portion slidably within the valve bore and, a second portion extending from the first portion to the exit port mounted for movement between a first position wherein the second portion overlies the exit port and a second position wherein the second portion is spaced from the exit port, the piston including also a bore extending therethrough and the first and second portions being of different cross-sectional areas, and a fixed balance pin extending from within the piston bore into the second chamber, the piston being slidable on the pin.

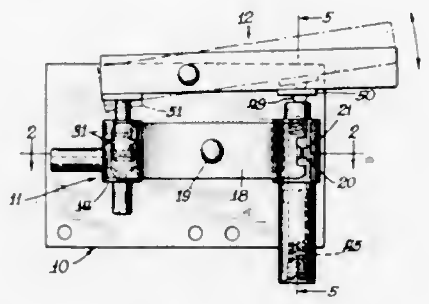


3,794,066
HYDRAULIC CONTROL APPARATUS
Robert E. Raymond, Zanesville, Ohio, assignor to International Basic Economy Corporation, New York, N.Y.
Filed Dec. 29, 1971, Ser. No. 213,314
Int. Cl. F16k *11/10*
U.S. Cl. 137—312 **12 Claims**



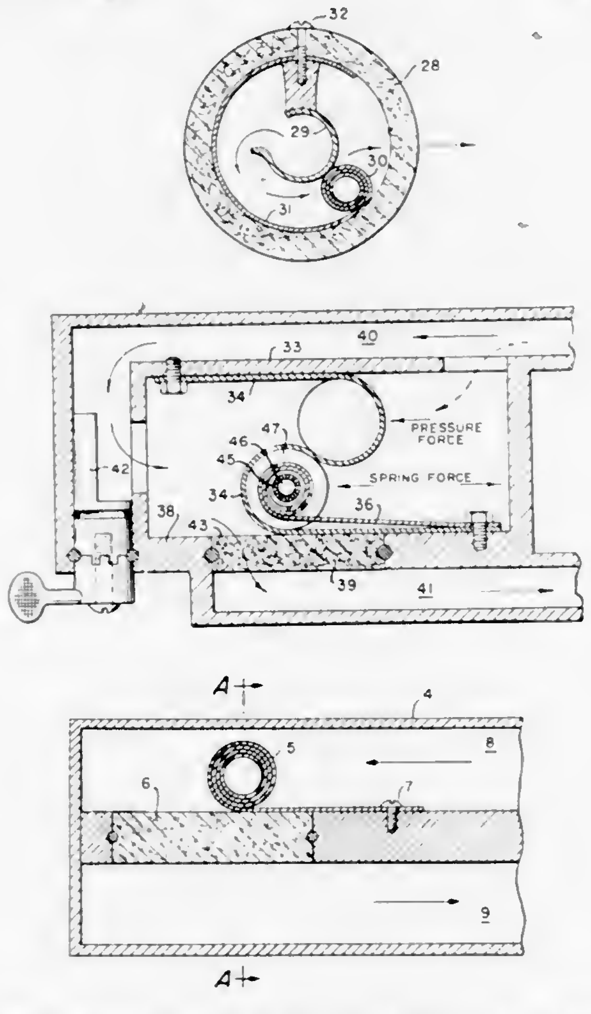
A hydraulic control apparatus comprising a plurality of standard multiple function conduit modules adapted to be selectively programmed in various arrays to effect substantially any required hydraulic control functions. The apparatus is further characterized by leakage collection zones at the interfaces of adjacent modules and a common drain passage through said adjacent modules.

3,794,067
SIMPLIFIED VALVE ASSEMBLY
Leonard R. Beck, 3602 Meadow Dr., Rolling Meadows, Ill. 60008
Division of Ser. No. 258,868, June 1, 1972. This application June 7, 1973, Ser. No. 367,873
Int. Cl. F16l *5/00*
U.S. Cl. 137—343 **5 Claims**



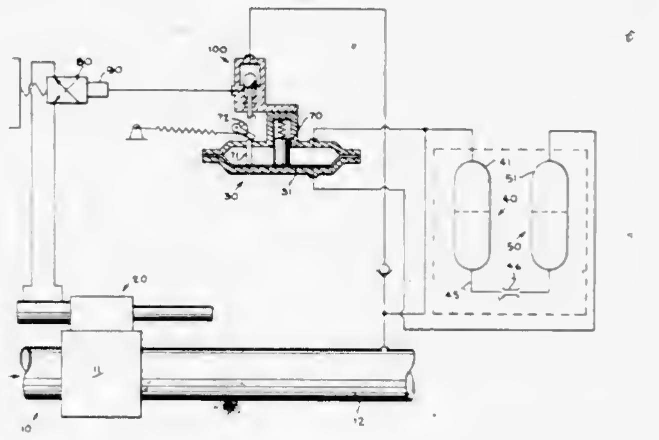
A mounting plate has a clip which holds a valve body and a spring body in spaced positions against the plate. A plunger in the spring body urges an operating lever in a direction such as to bear against the valve stem extending from the valve body. A valve closure is formed by two O-rings on the opposite side of a pressure plate. The valve closure is movable between a position at which one O-ring blocks an air inlet and a second position at which the other O-ring forms a seal about the valve stem.

3,794,068
NEGATOR-SPRING, ROLLING-TAPE, FLOW-CONTROL, QUIET THROTTLING VALVE
Richard A. Milroy, 222 S. Cherry Grove Ave., Annapolis, Md. 21401
Filed Apr. 24, 1973, Ser. No. 354,061
Int. Cl. G05d *7/00*
U.S. Cl. 137—497 **9 Claims**



A negator-spring is used as the rolling flow-control gate of a flow-control valve. The negator-spring is a strip of flat spring stock which is stressed on one side to make it roll upon itself. Fluid flows across the roll of negator-spring so that a pressure differential exists across the negator-spring roll. Any increase in the flow rate would cause the negator-spring to be extended or rolled out further upon the porous surface. The negator-spring is fixed at one end and is forced by the differential pressure to roll out over a port containing material which provides a fluid passage through its pores. Traditional springs increase or decrease in force with the amount extension. The spring force of the negator-spring is constant all along its length. Therefore, the valve configuration maintains the flow rate at a constant level since any increase or decrease in the differential pressure across the spring roll will cause a corresponding extension or contraction of the negator-spring which in turn will result in a change in the flow cross-sectional area of the porous material port until an equilibrium is again reached. The flow through the porous material causes quiet throttling of the fluid while the flow rate remains constant by the action of the negator-spring.

3,794,069
LINE BREAK CONTROL
Ronald A. Gulick, Houston, Tex., assignor to Research Engineering Company, Houston, Tex.
Filed Nov. 20, 1972, Ser. No. 308,026
Int. Cl. F16k *17/20*
U.S. Cl. 137—486 **5 Claims**



This invention is directed to a system for detecting pressure drops in a flow line, the same being indicative of a line break. Reduced pressure is communicated to one side of a diaphragm. A similar reduction is communicated much more slowly to the other side by virtue of series connected oil reservoirs having an orifice therebetween. The pressure differential on opposite diaphragm sides causes valve closure.

3,794,070
PRECISION REFERENCE PRESSURE SUPPLY SYSTEM
Charles D. Klem, Phoenix; Robert T. Riall, Scottsdale, and Richard A. Wallace, Phoenix, all of Ariz., assignors to Sperry Rand Corporation, New York, N.Y.
Filed Mar. 20, 1972, Ser. No. 235,954
Int. Cl. G05d *16/00*
U.S. Cl. 137—487.5 **6 Claims**

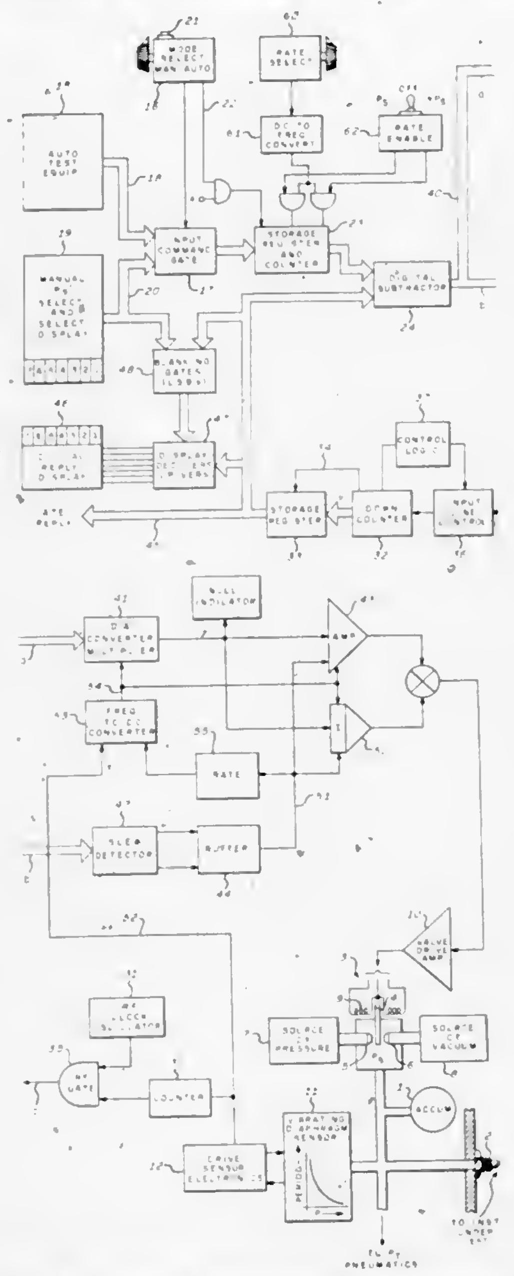
A closed loop, selectively variable precision pressure reference system for testing pneumatic apparatus comprising all solid state digital control of a precision valve for establishing and maintaining the selected or desired reference pressure as a ratio between a positive pressure and a vacuum, the pressure ratio being sensed by a precision pressure sensor of the vibrating diaphragm type. The desired reference pressure is expressed as a binary word and the output of the pressure sensor is converted to a binary word, these two words being digitally compared and the difference therebetween being

converted to an analog signal for adjusting the valve thereby

the smaller of a pair of counterbores, the axis of the larger being off-set therefrom. In the larger of these counterbores is

3,794,074
MIXER TAPS
Horace Watts, Pinner, England, assignor to H. E. D. E.

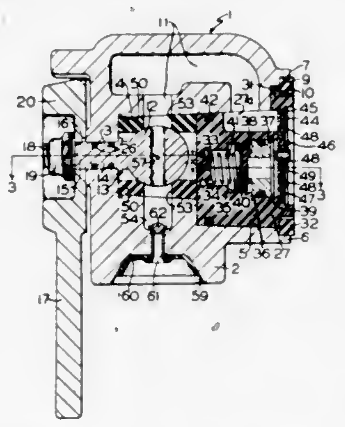
diaphragm forms one wall of a chamber within the housing to which pressure fluid can be admitted. This diaphgram has a boss which is engageable with the spool forming member and converted to an analog signal for adjusting the valve thereby closing the loop to maintain the selected pressure. The system is also capable of providing a precision pressure rate reference. The system automatically compensates for the inherent non-linear characteristics of the pressure sensor over its range of operation.



3,794,071
BALL TYPE BRAKE CYLINDER RETAINER VALVE

Daniel G. Scott, Apollo, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed July 27, 1972, Ser. No. 275,459
Int. Cl. F16k *11/10*
U.S. Cl. 137—599.2 **12 Claims**

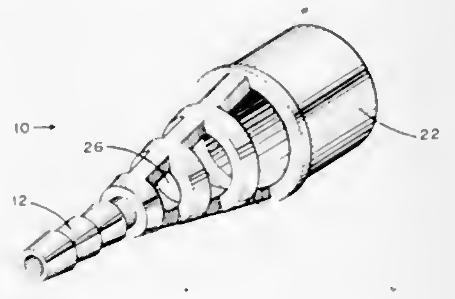


This invention relates to a three-position sealed ball-type brake cylinder pressure retaining valve device, for connection to the exhaust passageway of a railway vehicle brake control valve device. This retaining valve device has a body that is provided at one end with a securing flange. Extending into the body from the other end thereof is a bore that is coaxial with the smaller of a pair of counterbores, the axis of the larger being off-set therefrom. In the larger of these counterbores is disposed a removable cartridge which has formed integral with one end thereof a pair of diametrically arranged arcuate-shaped legs that extend into the smaller counterbore to the end thereof. A pair of diametrically arranged ported resilient arcuate-shaped seal members are disposed in the smaller counterbore between the arcuate-shaped legs and in surrounding sealing relation to a ball-type valve element that has integral therewith a valve stem which extends through the bore in the body for receiving on its outer end a handle manually movable in a plane parallel to the flange selectively to any one of three positions. Extending into the cartridge from its one end is a passageway of small diameter so as to constitute a choke that opens into the smaller of a plurality of coaxial counterbores in one of which is carried an annular valve seat member against which a check valve is normally biased by a spring interposed between the check valve and one end of another of the plurality of counterbores, the check valve thus being arranged in series relation with the choke. The ball-type valve element has therein a plurality of angularly spaced intersecting passageways, one of which is of such size as to constitute a choke, that open at one end at its spherical surface. These passageways of different flow capacity, in cooperation with one another and with either a passageway in the body that at one end opens into the smaller counterbore in this body in alignment with a port in one of the seal members and at the other registers with an arcuate cavity provided in the cartridge and open to the face of the flange via a strainer device, or the check valve, are effective in three respective positions of the ball-type valve element to selectively provide a fast blow-down of brake cylinder pressure to atmosphere, a slow blow-down to a chosen pressure above atmospheric pressure, and a slow blow-down to atmosphere.

3,794,072
OXYGEN DILUTER DEVICE

Donald F. Diedrich, Temecula, and John H. Price, La Jolla, both of Calif., assignors to Hudson Oxygen Therapy Sales Company, Temecula, Calif.

Filed June 26, 1972, Ser. No. 266,226
Int. Cl. F16k *15/00*
U.S. Cl. 137—604 **4 Claims**



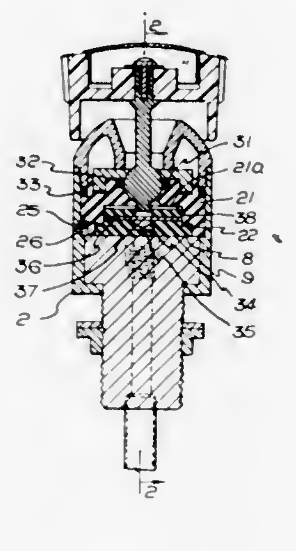
An improved device for controlling oxygen concentration delivered to an oxygen mask comprises a nozzle portion disposed at one end for attaching an oxygen delivery tube, a hollow gas delivery portion at the opposite end for directing gas to an oxygen mask and a tunnel portion disposed between the nozzle and gas delivery portion having support bars extending between the nozzle and delivery portions and a plurality of spaced arcuate ribs secured along the bars between which ribs are defined a plurality of air entrainment ports through which atmospheric air is drawn for diluting a stream of oxygen passing along the tunnel. Air restriction closure members are secured between the ribs selectively closing one or more of the ports for metering air entrainment and oxygen concentration delivered to the mask.

3,794,073
Patent Not Issued For This Number

3,794,074
MIXER TAPS

Horace Watts, Pinner, England, assignor to H. E. D. E. Limited, Middlesex, England

Filed Sept. 20, 1972, Ser. No. 290,495
Int. Cl. F16k *11/00*
U.S. Cl. 137—625.4 **4 Claims**



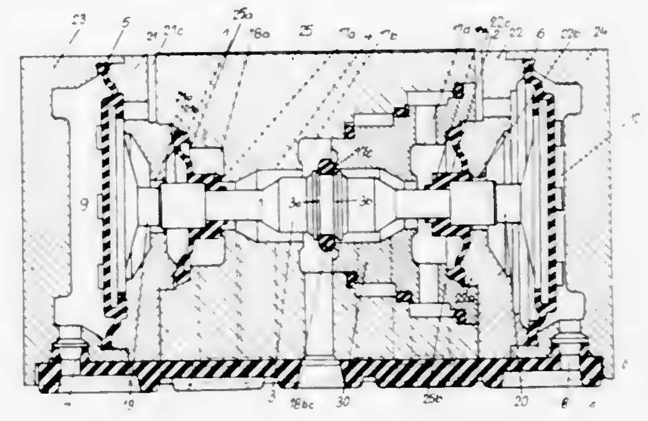
A mixing valve comprising a chamber having a surface defining a valve seat, hot and cold water inlets opening into said chamber at said seat, a valve member disposed in said chamber and slidably associated with said seat and having passage means therein movable into and out of registry with said inlets, a lever having one end interconnected to the valve member and a journal intermediate the ends mounted in a journal bearing spaced from said seat for swinging movement in a single plane extending normal to said seat so as to move the valve member in a straight path aligned with said single plane and for rotation about the longitudinal axis so as to rotate the valve member about an axis fixed with respect to the valve member and always lying substantially in said single plane, the lever and/or the valve member being guided between opposed parallel plane surfaces lying normal to the seat respectively at opposite sides of said single plane, and at least one sealing ring in engagement with the journal for sealing said journal with respect to said journal bearing to prevent water leaking along the spindle from the chamber to atmosphere.

3,794,075
MULTIWAY VALVE

Kurt Stoll, Schanbacher Str. 48, Esslingen-Hegensberg, and Willy Schwenk, Fuchshofstr. 28, Ludwigsburg, both of Germany

Filed Aug. 3, 1971, Ser. No. 168,680
Claims priority, application Germany, Aug. 5, 1970, 2038846
Int. Cl. F16k *11/02, 31/165*
U.S. Cl. 137—625.66 **6 Claims**

A multiple way valve includes a housing having a central bore and a plurality of passages opening from the outside into the bore. The bore includes a plurality of valve seats between the different passages. A valve member in the shape of a spool carries annular sealing members engageable with the valve seats is floatingly supported within the bore by a support diaphragm at one end and a support diaphgram or a coil spring at the other end. A control diaphragm outside of the support diaphragm forms one wall of a chamber within the housing to which pressure fluid can be admitted. This diaphgram has a boss which is engageable with the spool forming member and actuates it.

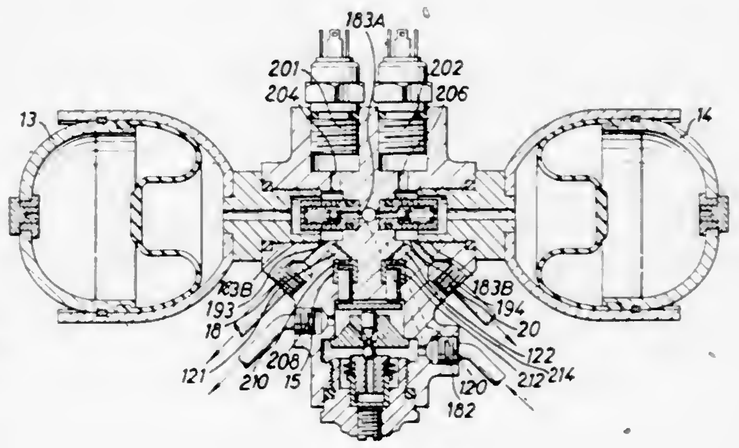


One of the diaphragms is constructed as a snap-action diaphragm, so that the valve member will move quickly from one end position to the other.

3,794,076
VALVE DEVICES

Leslie Cyril Chouings, Leamington Spa, England, assignor to Automotive Products Company Limited, Leamington Spa, England

Filed July 28, 1971, Ser. No. 166,662
Claims priority, application Great Britain, Aug. 10, 1970, 38,478/70
Int. Cl. G05d *11/00*
U.S. Cl. 137—115 **6 Claims**

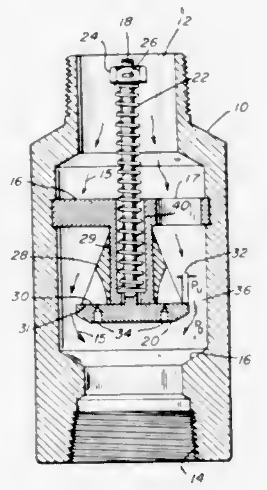


A valve device for controlling the supply of liquid pressure from a pump to two liquid pressure accumulators in a dual line liquid pressure braking system for a vehicle has an inlet port, two outlet ports and a vent port. The inlet port communicates with each outlet port via a respective non-return valve. Communication between the inlet port and the vent port is controlled by a normally closed valve which may be opened by means responsive directly or indirectly to the pressure at the outlet ports. The pressure responsive means responsive directly to the pressure at the outlet ports may comprise two pistons acting through a common beam which is hinged centrally to a plunger, movement of the plunger being arranged to open the normally closed valve. The valve device may include two fluid pressure responsive electric switches which are responsive to the pressure at a respective one of the outlet ports and which are arranged to operate a warning device.

3,794,077

EXCESS FLOW CHECK VALVE

Chester Fanshier, P.O. Box 1114, Bartlesville, Okla. 74003
Filed Dec. 15, 1972, Ser. No. 315,322
Int. Cl. F16k *17/30, 15/06*
U.S. Cl. 137—513.3 **3 Claims**



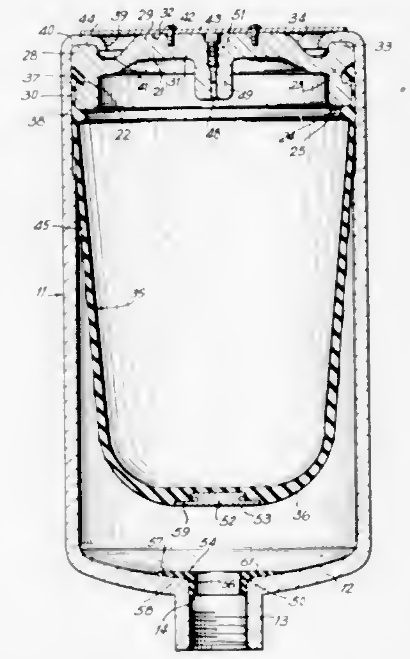
This disclosure describes an improved valve, which may be used as a check valve, in which the flow of fluid in the direction to close the valve, is designed to operate the closure mechanism at a preselected rate of fluid flow. There is a housing having an inlet at one end and a valve seat at the second end. There is an axial support means which carries a valve stem with a valve head at one end, adapted to seal against the seat. The valve stem is urged away from the seat and against the flow by means of a spring, until the valve head is seated against the end of the support means. The cross sectional area of the support means is less than the cross sectional area of the valve head.

The valve head is of less diameter than the internal diameter of the housing which provides an annular space through which the fluid flows, and in which there is a pressure drop. Thus, the unit pressure on the leading, upstream face is higher than the unit pressure on the lower downstream face of the valve head. The upper pressure times the exposed area on the upper surface of the head provides a downward force which is balanced by the sum of the upward forces of the fluid pressure on the lower surface of the head and the spring force. As the fluid flow increases the pressure drop increases and at a selected value of fluid flow the downward force on the valve head will be sufficient to overcome the upward forces and the valve will move downward. This movement provides a space between the lower end of the support means and the upper surface of the valve head and exposes the entire upper surface of the valve head to the upstream pressure which now provides a greater downward force on the valve head, causing it to rapidly close, shutting off all fluid flow.

3,794,078

PRESSURE VESSEL

Jacques H. Mercier, 49 Rue de Naples, Paris, France
Filed Mar. 15, 1972, Ser. No. 234,760
Int. Cl. F16l *55/00*
U.S. Cl. 138—30 **4 Claims**



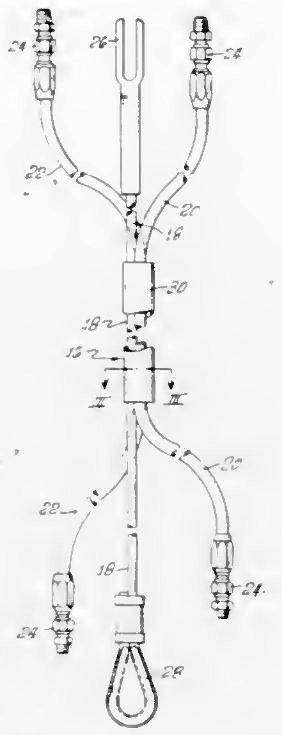
This invention relates to a pressure vessel and more particularly to a pressure accumulator of the type having a rigid container having a port at one end for flow of fluid therethrough. A deformable partition in the form of a bladder is positioned in the container and is charged with gas under pressure. The closed end of the bladder has an axially mounted button or valve member which will move against the periphery of the container port to close the latter when the bladder is inflated. The button and the periphery of the port define two elements of a valve, at least one of which has a resilient surface preferably of rubber to reduce the impact when the two elements are brought into engagement for closure of the valve.

3,794,079

COMBINATION STRENGTH/HYDRAULIC CABLE

Kenneth R. Fishel, Del Mar, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Aug. 27, 1971, Ser. No. 175,525
Int. Cl. F16l *55/00*
U.S. Cl. 138—103 **1 Claim**

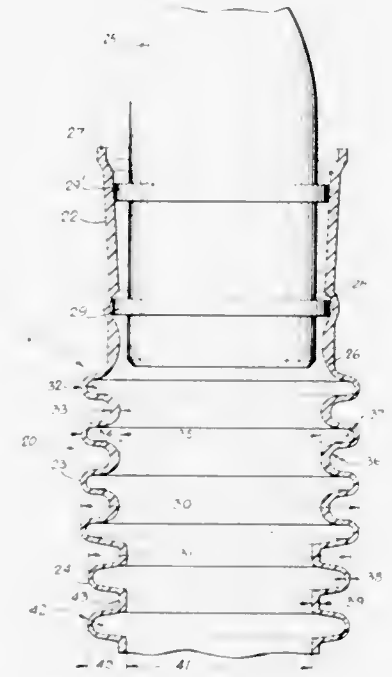
A combination strength/hydraulic cable including a load carrying cable having load carrying end fittings; and a pair of flexible hydraulic hoses, each hydraulic hose having end fittings. The load carrying cable and the pair of hydraulic hoses are bonded integrally within an elastomeric jacket. The end fittings extend from the elastomeric jacket for connection to respective components.



3,794,080

CORRUGATED FLEXIBLE HOSE

Paul O. Huston, Montville; Hermann Karl Seipp, Nutley, and Arduino E. Riuli, Wayne, all of N.J., assignors to Becton, Dickinson and Company, East Rutherford, N.J.
Filed Aug. 18, 1972, Ser. No. 281,914
Int. Cl. F16l *11/00*
U.S. Cl. 138—121 **16 Claims**

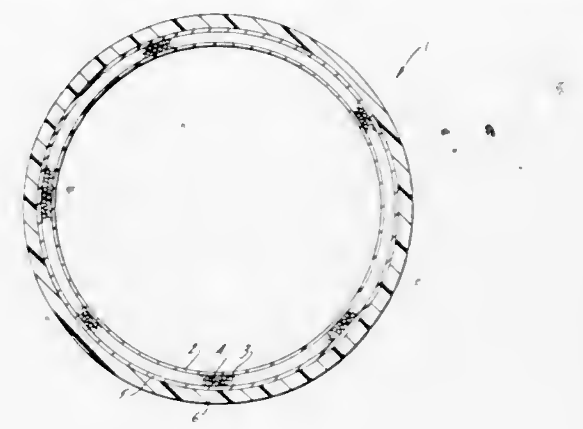


A corrugated flexible hose of a predetermined length of walled hollow tubular material. The wall includes convolutions of alternate crests and troughs along a substantial portion of its length. The convolutions adjacent at least one end of the wall are dimensionally varied from the remainder of the convolutions of the wall to thereby provide a stiffer portion at least at one end of the hose to facilitate connection to a member while retaining flexibility of the hose.

3,794,081

FIBER REINFORCED TUBULAR ARTICLE HAVING ABRASION RESISTANT LINER

James T. Fiser; Robert M. Jackman, and Ray R. James, all of Little Rock, Ark., assignors to A. O. Smith-Inland Inc., Milwaukee, Wis.
Filed May 5, 1972, Ser. No. 250,767
Int. Cl. F16l *9/04*
U.S. Cl. 138—141 **3 Claims**

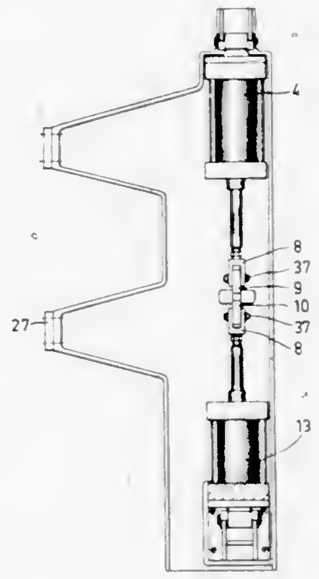


A tubular article having an internal abrasion and corrosion resistant liner and a method of forming the same provides an inner layer of cheesecloth impregnated with an epoxy resin with the resin adapted to form an outer layer on the cheesecloth. A layer including a plurality of ceramic spheres each having at least a partial surface coating of metal are secured to the cheesecloth through the bonding provided by the metal coating and resin and are maintained in a confined condition to form the inner liner, such as by an outer layer of cheesecloth impregnated with an epoxy resin which surrounds the layer of ceramic spheres and resin. A plurality of fiberglass filaments impregnated with thermosetting resin surround the inner liner with the entire composite cured to form the fiber reinforced pipe.

3,794,082

ARRANGEMENT FOR SHED FORMATION

Heinz Kuster, Ljungby Gard 570 82, Malilla, and Bjorn Brorsson, Furugatan 7c 590 00, Vimmerby, both of Sweden
Filed Jan. 4, 1972, Ser. No. 215,340
Int. Cl. D03c *13/00*
U.S. Cl. 139—55 **7 Claims**



A shed formation mechanism arrangement comprising a plurality of healds, an impulse counter controlled by the timing of the weft carrier, said counter continuously produces output impulses, a preset selector for determining the repeat of a weaving pattern, a reversing switch means for feeding said impulses, contact means, a pair of knives and a shaft for each of the said healds, a piston and cylinder coupling means for each of said knives, said contact means upon receiving the impulses generages a reciprocating movement to said coupling means to effect a mechanical coupling between one of said knives and said shaft, a guide and connecting means for coupling said shaft to its corresponding heald, a piston and cylinder drive means for each of said knives, and said drive means reciprocates said knives to move the healds to their shed positions.

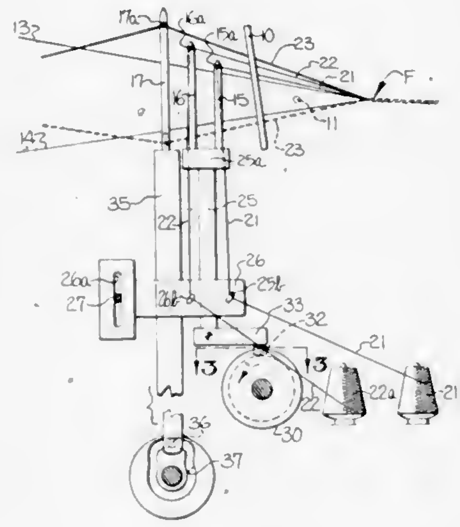
3,794,083
SELVAGE FORMING APPARATUS FOR LOOMS

Paul Anthony Czelusniak, Jr., Eden, N.C., assignor to Fieldcrest Mills Inc., Eden, N.C.

Filed Apr. 28, 1972, Ser. No. 248,625

Int. Cl. D03d *47/40*

U.S. Cl. 139—54 **7 Claims**



First, second and third thread guides, with respective first, second and third selvage threads extending therethrough, are successively arranged rearwardly of the reed, and means are provided for oscillating the first and second thread guides about a substantially vertical axis in timed relation to substantially vertical reciprocation of the third thread guide rearwardly thereof so as to cross the first and second threads with each other and position them astraddle the third thread.

3,794,084
RAIL BEARING FOR A WARP STOP MOTION

Gianfrance De Faveri, Zurich, Switzerland, assignor to Grob & Co. Aktiengesellschaft, Hargen, Switzerland

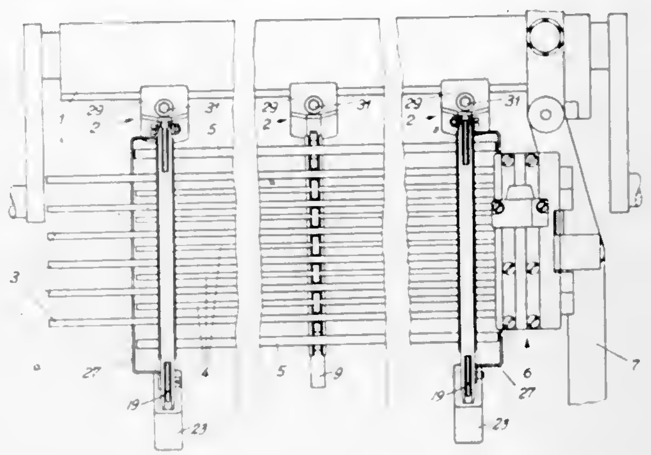
Filed June 16, 1972, Ser. No. 263,411

Claims priority, application Switzerland, June 18, 1971, 8974/71

Int. Cl. D03d *51/28*

U.S. Cl. 139—369 **3 Claims**

A rail bearing for a warp knock-off action in a power loom is provided with a substantially U-shaped base body in which is inserted an upright guide plate provided with spaced parallel slots for guide rails, while an upright distance plate mounted on top of the guide plate has parallel slots for contact rails or toothed rails, respectively. A cover is used for clamping the distance plate and the guide plate to the base body.



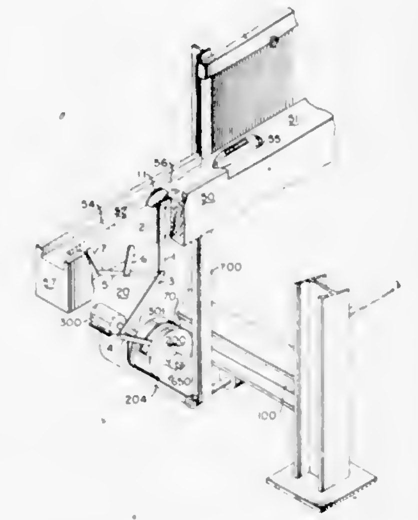
3,794,085
SHUTTLE BOXING METHOD AND APPARATUS

William J. Stephens, Bedford, Mass., assignor to Noxxe, Inc., Bedford, Mass.

Filed Feb. 28, 1972, Ser. No. 229,697

Int. Cl. D03d *49/54, 49/24, 49/38*

U.S. Cl. 139—185 **10 Claims**



There is disclosed a shuttle boxing method and apparatus whereby loom shuttles, upon completion of their traverse of the lay beam, are rapidly and smoothly decelerated without deleterious rebound. The deceleration method and apparatus of the invention serve to employ the kinetic energy of the flying shuttle in overcoming the inertia of a flywheel at rest. In the picking or firing cycle embodiment of the invention the energy of the spinning flywheel is imparted to the boxed shuttle.

3,794,086
APPARATUS FOR FORMING A SEAL-LESS TYPE JOINT IN OVERLAPPED FLAT STRAPPING

Marchand B. Hall, Olympia Fields, and Carl E. Krack, Evergreen Park, both of Ill., assignors to United States Steel Corporation, Pittsburgh, Pa.

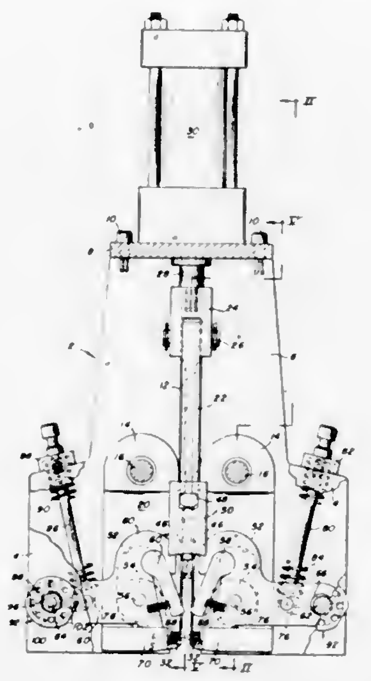
Filed Aug. 30, 1972, Ser. No. 284,841

Int. Cl. B21f *9/02*

U.S. Cl. 140—93.2 **4 Claims**

Apparatus includes a pair of opposed jaws mounted at one end for pivotal movement toward and away from each other. Mating notches are provided on the opposing faces of the jaws

remote from their pivoted ends for forming a fixed die for receiving overlapped flat strapping. A punch is disposed for reciprocal movement between the opposed edges of the jaws toward and away from the fixed die formed by the notched portions of the jaws. The punch is shaped so as to form interconnecting tabs in the overlapped portion of the flat strapping resting on the fixed die. A cutter is mounted on the punch for movement therewith which serves to cut the length of strapping proximate to the source of flat strapping. A linkage system is provided connected with each jaw which is actuatable by the punch as it travels away from the fixed die to open the jaws to release the overlapped portions of the strapping after the punch has joined them together and the cutter has cut the strapping from its source. Spring means are provided connected with the linkage system to constantly urge the jaws toward each other. The apparatus also includes a micrometer adjusting means to adjust the clearance between the jaws.



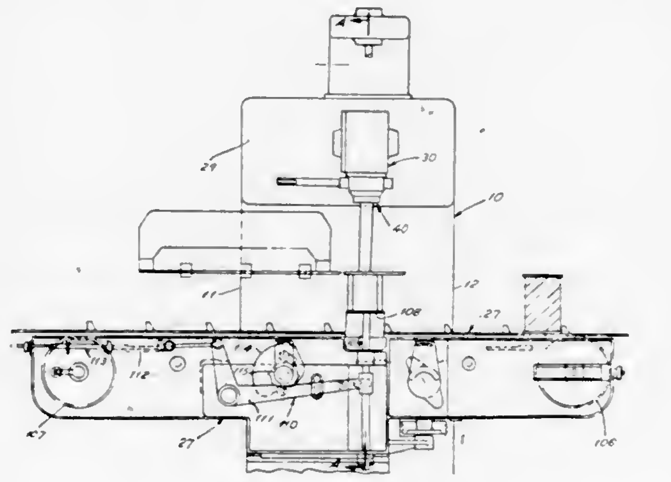
3,794,087
MACHINE FOR CONTINUOUSLY FILLING MEASURED QUANTITIES OF MATERIALS

Eduardo Victor Spano; Otilia Sueiro; Oscar Pedro Gonzalez, and Noem Mabel Campiani, all of c/o Quintana 689, Villa Ballester, Buenos Aires, Argentina

Filed Dec. 14, 1970, Ser. No. 97,925

Int. Cl. B65b *43/42*

U.S. Cl. 141—131 **8 Claims**



Improved machine for continuously filling measured quantities of materials, such as food products, into containers; comprising a feeding or dosing mechanism with a pair of receiving members having predetermined volumes for the measured material quantities, preferably in the form of cylinders with reciprocable plungers therein, and means for alternately filling the receiving members by way of a valve which has a partition-shaped valve element therein; means for transporting the containers to a filling position, and for elevating them one by one, for receiving the dosed materials from a discharging means; and control means for providing synchronized operation of the machine in an orderly and continuous manner.

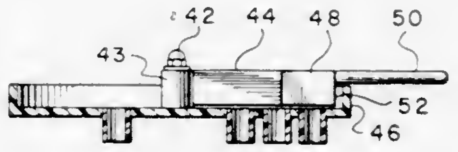
3,794,088
CONTAINER FILLING DEVICE

Pruitt Harvey, Dallas, Tex., assignor to Chester S. Hartman, Jr., Dallas, Tex.

Filed Dec. 13, 1971, Ser. No. 207,420

Int. Cl. B65b *1/04, 1/10*

U.S. Cl. 141—237 **1 Claim**



An apparatus for simultaneously filling multiple containers such as glasses with ice and the like is disclosed. A distributor tray having a flat bottom and upstanding side walls is provided with a plurality of circular openings in the bottom. Surrounding each opening is a downwardly extending spout which is adapted to be placed into containers arranged on a lower base tray. The lower base tray may be a conventional flat, oval tray or preferably may have indentations conforming to the shape of the bottom of the containers to properly align and index the glasses to be filled with the spouts in the upper tray. In one embodiment a paddle is affixed to the distributor tray and movable therein to assist in distributing the ice among the filler spouts.

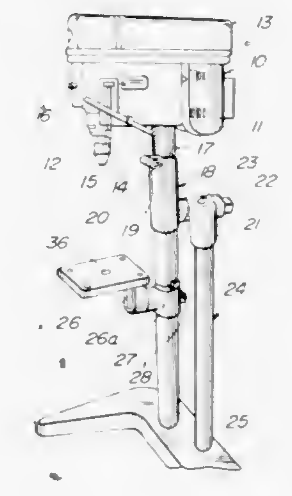
3,794,089
POSITIONING COUPLING FOR A TABLE BRACKET

Glenn B. Morse, 321 Fountain N. E., Grand Rapids, Mich. 49503

Filed Aug. 28, 1972, Ser. No. 284,417

Int. Cl. B27c *9/02*

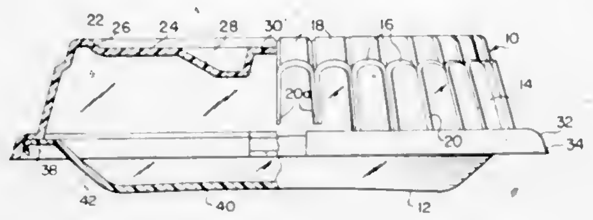
U.S. Cl. 144—1 C **3 Claims**



A machine having a cylindrical beam and a support capable of placing the beam horizontally, and rotatably adjustable in this position, is provided with a coupling interengaging a table bracket with the support to lock the bracket against rotation about the axis of the beam. The beam is itself rotatably adjustable with respect to the support about the beam axis. The coupling permits the bracket to be locked in a selected position while the beam is angularly adjusted about its own axis for various purposes.

3,794,090
COVERED CONTAINER FOR SERVING FOOD

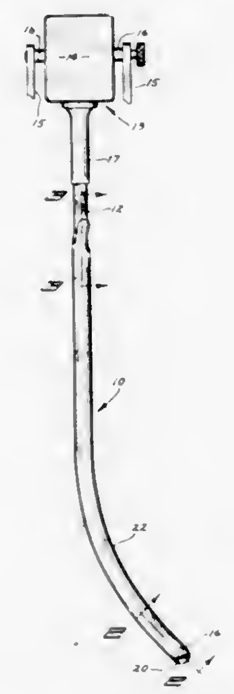
Nicholas D. Commisso, Victor, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.
Filed July 14, 1972, Ser. No. 271,864
Int. Cl. A45c/00; B65d/00
U.S. Cl. 150—.05 **8 Claims**



A thin gauge plastic cover having reinforcing ribs in its annular side wall and top, and a recessed knob-like handle at its top is disposed on a plate for serving food, for example, in institutions. The cover has a lower arcuate rim provided with a plurality of spaced inwardly projecting lugs to lock the cover to the periphery of the plate and to space the remainder of the rim of the cover slightly above the periphery of the plate to allow for venting from the interior of the container. The lugs and reinforcing ribs are arranged to prevent covers from sticking to each other when a plurality of covers are nested together.

3,794,091
STERILE SHEATH FOR SURGICAL ILLUMINATOR

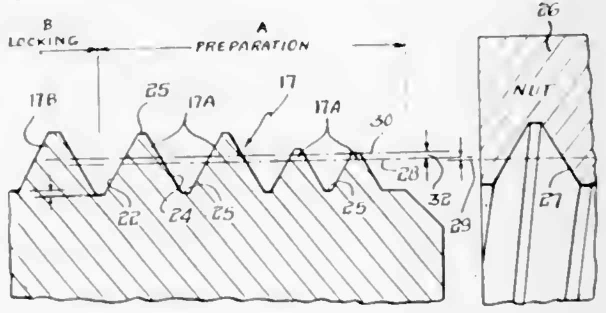
Robert A. Ersek; Donald E. Wall, and Michael C. Garity, all of Minneapolis, Minn., assignors to Med General, Inc., Miniapolis, Minn.
Filed Oct. 7, 1971, Ser. No. 187,295
Int. Cl. B65d *65/16, 65/32;* **A61b** *1/06*
U.S. Cl. 150—52 R **5 Claims**



A sterile sheath for enclosing certain surgical illuminating lamp structures having elongated light transmitting shafts with a light transmitting lens means disposed at the tip end of the light transmitting shaft. The sheath means of the present invention comprises an elongated tubular sheath having a closed tip at one end thereof and an opening at the other end thereof, the tubular sheath having sufficient length to cover that portion of the light transmitting shaft having a sterile requirement. The sheath is provided with a light transmitting tip at the closed end and has a pair of generally axially extending slots formed adjacent the open end to form a pair of grasping ears. One of the axially extending slots has a length in substantial excess of the other in order to provide the grasping ears with substantial asymmetry.

3,794,092
LOCKING FASTENER

Raymond H. Carlson, and Bernard F. Reiland, both of Rockford, Ill., assignors to Textron Inc., Providence, R.I.
Continuation-in-part of Ser. No. 91,730, Nov. 23, 1970, abandoned. This application Nov. 12, 1971, Ser. No. 198,146
Int. Cl. F16b *39/30*
U.S. Cl. 151—22 **21 Claims**

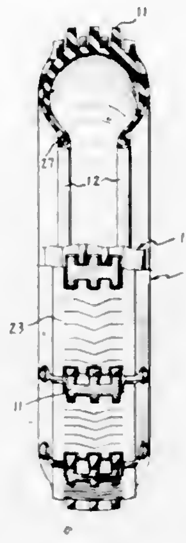


A locking screw arrangement and fastener member are disclosed which provide for predictability and control of the locking action attained. In addition, there is disclosed a novel type of locking thread configuration wherein the leading or following flank of one or more thread turns on the fastener are bulged outwardly in an axial direction, with the opposite flank depressed, whereby said bulged flank will engage the corresponding flank of the female member to produce flank-to-flank interference. In order to obtain said predictability and control, said locking arrangement employs an internally threaded female member having a thread configuration formed within industry accepted tolerances, which female member is engaged with an externally threaded fastener having a construction which eliminates any variables due to the tolerance encountered in the thread form of the female member that adversely effect the locking action. In this regard, the threaded portion of the fastener includes a preparation section and a locking section, the thread turns and the preparation section being such as to reshape and size the internal thread of the female member upon engagement therewith, thereby eliminating the effect of dimensional variables that may be encountered. Therefore, upon subsequent engagement of said reshaped internal threads with the thread turns of the locking portion, a predetermined locking action will be obtained.

3,794,093
PNEUMATIC TIRE

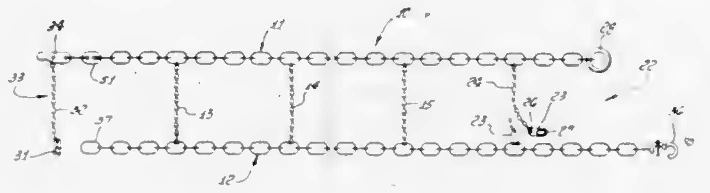
Lorenzo Boscaino, 1 Chestnut St., Norristown, Pa. 19401
Filed May 4, 1972, Ser. No. 250,322
Int. Cl. B60c *19/00*
U.S. Cl. 152—208 **15 Claims**

A pneumatic tire for a vehicle is provided with a pressurizable inner casing having luglike members on the peripheral surface thereof, and a non-pressurizable outer casing having openings through the peripheral portion thereof and adapted to fit over the inner casing, with the luglike members of the inner casing fitting through the openings and normally protruding beyond the outer surface of the outer casing but depressible flush therewith when the members meet the roadbed by the normal pressure due to the weight of the vehicle. The resulting multi-purpose tire is advantageous for use on dry roads as well as slippery roads.



3,794,094
METHOD AND APPARATUS FOR STORING AND ATTACHING TIRE CHAINS

Joseph L. Wosser, Jr., 1855 Sierra Sage Ln., Reno, Nev. 89502
Filed Aug. 11, 1972, Ser. No. 279,851
Int. Cl. B60c *27/02*
U.S. Cl. 152—213 **11 Claims**

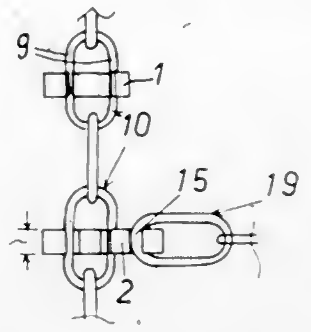


A system for storing and attaching a tire chain to a vehicle wheel is provided in which each chain is stored in a spring clip carrier constructed to receive and removably hold each of the cross chains which extend at spaced intervals between a pair of sidewall chains of the tire chain. The carrier has a relatively flat elongate shape, open at one end to receive the cross chains and is provided with a slight longitudinally arcuate configuration for conforming to the outer circumference of the tire. Installation is initiated by anchoring the end of the tire chain adjacent an open end of the spring clip carrier to the ground engaged portion of the tire by means of a special cross chain fitting. A crank tool of special construction is employed to impel the carrier around the tire circumference while it is slidably engaged with tread surfaces such that each of the retained cross chains and attached sidewall chains are released by the carrier and disposed in place around the tire circumference. Additional specially formed fitting means are provided for connecting associated ends of the sidewall chains and thus securing the tire chain in place.

3,794,095
TIRE CHAIN WITH CLEATS

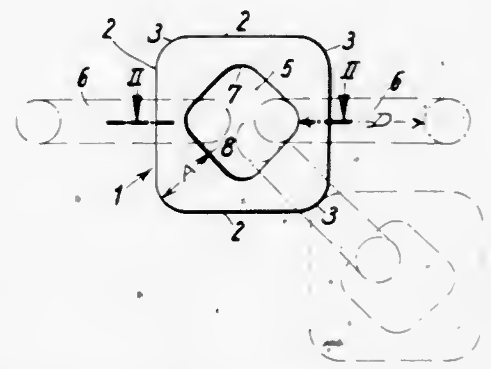
Theodor Insam, Kitzbuhel, Austria, assignor to Reid-Kettenfabrik Rieger & Dietz, Wurtemberg, Germany
Filed Jan. 24, 1972, Ser. No. 219,990
Claims priority, application Austria, Jan. 25, 1971, 567
Int. Cl. B60c *27/04*
U.S. Cl. 152—239 **10 Claims**

Certain links of a tire chain are inserted into and/or interconnected by cleats in the form of flat or annular bodies provided along one edge with a plurality of indentations gripping parts of the same or different chain links. The cleat bodies extend generally transversely to the main direction of the engaged chain to increase the traction exerted by the tire carrying the chain.



3,794,096
WEB LINK FOR TIRE ANTI-SKID CHAINS

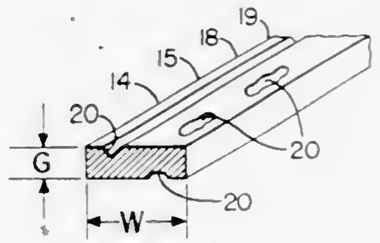
Anton Muller, Unterkochen, Germany, assignor to Eisen-und Drahtwerk Erlau Aktiengesellschaft, Aalen, Germany
Filed Mar. 23, 1972, Ser. No. 237,394
Claims priority, application Germany, Mar. 24, 1971, 92114201
Int. Cl. B60c *27/06*
U.S. Cl. 152—243 **13 Claims**



A reversible web link for anti-skid tire chains which has pairs of approximately parallel road engaging and/or tire engaging surfaces and also has a receiving opening for receiving connecting links, all outer peripheral surfaces of said link forming road and/or tire engaging surfaces, being substantially symmetrically arranged about the substantially axis symmetrical receiving opening.

3,794,097
PNEUMATIC TIRE

Guy Kind, Bellevue, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Continuation of Ser. No. 114,922, Feb. 12, 1971, abandoned. This application Nov. 2, 1972, Ser. No. 303,164
Int. Cl. B60c *9/18*
U.S. Cl. 152—356 **5 Claims**

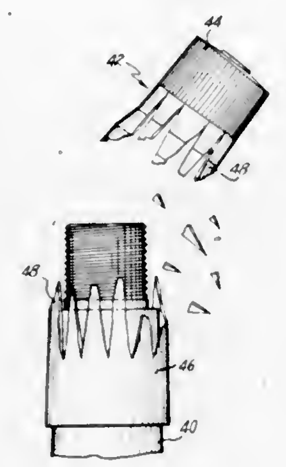


A pneumatic tire with flat wire cords in the carcass plies and breaker strips for annularly reinforcing the tire.

3,794,098

TIRE REPAIR OR INSTALLATION METHOD AND SEAL DEVICE THEREFOR

Michael A. Versen, P.O. Box 1848, Morgan City, La. 70380
Filed June 5, 1972, Ser. No. 259,942
Int. Cl. B60c *29/00*
U.S. Cl. 152—428 8 Claims

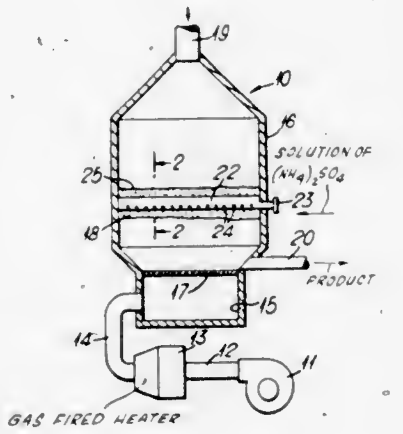


The valve stem of an assembled and inflated pneumatic tire and wheel assembly is equipped with a frangible seal, the seal being so constructed and arranged that such must be destroyed before air can again be placed in the assembly. In the method the destructible seal is used with a record system to ensure the proprietor that he is receiving pay for tire installations and repairs made by his employees, and to give a guarantee to the customer.

3,794,099

FLUIDIZED BED PROCESS FOR DRYING AMMONIUM SULPHATE

Neophytos Ganiaris, 3671 Hudson Manor Terr., Riverdale, N.Y. 10463
Filed June 14, 1971, Ser. No. 152,887
Claims priority, application Great Britain, June 13, 1970, 28721/70
Int. Cl. B01d *1/16;* **F26b** *3/12*
U.S. Cl. 159—48 R 1 Claim

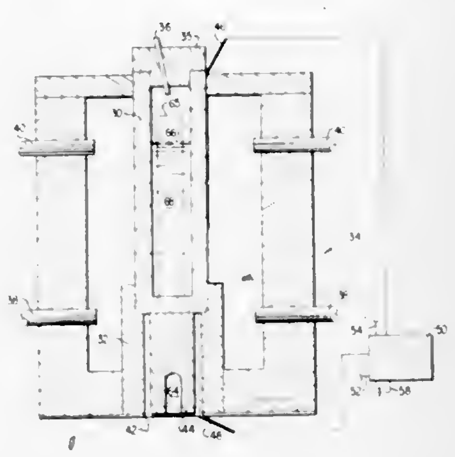


A nozzle introducing a spray into a fluidized bed is positioned a few inches below the top of the expanded bed to minimize the production of dust and to reduce the formation of lumps of material on the surfaces of the nozzle.

3,794,100

METHOD OF MAKING A BILLET SUITABLE FOR MANUFACTURING INTO A SUPERCONDUCTOR

Jan W. Raymond, and Clay N. Whetstone, both of Denver, Colo., assignors to Cryomagnetics Corporation, Denver, Colo.
Filed June 18, 1970, Ser. No. 47,390
Int. Cl. B22d *27/20, 19/00*
U.S. Cl. 164—57 8 Claims

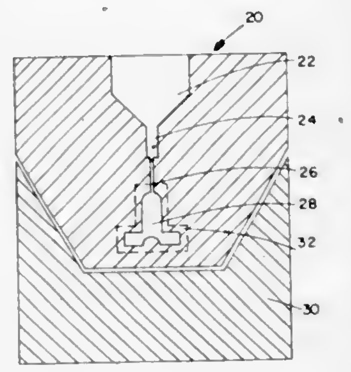


A plurality of rods are assembled in a predetermined configuration to form a core which is surrounded by a molten matrix metal within a heated crucible. The temperature of the thusly charged crucible's upper portion is maintained above the matrix metal's melting point. In this respect, as the heat is applied to the top of the melt, the crucible is maintained in a hot environment while the bottom of the crucible is centrally chilled. In this manner the charge is solidified from the bottom toward the top so that the solidification progresses upwardly and outwardly in a conical pattern. After the controlled solidification is completed the casting is separated from the crucible to form a cored extrusion billet. In one embodiment the rods are separated from the casting and the resulting open holes are filled with superconductive material to form a composite superconductor extrusion billet. In another embodiment the rods themselves are made of a superconductive material so as to eliminate the step of separating the rods from the casting.

3,794,101

METHOD OF CASTING METALS IN METAL MOLD

Jean Robert Frederick, 3130 State Rd., Ashtabular, Ohio 44004
Filed May 17, 1971, Ser. No. 143,907
Int. Cl. B22d *21/02, 23/06, 29/00*
U.S. Cl. 164—68 5 Claims



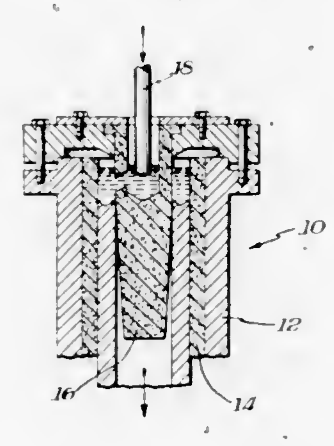
A process for casting an exotic alloy in a metal mold comprising a relatively easily machined steel mold wherein the mold is prefabricated from component parts having those surfaces which are exposed to the cast metal being machined and finished by polishing. The mold formed is characterized by the

unusually complex forms that are possible and is preferably removed partially by rough machining and the remainder being dissolved by an acid which will not attack the cast metal. The casting is recovered in a precise highly finished form requiring no further finishing process.

3,794,102

METHOD AND APPARATUS FOR CONTINUOUSLY CASTING NON-FERROUS METALS IN A GRAPHITE-GLASSY SUBSTANCE MOLD

Kurt Binder, Giessen, Germany, assignor to Berkenhoff & Co., KG., Kinzenbach, Germany
Filed Mar. 16, 1971, Ser. No. 124,719
Int. Cl. B22d *11/02*
U.S. Cl. 164—82 10 Claims

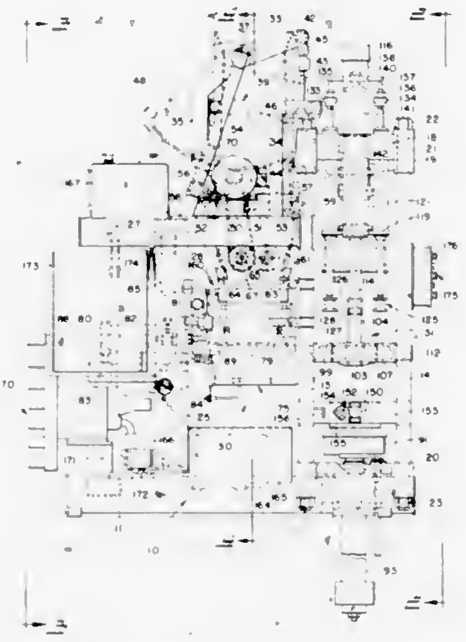


Graphite dies or molds used for casting metals contain glasses or fluxes as a lubricant, which softens or melts below the solidification temperature of the metal melt.

3,794,103

MATCHPLATE MOLDING MACHINE

Robert G. Shields, Chagrin Falls; Warren A. Blower, and Edmond K. Hatch, both of Brecksville, all of Ohio, assignors to The Sherwin-Williams Company, Cleveland, Ohio
Filed Jan. 7, 1972, Ser. No. 216,013
Int. Cl. B22c *17/00*
U.S. Cl. 164—182 22 Claims

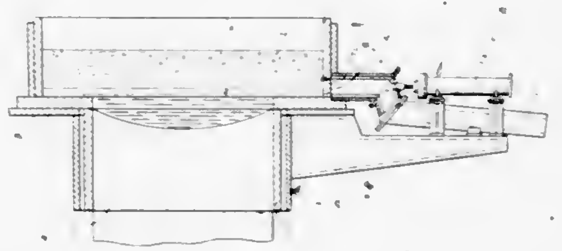


A matchplate foundry molding machine having a fill station and an adjacent molding station with a cope, matchplate, and drag assembly adapted to be indexed between such stations. The assembly in the fill station is supported for inversion so that the drag may be inverted and filled with sand. After a bottom board is inserted the assembly is reinverted and the cope filled with sand. The assembly is then indexed into the molding station which includes a vertically movable table, a drag support, a cope support, a fixed matchplate support, and a squeeze head incorporating a jolt ram. When the sand filled assembly is in position, the table elevates and simultaneously jolts and squeezes the cope and drag. The table is then lowered to draw the matchplate from the cope which is held against the squeeze board by its support and when the drag and matchplate reach the matchplate support, the matchplate is drawn from the drag with the drag continuing to coring height with the matchplate alone now indexing back to the fill station. The drag support then elevates the drag with the table following to close the drag against the cope, slight further elevation lifting the flasks free of the sand cakes held by the squeeze head which are then supported on the table. The table lowers with the booked cope and drag sand cakes thereon, the drag support following with the drag, with the cope remaining elevated. When the drag is clear, the matchplate is again indexed into the molding station to be reassembled with the cope and drag flasks. The assembly is then indexed to the fill station for filling and the booked cand cakes are pushed out of the machine.

3,794,104

MOULD FOR ELECTROSLAG REMELTING FURNACE

Boris Izrailevich Medovar, bulvar Leis Ukrainki, 2, kv. 8; Jury Fedorovich Alferov, bulvar Lepse, 29, kv. 64; Grigory Bentsionovich Schupak, ulitsa Chudnovskogo, 7, kv. 61; Valery Evgenievich Lanevsky, ulitsa V.Kuchera, 2a, kv. 8; Vitaly Grigorievich Dykan, ulitsa Ushinskogo, 8, kv. 29; Mikhail Elevich Berezovsky, ulitsa Lomonosova, 21/14, kv. 54; Vitaly Mikhailovich Baglai, ulitsa Semashko, 10, kv. 54/3; Lev Andreevich Shuruev, ulitsa Gagarina, 10/2, kv. 7; July Georgievich Emelyanenko, ulitsa Darvina, 5, kv. 5, all of Kiev; Kim Moiseevich Khasin, prospekt K.Marxa, 35, kv. 17, Novosibirsk; Vladimir Ivanovich Lugovsky, ulitsa Pamirskaya, 48, kv. 70, Novosibirsk; Valery Vasilievich Salmin, ulitsa Zorge, 95, kv. 69, Novosibirsk; Vilen Fedorovich Marjuschenko, ulitsa Televizionnaya, 11; kv. 7, Novosibirsk; Fedor Fedorovich Shaburov, ulitsa Rimskogo-Korsakova, 4a, kv. 64, Novosibirsk; Georgy Vasilievich Tamozhnikov, ulitsa Vertkovskaya, 14, kv. 4, Novosibirsk; Viktor Andreevich Popov, ulitsa Andreevskaya, 11, kv. 2, Kiev, and Gennady Mikhailovich Semin-Vadov, ulitsa Butyrskaya, 86 B, kv. 10, Moscow, all of U.S.S.R.
Filed Sept. 27, 1972, Ser. No. 292,803
Int. Cl. B22d *27/02*
U.S. Cl. 164—252 4 Claims



A mould for an electroslag remelting furnace fitted with a slag hole which is closed with a plug manufactured of a refractory material having high chemical resistance against attack by the slag. A preferred refractory material is graphite, having a specific gravity less than that of the slag.

sequence of idler and pinch rolls therewithin defining a path

3,794,110

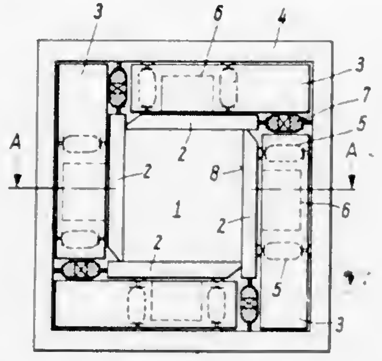
3,794,105
OSCILLATING WALL ARRANGEMENT FOR A CONTINUOUS CASTING MOLD

Wilhelm Voss, Dortmund-Syburg, Germany, assignor to Demag AG, Duisburg, Germany

Filed June 1, 1971, Ser. No. 148,631

Int. Cl. B22d *27/08*

U.S. Cl. 164—260 **11 Claims**



Separate wall plates disposed perpendicularly to one another and with a seal between the abutting surfaces of the wall plates, form the mold cavity in a continuous casting mold. Each wall plate has a device for oscillating it in the radial direction of the mold cavity and another device for oscillating it in the plane of its contacting surface with the casting passing through the mold cavity. The wall plates are enclosed by a frame with abutment strips extending between the frame and the outer surface of the plates. Further, elastic elements are articulated to and extend between the wall plates and the frame. The elastic elements are adjustable for adapting to the tapering action of the casting as it moves through the mold.

3,794,106
PLANT FOR PRODUCING A METAL BAND FROM A MELT

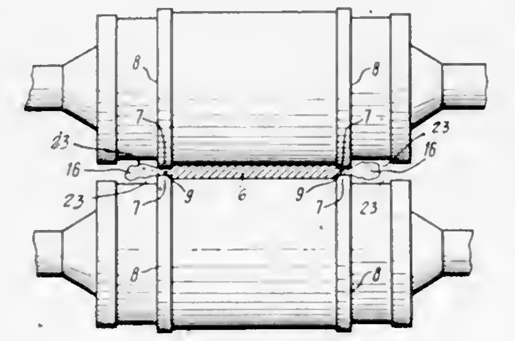
Vladimir Vasilievich Barsukov, ulitsa Bogatogo, 39/41, kv. 24; Savely Leonidovich Burakov, Treugolny pereulok, 13, kv. 23; Vladimir Vissarionovich Grebennikov, ulitsa R.Ljuxemburg, 4, kv. 12; Petr Georgievich Kalashnikov, ulitsa 25 Chapaevskoi divizii, 10, korpus 2, kv. 23; Miron Vasilievich Krasnov, doroga Kotovskogo, 191, kv. 5; Alexandr Yankelevich Kuperman, ulitsa Tomasa, 4, kv. 9; Evgeny Emelyanovich Mikotin, ulitsa Gaidara, 37, kv. 12; Evgeny Grigorievich Nikolaenko, ulitsa Lastochkina, 9, kv. 6; Alexandr Nikolaevich Stepanov, ulitsa Sverdlova, 97, kv. 68; Georgy Grigorievich Tsarev, ulitsa Bogatogo, 39, kv. 9; Grigory Abramovich Yarovinsky, Treugolny pereulok, 13, kv. 14, and Dolya Iosifovich Yassky, ulitsa Zaslavskogo, 5, kv. 6, all of Odessa, U.S.S.R.

Filed Nov. 3, 1971, Ser. No. 195,191

Claims priority, application U.S.S.R., May 19, 1971, 1652352

Int. Cl. B22d *11/06*

U.S. Cl. 164—277 **2 Claims**



A metal band producing plant in which there is provided rotating rolls for crystallizing molten metal into a band, with said rolls having a crystallizing zone which is limited by annular projections whose height is less than half the thickness of the crystallizing band and which zone is located at such a distance from the roll ends as to ensure a minimum relative deformation of the rolls in the crystallizing zone.

3,794,107
PLURAL SEGMENTED GUIDING ASSEMBLY FOR A CONTINUOUS CASTING

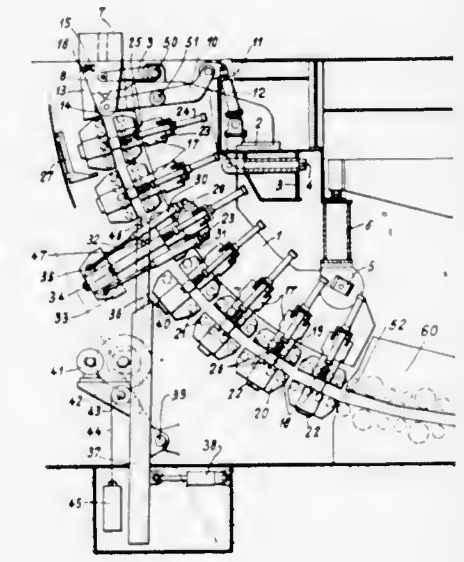
George Bollig, Buderich; Horst Grothe, Kaarst, and Josef Eisen, Osterath, all of Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed July 14, 1972, Ser. No. 272,065

Claims priority, application Germany, July 17, 1971, 2135860

Int. Cl. B22d *11/12*

U.S. Cl. 164—282 **9 Claims**



A continuous casting plant consisting of at least one assembly comprising a supporting frame, a mold and a plurality of following guiding segments forming an arcuate apron attached to the frame. The segments are movable out of alignment with the apron in a direction away from the frame. The frame is disposed on the inside of the arcuate path formed by the apron and supported by the foundation structure of the plant at two bearing points, the bearing at the upper end of the frame being the main bearing located in line with a vertical through the center of gravity of said assembly, and the other bearing at the lower end of the frame being a loose bearing affording freedom of movement in a direction parallel to the longitudinal axis of the path formed by the apron. There is also provided equipment for the reception of a dummy bar and introducible into an opening formed upon displacement of at least one segment at the outside of the apron. Such equipment comprises a deflectably mounted casing containing a telescopically extendable magazine for the dummy bar.

3,794,108
HIGH SPEED CONTINUOUS CASTING SYSTEM

Valentin Koump, Greensburg, Pa., assignor to Urban Reclamation Technologies, Inc., Waltham, Mass.

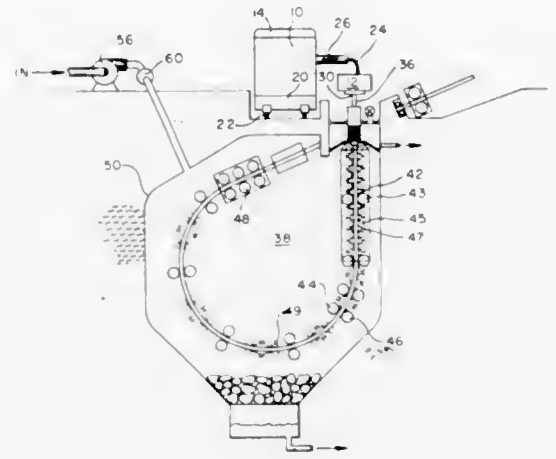
Continuation of Ser. No. 109,139, Jan. 25, 1971, abandoned. This application May 30, 1973, Ser. No. 365,071

Int. Cl. B22d *11/12*

U.S. Cl. 164—283 S **7 Claims**

A continuous casting system for molten steel involving (1) a high cooling capacity, low friction mold characterized by a reticulated skirt and liquid sprays for heat removal from the lower portion of the mold, (2) an intermediate pressure chamber over the spray-cooled part of the mold, (3) an underground structure that defines a pressure chamber, (4) a

sequence of idler and pinch rolls therewithin defining a path for a continuously advancing billet that solidifies within the underground pressure chamber, and (5) a gaseous medium within the upper and lower pressure chambers at greater than atmospheric pressure. The high cooling capacity, low friction mold and higher than atmospheric pressure of the gaseous medium in the upper and lower chambers increase frozen skin strength and decrease stresses in the frozen skin, by reducing frictional forces and neutralizing the metallostatic pressure of the molten steel within the billet and hence permit casting of billets and slabs at unusually high casting speeds.



3,794,109
ROTARY HEAT EXCHANGERS

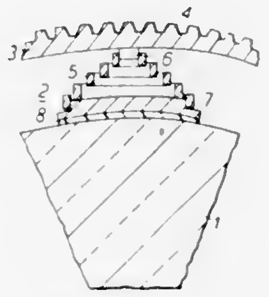
John Oliver Philip Hughes, Princes Risborough, England, assignor to British Leyland Truck and Bus Division Limited, Leyland, Lancashire, England

Filed May 15, 1972, Ser. No. 253,193

Claims priority, application Great Britain, June 11, 1971, 27612/71

Int. Cl. F28d *19/00*

U.S. Cl. 165—8 **4 Claims**



A heat-exchanger of the kind having a rotary disc-type matrix that comprises a foraminous core of ceramic material arranged to effect heat transference between segregated streams of gaseous heat-exchanging fluids; has an annular gap between the periphery of the ceramic disc of the rotary matrix and a surrounding coaxial metallic drive-ring; the annular gap containing radially-disposed compression springs spaced around the periphery of the disc and serving to transmit drive from the drive-ring to the ceramic disc.

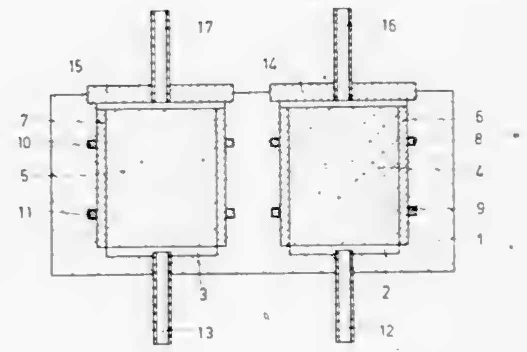
3,794,110
HEAT EXCHANGER AND METHOD OF MANUFACTURING THE SAME

Adrianus Petrus Severijns, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 14,555, Feb. 26, 1970, abandoned. This application May 15, 1972, Ser. No. 253,360

Int. Cl. F28f *1/40*

U.S. Cl. 165—164 **6 Claims**



A heat exchanger comprising a readily heat-conducting block of material having at least one chamber, a gas-permeable filling mass in said chamber, the mass consisting of particles of readily heat-conducting material sintered together with a layer of a readily heat-conducting material provided on an outer circumferential surface of the mass, and a soldered joint provided between the layer and the inner wall of the chamber in at least one zone extending throughout the circumference of the filling mass.

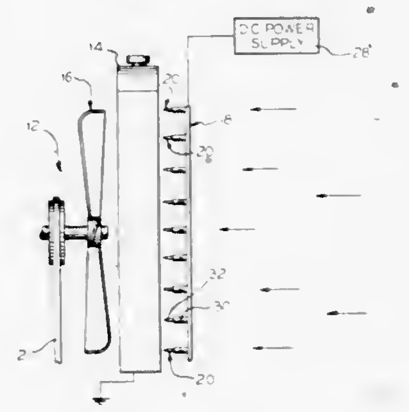
3,794,111
COOLING APPARATUS FOR HEAT EXCHANGERS

Oscar C. Blomgren, Sr.; Oscar C. Blomgren, Jr., both of Lake Bluff, and Felix J. Lyczko, Lake Forest, all of Ill., assignors to Inter-Probe, Inc., North Chicago, Ill.

Filed Apr. 8, 1971, Ser. No. 132,280

Int. Cl. F28f *13/16*

U.S. Cl. 165—1 **6 Claims**



To improve the coefficient of heat transfer between the surfaces and the heat exchange media of heat exchangers, such as automobile radiators, steam condensers, and steam boilers. Conductive probes or conductors are energized with a low power, low current high DC potential and spaced from the surfaces a distance slightly greater than the distance at which arcing occurs while the surfaces are grounded to generate an electrostatic field.

3,794,112

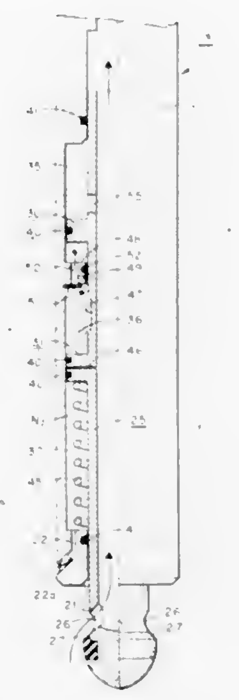
SURFACE CONTROLLED SUBSURFACE SAFETY VALVE

Tom H. Hill, Houston, Tex., assignor to Esso Production Research Company, Houston, Tex.

Filed Oct. 2, 1972, Ser. No. 294,399

Int. Cl. E21b *43/00*

U.S. Cl. 166—64 **17 Claims**



A surface controlled subsurface safety valve is positioned in a well production tubing and an adjustable choke is installed in the surface production tubing. The safety valve is operated by the absolute pressure of the production fluids in the well tubing. The adjustable choke is controlled by a timer which periodically cycles the choke to reduce the flow area available for production of well fluids for a predetermined short period of time. The reduction in flow area causes a corresponding build up of pressure in the surface tubing which is transmitted down the well tubing to the subsurface valve. Biasing means urges the valve to its closed position while tubing pressure urges the valve to its open positions. During normal well flowing conditions the force of the tubing pressure is less than the force of the biasing means and the valve, while remaining fully open is moved by the biasing means towards its closed position. Such movement is retarded by a dash pot arrangement in the valve. Means are provided in the valve to bypass the dash pot and cause rapid closure of the valve when the valve has reached a predetermined point towards its closed position. Under normal operations before the valve reaches the point of rapid closure the tubing pressure force at the valve is increased substantially over the force of the biasing means and the valve is moved rapidly to its initial open position. The increase in tubing pressure at the valve results from reducing the flow area by means of the adjustable choke in the surface tubing.

3,794,113

COMBINATION IN SITU COMBUSTION DISPLACEMENT AND STEAM STIMULATION OF PRODUCING WELLS

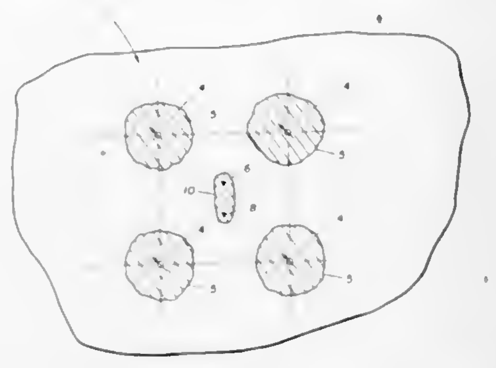
Lloyd K. Strange, Grand Prairie, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 13, 1972, Ser. No. 306,131

Int. Cl. E21b *43/24*

U.S. Cl. 166—245 **6 Claims**

This specification discloses a method of producing hydrocarbons from a hydrocarbon-bearing formation penetrated by a pattern of wells including at least one injection well and two production wells spaced relatively close one to the other. The production wells are stimulated by heating the formation to form a heated zone about the production wells, for example, by injecting steam via the wells into the formation. A forward drive in situ combustion process is initiated at an injection well and production of hydrocarbons is initiated from the reservoir from at least one of the production wells. The heated zone is maintained by injecting heat, for example, steam, via another of the production wells while continuously producing hydrocarbons from at least one production well from within the heated zone. The producing wells are alternately employed for producing hydrocarbons from the formation and for injecting heat into the formation to maintain the heated zone about the producing wells.



3,794,114

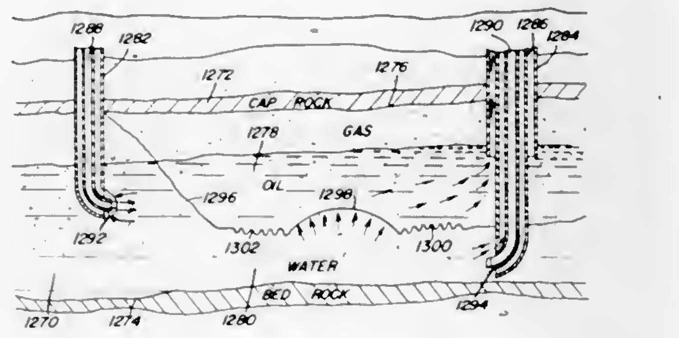
USE OF LIQUEFIABLE GAS TO CONTROL LIQUID FLOW IN PERMEABLE FORMATIONS

Clarence W. Brandon, P.O. Box 490, Nashville, Tenn. 37202

Continuation-in-part of Ser. Nos. 611,082, Jan. 23, 1967, and Ser. No. 719,882, April 9, 1968, which is a continuation-in-part of Ser. No. 665,995, June 17, 1957, Pat. No. 3,302,720, which is a continuation-in-part of Ser. No. 296,038, June 27, 1952, Pat. No. 2,866,509, and Ser. No. 241,647, Aug. 13, 1951, Pat. No. 2,796,129. This application Apr. 20, 1972, Ser. No. 245,914

Int. Cl. E21b *43/00, 43/16*

U.S. Cl. 166—249 **93 Claims**



Control of flow of liquids in formations is effected by introduction of a gas, or gases, into the formation and varying the pressure on the liquid in the formation, which may be an oil and gas bearing formation, and upon the introduced gas wherein inter-dispersed gas and liquid globules may be formed in selected regions of the formation, thus causing capillary blocking to flow of liquids in preselected regions of the formation.

3,794,115

PROCESS FOR FORMING BOREHOLE PLUGS

William E. Skagerberg, St. Paul, Minn., assignor to General Mills Chemicals, Inc., Minneapolis, Minn.

Filed Jan. 14, 1972, Ser. No. 217,964

Int. Cl. E21b *33/138*

U.S. Cl. 166—294 **6 Claims**

A process for making plugs for boreholes. The process uses dispersions of water soluble polymers and cross-linking agents, the cross-linking activity of which is retarded. The dispersion is positioned while in a low viscosity state and subsequently high viscosities develop.

3,794,116

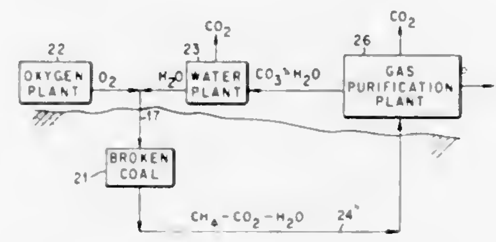
SITU COAL BED GASIFICATION

Gary H. Higgins, Livermore, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed May 30, 1972, Ser. No. 257,965

Int. Cl. E21b *43/24, 43/26*

U.S. Cl. 166—259 **8 Claims**



Deeply buried relatively thick coal bed formations are fractured explosively. Reactant input conduits communicating with upper portions of the fragmented coal zone and product withdrawal conduits communicating with lower portions thereof are provided. The uppermost layer of the fragmented zone is ignited as by injection of oxygen and fuel gas from a surface plant while the product conduits are closed off to raise the operating pressure in the fragmented zone to balance hydrostatic pressure so that the fragmented zone comprises effectively a pressurized reaction vessel. Water or steam together with regulated amounts of oxygen are then introduced while reaction products are withdrawn at a rate at which operating pressure is maintained so that a relatively higher temperature reaction zone layer is reacted in the upper layer to travel progressively downward. A graduated lower temperature region precedes the higher temperature zone. Various gasification reactions occur in the reaction zones with the net overall products being methane and CO_2 with relatively little up to varying amounts of carbon monoxide and hydrogen appearing in the reaction product gas. Processing to remove CO_2 and react the carbon monoxide and hydrogen if deemed necessary is done at the surface yielding a high caloric value fuel gas suitable for pipeline or for synthesis uses.

3,794,117

TREATMENT OF SANDSTONE FORMATIONS

John A. Knox, and Reginald M. Lasater, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Sept. 5, 1972, Ser. No. 286,529

Int. Cl. E21b *43/27*

U.S. Cl. 166—307 **13 Claims**

The present invention provides a method of treating a subterranean sandstone formation with an aqueous acid solution containing hydrofluoric acid wherein the reaction rate of the acid with the formation is retarded and substantial penetration of the formation with active acid results.

3,794,118

HEATED ROLLER AND METHOD OF HEATING THE SAME

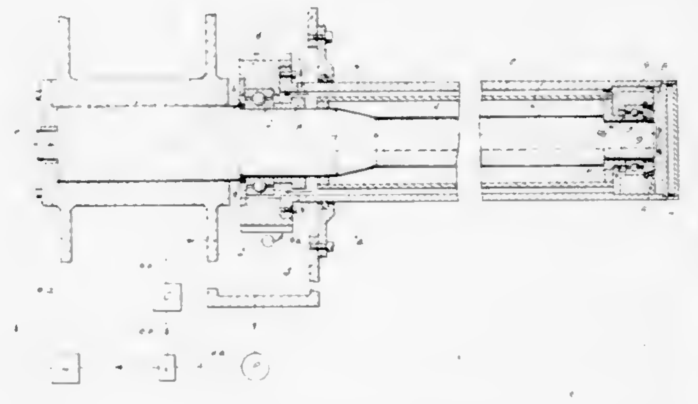
Ernst Bauch, Bordesholm, Germany, assignor to Neumunstersche Maschinen-Und Apparatebau Gesellschaft m.b.H., Neumunster, Germany

Filed Nov. 16, 1971, Ser. No. 199,124

Claims priority, application Germany, Nov. 21, 1970, 2057391; Dec. 8, 1970, 7045194

Int. Cl. F28d *11/02*

U.S. Cl. 165—90 **10 Claims**



A hollow roll is mounted on a shaft by journal means. The shaft has an axial passage through which a heated lubricant fluid is supplied, part of which is circulated to the journal means to lubricate the same and the remainder of which is circulated—bypassing the journal means—directly into the interior of the roll for heating the latter.

3,794,119

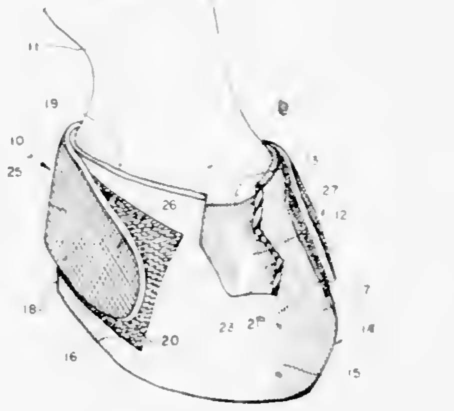
HORSE SHOE

Al Paiso, 5044 Firestone Pl., Southgate, Calif. 90280, and Jno R. Battle, 337 Mt. Holyoke Ave., Pacific Palisades, Calif. 90272

Filed Oct. 6, 1972, Ser. No. 291,841

Int. Cl. A01l *3/00*

U.S. Cl. 168—18 **2 Claims**



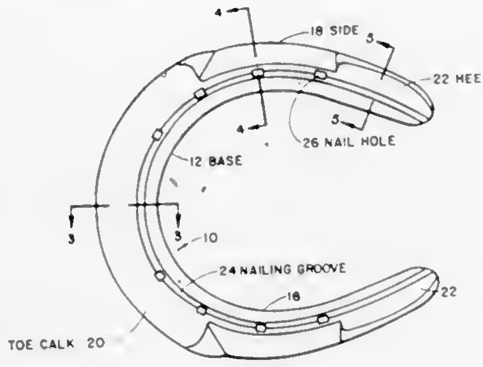
A horse shoe is constructed from a flexible covering contoured to fit substantially entirely over a horse's hoof. Fixed to the sides and upper rear part of the covering are three holding elements. A securement sling or band carrying at least three attachment elements is wrapped around the hoof back portion and opposing sides. The band is oriented to generally overlie the covering in a manner to permit the holding elements and attachment elements to become interlocked in order to firmly secure the covering onto the horse's hoof.

3,794,124

3,794,126

3,794,120
HORSESHOE

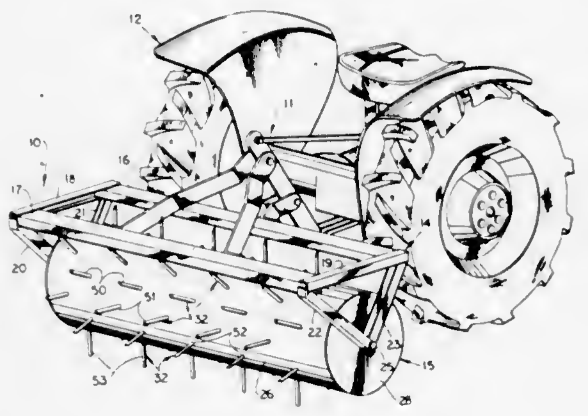
Thomas M. Charlson, 114 N. 5th St., Chickasha, Okla. 73018
Filed Oct. 27, 1972, Ser. No. 301,632
Int. Cl. A01i *1/00*
U.S. Cl. 168—24 **8 Claims**



A horseshoe or racing plate whose toe calk comprises in cross-section inner and outer arcuate convex surfaces meeting at a relatively sharp edge at a point substantially outward and downward of the main portion of the shoe, and whose heel calks are approximately right triangles in cross-section, the right angles being located at the outer edges of the main portion of the shoe. The toe calk preferably encompasses about 50 percent of the peripheral length of the shoe, and the heel calks about 10 percent each.

3,794,121
SOIL AERATOR

David A. Drozak, 2693 E. College Ave., Decatur, Ga. 30030
Filed Aug. 4, 1972, Ser. No. 278,029
Int. Cl. A01b *45/02*
U.S. Cl. 172—21 **7 Claims**

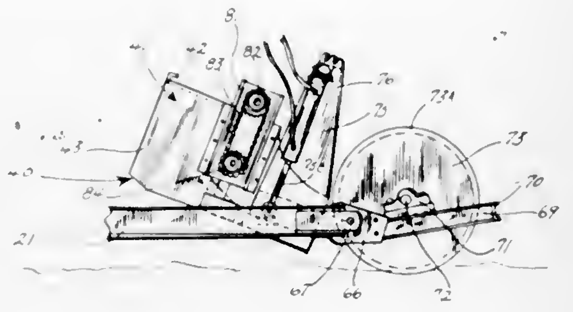


A soil aerator wherein a cylindrical drum is mounted on a framework to be carried by a tractor. A plurality of tubular soil penetrating spikes are connected to protrusions extending from the external surface of the cylindrical drum by inserting the openings of the tubular spikes over the protrusions and into abutment with the drum.

3,794,122
SNOW CONDITIONING MACHINE

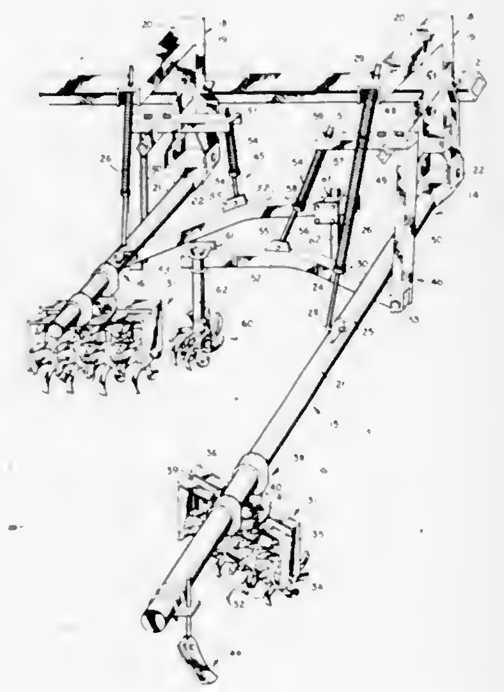
Dennis L. Rohrer, 15400 Buck Hill Rd., Burnsville, Minn. 55378
Filed Mar. 14, 1972, Ser. No. 234,512
Int. Cl. A01b *9/00, 5/00*
U.S. Cl. 172—66 **18 Claims**

A snow conditioning machine for conditioning snow at ski areas to give it a proper texture for skiing even after it has become packed hard or become icy including a rotating member having radial teeth that intermesh with stationary teeth on the machine and through which the snow passes to be reduced in particle size to an acceptable level. The unit includes means for breaking hard packed snow into large chunks which are then passes into the intermeshing teeth of the rotating member and the stationary member. Support rollers for the unit are provided, this makes the unit usable for compacting newly fallen snow when the rotating member is not in use.



3,794,123
CULTIVATOR

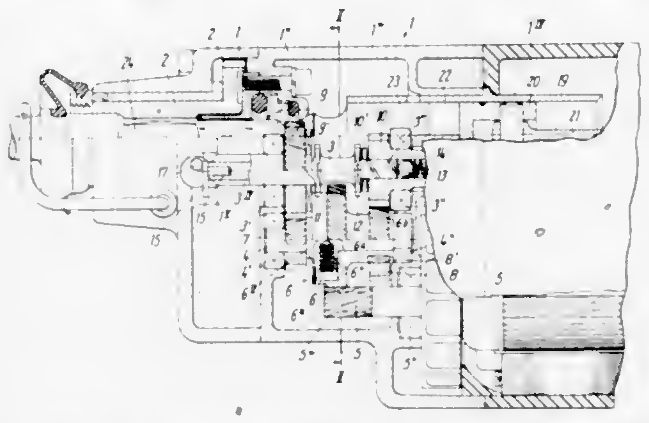
Jack C. Whitesides, Columbus, Ga., assignor to Kelly Manufacturing Company, Tifton, Ga.
Filed May 18, 1972, Ser. No. 254,434
Int. Cl. A01b *21/04, 39/08, 5/04*
U.S. Cl. 172—624 **8 Claims**



A cultivator including a framework for towing along a plurality of crop rows by a tractor and a plurality of rotary hoe gangs mounted on the framework which rotatably engage and till the soil below the framework. A group of four rotary hoe gangs is provided for each crop row, with one pair of rotary hoe gangs being independently movable about an axis extending along the crop row, and with another pair of rotary hoe gangs being independently movable about an axis extending transverse to the crop row.

3,794,124
ELECTRICALLY OPERATED HAMMER DRILL

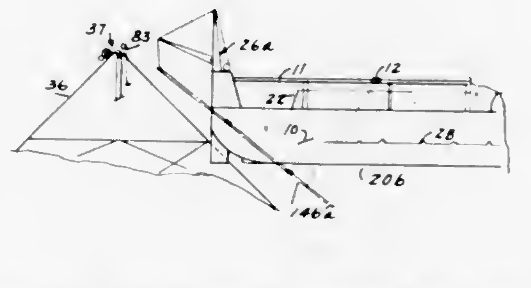
Horst Biersack, Ansbach, Germany, assignor to Impex-Essen GmbH, Ansbach, Germany
Filed Sept. 16, 1970, Ser. No. 72,779
Claims priority, application Germany, Sept. 23, 1969, P 19 48 055.8
Int. Cl. B25d *11/00*
U.S. Cl. 173—104 **10 Claims**



A boring tool, axially reciprocable in a rotary chuck under repeated blows of a striker, is rotatable at either of two speeds from an electric motor by way of a transmission which includes two gear trains alternately made effective in two limiting positions of an axially shiftable coupling shaft. In an intermediate position of that shaft, the chuck is disengaged from both gear trains. The low-speed train includes a yieldable safety clutch to decouple the chuck from the motor in the case of overload.

3,794,125
APPARATUS AND METHOD OF MANEUVER AND SUSTAIN

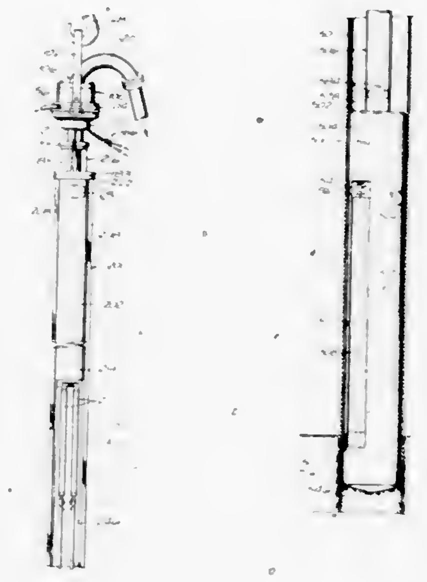
Arthur John Nelson, San Mateo, Calif.
Continuation-in-part of Ser. No. 105,434, Jan. 11, 1971, Pat. No. 3,738,434. This application Sept. 7, 1971, Ser. No. 178,002
Int. Cl. E21b *7/12*
U.S. Cl. 175—6 **9 Claims**



The attended drilling system comprises a vertical array of objects extending from floor to surface of a body of water. The principal contributing objects of the array considered in the present application comprises: a drilling station that is to be established upon the floor, a control station stably maintained at the surface and a support station adapted to function between as an elevator. These stations are towed to a site as a close coupled self buoyant stable array, whereupon it is expanded and established as stated. Sectionalizing the drilling station to permit variations to its assembly and the relocation of the portable sections minimizes lost time. Adjusting, monitoring and control means are provided to function in a prolonged underwater environment. A diverter, terminating the annulus defined by the drill string in a casing lined hole, accommodates fluid sealed axial movement of the string therethrough and provides fluid communication between said annulus and a conduit remote to the string. Said diverter is adaptable to drilling rigs employing the conventional kelly bar and draw works.

3,794,126
DRILLING AND BELLING APPARATUS

Robert L. Pereau, Irvine, Calif., assignor to Smith International, Inc., Newport Beach, Calif.
Division of Ser. No. 177,037, Oct. 1, 1971, Pat. No. 3,757,876. This application Aug. 23, 1973, Ser. No. 391,008
Int. Cl. E21b *9/26*
U.S. Cl. 175—173 **3 Claims**

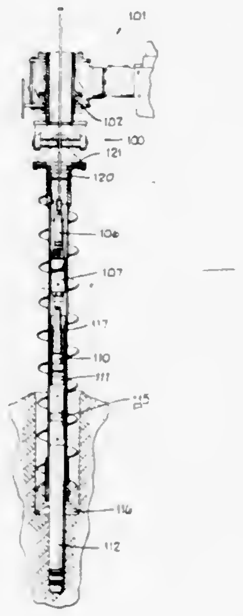


Apparatus for drilling a hole, and for belling out the lower end of the hole into a conical enlargement, in a single pass of the apparatus down the drill hole, which apparatus includes a combined drilling and belling tool.

Both the extension and the retraction of the belling blades are positively driven.

3,794,127
HOLLOW AUGER-DRIVER COUPLING

Henry E. Davis, Aptos, Calif., assignor to Mobile Drilling Company, Inc., Indianapolis, Ind.
Continuation-in-part of Ser. No. 165,197, July 22, 1971, abandoned. This application June 6, 1972, Ser. No. 260.270
Int. Cl. E21b *49/00, 17/00*
U.S. Cl. 175—58 **16 Claims**

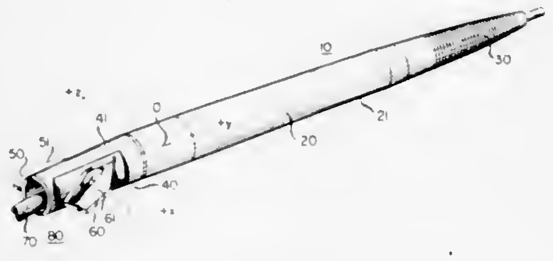


A coupling for connecting an auger to a driver so as to allow core sampling while the auger is positioned within the drilled hole and connected to the driver. One embodiment of the coupling has a ring positioned outwardly of the adjacent ends of the auger and driver. Arms are mounted to the ring and extend radially inward being bearingly received by the adjacent auger and driver ends. The driver and auger are hollow so as to allow the raising and lowering by cable of a sampling hammer with a sampler. A hollow cap is removably mounted to the top of the auger and has a pair of upstanding members which receive two of the arms of the coupling. A hollow-centered plate is removably mounted to the bottom of the driver and has a pair of depending members which receive the other two arms of the coupling. Another embodiment of the coupling includes a pair of yokes each of which is pivoted to an open centered ring member. The yokes are also coupled, respectively, to the auger and the driver. The yokes extend outwardly of the ring member and are connected through bearings to the ring member.

3,794,128
SUBTERRANEAN PENETRATOR STEERING SYSTEM UTILIZING FIXED AND ROTATABLE FINS

Paul Francis Gagen, Westfield, and Charles Elmer Jones, Jr., Fairfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 29, 1972, Ser. No. 310,206
Int. Cl. E21b *7/08*
U.S. Cl. 175—73 **11 Claims**



A steering system for a subterranean penetrator includes a fixed fin and a rotatable fin. The fixed fin is advantageously attached to the exterior rear portion of the penetrator at an angle of approximately 25° with the penetrator's longitudinal axis. The rotatable fin is located diametrically opposite to the fixed fin, the axis of rotation thereof being perpendicular to and intersecting the penetrator's longitudinal axis. An associated actuating mechanism located within the penetrator adjustably orients the position of the rotatable fin. Rotation of the penetrator about its longitudinal axis is effected when the rotatable fin is antiparallel to the fixed fin or to a lesser degree when the rotatable fin is substantially parallel to the penetrator's long axis. Curvilinear penetrator motion along the desired steering plane is effected when the rotatable fin is parallel to the fixed fin, the axis of rotation of the rotatable fin being perpendicular to this plane. In one embodiment of this invention, the rear portion of the penetrator which houses the fins is inwardly tapered at approximately 4° to allow use of substantially smaller fins and/or produce higher steering rates for a given length penetrator. It is an advantage of this invention that it does not require the articulatable tail and its associated actuating mechanism of prior art subterranean penetrators.

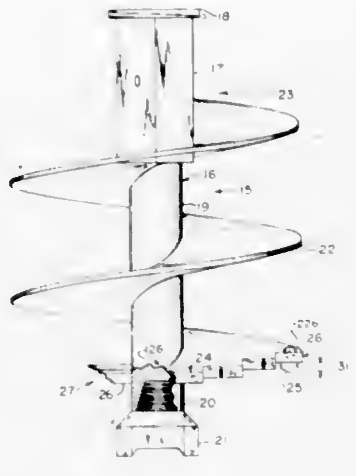
3,794,129
STEP AUGER AND ROCK BIT COMBINATION

Thomas L. Taylor, P.O. Box 6048, Odessa, Tex. 79760

Filed Dec. 1, 1972, Ser. No. 311,311
Int. Cl. E21c *13/04*
U.S. Cl. 175—391 **14 Claims**

Combination earth drilling tool in the form of a step auger having a pilot bit attached thereto. A downwardly spiraling flight member is affixed to an elongated axial hub member with the leading edge of the flight terminating in a plurality of cutting teeth arranged in a novel pattern relative to one another and the flight. The cutting teeth are arranged radially from the hub and along the leading edge of the flight member in a configuration which causes the innermost of the digging teeth to cut a first step outwardly from the pilot hole while the remaining of the cutting teeth trail behind and cut subsequent steps into a formation.

The pilot bit is in the form of a rotary rock bit having radially spaced apart pockets formed within a novel cylindrical member and a novel body portion so that the shank of a removable cutting tooth is received within the pocket with a portion of the shank extending outwardly of the pocket where the shank can be removably fastened to a shoulder formed between the body portion and the cylindrical portion.



The pockets on both the flights and the rock bit are arranged into a configuration whereby any one of the cutting teeth can be substituted for any other one cutting tooth, thereby enabling a single type or designed cutting tooth to be utilized by both the auger and the bit.

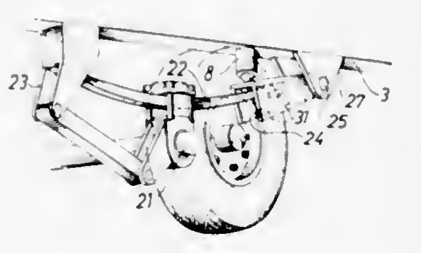
3,794,130
DEVICE FOR WEIGHING OF VEHICLE LOADS

Per Ake Malmgren, and Kurt Eilert Johansson, both of Kiruna, Sweden, assignors to Ake Malmgrens Mekaniska Verkstad AB, Kiruna, Sweden

Filed June 19, 1972, Ser. No. 263,826

Claims priority, application Sweden, June 24, 1971, 8254/71; July 20, 1971, 9340/71

Int. Cl. G01g *19/08*
U.S. Cl. 177—137 **4 Claims**

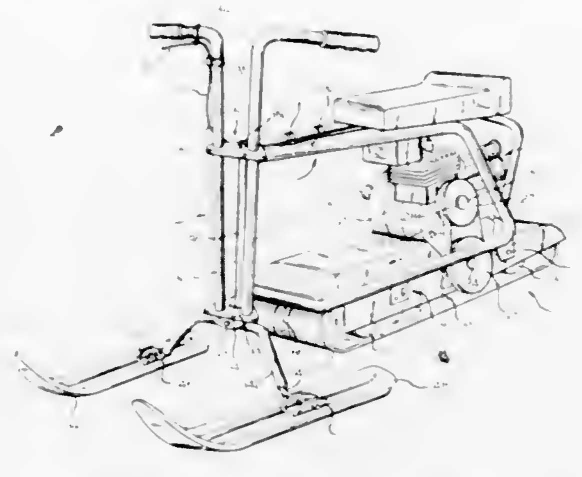


Fastening device for load cell for fitting between the chassis of a truck and a part of the truck which is movable in relation to the chassis for measurement of forces acting on the platform, said device comprising a fastening element constituting a supporting device for said movable part of the truck and designed to be fitted to the truck with some play, at one end of the fastening element there being at this end a carrying member for the load cell fitted between bearing devices placed on the chassis and on said movable part.

3,794,131
ALL TERRAIN MOTOR SCOOTER

Gerald Freedman, Wilmette, and Robert A. Wahls, McHenry, both of Ill., assignors to Freedman Seating Company, Evanston, Ill.

Filed May 20, 1971, Ser. No. 145,226
Int. Cl. B62m *27/02*
U.S. Cl. 180—5 R **9 Claims**

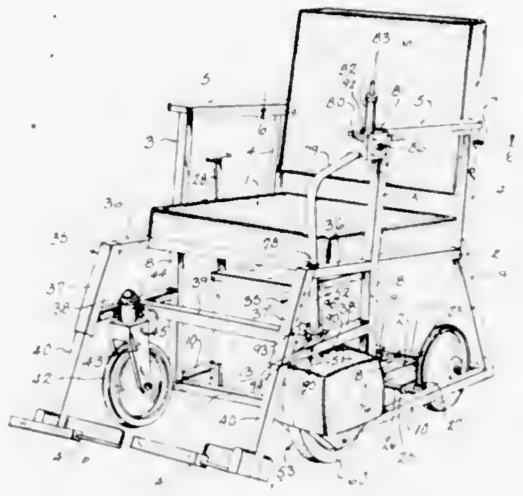


A track chassis supports the center of gravity of the entire vehicle. Pivotally mounted near the back or trailing end of the track chassis is a forwardly extending frame which carries a fork assembly including a pair of either skies or wheels steered by handle bars, which may be quickly replaced by another and similar unit in order to switch between the skis and wheels or oversize low pressure balloon tires. A variable resilient coupling interconnects the front or leading end of the track chassis and the forwardly extending frame. By suitably changing the resilience of the coupling, the front wheels or skis may be made to lift slightly so as not to dig into mud or loose sand, or to bear down and bite into snow.

3,794,132
SELF-PROPELLED WHEELCHAIR

Robert W. Moon, Shorewood, Wis., assignor to Lakeside Manufacturing Inc., Milwaukee, Wis.

Filed Aug. 16, 1972, Ser. No. 281,081
Int. Cl. B62d *61/00*
U.S. Cl. 180—13 **10 Claims**

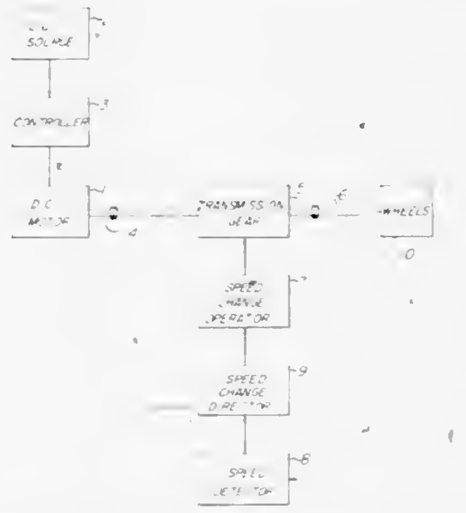


A self-powered wheelchair with four ground engaging wheels, the two rear wheels being mounted on a rear axle that is pivoted about a fore and aft axis at its mid-point for limited tilting in a vertical, transverse plane, one of the front wheels being an idler at one side of the chair, and the other front wheel being part of a power unit at the opposite side of the chair. The power unit is steerable about a vertical axis by turning a steering shaft that rises upwardly and turns rearwardly to present a tiller arm, such tiller arm having a control box at its upper end that presents a vertical palm engageable handle for turning the tiller, and a vertically depressible thumb engageable speed selector rod for governing the speed of the chair. There is also a brake mechanism associated with the rear wheels of which a part tilts with the rear axle and mounts brake shoes to apply desired braking force regardless of the degree of axle tilt.

3,794,133
DRIVING APPARATUS FOR MOTOR VEHICLE

Shinzo Sugiura, deceased, late of Katsuta, Japan (by Yoko Sugiura, administratrix); Takeshi Morioka, and Ryoji Kasama, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 18, 1971, Ser. No. 190,092
Int. Cl. B60k *1/00;* **F16h** *3/74;* **B60k** *21/00*
U.S. Cl. 180—65 R **6 Claims**

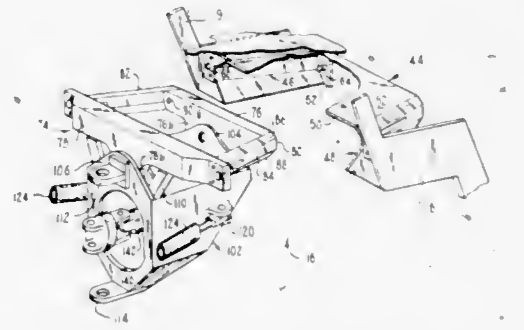


A driving apparatus for a motor vehicle, which employs a power transmission mechanism for transmitting the rotation of a driving motor of the motor vehicle to the driving wheels through a transmission gear mechanism, and in which in order to operate said transmission gear mechanism to a change gear ratio of large output torque at an intersection point between the revolutional speed-revolutional torque curves of an output shaft of said transmission gear mechanism as is obtained at optional change gear ratios, the revolutional speed corresponding to said intersection point between said revolutional speed-rotational torque curves is detected to automatically operate said transmission gear mechanism.

3,794,134
DETACHABLE ARTICULATION JOINT FOR GROUND VEHICLES

Walter A. Wood, San Jose, and Dale Hutchins, Palo Alto, both of Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Sept. 28, 1972, Ser. No. 293,111
Int. Cl. B62d *3/02*
U.S. Cl. 180—79.2 B **19 Claims**



A two section ground vehicle and a joint for effecting rapid connection and disconnection of the sections. A joint that provides for articulation between the two vehicle sections. A joint having two complemental tapering parts so as to achieve precise self alignment between the vehicle sections on which they are mounted. Apparatus that renders one or both of the vehicle sections self supporting so that such section can be moved independently and while disconnected from the other section.

3,794,135

MOTOR VEHICLE SEAT BELT OCCUPANT-RESTRAINT SYSTEM

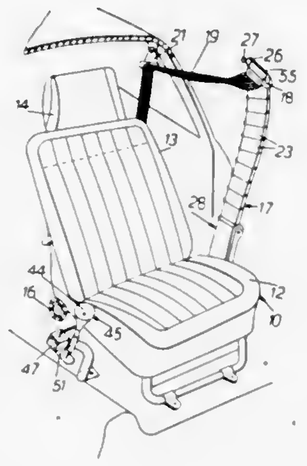
Bruno Ewert, and Wilfried Roos, both of Russelsheim, Germany, assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 15, 1972, Ser. No. 315,501

Claims priority, application Germany, Dec. 21, 1971, P 21 63 451.5

Int. Cl. B60n *21/10*

U.S. Cl. 180—82 **10 Claims**



A seat belt occupant restraint arrangement of the "passive safety belt" type, in which a seat belt is automatically placed in position around the body of an occupant of a seat in a motor vehicle in response to the closing of a vehicle door adjacent said seat, and is removed therefrom in response to the opening of said door, the seat belt being an articulated belt consisting of segment members having their ends movably connected one to another, said belt having retained adjacent thereto a continuous spring strip arranged for longitudinal tensioning and relaxation along said belt; which belt, when the door is open, occupies an upright position adjacent said seat, and which strip, when said door is closed, is tensioned by means of a motorised driving device attached to one end of said belt adjacent one side of said seat and thus is caused to curve downwardly around the body of said occupant until the free end of said belt locks into a belt-locking means adjacent the other side of said seat. Control of the direction of rotation of the motorised driving device is governed by switch control means arranged on the device and on the vehicle door, said switch control means also controlling the locking operation of said belt-locking means. Thus, when the vehicle door is opened, the switch control means releases the free end of said articulated belt from said belt-locking means, and causes the motorised driving device to rotate in a direction which decreases the tension in the spring strip associated with the articulated belt. This in turn allows the spring strip to unbend, thus straightening and lifting the belt from the body of the occupant so that the belt returns to its aforesaid upright position.

3,794,136

COLLISION DETECTING APPARATUS FOR A VEHICLE

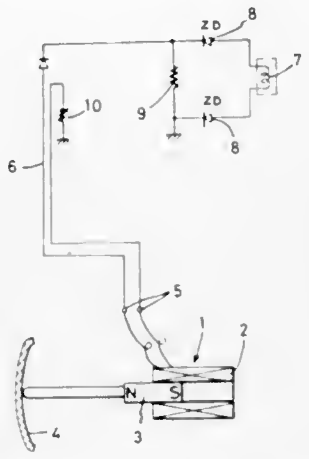
Motohiro Okada, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Chuo-ku, Tokyo, Japan

Filed June 3, 1971, Ser. No. 149,698

Claims priority, application Japan, June 4, 1970, 45/47580

Int. Cl. B60r *21/02*

U.S. Cl. 180—91 **5 Claims**



Electrical generators are connected to the body of a vehicle to detect deformation of the body at the time of collision and produce an electrical voltage signal to actuate a safety device such as an air bag. Each generator comprises a relatively movable coil and magnet assembly which is connected to the safety device by a circuit containing a Zener diode and possibly a silicon control rectifier to establish a threshold level for actuation of the safety device.

3,794,137

DEVICE FOR ATTENUATING THE NOISE GENERATED BY THE EXPANSION OF GASES INTO THE ATMOSPHERE

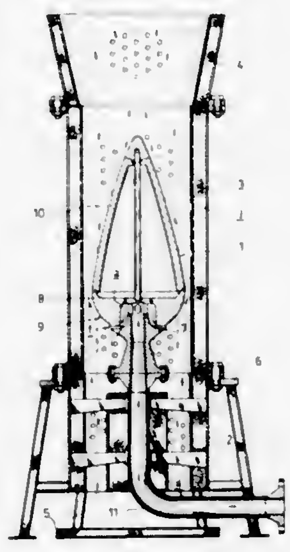
Constantin GH. Teodorescu; Constantin N. Ceauselu, and Grigore Vlasie Vasilescu, all of Bucharest, Romania, assignors to Institutul Pentru Creatie stiintifica si Tehnica (Increst), Bucharest, Romania

Filed Sept. 15, 1972, Ser. No. 289,289

Claims priority, application Romania, Dec. 13, 1971, 69039

Int. Cl. F01n *1/10, 1/14, 1/00*

U.S. Cl. 181—33 E **4 Claims**



A device for attenuating the noise generated by the expansion into the atmosphere of the gases an industrial installation.

The device utilizes an exterior type Coanda ejector, the body of which has an annular cavity followed by a slot and further by an outer curving profile and a converging cone; the ejector lies in an attenuator ending in an exhaust cone.

3,794,138

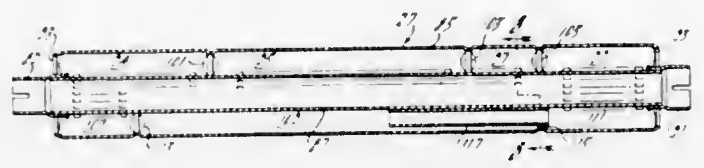
EXHAUST SYSTEM

Robert A. Heath, Racine, Wis., and Ronald J. Martoia, Jackson, Mich., assignors to Tenneco Inc., Racine, Wis.

Continuation-in-part of Ser. No. 868,283, Oct. 13, 1969, Pat. No. 3,648,803, which is a continuation of Ser. No. 531,245, March 2, 1966, abandoned. This application Mar. 9, 1972, Ser. No. 233,211

Int. Cl. F01n *1/00*

U.S. Cl. 181—48 **3 Claims**



An exhaust system for internal combustion engines, including the Wankel engine, comprises a plurality of very thin silencing members arranged in series and of the straight through flow type, the silencers preferably including an outer tube of an oval shape that longitudinally contacts both sides of an inner gas flow tube that is suitably perforated to cooperate with silencing means in the space between the outer shell and the flow tube.

3,794,139

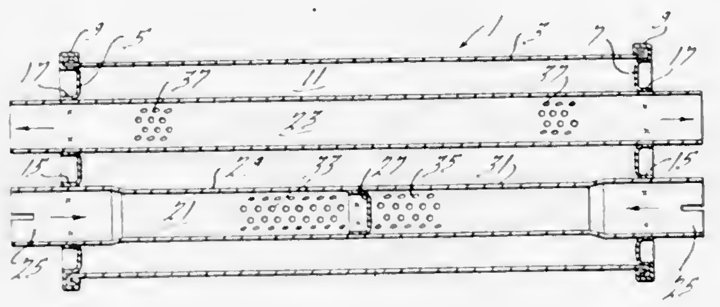
MUFFLER WITH PLURAL INLETS AND OUTLETS

Theodore W. Hetherington, and Larry E. Strunk, both of Jackson, Mich., assignors to Tenneco Inc., Racine, Wis.

Filed Jan. 2, 1973, Ser. No. 320,506

Int. Cl. F01n *1/08*

U.S. Cl. 181—56 **7 Claims**



A muffler has four inlets and two outlets opening into a sound attenuating chamber.

3,794,140

BOAT LADDER

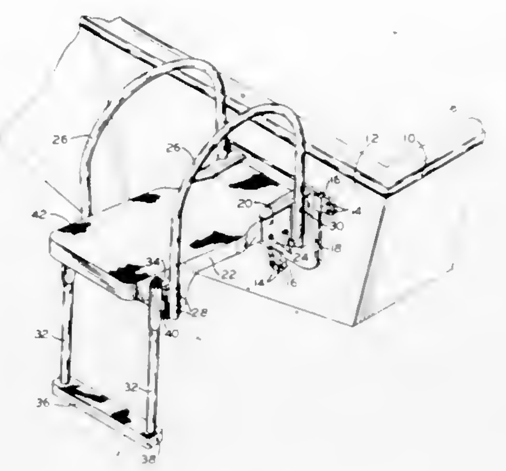
James F. Sell, R.R. 3, Box 157, Muncie, Ind. 47302

Filed Feb. 9, 1972, Ser. No. 224,867

Int. Cl. E06c *9/06*

U.S. Cl. 182—92 **2 Claims**

A boat ladder adapted for mounting on the rear of a boat, for example, on the outside wall of the transom of the boat. The boat ladder comprises a substantially horizontal platform portion projecting outwardly from the boat and having side rails connected thereto while a step is pivotally mounted at the outer end of the platform and can be lowered to below the level of the platform for use, or folded upwardly and toward the boat to rest on top of the platform when not in use.



3,794,141

DEVICE FOR ADAPTING THE LENGTHS OF A PAIR OF LEGS, SUCH AS THOSE OF A LADDER, TO UNEVENNESS OF A SUPPORTING SURFACE

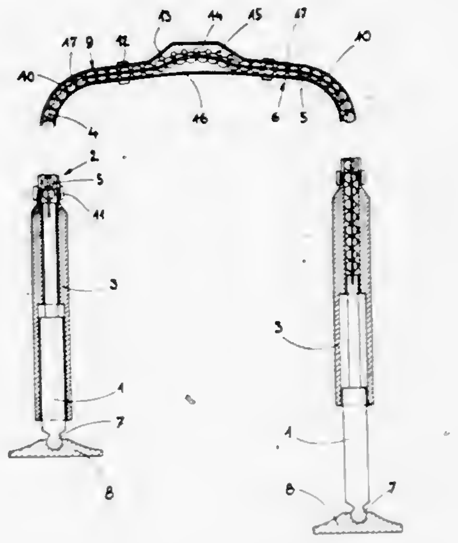
Walter Sturm, Apt. 11, 2410 Third Ave., Owen Sound, Ontario, Canada

Filed Oct. 24, 1972, Ser. No. 300,349

Claims priority, application Germany, Feb. 10, 1972, P 22 06 326.9

Int. Cl. E06c *7/44*

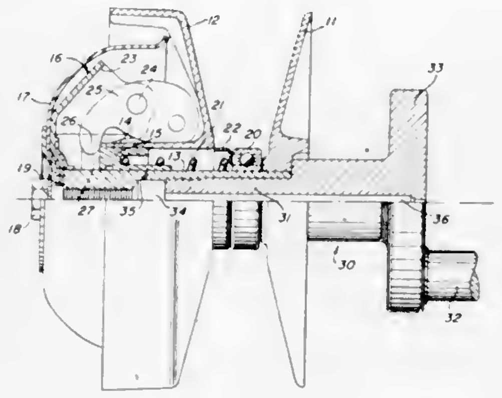
U.S. Cl. 182—202 **5 Claims**



A device is provided which can be mounted at the lower end of a ladder for adapting the legs of the ladder to the unevenness of the ground. The device comprises two extension legs which are mounted for telescoping movement into and out of the respective ends of a U-shaped tubular member which is fastened to the ladder. The extension legs are interconnected through the tubular member by means of a longitudinal flexible member having a series of longitudinally spaced recesses on its outer surface. The U-shaped tubular member has an expanded portion midway between its legs so that the longitudinal flexible member will bulge into the expanded portion when pressure is applied to both extension legs. A number of mutually spaced projections are provided inside the expanded portion for fitting into the recesses on the flexible member when it bulges into the expanded portion to lock the flexible member in position relative to the tubular member.

3,794,142
LUBRICATION SYSTEM FOR VARIABLE SPEED DRIVE PULLEY

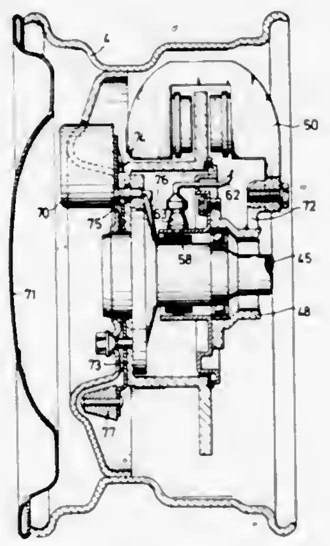
Jules Perreault, Valcourt, Quebec, Canada, assignor to Bombardier Limited, Valcourt, Quebec, Canada
Filed June 29, 1972, Ser. No. 267,473
Int. Cl. F01m *1/06*
U.S. Cl. 184—6.5 **4 Claims**



An automatic system is disclosed for lubricating a variable speed drive pulley of the type having two pulley sheaves axially mounted for rotation on the output end of a crankshaft of a two-cycle engine and wherein one sheave is free to move axially relative to the other. Heretofore, pulleys of this type required maintenance mantenance in order to ensure proper lubrication between the movable sheave and a pulley shaft connected to the output end of the crankshaft. The novel system comprises a conduit which extends through the crankshaft and which leads oil from the interior of the engine's crankcase to between the movable sheave and the output portion of the pulley shaft fixed to the crankshaft.

3,794,143
ANTI-SKID BRAKE CONTROL APPARATUS FOR SENSING CHANGES IN THE ABSOLUTE ROTATIONAL SPEED OF A VEHICLE WHEEL

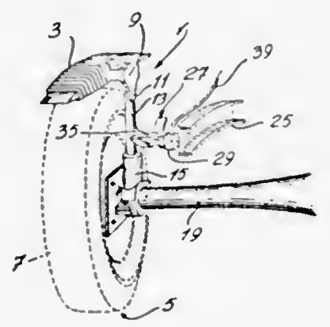
Heinz Leiber, Leimen, and Heinz Wehde, Heidelberg, both of Germany, assignors to Teldix GmbH, Heidelberg, Germany
Continuation of Ser. No. 817,340, April 18, 1969, Pat. No. 3,563,351. This application Feb. 10, 1971, Ser. No. 114,213
Claims priority, application Germany, Apr. 20, 1968, 1755280. The portion of the term of this patent subsequent to Feb. 16, 1988, has been disclaimed.
Int. Cl. B60t *8/16*
U.S. Cl. 188—181 A **7 Claims**



An anti-skid brake control system having means for sensing changes in the absolute rotational speed of a vehicle wheel. The sensing means which is eccentrically mounted on the wheel, includes a hermetically sealed housing, an inertial mass arranged within the housing and rotatable relative to the housing within a limited angular range, an electrical signaling device responsive to the relative rotation between the inertial mass and the housing and at least one electrical conductor connected to the signaling device and passing through the housing. The brake control system is also provided with an electrically actuatable device for controlling the brake pressure applied to the sensed wheel and an electrical line interconnecting the sensing means with this control device. According to the invention, the sensor housing and the vehicle wheel or a member rigidly connected with the vehicle wheel are provided with means for detachably coupling these two parts together. Contact elements are also provided, beneath the side of the sensor housing that faces the wheel, to detachably connect the electrical line to the electrical conductor.

3,794,144
MOTOR VEHICLE ANTI-SKID DEVICE

Joel Tepper, Montreal, Quebec, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed Oct. 16, 1972, Ser. No. 289,826
Int. Cl. B60t *1/14*
U.S. Cl. 188—4 R **9 Claims**



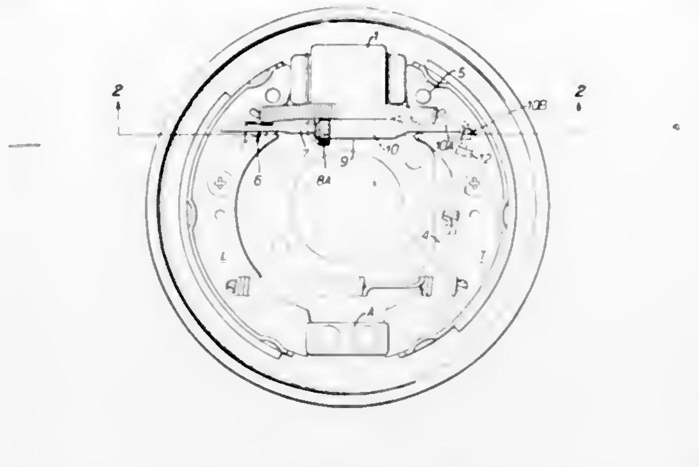
An anti-skid device for motor vehicles provides, particularly at start-up on slippery roads, additional friction to the traction wheels of the vehicle. The anti-skid comprises a traction shoe disposed in facing relation with the tread of the wheel tire and normally out of contact with it. The shoe is mounted at one end of an arm of which the other end is mounted to extend radially from the wheel axle and to be rotatable therearound. A releasable locking device on the arm locks the shoe in inoperative position outwardly away from the tread and stationary with respect to the frame and presses the shoe against the tread in operative position and upon being released. The shoe is thus inserted between the tread and the ground to provide the wheel with anti-skid friction upon starting of the vehicle on slippery grounds.

3,794,145
VEHICLE BRAKE ADJUSTER

Hugh Grenville Margetts, Birmingham, England, assignor to Girling Limited, Birmingham, England
Filed Aug. 23, 1971, Ser. No. 173,954
Claims priority, application Great Britain, Aug. 24, 1970, 40573/70
Int. Cl. F16d *65/56, 51/70*
U.S. Cl. 188—79.5 P **5 Claims**

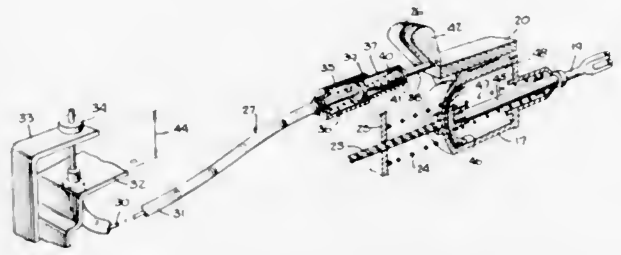
An auto-adjuster for an internal shoe drum brake having power and manual brake applying means, the latter working through a strut comprising relatively rotatable screw threaded members, comprises a spring biased pawl pivotally mounted on one brake shoe on the same pivot as a handbrake applying lever, the pawl spring exerting sufficient force to rotate the pawl to effect adjustment when the strut is relieved of the shoe

return spring force, but insufficient force to effect adjustment when the strut is loaded by operation of the hand brake mechanism. The same spring also yieldingly biases the pawl laterally into engagement with the ratchet wheel, allowing the pawl to spring over the ratchet teeth when required.



3,794,146
EMPTY-LOAD BRAKING APPARATUS

Robert L. Ludington, 3419 Manitou Tr., and Robert M. Holloway, 921 N. Roeske Tr., both of Michigan City, Ind. 46360
Continuation-in-part of Ser. No. 127,277, March 23, 1971, which is a continuation-in-part of Ser. No. 1,266, Jan. 7, 1970, Pat. No. 3,612,230. This application Aug. 3, 1972, Ser. No. 277,811
Int. Cl. B60t *8/22*
U.S. Cl. 188—195 **15 Claims**

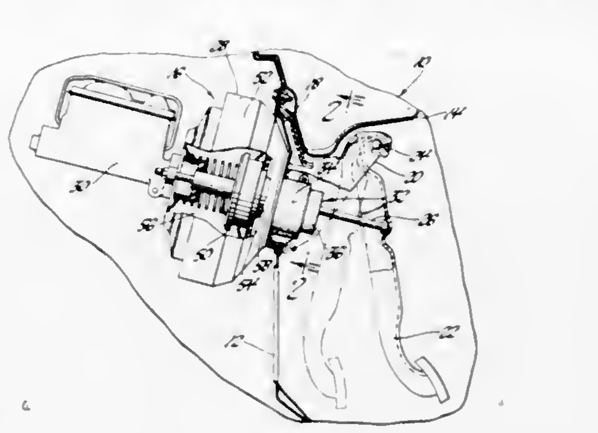


Empty-load braking apparatus for a railway car in which the cylinder of the fluid operable cylinder and piston means which actuates the brakes is slidably mounted and movement of the cylinder upon actuation of the brakes is opposed by a spring with a lightly loaded car. With a heavily loaded car, a pawl controlled by load responsive means on the car limits the movement of the cylinder so that a greater braking force is applied.

3,794,147
BOOT AND CONTROL MECHANISM

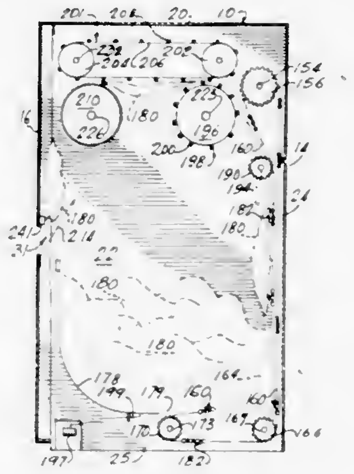
Ronald L. Shellhause, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Division of Ser. No. 217,805, Jan. 14, 1972, Pat. No. 3,735,067. This application Dec. 5, 1972, Ser. No. 312,333
Int. Cl. F16d *23/00*
U.S. Cl. 192—3 G **2 Claims**

A power brake assembly has a boot through which the brake pedal operated push rod extends to control the power brake. Instead of the usual flexible convoluted rubber boot, the boot is made of two housings forming tubes or cylinders, one slidably located within the other, with the power brake piston extension containing the atmospheric air inlet filter extending into the inner housing. A switch mechanism is provided in the outer housing and includes a biasing spring acting on a switch contact carrier. The inner housing has a probe which engages the contact carrier so that in one slidable position of the inner housing relative to the outer housing the contact carrier is urged into position relative to other switch contacts so that the switch or switches comprising the switch mechanism have assumed positions, either open or closed, as desired. This occurs when the power brake piston has moved in the brake apply direction. When the power brake piston moves to the brake release position, the probe on the inner housing moves the contact carrier against the spring, changing the operational status positions of the switches. A vacuum control valve arrangement is also provided so that a port is closed or connected to atmosphere depending upon the position of the inner housing relative to the outer housing, if such a vacuum control is needed as, for example, in conjunction with a road speed control device.



3,794,148
TOWEL VENDING MACHINE FOR FABRIC-LIKE ARTICLES AND METHOD

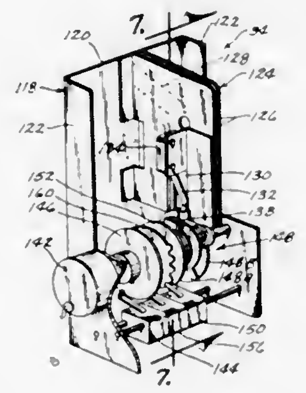
Queve E. Copp, 3470 Thornwood Dr., Doraville, Ga. 30340
Filed June 15, 1972, Ser. No. 263,308
Int. Cl. G07f *7/06*
U.S. Cl. 194—4 C **22 Claims**



An electrically operated shop towel vending machine for dispensing a clean shop towel only in response to the proper input of a satisfactory dirty towel inspected as to length, strength or texture and bulk. The machine cabinet is locked in an effort to prevent lost and wasted shop towels and has an input opening for the dirty shop towel and an output exit for a clean shop towel. The input section of the machine includes a continuous, endless chain with protruding towel pick-up members on which a dirty towel is hung. An inspection procedure includes a rotatable towel contact wheel contacting the towel to determine the proper length of the towel and a switch positioned to determine the proper bulk. The input section of the machine is electrically related to the output section so that the clean shop towel is dispensed only if a dirty shop towel passes inspection. Clean shop towels are simply stored by piling in the cabinet near a towel dispensing conveyor system including a pick-up belt and a shedding arrangement whereby clean towels are constantly being conveyed to the shedding or separating arrangement and by means of a special relationship of relative motion of conveyors only one is fed through and dropped to the dispensing exit each time one dirty one is put in the machine. Other details include the electro-mechanical arrangement of the input section and the electro-mechanical arrangement of the output conveyor section and the details of the shedding arrangement.

3,794,149
ADJUSTABLE TIMING CAM FOR HOT DRINK DISPENSERS

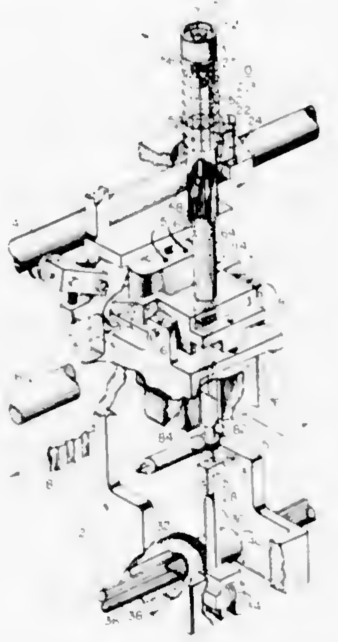
Martelle J. Syverson, Albert Lea, Minn., assignor to Fountain Industries, Inc., Freeborn County, Minn.
Filed Mar. 27, 1972, Ser. No. 238,447
Int. Cl. G07f *15/12*
U.S. Cl. 194—13 9 Claims



A housing includes a heated water tank, two pairs of particulate food product cartridges from which metered servings are funneled into a cup along with hot water. The hot water vapors are blown out of the housing by a fan directing air downwardly past the agitation and metering scoop in the food cartridges and through the funnel out of the machine. A cup support shelf is provided below the funnel and heated water conduit and a float is provided therebelow connected to a switch for lighting a warning light should liquid in the bottom of the housing rise above a predetermined level. The electrical circuitry is also de-energized. A control switch is actuatable by the cup to insure the cup's presence before water or food product is discharged. A coin mechanism is provided in the housing and includes a first cam in the path of a coin for holding the coin which actuates a switch connected to a motor for rotating the cam shaft. A second cam will cause the motor to turn the cam shaft one full revolution after it has started turning by the coin actuating the switch. The coin is then dropped to the bottom of the coin mechanism. Upon the cam shaft making one complete revolution the first cam will again be in a position to receive the next coin to repeat the cycle. During the one revolution of the cam shaft food product cams will operate switches a predetermined number of times to cause solenoids connected thereto to discharge corresponding numbers of scoops of food product from the food cartridges. Still another cam controls the maximum quanity of water which can flow from a solenoid valve controlled water conduit such that no more than a cup of water will be discharged. The water cam is adjustable and includes coaxial overlapping portions which are engaged by the switch previously engaging the coin for the desired degrees of the one revolution of the cam shaft. Upon the coin dropping from the coin guide the switch actuating element moves through the coin guide for engagement with the adjustable cam.

3,794,150
AXIALLY AND ROTATIONALLY MOVEABLE PRINT HEAD

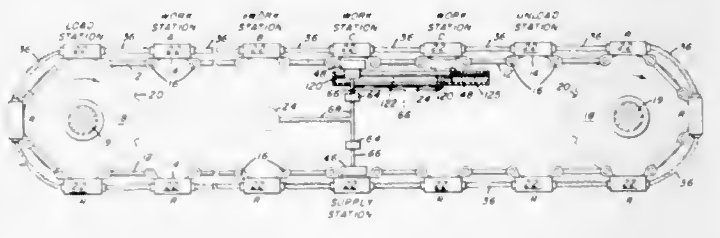
Steven P. Cahill, Revere, and Constantine J. Pateuk, Natick, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.
Continuation of Ser. No. 94,144, Dec. 1, 1970, abandoned. This application Oct. 27, 1972, Ser. No. 301,545
Int. Cl. B41j *1/32*
U.S. Cl. 197—55 15 Claims



A novel carriage apparatus for a high speed serial printer is herein disclosed. The carriage apparatus comprises a rotatable and axially positionable print head with an associated positioning structure that provides a rigid and quickly responsive drive to the print head. The drive is achieved by a series of interconnecting rotational and axial shaft motions. The combination drives emphasize a relatively small number of moving parts and in some instances embody direct magnetic drives from associated motors. One embodiment of the invention provides for an internal drive within the shell of the print head itself.

3,794,151
METHOD AND APPARATUS FOR CONTINUOUSLY SUPPLYING FLUID PRESSURE TO A PLURALITY OF FLUID DIRECTING MEMBERS

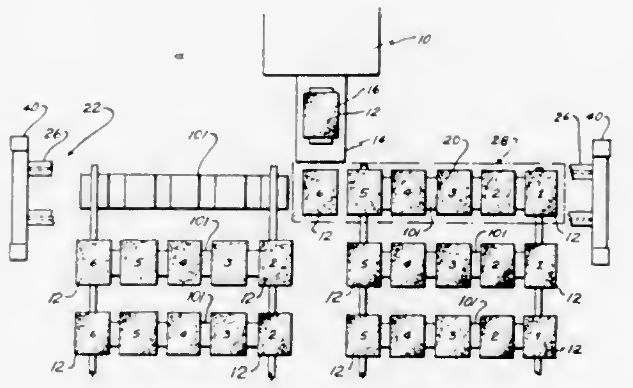
Raymond D. Feasey, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 5, 1973, Ser. No. 329,933
Int. Cl. B65g
U.S. Cl. 198—19 18 Claims



A fluid pressure supply system for continuously supplying fluid pressure to a plurality of independent, spaced apart, fluid directing members intermittently movable in unison between rest positions at various stations. A stationary valve connector located at a supply station is connectable to each of the fluid directing members in succession at the supply station for supplying fluid pressure to the members while at rest. Such pressure connection is broken to permit movement of the members in unison to succeeding rest positions. A movable valve connector located at a work station is connectable to a fluid directing member at rest at the work station for supplying fluid pressure to the members. The movable valve connector is movable along with the member to a succeeding rest position and work station to supply fluid pressure to the members while the stationary valve is disconnected and incapable of supplying fluid pressure to the members.

3,794,152
AUTOMATIC MOLD INDEXING DEVICE

James Nicholas Reyland, St. Louis, Mo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Apr. 24, 1972, Ser. No. 246,835
Int. Cl. B66b *17/00*
U.S. Cl. 198—20 5 Claims

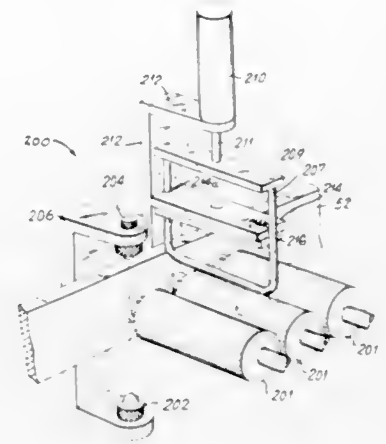


A transfer mechanism is disclosed for use in a foundry operation by receiving the output of an automatic molding machine and for transferring the sand mold produced from the machine onto a pallet line for pouring of the molds. The transfer mechanism may be designed for a single pallet line with the machine at one end of the line or alternatively may be designed for two longitudinally spaced lines with the machine at the center of the two lines. The carriage mechanism is a multiple mold-bearing shuttle, translatable past the machine output station and is advanced by a rope drive Geneva mechanism to convey the carriage mechanism in a step-by-step path along the edge of the pallet lines. On each such step, a mold is moved from the machine to the transfer mechanism and at the end of a traverse of the mechanism, the molds are removed from the carriage mechanism onto the pallet line.

3,794,153
FABRIC TURNOVER DEVICE

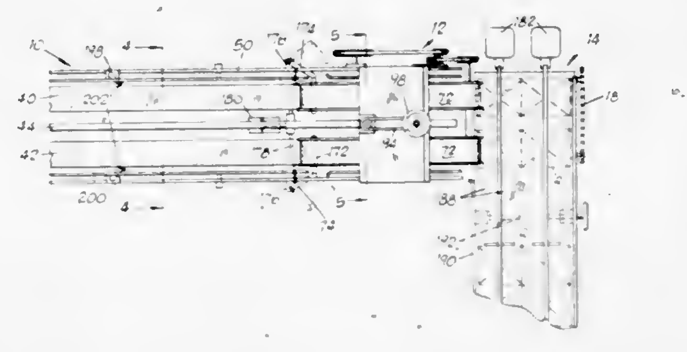
Enrique Lopez; Robert D. Spidle, and Aubrey Glenn Beazley, all of El Paso, Tex., assignors to Farah Manufacturing Company, Inc., El Paso, Tex.
Continuation-in-part of Ser. No. 44,710, June 9, 1970, Pat. No. 3,611,961. This application Oct. 6, 1971, Ser. No. 186,986
Int. Cl. B65g *47/24*
U.S. Cl. 198—270 9 Claims

A device for turning over sequentially alternate garment components being transferred on a conveyor is disclosed which senses the presence of a garment component on the conveyor, raises and captures the leading edge of the garment component thereby permitting conveyor rollers covered with an elastomeric material to sweep the following edge of the garment component under its captured leading edge, and releases the captured leading edge of the garment component after an appropriate delay period.



3,794,154
ARTICLE GROUP ASSEMBLY AND FORWARDING CONVEYOR FOR WRAPPING MACHINES

Ronald Holt, Battle Creek, Mich., assignor to Franklin Electric Subsidiaries, Inc., Bluffton, Ind.
Filed Dec. 1, 1972, Ser. No. 311,304
Int. Cl. B65g *35/30, 47/26*
U.S. Cl. 198—34 12 Claims



Parallel feed conveyors deliver side by side rows of articles to side by side accelerating conveyors. The accelerating conveyors deliver groups of articles transversely across parallel side by side wrapping machine conveyors having package advancing flights in the plane of both conveyors and transversely across the end of the accelerating conveyors. The accelerating conveyors have two different speed drive connections, and adjustable cycle dividing switches driven at the same frequency as the cycle of the advancing flights of the wrapping machine conveyors function to engage the high speed drive to the accelerating conveyors during a fraction only of each package advancing cycle. The dividing switches also function to momentarily close article stop gates between the feed conveyors and the accelerating conveyors at about the beginning of each cycle of the machine.

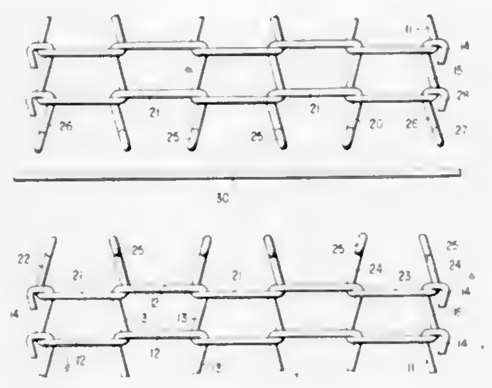
Adjustable clutch connections permit two speed operation of the in-feeding conveyors and continuous lower speed drive of the accelerating conveyors, for collecting and wrapping half or fractional size groups of articles from the lead articles in the parallel feed conveyors. Longitudinal adjustment of the accelerating conveyors to accommodate the smaller packages is provided.

operative position while at the same time the associated rod

3,794,161

3,794,155
WIRE MESH BELT

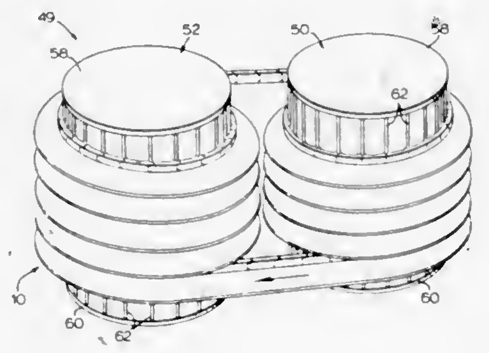
Alfred R. Bechtel, Jr., Portsmouth, R.I., assignor to Ashworth Bros., Inc., Fall River, Mass.
Filed June 2, 1972, Ser. No. 259,039
Int. Cl. B65g *15/00*
U.S. Cl. 198—194 **8 Claims**



An improved means for connecting two end strands of two separate parts of a wire mesh belt having a plurality of interlocked zig zag strands which includes a first row of generally U-shaped connecting links each interlocked with one end strand and a second row of connecting links interlocked with the other end strand. The links have loops at their extremities which are axially aligned whereby a connector rod inserted therethrough connects the two rows and consequently the end strands together. In one embodiment the connector rod is straight throughout its main body portion and a hooked end connecting element is connected to each end thereof and interlocked with one of the end strands. In another embodiment the connector rod is comprised of two straight aligned segments having hooked outer ends interlocked with one of the end strands. The two segments may be joined by a connecting sleeve.

3,794,156
CONVEYOR

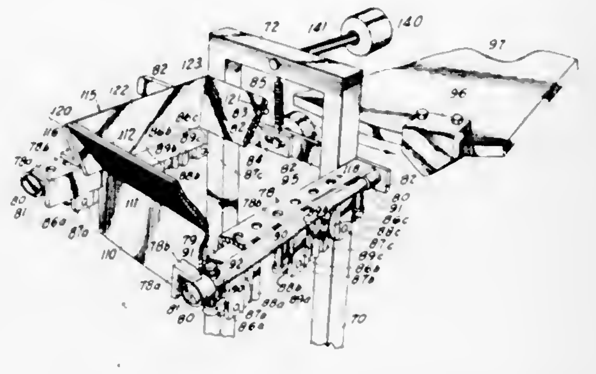
Warren A. Brackmann, Cooksville, and Daniel Di Ianni, Toronto, Ontario, both of Canada, assignors to Rothmans of Pall Mall Canada Limited, Toronto, Ontario, Canada
Continuation of Ser. No. 27,957, April 13, 1970, abandoned. This application Jan. 31, 1972, Ser. No. 222,062
Int. Cl. B65g *15/00*
U.S. Cl. 198—136 **12 Claims**



A conveyor includes a driving member and a chain consisting of a plurality of articulated links. Each of the links includes a platform adapted to support a load in cantilever manner.

3,794,157
AUTOMATIC FILLING AND WEIGHING MECHANISM

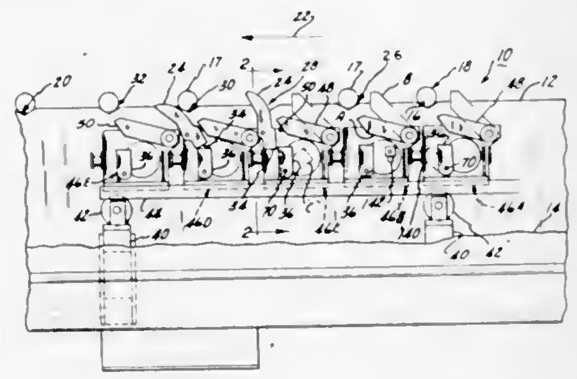
Nelson R. Henry, 583 Willivee Dr., Decatur, Ga. 30030
Division of Ser. No. 675,125, Oct. 13, 1967. This application Feb. 22, 1971, Ser. No. 117,762
Int. Cl. B65g *15/00*
U.S. Cl. 198—131 **7 Claims**



Automatic filling and weighing mechanism in which receptacles are moved in a prescribed path and automatically releasably held by their rims by a plurality of downwardly opening grippers, actuated by a rotation of levers to release the bags.

3,794,158
ACCUMULATING CONVEYOR SYSTEM

Walter Greenwood, Jr., 505 Brentwood Dr., Dearborn, Mich. 48124
Filed Feb. 24, 1972, Ser. No. 229,024
Int. Cl. B65g *25/08*
U.S. Cl. 198—223 **11 Claims**



An accumulating conveyor system of the type having a pair of spaced longitudinally disposed frames on which a plurality of equally spaced article support stations are provided and through which articles are advanced from a load station at one end of the frames to an unload station at the opposite end of the frames. A plurality of conveyor modules are reciprocably mounted in directions paralleling the longitudinal axes of the frames with each module being so mounted as to be movable between a pair of adjacent stations. Each module comprises a housing having a reciprocably mounted actuating rod, the outer ends of which are adapted to alternately, engagably abut the outer ends of the actuating rods, respectively, carried by the modules immediately thereahead and therebehind. Article engaging levers carried by each module become operative upon movement of their associated actuating rods to engage an article in one of the associated support stations to transfer the article to the next forward adjacent station when the modules are reciprocated toward the unload station. Each support station has means for sensing whether the support station is empty and such sensing means is adapted to cooperate with an externally mounted lever carried by the module housing to cause reciprocal movement of its associated actuating rod and thereby actuate the article engaging levers to an operative position while at the same time the associated rod abuttably engages the rod of the module therebehind to shift the same and all rods therebehind to position their associated article engaging levers to an operative position thereby causing all articles carried in support stations behind the empty station to be advanced one station as the modules are reciprocated toward the unload station of the conveyor system. Means are provided to activate the actuating rod in the module associated with the load station of the conveyor so that all forwardly spaced modules actuating rods are shifted in such a manner as to position the article engaging levers to an inoperative position as the modules are reciprocated toward the load station back to the initial starting position.

ERRATUM

For Class 206—173 see:
Patent No. 3,794,210

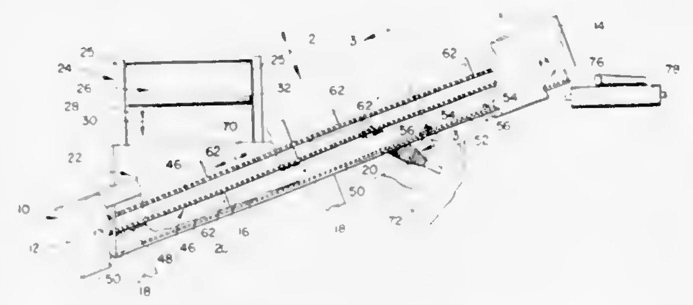
3,794,159
PROCESS FOR FLOTATION OF LARGE SIZE MINERAL PARTICLES

Arno Singewald, Kassel, Germany, assignor to Wintershall Aktiengesellschaft, Kassel, Germany
Filed Dec. 14, 1970, Ser. No. 98,210
Int. Cl. B03b *7/00*
U.S. Cl. 209—12 **7 Claims**

Process for flotation of large size mineral particles which comprises mixing the turbid liquid which is to be subjected to flotation with a fine particle size weighting agent by which the large size particles are made more buoyant and are on treatment with air bubbles more easily floated out.

3,794,160
BOBBIN SORTING

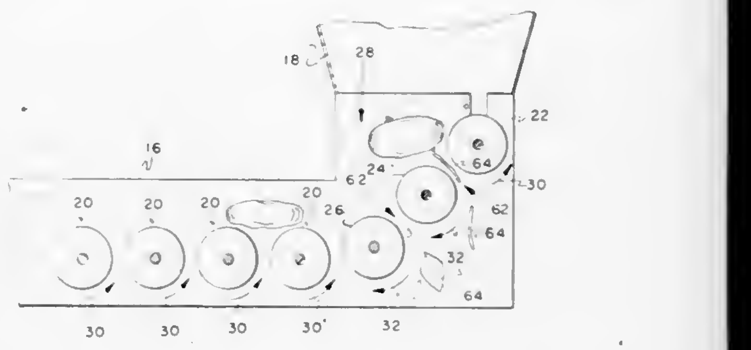
Raymond V. Tata, Warwick, R.I., assignor to Leesona Corporation, Warwick, R.I.
Continuation-in-part of Ser. No. 857,750, Sept. 15, 1969, abandoned. This application June 21, 1971, Ser. No. 155,122
Int. Cl. B07b *13/04*
U.S. Cl. 209—90 **8 Claims**



An apparatus for sorting filled bobbins from empty bobbins. The bobbins are deposited on a platform which declines transversely toward a retaining surface so that the bobbins roll on the platform and against the retaining surface. Pushers segregate the bobbins from each other on the platform and move each bobbin serially from a wide portion of the platform onto a portion of the platform sufficiently narrow that larger diameter filled bobbins will roll overcenter across an edge of the platform to be collected in any suitable manner. However, the smaller diameter bobbins generally devoid of yarn are cradled on the narrow portion of the platform and the retaining surface and do not roll overcenter. Rather, the empty bobbins are conveyed to an end of the platform and are deposited in any suitable collecting means separate from the collecting means for the bobbins having yarn. The narrow portion of the platform is adjustable so that the edge of the platform over which the bobbins roll overcenter may be moved toward or away from the retaining surface for sorting different diameter bobbins.

3,794,161
POTATO CUTTING MACHINE

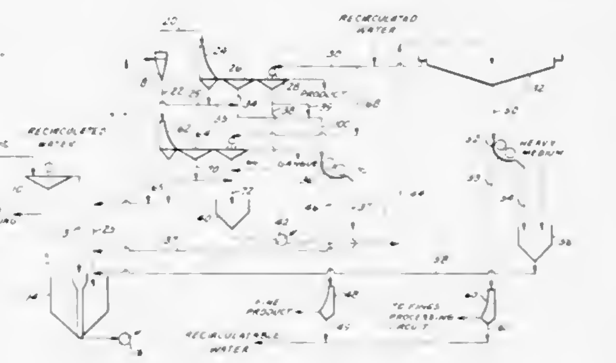
Soren Eskel Peterson, 875 S. Redwood Rd., Salt Lake City, Utah 84104
Filed Nov. 10, 1971, Ser. No. 197,220
Int. Cl. B07b *13/04*
U.S. Cl. 209—106 **16 Claims**



A potato cutting machine including means for eliminating sprouts and other debris comprising a first plurality of driven rollers disposed in a common plane for transporting potatoes, a second plurality of driven rollers extending upwardly and rearwardly from said first plurality of rollers in stepwise fashion and having at least one of said second plurality of rollers rotating in a direction reverse from that of said first plurality of rollers, means for delivering potatoes and debris to said second plurality of rollers, and means for aligning potatoes for presentation to a cutting mechanism, said aligning means comprising a conveyor having a plurality of transverse troughs, and a plurality of resilient bands extending across said conveyor and spaced above said conveyor a distance such that properly aligned potatoes lying in said troughs will pass under said bands while improperly aligned potatoes will engage said bands and be restrained thereby.

3,794,162
HEAVY MEDIUM BENEFICIATING PROCESS

Francis G. Miller, Bethlehem, and Stanton D. Irons, Northampton, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.
Filed Mar. 6, 1972, Ser. No. 231,852
Int. Cl. B03b *3/44*
U.S. Cl. 209—172.5 **8 Claims**



A process for heavy medium beneficiating of coal, including particles in the 28 × 150 mesh range. As-mined or crushed coal is washed and screened to prepare a feed material whose average coarseness is greater than about 150 mesh. This feed is combined with a heavy medium, such as water and magnetite, and cycloned. Cyclone overflow is screened, drained and rinsed to separate returnable heavy medium, fines (both heavy medium and ore) from coarse product. Fines are processed through a magnetic separator to separate the heavy medium from a non-magnetic fines ore-water fraction. The ore-water fraction is screened to separate a fine product and recirculatable water. Cyclone underflow is similarly screened to separate returnable medium, fines (medium, gangue and ore particles) from coarse gangue. The fines are concentrated in a densifier and then magnetically separated into a magnetic and non-magnetic fraction. The magnetic fraction is reused as heavy medium and the non-magnetic fraction is screened to recover recirculatable water and a particle fraction which requires further processing.

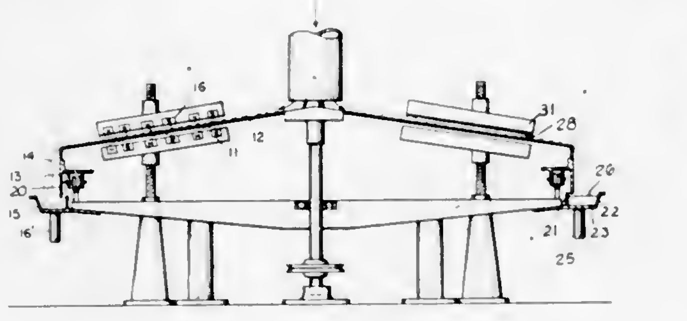
3,794,163
DISK-TYPE MAGNETIC SEPARATOR

Arlo F. Israelson, and Jerzy A. Bartnik, both of Erie, Pa., assignors to Eriez Manufacturing Company, Erie, Pa.

Continuation-in-part of Ser. No. 762,845, Sept. 26, 1968, abandoned. This application Apr. 28, 1971, Ser. No. 138,341

Int. Cl. B03c *1/08*

U.S. Cl. 207—223 **2 Claims**



A magnetic separator made up of a disk in the shape of a cone with a downwardly extending cylindrical skirt. A circular trough with a drain is supported below the skirt. A feed pipe is supported above the center of the disk and a conical boss extends up into the feed pipe to distribute the material over the top of the disk where it flows downward over the cone to the trough. Spaced arcuate magnets are supported above and below the disk so they distribute magnetic fields through the disk and attract magnetic as well as some non-magnetic material. In a second embodiment, radial magnets are supported above and below the disk. The invention disclosed herein concerns the creation of high gradient type magnetic fields and the ability to adjust these fields to best suit the magnetic materials to be separated.

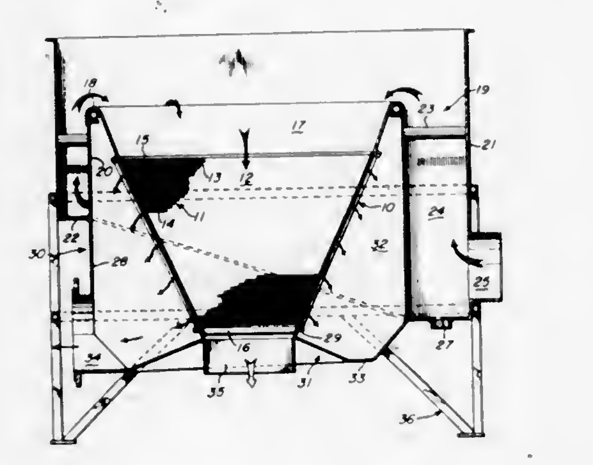
3,794,164
HOPPER TYPE SEPARATING AND CLASSIFYING DEVICE

Marvin E. Ginaven, Springfield, Ohio, assignor to The Beuer Bros. Co., Springfield, Ohio

Filed Dec. 21, 1970, Ser. No. 100,153

Int. Cl. B07b *1/06*

U.S. Cl. 209—243 **8 Claims**



Apparatus for separating and/or classifying liquids and solids characterized by a hopper type receptacle defining a generally vertical flow channel. The receptacle is distinguished by an interior wall portion providing a flow surface formed to cause fluid to adhere thereto and pass through apertures defined therein and further having a construction to produce a pressured turbulence in a fluid flow whereby to cause additional fluid to move through said apertures.

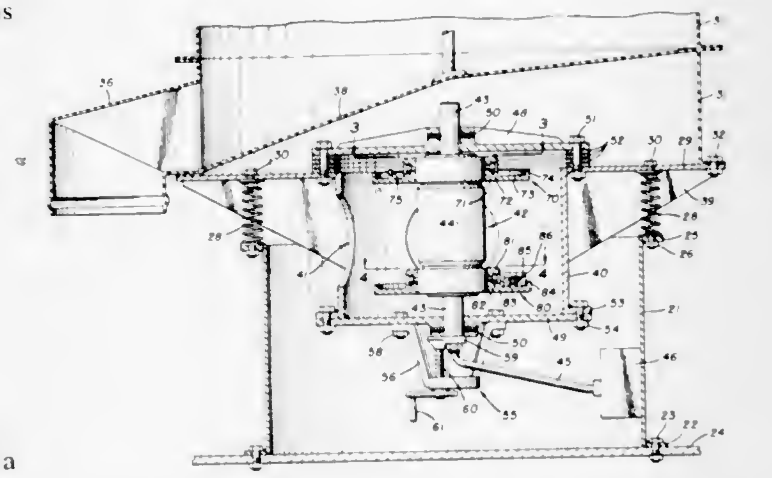
3,794,165
MOTION CONTROL FOR A MATERIAL SEPARATOR

Laverne J. Riesbeck, and Willis A. Blackwell, both of Canton, Ohio, assignors to Midwestern Industries, Inc., Massillon, Ohio

Filed Mar. 17, 1971, Ser. No. 125,274

Int. Cl. B07b *1/36, 1/42*

U.S. Cl. 209—325 **11 Claims**



A device for generating motion to a conventional material separator consists generally of a variable speed rotatable shaft-like member. Attached to the rotatable member are weights, the position of which is adjustable axially along and circumferentially around the rotatable member. Further, the axial position of the rotatable member and the weights affixed thereto is adjustable, thus providing a wide range of motions to the material separator.

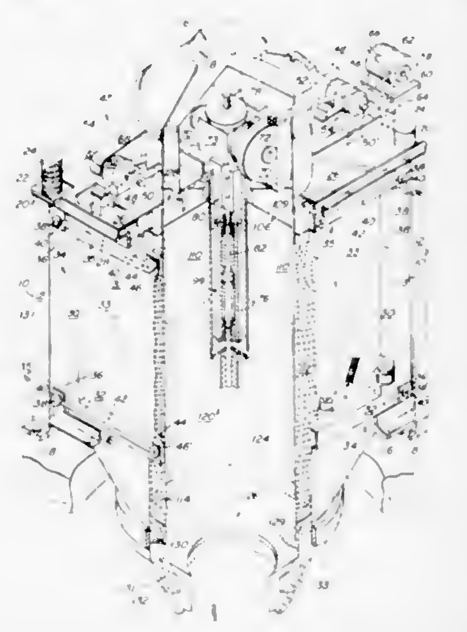
3,794,166
VERTICAL ROTATING SCREEN SEPARATOR

John O. Converse, Minneapolis; Kenneth W. Korpi, Ely, both of Minn., and John R. Diver, Lake Forest, Ill., assignors to Hart-Carter Company, Minneapolis, Minn.

Filed Feb. 22, 1972, Ser. No. 228,036

Int. Cl. B07b *1/26*

U.S. Cl. 209—301 **24 Claims**



A rotating vertical cylindrical screen which is suspended by a spring from an inner frame member for the separation of seeds or other dry or moist-surface solid particulate matter according to size or shape or as to content of foreign matter. The aggregate containing the foreign matter is fed to the top of the screen through a rotating distributor means which casts the aggregate against the inner surface of the wall of the screen. The screen has a vertical mode of vibration imposed thereon by rotating eccentric weights operationally mounted thereto, which weights work in conjunction with the force of gravity to move said aggregate down the inner wall of the screen surface. The small particulates and foreign matter in the aggregate are readily transmitted through the wire mesh of the screen under the increased centrifugal force thereon due to their rotation with the rotating screen on which they lie. These small transmitted particulates are thrown outwardly from the rotating screen, and are caught by and collected in a surrounding shell to be subsequently discharged through a collecting funnel and spout. Those particulates larger than the screen mesh which do not pass therethrough remain within the screen and move further down the inside thereof to be subsequently discharged through a second collecting funnel and spout. The inner frame of the separator is supported by an outer spring suspension means on an outer frame structure which is set on the floor for effectively isolating all vertical shaking forces from the rotating eccentric weight drive from said floor or supporting structure. The rotating screen is effectively supported in a horizontal direction by a soft spring stabilizing means for isolating all lateral forces from said floor or supporting structure introduced therein by a rotating unbalance of aggregate flow through the screen.

3,794,167
METHOD AND APPARATUS FOR SUPPLYING AND CONTROLLING FLOW OF A LIQUID SUSPENSION THROUGH LAMINAR APPARATUS

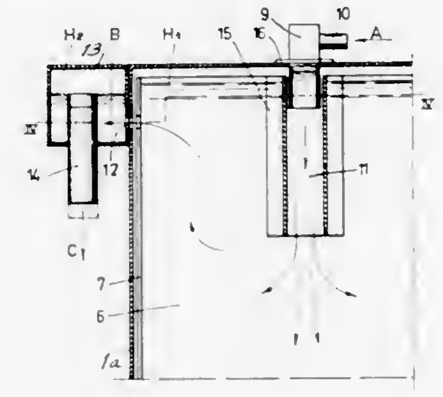
Gunnar Olgard; Bo Forsell, both of Nynashamn, and Bengt Uddstrand, Stora Vika, all of Sweden, assignors to Rederiaktiebolaget Nordstjernan, Nynashamn, Sweden

Continuation of Ser. No. 122,800, March 10, 1971, abandoned. This application Dec. 6, 1972, Ser. No. 312,711

Claims priority, application Sweden, Mar. 12, 1970, 3281/70

Int. Cl. B01d *21/24*

U.S. Cl. 210—84 **7 Claims**



A method and an apparatus for supplying and controlling the flow of a liquid suspension through a laminar apparatus having separate parallel sedimentation spaces formed by plate means inclined relative to the horizontal plane, wherein the suspension is supplied to the sedimentation spaces and the sediment in each of these spaces sinks downward and flows past the lower edge of the plate means down into a trough while the clarified liquid flows upwards and out through outlets provided in the upper part of the plate means.

The entering suspension is distributed over all sedimentation spaces over a wide area to prevent clogging, and the distribution of the suspension to and through each and all sedimentation spaces is controlled and maintained uniform by adjusted throttling of the outflow of clarified liquid through outlets from each sedimentation space.

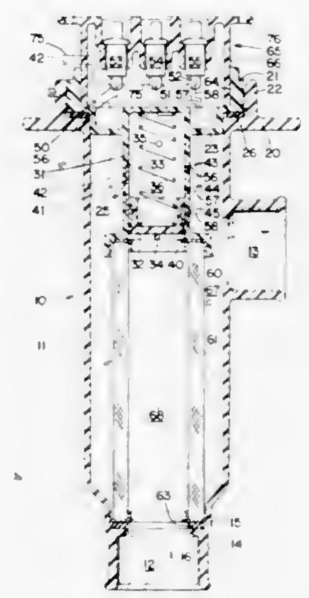
3,794,168
FILTER WITH CONDITION INDICATOR

Gerard T. Perkins, Detroit, Mich., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed July 31, 1972, Ser. No. 276,694

Int. Cl. B01d *35/14*

U.S. Cl. 210—90 **5 Claims**



A filter assembly having a cylinder and piston movable therein by the pressure differential across the filter element and the piston carrying a metal ring to connect various indicator lights with a source of power at various pressure differentials to show the cleanliness condition of the filter element at various stages.

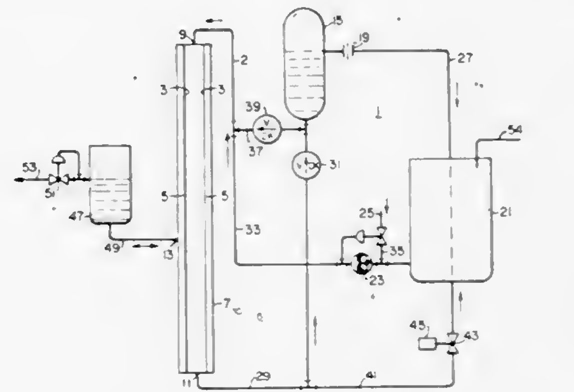
3,794,169
APPARATUS FOR DISSOCIATING COLLECTED SOLIDS FROM A FILTRATION MEMBRANE

Francis J. Sisk, and Robert F. Watson, Jr.; both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 15, 1972, Ser. No. 253,489

Int. Cl. B01d *31/00*

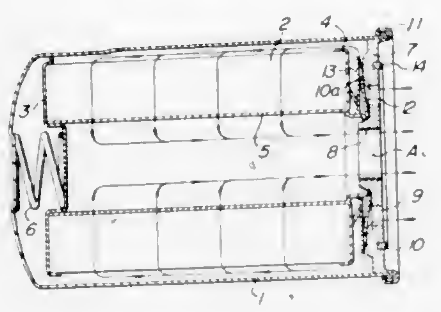
U.S. Cl. 210—140 **11 Claims**



Apparatus for producing a rapid reduction in the pressure followed by a high velocity slug of liquid to dissociate collected solids from a filtration membrane surface utilizing an air accumulator, check valve and a timed rapid pressure blowdown to dislodge the collected solids and flush them from the membrane; or utilizing a high volume recirculating pump for recirculating liquid suffused with air and periodically stopping the pump for a predetermined time interval and draining liquid from adjacent the membrane, resulting in a reduction of the pressure, and then starting the recirculating pump to provide a high velocity flow of liquid to flush collected solids from the membrane.

3,794,170
FILTER

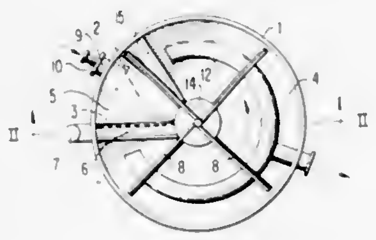
Terumoto Yamaguchi, Anjo, Japan, assignor to Nippondenso Co., Ltd., Aichi-ken, Japan
Filed Aug. 17, 1971, Ser. No. 172,433
Claims priority, application Japan, Aug. 29, 1970, 45-75664
Int. Cl. B01d *27/08*
U.S. Cl. 210—136 **1 Claim**



A filter wherein a closure member of the filter consists of a single sheet of plate and secured directly to a cylindrical body of the filter, with its peripheral edge tightened to the open edge of said cylindrical body in overlapping relation.

3,794,171
APPARATUS FOR PURIFYING WASTE LIQUIDS

Hiroshiro Kimura, Kyoto; Seiji Yoshii, Hyogo, and Masao Tanaka, Gifu, all of Japan, assignors to Unitika Ltd., Amagasaki-shi, Hyogo, Japan
Filed May 24, 1972, Ser. No. 256,247
Claims priority, application Japan, May 24, 1971, 46-35688
Int. Cl. B03d *1/00*
U.S. Cl. 210—205 **8 Claims**

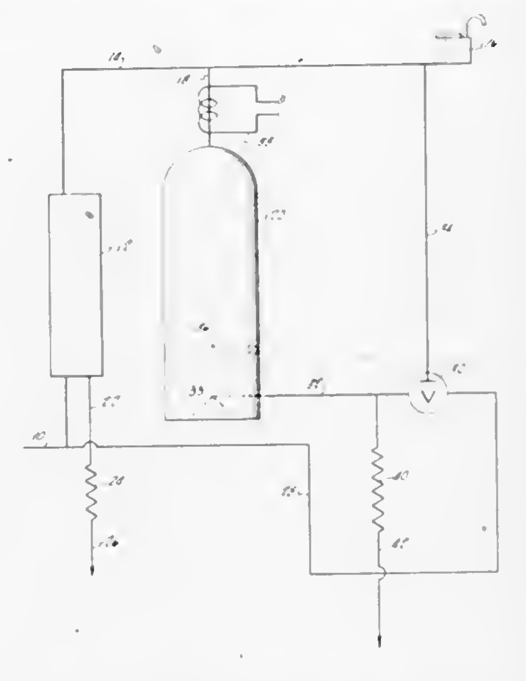


An apparatus for purifying waste liquids which includes (a) a mixing chamber for introducing and mixing a pressurized gas-liquid phase, which substantially saturatedly dissolves a pressurized air into a waste liquid under the pressure, (b) a curved liquid chamber having a flat circular arcuate or curved spiral for separating the waste liquid into substances to be removed, such as flocs, etc., and a liquid, and (c) a scum outlet duct so disposed as to communicate with the curved liquid chamber at the upper portion of the chamber for discharging a scum of the substances to be removed floating on the surface of the liquid in the curved liquid chamber. The mixing chamber and the curved liquid chamber are separated from each other with partitions, but one of the partitions has an opening at the upper portion thereof so as to communicate the mixing chamber with the curved liquid chamber.

3,794,172
STORAGE AND DISPENSING APPARATUS FOR A REVERSE OSMOSIS WATER PURIFICATION SYSTEM

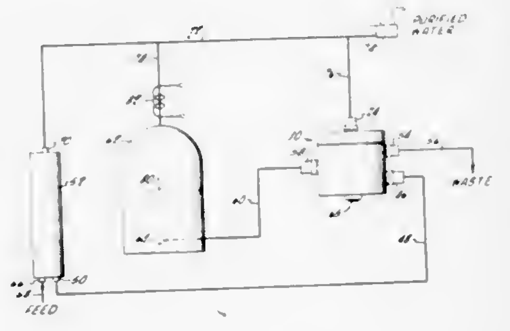
Donald T. Bray, Escondido, Calif., assignor to Desalination Systems, Inc., Escondido, Calif.
Filed Aug. 29, 1972, Ser. No. 284,489
Int. Cl. B01d *31/00*
U.S. Cl. 210—257 **9 Claims**

Storage and dispensing apparatus for a reverse osmosis water purification system includes a storage container or tank, in which purified water is stored, connected to a dispensing valve. The purified water in this storage tank is separated, as by a pressure transmitting diaphragm or a gradient barrier, from impure water used as feed for the purification unit and which is normally maintained also in the storage tank under pressure no greater than slightly above atmospheric for example, 10 psig more or less. Opening the purified water dispensing valve actuates a diaphragm valve which opens to supply impure water into the storage tank at an elevated pressure of, for example 40 to 100 psig more or less, thus pressurizing the purified water in the storage tank to a pressure substantially elevated above its normal storage pressure for delivery through the dispensing valve.



3,794,173
VALVE FOR REVERSE OSMOSIS PURIFICATION AND STORAGE SYSTEM

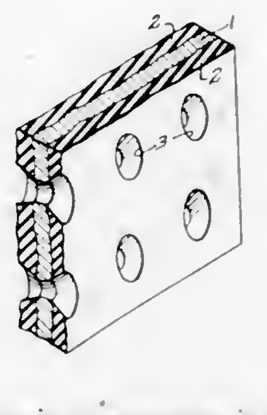
Donald T. Bray, San Diego, Calif., assignor to Desalination Systems, Inc., Escondido, Calif.
Continuation-in-part of Ser. No. 284,489, Aug. 29, 1972. This application Oct. 4, 1972, Ser. No. 294,965
Int. Cl. B01d *31/00*
U.S. Cl. 210—257 **5 Claims**



A valve for a water purification system operating by reverse osmosis which combines the functions of a pressure control for the blowdown or brine from the reverse osmosis module, and of a pressure control for a purified water container; and also acts as a pressure responsive valve to allow elevated pressure impure water to flow into the purified water container to elevate the pressure of purified water supplied to a dispensing valve when the dispensing valve is opened.

3,794,174
POROUS METAL INSULATOR SANDWICH MEMBRANE

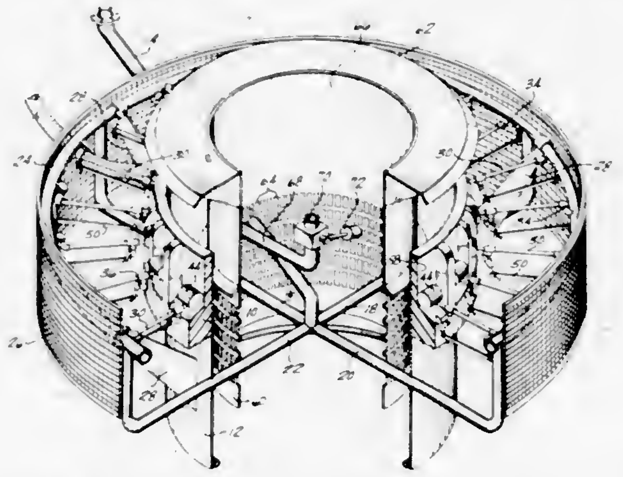
Glenn L. Booman, and Joseph R. Delmastro, both of Idaho Falls, Idaho, assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed Jan. 11, 1972, Ser. No. 216,947
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 **9 Claims**



A membrane for use in reverse osmosis and electrodialysis separation processes comprising a thin metal layer with a thin layer of insulator material on each side thereof, the membrane being porous with the pores having uniform radii from 5 angstroms and lower to approximately 100 angstroms, and means associated with the metal layer for controlling the surface charge density by external electrical circuitry whereby ionic transfer through the pores is controlled. The membrane is made by (*a*) depositing sequentially by radio-frequency sputtering technique 5–500 angstrom layers of platinum and silicon nitride on a 50–100 micron thick glass substrate to form a thin sandwich. Then (*b*) there are chemically etched 300 micron diameter holes in the glass substrate by using a mask of sputter-etched molybdenum metal with a thin molybdenum layer functioning as a stopping layer for the etching step. Next (*c*) the molybdenum masking layer is removed and, using the 300 micron holes in the substrate as a pattern, the molybdenum stopping layer is chemically etched through. Next (*d*) the resulting sandwich structure is irradiated with fission fragments to produce damage tracks in the Si_3N_4 layers, after which these layers are chemically etched along the fission fragment damage tracks. Finally (*e*) the metal membrane layer is chemically etched through, using the small holes in the surrounding Si_3N_4 dielectric layers as a mask.

3,794,175
OIL RECOVERY APPARATUS

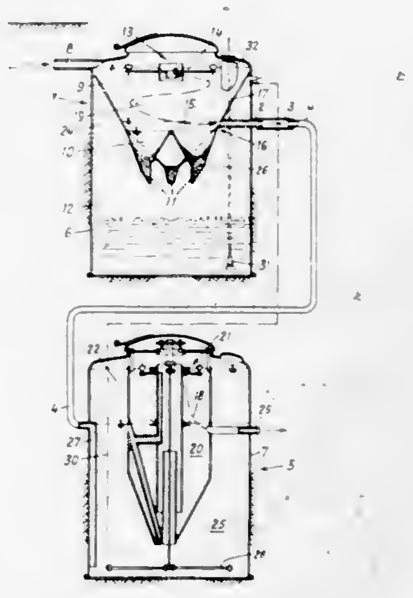
Joe K. Stewart, 22818-102nd Pl. West, Edmonds, Wash. 98020
Filed May 15, 1972, Ser. No. 253,433
Int. Cl. E02b *15/04*
U.S. Cl. 210—242 **18 Claims**



Floating oil is picked up by water jets and carried over a vertical wall into a receiving chamber. The water jet forming nozzles and the receiving chamber are parts of a floating vessel. The water jet forming nozzles are positioned to discharge upwardly through the floating oil. Float controlled mechanisms automatically maintain the jet nozzles properly oriented with respect to the receiving chamber wall.

3,794,176
MECHANICAL-BIOLOGICAL WASTE WATER PURIFICATION PLANT

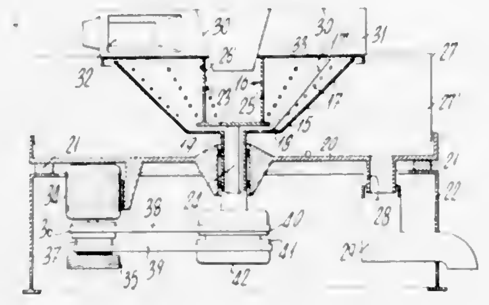
Hans Schnyder, Wattenwylstrasse 29, Worb, Switzerland
Filed Nov. 30, 1972, Ser. No. 310,695
Claims priority, application Switzerland, Dec. 3, 1971, 17692/71
Int. Cl. C02c *1/26*
U.S. Cl. 210—242 **10 Claims**



The plant is a pre-clarifying plant designed for connection to a clarifying plant or to a post-clarifying plant, and includes a pre-clarifying basin and a sludge digestion tank or zone arranged beneath and communicating with the basin. A feed inlet communicates with the upper portion of the basin and an adjustably positionable pipe, such as either a flexible pipe or a jointed pipe, is within the clarifying basin and has an inlet end communicating with a device, such as a weir, floating on the liquid in the basin. The outlet end of the discharge pipe extends through a side wall of the basin at a level below the feed inlet. The discharge pipe has a flow rate less than the flow rate of the feed inlet, as by having a relatively reduced cross sectional area or a restriction, so that the pre-clarifying basin has a first buffer zone whose height corresponds to the vertical distance between the feed inlet and the outlet end of the discharge pipe. The pre-clarifying basin is arranged inside the upper part of a tank whose lower part defines a sludge digestion zone, whereby the upper part of the tank defines a second buffer zone open at the bottom and delimited laterally by the wall of the tank and the side walls of the pre-clarifying basin, and at least one valve vents the upper part of the second buffer zone. The arrangement delays level equalization, as effected by communication by the pre-clarifying basin and the sludge digestion zone. The discharge pipe communicates with a post-clarifying plant having an activated sludge zone which communicates with the upper portion of the second buffer zone in the pre-clarifying plant. The post-clarifying plant has a clarifying basin communicating with the activated sludge zone and provided with a floating weir connected by a flexible or jointed discharge pipe to a clarified water outlet located some distance below the upper end of the post-clarifying basin. Sludge transferred by vacuum from the post-clarifying plant to the pre-clarifying plant is removed from the sludge digestion zone of the latter by a suitable pump.

3,794,177
CONTINUOUSLY OPERATING CENTRIFUGAL HYDROEXTRACTOR PROVIDED WITH A MECHANICAL TIMER

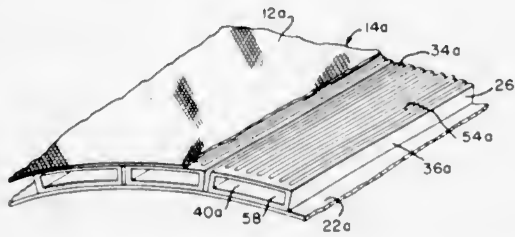
Berlando Lega, and Giannangiolo Cecchi, both of Firenze, Italy, assignors to Texfluid S.n.c. di G. Cecchi e B., Lega, Firenze, Italy
Filed Mar. 7, 1972, Ser. No. 232,400
Claims priority, application Italy, Mar. 23, 1971, 22121/71
Int. Cl. B01d *21/26*
U.S. Cl. 210—377 **15 Claims**



A centrifugal hydroextractor for fibrous material processing, comprising a rotating basket and a dispensing member for the material to be processed, which is rotatably mounted coaxially with and internally of said basket. The dispensing member is provided with material guide paths from the center to the side walls of the basket; at least one disc valve, closing the basket at the top, is fast with said dispenser and has a central aperture for the material supply and a number of peripheral ports corresponding to said paths. Drive means provided for rotating said basket and dispensing member with different angular velocities.

3,794,178
ROTARY DRUM FILTERING APPARATUS AND UNITARY DRAINAGE SECTORS THEREFOR

Oscar Luthi, Nashua, N.H., assignor to Improved Machinery Inc., Nashua, N.H.
Filed Dec. 2, 1971, Ser. No. 204,103
Int. Cl. B01d *33/06*
U.S. Cl. 210—404 **14 Claims**

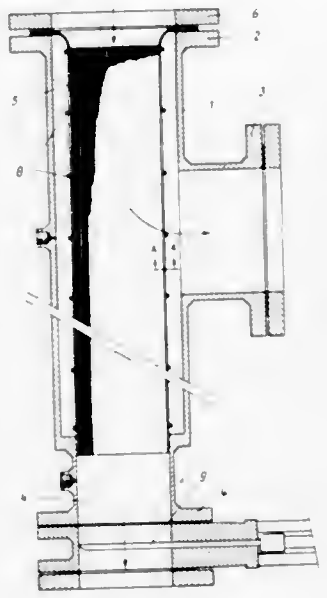


Unitary drainage sectors for rotary drum filtering apparatus, constructed whereby the drainage channels are enclosed within the sectors. Each sector may completely contain one or more of the drainage channels and/or the sectors may be formed such that, after assembly into a filter drum structure, laterally adjacent ones of the sectors cooperate to completely contain drainage channels.

3,794,179
FILTRATION OF FLUIDS

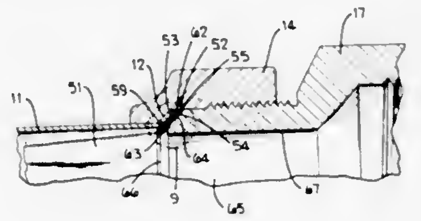
Charles Doucet, 20 Avenue Tronchet-Thonex, Geneva, Switzerland
Filed Aug. 31, 1971, Ser. No. 176,570
Claims priority, application Switzerland, Sept. 4, 1970, 13249/70; July 29, 1971, 11198/71
Int. Cl. B01d *29/30*
U.S. Cl. 210—409 **2 Claims**

A filter tube having an inner cylindrical filter surface formed of longitudinal filaments with micro-grooves therebetween is supplied with fluid to be filtered through an inlet end towards a normally closed exhaust end. The fluid is normally diverted through a filtration zone in the filter surface, filtered matter being retained superficially on the filter surface whilst filtered fluid is extracted via an outlet. The filtration zone moves along the tube as the filter surface becomes clogged and an increase in the head loss when the entire filter suface is clogged actuates opening of the exhaust end to exhaust fluid with a flushing action which cleans the filter surface. Alternatively, the exhaust end can remain permanently open, a part of the fluid being diverted through the filter surface, and the non-diverted fluid cleaning the filter surface with a flushing action.



3,794,180
FLARED CONE FILTER

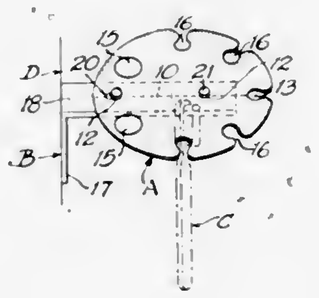
William C. Blocker, 1406 N. Butler Ave., Indianapolis, Ind. 46219
Continuation-in-part of Ser. No. 224,012, Feb. 7, 1972, abandoned. This application Jan. 22, 1973, Ser. No. 325,757
Int. Cl. B01d *29/10*
U.S. Cl. 210—445 **6 Claims**



A screen filter for filtering fluids. A conically-shaped screen is attached to a flare ring. The screen has a filtering surface area approximately ten times the area of the entrance to the screen. The flare ring has a continuous circular side wall which is positioned at an angle with respect to the longitudinal axis of the screen. The ring seats within the flared end of a tube which has a female connector projecting outwardly therefrom to threadingly engage a male connector. The male connector has a beveled inner end which seats within the ring forcing the ring against the flared end of the tube. In the preferred embodiment, the screen extends into the flare ring which is crimped to the screen.

3,794,181
SANITARY DISPOSABLE HOLDER FOR ARTICLES OF PERSONAL HYGIENE

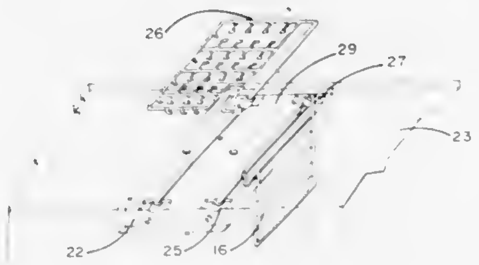
William H. Canham, 4836 Agnes Ave., North Hollywood, Calif. 91607
Filed Sept. 8, 1972, Ser. No. 287,554
Int. Cl. A47k *1/09;* **A47b** *81/02*
U.S. Cl. 211—65 **10 Claims**



A holder for toothbrush and other toilet or personal articles for use in a motel or hotel room or in a home guest room, comprises a wall bracket having a pair of holder studs; and a disposable sanitized holder disc having a pair of apertures to receive the studs with a force-fit and having peripheral slots and/or openings to receive the toilet articles; the disc being scored or otherwise weakened along a diameter intersecting the attachment apertures, such that the disc can be readily broken in halves for quick removal from the holder studs. The disc is replaced by a fresh, sanitized holder disc for the next guest to occupy the room.

3,794,182
STORAGE HANGING RACK

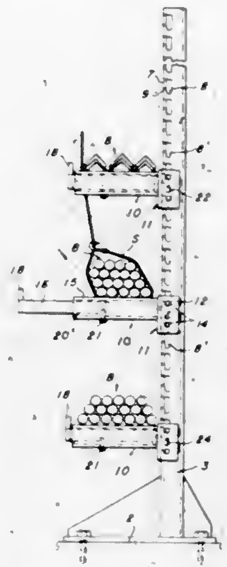
John W. Royeton, 2120-B Paradise Rd., Las Vegas, Nev. 89105
Filed June 22, 1972, Ser. No. 265,358
Int. Cl. A47f *5/08*
U.S. Cl. 211—94 **6 Claims**



A hanging rack device comprises a rod slideably received in a tubular sleeve, the rod having attached thereto a hanging rack and which sleeve includes guide means for directing the inclination of the rod and rack between vertical and horizontal depending on the extent in which the rod is received in the sleeve.

3,794,183
ADJUSTABLE STORAGE RACK

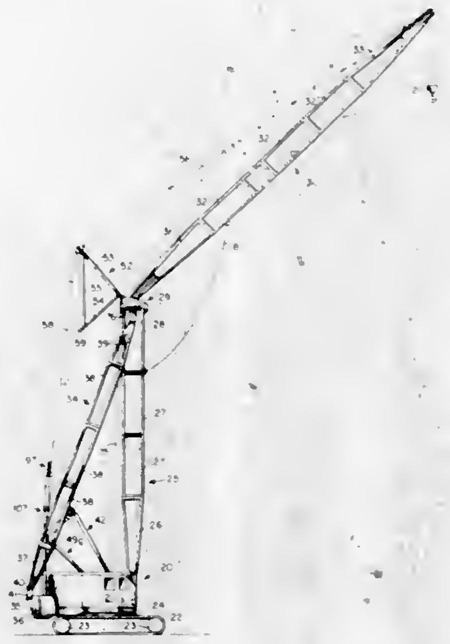
Thomas D. Colbridge, Chalk Hill, Pa., assignor to Rack Engineering Company, Connellsville, Pa.
Filed July 6, 1971, Ser. No. 159,791
Int. Cl. A47b *96/12;* **A47f** *5/08*
U.S. Cl. 211—176 **4 Claims**



There is disclosed an adjustable storage rack with vertically adjustable arms that are horizontally extensible and retractable to facilitate placement of material on or removal of material from the rack, especially where an overhead crane is used for this purpose.

3,794,184
CRANE

Robert J. Higgins, Baton Rouge, La., assignor to Joyce Burroughs Torregrossa, Baton Rouge, La., a part interest
Continuation of Ser. No. 76,485, Sept. 29, 1970. This application Jan. 15, 1973, Ser. No. 323,732
Int. Cl. B66c *23/62*
U.S. Cl. 212—46 A **12 Claims**



A mobile crane for use in the construction industry. The crane includes a prime mover which may be a wheeled or endless track vehicle having the conventional superstructure with the power assembly mounted thereon. The crane has a main boom attached at its lower end in the conventional manner, which boom has attached at its upper ends two auxiliary support members, which members are removably at-

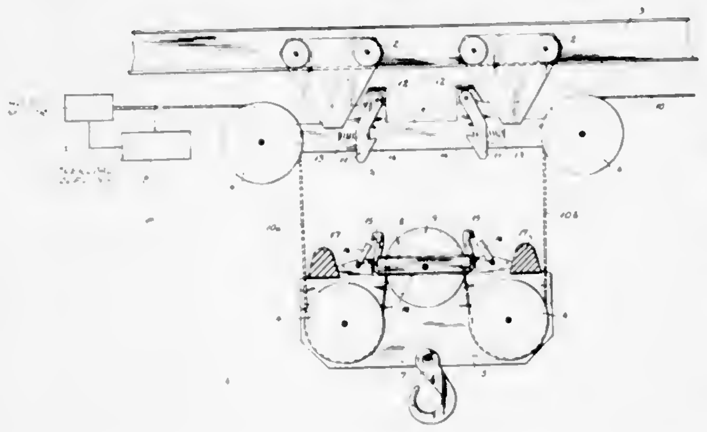
the house module for movement from the transporter to the

3,794,188
STORAGE SILOS AND BOTTOM UNLOADERS

bucket will tilt forward and down into the chute. The rear end tached to the rear of the crane to provide a tripod structure which includes the main boom. A secondary or elevated boom is attached to the topmost portion of the main boom by a novel connecting means which permits the secondary boom to be elevated into working position atop the main boom. The crane is characterized in that it permits the utilization of substantially the full capacity of the main boom, even though extending the crane height to approximately twice the height of the main boom by means of the secondary boom.

3,794,185
CHANGE-OVER UNIT FOR HOISTING APPLIANCES

Fridthof Berg Kroll, 108, Furesovej, Virum, and Berthold Gerhard Lang, 298, Vingetoften, Herlev, both of Denmark
Filed Aug. 23, 1971, Ser. No. 173,781
Claims priority, application Germany, Apr. 5, 1971, 2116544
Int. Cl. B66c *21/00*
U.S. Cl. 212—105 **5 Claims**

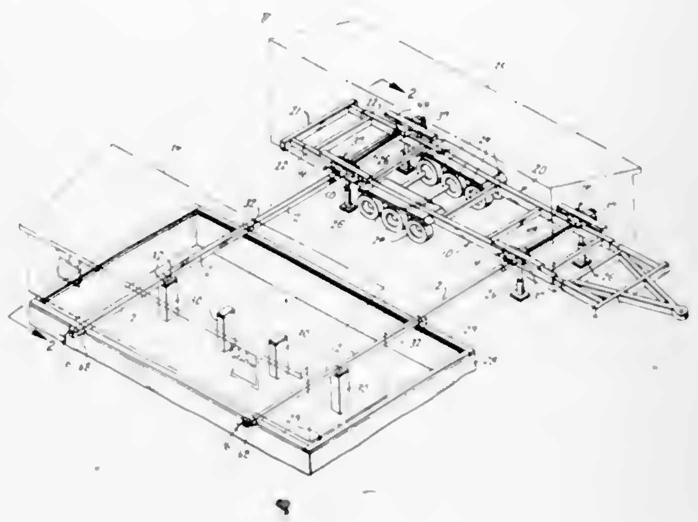


A change-over unit for hoisting appliances with a lower block suspended in a plurality of rope parts from an upper block, and with an intermediate block inserted between said blocks, the intermediate block being adapted to be arbitrarily coupled to the upper block or to the lower block to change the transmission ratio and the permissible load, the upper block (1) being provided with at least one releasable coupling member (11) which is arranged to engage at least one coupling member (15) provided on the intermediate block (8), the lower block (5) having at least one uncoupling member (16) which is designed as a releasing member for the coupling member (11) of the upper block (1), said coupling member being adapted to be arbitrarily placed in a releasing position or a neutral position.

3,794,186
PREFABRICATED HOUSE MODULE MOVING SYSTEM, METHOD OF MOVING HOUSE MODULES, AND UNITS THEREOF

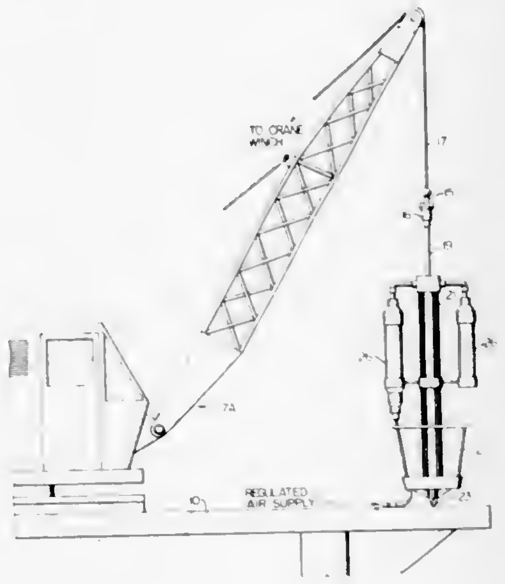
Bobby G. Baxter, Warrenton, Mo., assignor to The Binkley Company, Warrenton, Mo.
Filed Jan. 7, 1972, Ser. No. 216,204
Int. Cl. B65g *67/24*
U.S. Cl. 214—1 H **14 Claims**

This is a novel prefabricated house module moving system, a novel method of effecting same, and novel operating units thereof. The novel system includes a tractor-drawn, lengthwise adjustable transporter or trailer of chassis-type construction for moving house modules and the like from a fabrication center to a house foundation. At the foundation site two parallel roller tracks of connected segments are disposed under the first house module on the transporter between the transporter and a foundation for the house, and across the house foundation. Novel four-way roller pads are placed under the house module on the tracks which receive the house module for movement from the transporter to the house foundation under a lateral winching action. When in position above the foundation, the module is centered through maneuvering of the four-way movable adjustable pads, the module is jacked up and the roller pads are rolled from beneath it and beneath a second house module on a transporter which has been moved into place beside the foundation. The second module is similarly moved onto the foundation, centered, and jacked up. The track and rollers are moved from beneath both modules and the two units are lowered onto the foundation.



3,794,187
SYSTEM AND APPARATUS FOR TRANSFER OF PERSONNEL/CARGO BETWEEN A MARINE PLATFORM AND CREW BOAT

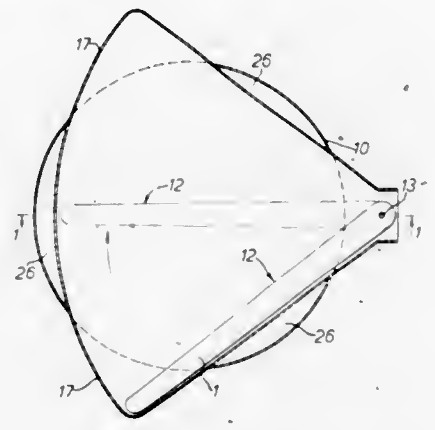
Rudolph A. Begault, 1717 Disney Dr., Metairie, La. 70003
Filed Nov. 22, 1972, Ser. No. 308,825
Int. Cl. B65g *67/58*
U.S. Cl. 214—14 **6 Claims**



The present disclosure is directed to a system and apparatus for employing the compressibility of a gas (air) to provide a variable length, load carrying, member in a suspension system used for transporting a load (personnel, cargo, provision, etc.) from one point to another, between which points there is relative motion. This device incorporates the foregoing basic idea into a system which eliminates relative oscillatory motion between a load and an oscillating point to which the load is being transferred, while allowing relative linear motion between the load and the oscillating point.

3,794,188
STORAGE SILOS AND BOTTOM UNLOADERS THEREFOR

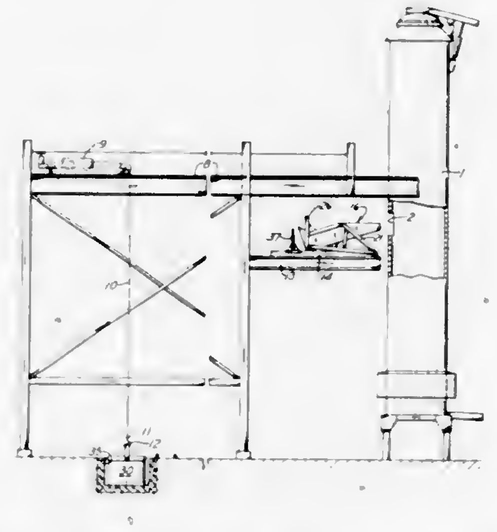
Dennis Denman, Princes Risborough, England, assignor to Austin Hoy and Company Limited, Buckinghamshire, England
Filed May 17, 1971, Ser. No. 144,020
Int. Cl. B65g *65/24*
U.S. Cl. 214—17 DA **7 Claims**



The invention provides a bottom unloader for a storage silo, of the kind comprising a sweep arm pivoted at a position adjacent to the silo wall and carrying a cutter chain which conveys the cut silage to a discharge outlet, wherein the problem of the silage trapping the sweep arm is overcome by arranging some of the cutters on the chain to be upwardly extending preferably to overlie the top of the arm. In an alternative embodiment the cutter teeth are pivoted on the chain so that when the chain is moved in one direction round the arm the teeth extend at right-angles to the chain and when the chain is moved in the opposite direction the teeth move into an inoperative position in which they extend parallel to the chain.

3,794,189
CUPOLA CHARGING APPARATUS

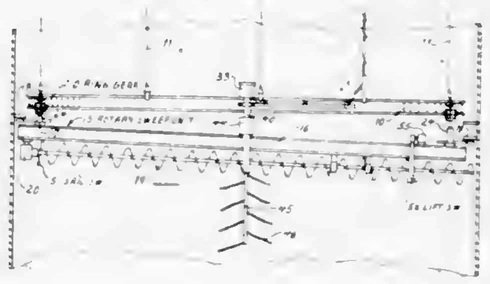
John C. Steighner, Jeannette, Pa., assignor to The Hockensmith Corporation, Penn, Pa.
Filed Sept. 29, 1971, Ser. No. 184,820
Int. Cl. F23k *3/00*
U.S. Cl. 214—18 SC **2 Claims**



A normally reclining chute with a front discharge end adapted to be disposed beside a charging opening in the side of a cupola has means beneath its front end pivotally supporting it on a transverse axis. A charging bucket narrower than the back of the chute has laterally projecting trunnions at its bottom that can be lowered onto supporting means carried by opposite sides of the rear end of the chute, whereupon the bucket will tilt forward and down into the chute. The rear end of the chute then is raised to tilt the chute forward for discharging the contents of the bucket from the front end of the chute.

3,794,190
SLANTED-AUGER SPREADER/UNLOADER FOR FEED STORAGE TANKS

Charles F. Lambert, Jr., Louisville, Ky., assignor to Clayton & Lambert Manufacturing Company, Bucker, Ky.
Filed June 2, 1972, Ser. No. 258,978
Int. Cl. B65g *65/32, 65/38*
U.S. Cl. 214—17 CA **12 Claims**

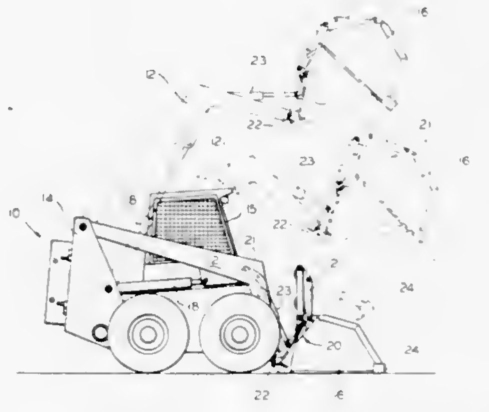


A spreader/unloader composed of a ring gear, a rotary sweep unit of the diametric auger type and a hole former, has its diametric auger inclined and connected for rotation in one direction such that, during both filling and emptying, the augers always move the silage into the auger space between them and uphill along that space. With this arrangement, their upper slanted halves or radius sections operate as an "uphill" spreader during filling while their lower slanted halves operate as an "uphill" unloader during emptying.

It also has a hole former comprising: a vertical member depending from the frame along the center axis of the ring gear; cutter chains centered on said member; and motorized means for whirling said cutter chains horizontally. By whirling the cutter chains during the filling operation or between the filling and emptying operations, a center hole of uniform diameter can be formed entirely through the height of the silage column to ready the installation for the unloading or emptying operations.

3,794,191
HIGH DUMP BUCKET LINKAGE

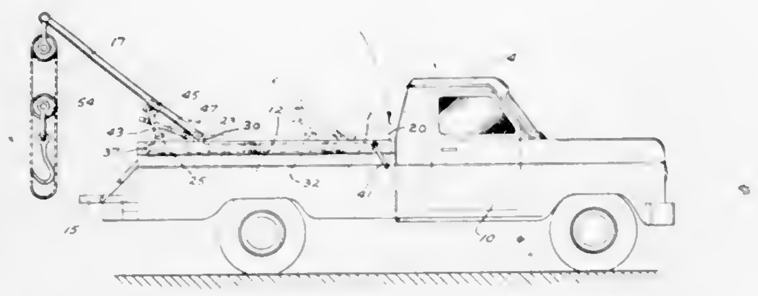
Patrick Kuhn, Lisbon, N. Dak., assignor to Clark Equipment Company, Buchanan, Mich.
Filed July 17, 1972, Ser. No. 272,237
Int. Cl. E02f *3/28*
U.S. Cl. 214—774 **5 Claims**



A bucket linkage for an end loader type vehicle which effects upward and forward dumping movement of the bucket about an axis adjacent the cutting edge utilizing link members so arranged as to obtain a high ratio of bucket travel to cylinder displacement for greater lift height and bucket reach characteristics.

3,794,192
PICKUP TRUCK HOIST SUPPORT

Charles D. Monson, Coon Rapids, Minn., assignor to Inventors Engineering, Inc., Minneapolis, Minn.
Filed June 17, 1970, Ser. No. 46,899
Int. Cl. B60p *1/54*
U.S. Cl. 214—75 H **7 Claims**

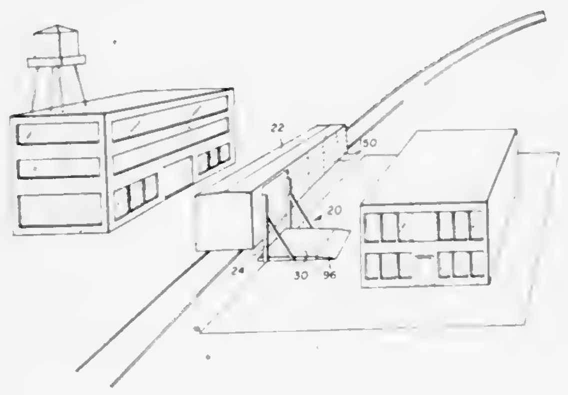


A folding support frame for boxes of pickup trucks which can be used for supporting a chain hoist or the like, and which will fold into a compact storage position on the top of the pickup box without having any members interfering with the box capacity.

The support pivots to its operative position and has automatically raisable support linkages. The support frame can be moved longitudinally in direction along the box to place items held by a hoist into the pickup truck box.

3,794,193
CARGO HANDLING MECHANISM

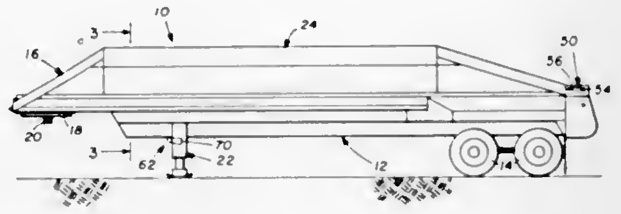
Warren O. Fleenor, 8250 W. Bergen Rd., Leroy, N.Y. 14482
Filed Dec. 17, 1971, Ser. No. 209,109
Int. Cl. B60p *1/44*
U.S. Cl. 214—75 G **10 Claims**



A cargo handling mechanism for use on an enclosing structure, such as a railroad car or the like, for loading cargo into or unloading cargo from the car. The cargo handling mechanism is preferably mounted in a vertical orientation for lateral movement, and has a door that is vertically movable to a selected position, and then pivotally movable in the selected position between open and closed positions. The cargo handling mechanism is a self-contained unit containing the controls and power source for laterally moving the mechanism, and vertically and pivotally moving the door. The lateral movement of the mechanism is desirable for horizontally aligning the door with a desired cargo space in the enclosing structure. Once aligned, the vertical movement of the door is desirable for aligning the lower end of the door with the cargo-supporting surface in the enclosing structure. The door is pivotally movable from a normaly closed position, in which it blocks entry to the enclosing structure and assumes a compact position for transport and handling of the mechanism, to an open position, in which the door forms a platform over which cargo may be loaded into or unloaded from the enclosing structure.

3,794,194
SELF-UNLOADING MATERIAL DELIVERY SYSTEM

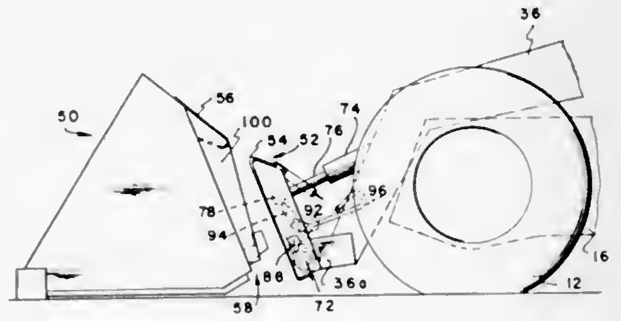
John H. Holland, Norman, Okla., assignor to Arkansas Rock and Gravel Company, Murfreeboro, Ark.
Filed Dec. 1, 1971, Ser. No. 203,739
Int. Cl. B60p *1/38*
U.S. Cl. 214—83.36 **13 Claims**



A self-unloading particulate material delivery system includes a material receiving hopper comprised of a front wall and side walls that slope inwardly and downwardly and a floor positioned beneath the lower ends of the walls. The rear of the hopper is open and the side walls and the floor extend beyond the rear of the hopper to form a discharge chute. A conveyor includes a pair of drive chains and a plurality of flights connected between the drive chains for movement thereby around a course extending through the hopper and the chute to unload material from the hopper. A flow indicator comprises a plate pivotally supported at the rear of the chute for actuation by material moving therethrough under the action of the conveyor to provide an output indicative of the rate of flow of material out of the delivery system. A flight locator includes a lever mounted in the path of the flights of the conveyor to provide an output indicative of the positioning of the conveyor flights relative to the course of the conveyor.

3,794,195
QUICK-ATTACHING MECHANISM

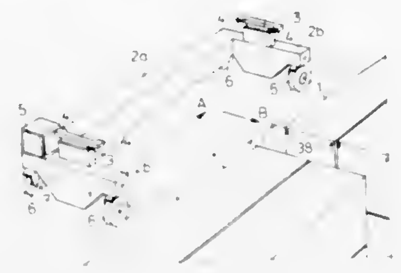
James T. Clevenger, Lancaster, and John L. Stohler, Ephrata, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.
Filed Sept. 9, 1971, Ser. No. 178,996
Int. Cl. E02f *3/70*
U.S. Cl. 214—145 **11 Claims**



A quick-attaching mechanism for coupling a material handling implement to the remote end of a boom structure extending from a loader. The quick-attaching mechanism includes a mounting lip or cavity formed along an upper rear portion of the material handling implement and particularly adapted to receive an upper edge of a mounting plate that is pivotally mounted to the remote end of the boom structure. In addition, an over-center wedging mechanism is provided with said mounting plate for engagement with a pair of hook members that are fixed to said material handling implement and extend rearwardly therefrom, through openings within said mounting plate.

3,794,196
CARRIER FOR CONTAINERS

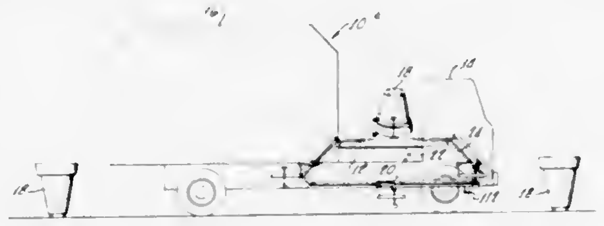
Matti Terho, Haikankatu 10, Naistenmatka, and Reijo Tutto, Peltolamminkatu 2D25, Tampere, both of Finland
Continuation-in-part of Ser. No. 85,920, Nov. 2, 1970. This application Jan. 18, 1972, Ser. No. 218,710
Int. Cl. B60p *1/64*
U.S. Cl. 214—390 **1 Claim**



A carrier for the loading and unloading of elongated freight containers includes a U-shaped body consisting of beams forming an inner space corresponding to the size of the container, and hydraulic means gripping and lifting the container. The U-shaped body has four wheels at its corners with hydraulic motors and steering means, an engine and a hydraulic pump driven by the engine and operatively connected with the hydraulic wheel motors, the steering means and the hydraulic gripping and lifting means. The operative connections of the pump include control means.

3,794,197
NON-STOP REFUSE COLLECTION SYSTEM

Marcel G. Stragier, 8201 Monterey Way, Scottsdale, Ariz. 85251
Continuation of Ser. No. 15,421, March 2, 1970, abandoned. This application Nov. 17, 1971, Ser. No. 199,756
Int. Cl. B65f *3/02*
U.S. Cl. 214—302 **24 Claims**

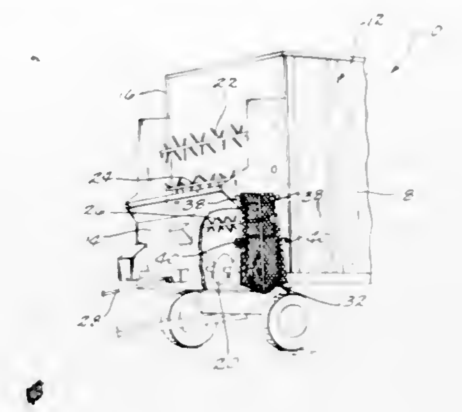


A device designed to be mounted on the side of a garbage pick-up vehicle and adapted to engage and invert refuse containers to transfer the contents thereof into the bed of said vehicle while the vehicle is in motion, allowing the vehicle to collect garbage placed along a roadway in a non-stop operation without manual handling.

3,794,198
SAFETY DOOR FOR THE UNLOADING MECHANISM OF SELF-UNLOADING WAGONS

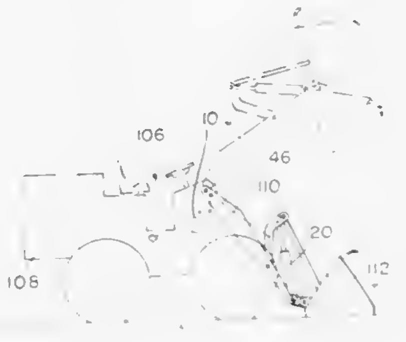
Wesley F. Buchele, and Leo C. Peters, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa
Filed June 12, 1972, Ser. No. 261,930
Int. Cl. B60p *1/40*
U.S. Cl. 214—519 **5 Claims**

A safety door for the discharge opening of a self-unloading wagon is disclosed herein. The wagon includes a material receiving box having a first conveyor therein for conveying the material towards one end thereof. A cross conveyor is mounted at the one end of the box for conveying the material outwardly from the box through the lower end of a discharge opening formed in the side of the box. A material beater means is rotatably mounted in the box above the cross conveyor. The safety door extends across the discharge opening to prevent the operator from reaching inwardly through the discharge opening. The safety door is self-closing and is opened by the material being discharged outwardly through the discharge opening.



3,794,199
HYDRAULIC SELF-LEVELING DEVICE FOR A LOADER BUCKET

Richard J. Bromberek, Lockport; Robert J. Oliver, Westmont; Rudolph E. Yeh, Elmhurst, and Gale A. Holloway, Joliet, all of Ill., assignors to International Harvester Company, Chicago, Ill.
Filed May 2, 1972, Ser. No. 249,641
Int. Cl. E02f *3/86*
U.S. Cl. 214—763 **7 Claims**



A mechanically actuated single valve which has a sequence of opening and closing port connections controlled by a timed spool. The timing of the spool in conjunction with a priority system is such that upon actuation of the self-leveling valve, manual rollback of the bucket is no longer possible.

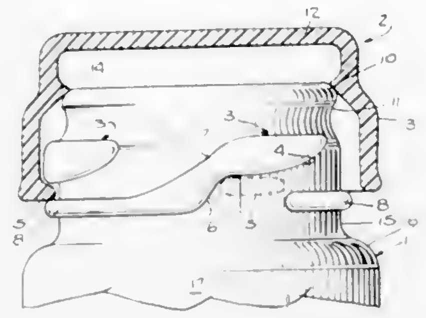
3,794,200
SAFETY CLOSURE AND PACKAGE

Walter J. Marks, Mississauga, Ontario, Canada, assignor to Anchor Cap & Closure Corporation of Canada, Limited, Toronto, Ontario, Calif.
Filed July 25, 1972, Ser. No. 274,988
Claims priority, application Canada, July 26, 1971, 119114
Int. Cl. A61j *1/00;* **B65d** *55/02*
U.S. Cl. 215—9 **24 Claims**

A safety closure is described for use in sealing glass or similar containers and which may be used as a regular easily removed twist-on twist-off closure or, alternatively, at the option of the user as a locked safety closure for preventing removal of the closure cap be children. The container and the closure cap have cooperating lugs which engage in the usual manner for permitting the closure cap to be used in an unlocked or freely removable manner. A sealing bead is included

the closure device includes a wrench engageable with the

at least partially separated from the closure by pressing it in the cap for sealing the package in the unlocked use. A pair of cap engaging grooves are provided on the container finish in addition to the cap lugs for engaging the sealing bead and the cap lugs in the locked position and which act to prevent removal of the cap by children.



3,794,201

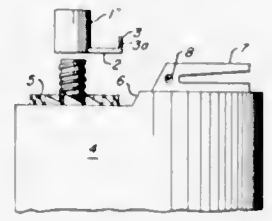
SECURELY CLOSED CONTAINERS

Herbert W. Galer, Circleville, Ohio, assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Feb. 25, 1971, Ser. No. 118,798

Int. Cl. B65d *55/02*

U.S. Cl. 215—9 **9 Claims**



Containers are provided with ratchet locking mechanisms that prevent loosening of closures from vibration or otherwise but may be easily released when the closure is to be removed.

3,794,202

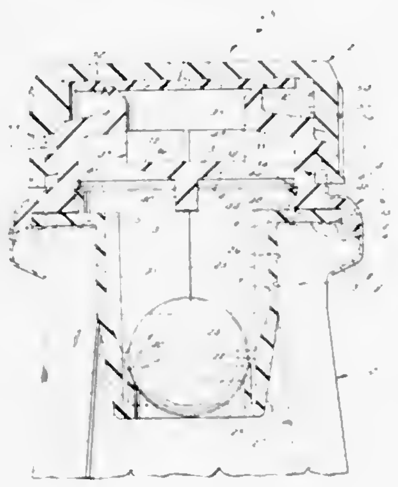
NON-REFILLABLE POURING CLOSURE FOR LIQUOR BOTTLES

Earl D. Unger, Louisville, Ky., assignor to Joseph E. Seagram & Sons, Inc., New York, N.Y.

Filed Mar. 26, 1971, Ser. No. 128,274

Int. Cl. B65d *49/02*

U.S. Cl. 215—22 **16 Claims**



A non-refillable pouring closure for liquor bottles is provided with a check valve disposed interiorly of the bottle neck. This valve includes a ball cage within which a ball is adapted to seal the opening in the valve seat defined by the cage to prevent spurious liquids to be poured into the bottle following removal of the legitimate contents of the bottle. The ball is adapted to be advantageously unseated when it is desired to pour the legitimate liquor in the bottle for consumption upon tilting of the bottle to the desired pouring angle. Guide ribs on the interior of the cage assures proper movement of the ball therein between the ball valve opening and closing positions. A pouring spout or cowl extends upwardly and outwardly from the ball cage to facilitate pouring of the bottle contents. The cowl and the cage define a space within which a guard plate is adapted to be disposed. This guard plate permits pouring of the liquor from the bottle but, at the same time, prevents foreign objects from being inserted into the cowl with a view towards unseating the ball in an effort to refill the bottle with a spurious liquor. A locking band engages with the open end of the bottle neck and surfaces of the cowl to secure the cowl and ball cage to the bottle neck. A removable closure cap containing a liner is adapted to close the bottle and particularly seal off the upper open end of the cowl. This closure cap is removed when it is desired to pour or drain the liquor contents of the bottle.

3,794,203

THERMOPLASTIC LINED HOLLOW METAL BODIES AND METHOD

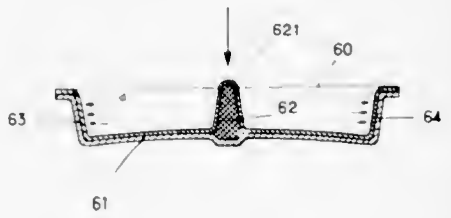
Bernard Baumann, Paris, France, assignor to CEGEDUR Societe de Transformation de L'Aluminium PECHINEY, Paris, France

Filed Sept. 18, 1970, Ser. No. 73,446

Claims priority, application France, Sept. 18, 1969, 69.31788

Int. Cl. B65d *7/02, 25/14, 87/12*

U.S. Cl. 220—5 A **1 Claim**



Fuel tank and other hollow metal bodies internally lined with a thermoplastic material wherein a heated sheet of the thermoplastic material is laid over the previously formed hollow metal body with the plastic sheet in engagement with the edge of said body and the sheet is deformed to correspond to the internal shape of said body by drawing a vacuum through a foraminous vacuum tubing which remains entrapped between said sheet and body to become a part thereof and which includes the addition of porous and permeable bodies connected to the vacuum system for formation of said sheet liner with sections which extend from the metal body, and fuel tanks formed by the joinder of such lined body portions in sealed relation along the meeting edges of the plastic lining.

3,794,204

CLOSURE DEVICE

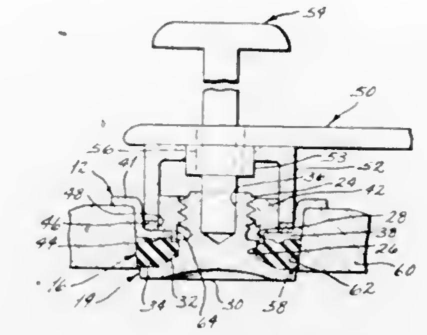
Eugene E. Wehmeyer, c/o Provident Tool Engineering Co., 4501 Swan Ave., St. Louis, Mo. 63110

Filed Aug. 13, 1971, Ser. No. 171,641

Int. Cl. B65d *39/12*

U.S. Cl. 220—24.5 **13 Claims**

A closure device for sealing the opening of a refillable container, the closure device including spaced pressure members having a soft resiliently deformable washer member sandwiched therebetween, and a tightening member engageable with a neck portion of one of the pressure members for drawing the pressure members together. Tightening apparatus for the closure device includes a wrench engageable with the tightening member and a key member engageable with the pressure member neck portion for holding the closure device in fixed position during movement of the tightening member by the wrench.



3,794,205

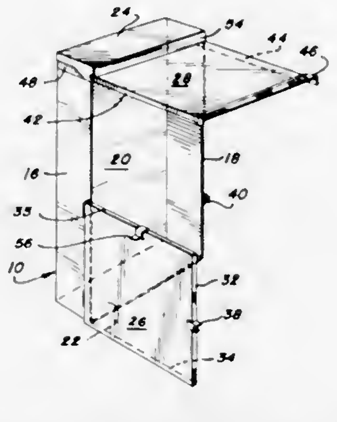
RAINTIGHT ENCLOSURE WITH MULTIPLE COVERS

William T. Cantrell, Lexington, Ky., assignor to Square D Company, Park Ridge, Ill.

Filed July 25, 1972, Ser. No. 274,923

Int. Cl. B65d *51/18*

U.S. Cl. 220—29 **7 Claims**



An enclosure has a rear wall, a pair of opposite side walls, a bottom wall, a flange cap providing a top wall, and a front cover including upper and lower cover portions each having side flanges. The side flanges of the upper cover portion are pivotally connected to the enclosure side walls at their upper front portions, one side flange of the lower cover portion is pivotally connected to one enclosure side wall and the upper cover portion overlaps the lower cover portion when the lower cover portion and upper cover portion are closed.

3,794,206

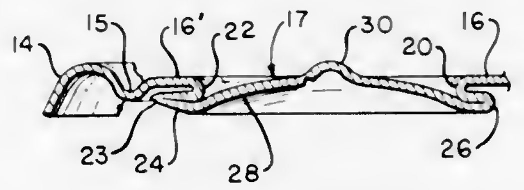
FRANGIBLE OPENING MEANS FOR A CONTAINER LID

John W. De Line, 6011 E. Sixth Ave., Denver, Colo. 80220, and Nobel N. Ida, Boulder, Colo., assignors to John W. De Line, Denver, Colo., by said Ida N. Nobel

Filed Apr. 6, 1972, Ser. No. 241,642

Int. Cl. B65d *17/00*

U.S. Cl. 220—27 **15 Claims**



A container lid for beverage containers and the like has a tear strip formed as a unitary part of the closure which can be at least partially separated from the closure by pressing it downwardly to displace it into the container about a hinge point in such a way as to leave a protected opening for removal of the contents from the container.

3,794,207

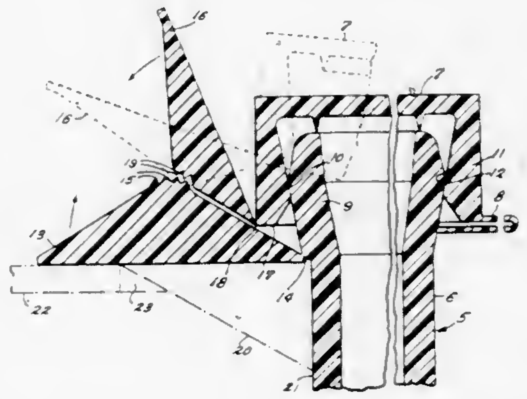
SNAP-ON CLOSURE OPENING DEVICE

Charles J. Hunt, Morning View, Ky., assignor to Vulcan Corporation, Cincinnati, Ohio

Filed Aug. 9, 1972, Ser. No. 279,220

Int. Cl. B65d *43/16, 51/10*

U.S. Cl. 220—36 **4 Claims**



An opening device for removable, snap-on container closures comprising a pair of pivotably associated tabs, one tab being hingedly connected to a container part and the other tab connected to the container closure whereby the container and the closure attached ends of the tabs work away from each other to open the container when the opposed free ends of said tabs are manual moved toward one another.

3,794,208

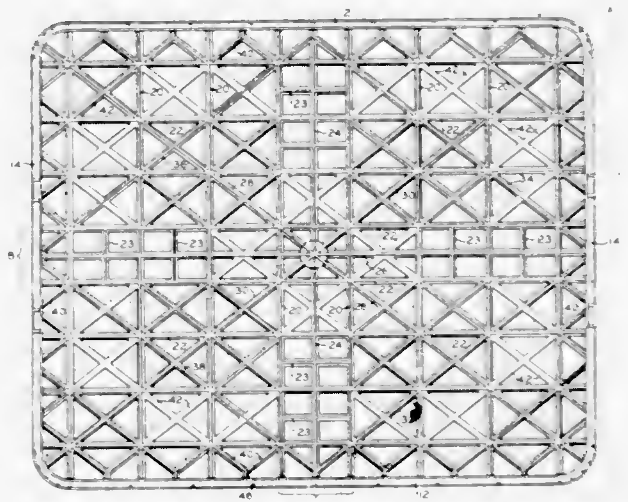
TRAY

Gale S. Roush, and Hugh B. Fraser, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 26, 1972, Ser. No. 257,230

Int. Cl. B65d *7/42*

U.S. Cl. 220—66 **17 Claims**



A tray comprising upstanding side and end walls and a gridwork bottom disposed between the lower edge portions of said walls. Each of said walls preferably comprises an essentially vertical lower section and an outwardly sloping upper section. Said gridwork bottom comprises a plurality of intersecting struts which form rows of rectangles generally parallel with said walls. Reinforcing strut members are provided in intersecting centrally disposed rows of said rectangles. A transverse strut member in at least one of said centrally disposed rows of rectangles provides a location for a denesting device to hook onto the gridwork bottom and remove a tray from a stack of nested trays.

3,794,209
COVER PLATE FOR COVERING THE OUTER PERIPHERY OF A WIRE REEL

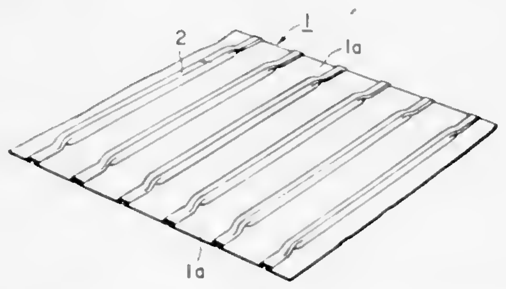
Toru Mizuguchi; Mitsuo Fujita, and Yoshiaki Suzuki, all of Yokohama, Japan, assignors to The Furukawa Electric Company Limited and Toko Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed July 26, 1971, Ser. No. 166,229

Claims priority, application Japan, Aug. 1, 1970, 45-67418; Aug. 25, 1970, 45-84048; Aug. 25, 1970, 45-84049

Int. Cl. B65d *7/46, 85/66*

U.S. Cl. 220—72 **3 Claims**



A cover plate for covering the outer periphery of a wire reel comprising an elongate metal plate including on its inner surface a plurality of reinforcing grooves extending continuously across the metal plate and separated in the lengthwise direction of the metal plate, said groove being dimensioned to have a depth sufficient to be deformed into two symmetrically inwards re-entrant bent portions when subjected at the intermediate of the opposite side walls of the groove to an external force produced when the bottom portion of the groove is depressed and in which the re-entrant bent portions are deformed into a flat laminated surface by further depression at opposite side edges of the groove. A method of manufacturing said cover plate, comprising the steps of forming said grooves, depressing the bottom portion of said grooves to form said two symmetrically inwards re-entrant bent portions, and further depressing said re-entrant bent portions into said flat liminated surface. A cover plate manufacturing apparatus comprising a press bed, a pair of restrictable members and a plunger member.

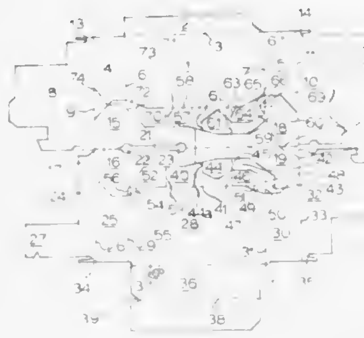
3,794,210
ARTICLE CARRIER

James T. Stout, Doraville, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed June 12, 1972, Ser. No. 261,729

Int. Cl. B65d *85/00*

U.S. Cl. 220—113 **10 Claims**



A basket style article carrier having bottom, side and end walls and a multi-ply medial handle of the telescoping type secured at its ends to the end walls of the carrier is provided with partition structure which in effect is struck from the handle panels, a part of which is foldably joined thereto and another part of which is foldably joined to the top edge of the adjacent side wall thereby to provide a carrier which is characterized by a high degree of mechanical strength and which requires a minimum of material.

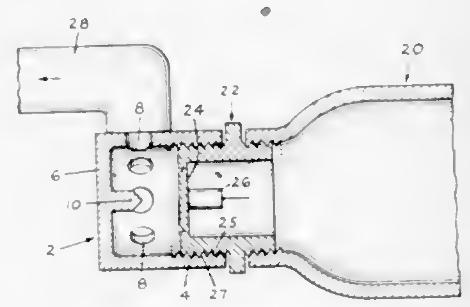
3,794,211
CAP ASSEMBLY

Yogendra S. Loomba, Roseville, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed June 9, 1971, Ser. No. 151,401

Int. Cl. B65d *47/36*

U.S. Cl. 220—89 A **2 Claims**



A cap assembly provided with means for attachment to the outlet of a gas storage bottle. The assembly, which totally encloses the outlet of the bottle, is provided with a plurality of equidistantly spaced apertures. In the event that the closed outlet is inadvertently opened, gas is released through the apertures without any thrust development. The cap assembly of the instant invention is particularly designed for use with a gas generator of the type used in inflatable gas bag assemblies.

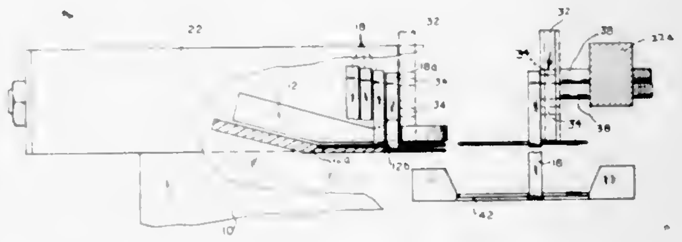
3,794,212
AUTOMATIC WIRE CLAMP FEEDING DEVICE FOR BOTTLES

Mathias M. Check, Greenwich, Conn., assignor to Alfred E. Miller, Greenwich, Conn., a part interest

Filed Apr. 27, 1972, Ser. No. 247,961

Int. Cl. B65g *59/04*

U.S. Cl. 221—212 **6 Claims**



An automatic device for feeding loop-shaped wire clamps for application to the necks of bottles of wine, champagne, and the like. The device includes a chute for holding a nested pack of wire clamps and means for individually separating the leading clamp from the pack and a magnetic arrangement for carrying and depositing the same in a receptacle whereby the wire clamp can be automatically removed for application to the bottle.

ERRATUM

For Class 221—310 see:
Patent No. 3,794,214

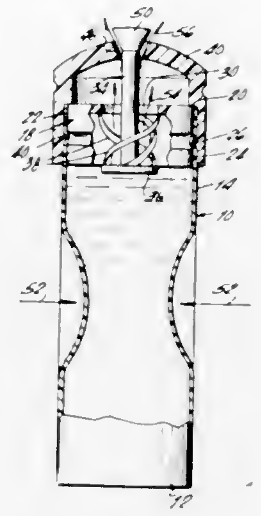
3,794,213
TUBE MOUNTED APPLICATOR

Gilbert Schwartzman, 20 Wilmot Cir., Scarsdale, N.Y. 10583

Filed Apr. 17, 1972, Ser. No. 244,561

Int. Cl. B65d *35/54*

U.S. Cl. 222—107 **1 Claim**



An applicator comprising a squeezeable container, a cap surrounding the upper part of the container and having an opening therein forming a valve seat. The cap has an inwardly extending flange on the inner surface thereof. A mounting ring is concentric with the container and has a groove therein and is force fitted in the container with the flange being locked in the upper part forcing a portion of the upper part into the groove thereby holding said upper part, said mounting ring, and said container in assembled condition. An enlarged valve head connected to the mounting ring and located [illegible] the opening and engageable with the valve seat to close the opening is formed by heat and pressure after the step of force fitting.

3,794,214
PACKAGE FOR AUTOMATIC PENCIL LEADS

Lasse Kuparinen, Hamburg, Germany, assignor to Koh-I-Noor Rapidograph, Inc., Bloomsbury, N.J.

Filed Jan. 26, 1973, Ser. No. 326,902

Claims priority, application Germany, Jan. 27, 1972, 7202879

Int. Cl. B65d *83/02*

U.S. Cl. 221—310 **7 Claims**

A lead package for leads of the type used in "automatic" pencils. Particularly, a housing having a bifurcated fork portion which locks a slidable lead storage portion within the housing. The lead storage portion may be reciprocated longitudinally so as to split the bifurcated portion of the housing and thus extend the ends of the leads for removal outwardly of the front end of the housing.

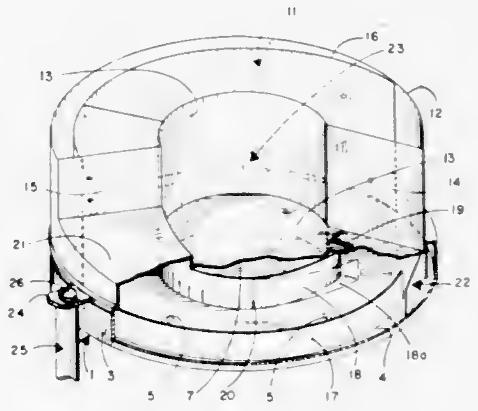
3,794,215
POWDER COMPACTING APPARATUS FOR USE WITH A MECHANISM FOR AUTOMATICALLY MEASURING AND DISPENSING UNIT QUANTITIES OF DRY POWDER

Joseph C. Osterhaus, Port Jefferson, N.Y., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed May 12, 1972, Ser. No. 252,795

Int. Cl. B65b *13/20*

U.S. Cl. 222—1 **19 Claims**



Powder compacting apparatus for use with a mechanism for automatically measuring and dispensing unit quantities of dry powder comprising means for transporting said dry powder through a tunnel having a progressively diminishing cross-sectional area wherein said dry powder is compacted to a uniform density immediately preceding and during the process of the measuring of the unit quantities of the dry powder.

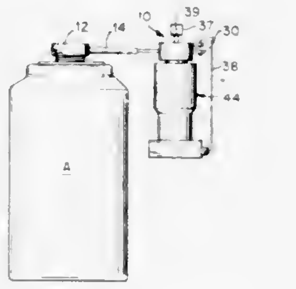
3,794,216
PRESSURE POWERED AEROSOL TIMER

Willard E. Buck, deceased, late of Lake Havasu City, Ariz. (by Gwynne Buck, executrix), assignor to Spray-A-Matic Products, Inc., New York, N.Y.

Filed Feb. 22, 1973, Ser. No. 334,759

Int. Cl. B65d *83/14*

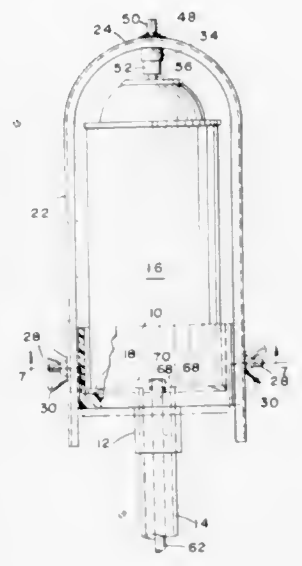
U.S. Cl. 222—70 **8 Claims**



A pressure powered timer for aerosol spray cans operates automatically to periodically spray the contents of the can at desired, predetermined intervals, the pressure within the can being utilized to actuate the timer.

3,794,217
ELEVATED SPRAY DEVICE

Carl J. Munchel, 17 Maple Rd., York, Pa. 17403
Continuation of Ser. No. 86,760, Nov. 4, 1970, abandoned.
This application Apr. 12, 1972, Ser. No. 243,314
Int. Cl. B65d *83/14*
U.S. Cl. 222—174 **20 Claims**

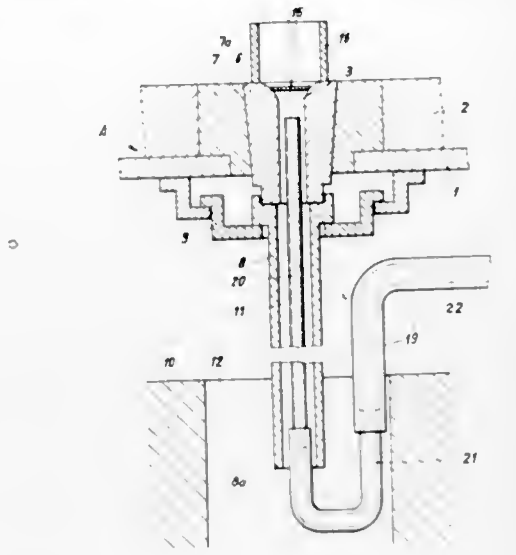


A device adapted to support and actuate, selectively, either a pressurized discharge type container or one equipped with a self-contained pump to adapt the same for operation at extended locations relative to the operator, either vertically or otherwise. Clamping means are adjustable to accommodate containers of either type of different heights, diameters and shapes, and elongated handle means extend from the clamping means and include a push rod to move the container relative to its clamping and supporting means to cause opening of the valve of a pressurized container or the pump of a container which includes a pump, and effect discharge of the contents either as a solid stream, atomized spray or a mist at extended distances from the operator. Adapter means and adjustable clamping means selectively permit the reception of various sizes of push caps or tubular valve members or operating heads of the containers.

3,794,218
METHOD AND APPARATUS FOR OPENING A SEALING ELEMENT, WHICH CANNOT BE ACTUATED, OF THE BOTTOM NOZZLE OF A CASTING VESSEL

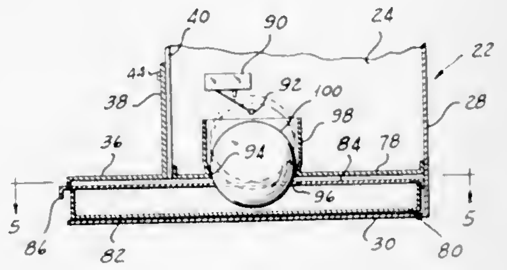
Mareo Yanagida; Susumu Sakanoue; Hideyuki Nakagawa, all of Kurashiki, Japan, and Werner Bruderer, Feldmeilen, Switzerland, assignors to Concast AG, Zurich, Switzerland
Filed Sept. 25, 1972, Ser. No. 291,919
Claims priority, application Switzerland, Sept. 27, 1971, 14059/71
Int. Cl. B22d *32/00*
U.S. Cl. 222—1 **8 Claims**

A method of and apparatus for opening a sealing element, which cannot be actuated, of the bottom nozzle of a casting vessel, especially during continuous casting, wherein the steel which issues is passed through an immersion tube into the next steel receiver. According to the invention an oxygen infeed or lead is introduced through the hollow compartment or cavity associated with the casting jet into the region of the sealing element, the casting vessel together with the immersion tube is brought into the casting position, after introducing the steel at the beginning of casting the sealing element is lanced or burned and the oxygen infeed or lead is removed through the steel which issues from the hollow compartment or cavity associated with the casting jet.



3,794,219
CHARGED CUP BEVERAGE MERCHANDISING MACHINE

Irving Pitel, Edison, and Richard J. Mueller, Mountain Lakes, both of N.J., assignors to Rowe International, Inc., Whippany, N.J.
Filed Sept. 6, 1972, Ser. No. 286,576
Int. Cl. B67d *1/16*
U.S. Cl. 222—108 **15 Claims**

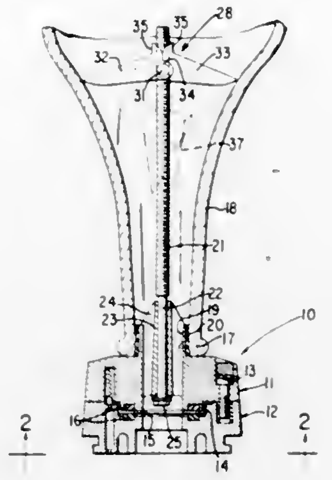


A charged-cup beverage merchandising machine in which in response to the deposit of money a cup delivery mechanism is actuated to deliver a cup containing a charge of dry beverage concentrate to the drain area of a delivery shelf, and then to open a valve to deliver a charge of water to the cup to make the beverage and in which a shallow tray removably supported below the shelf receives a float adapted to operate a switch to disable the machine when the level of liquid overflow or drippings accumulated in the tray is above a predetermined level and which tray can be slid clear of the cabinet for emptying and can be reinserted without disassembly of any of the float or float switch-actuating mechanisms.

3,794,220
TOGGLE NECKLOCK

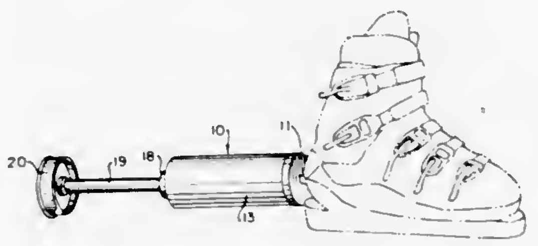
Howard C. Valle, Doylestown, Pa., assignor to Auto Bar Systems Corporation, New York, N.Y.
Continuation of Ser. No. 06,428, Jan. 28, 1970, abandoned.
This application Apr. 5, 1972, Ser. No. 241,472
Int. Cl. B67d *5/32*
U.S. Cl. 222—153 **1 Claim**

A bottle dispenser mounted on the open end of a bottle has a rotatable threaded shaft extending into the neck of the bottle with a toggle nut threaded onto the shaft for combined rotation and translation movement and a pair of oppositely extending wings pivotally mounted on the toggle nut. The wings are expanded to engage the inner surface of the bottle neck and the shaft rotated so that the toggle nut moves therealong to lockingly engage the expanded wing members against the inner surface of the bottle neck.



3,794,221
CARTRIDGE FOR STORING, MIXING AND DISPENSING A PLURALITY OF INGREDIENTS

Fritz Hostettler, Freehold, N.J., and Heinz O. Herzog, Chappaqua, N.Y., assignors to Inter-Polymer Research Corporation, Farmingdale, N.J.
Filed Dec. 6, 1971, Ser. No. 204,997
Int. Cl. B67d *1/08*
U.S. Cl. 222—190 **10 Claims**

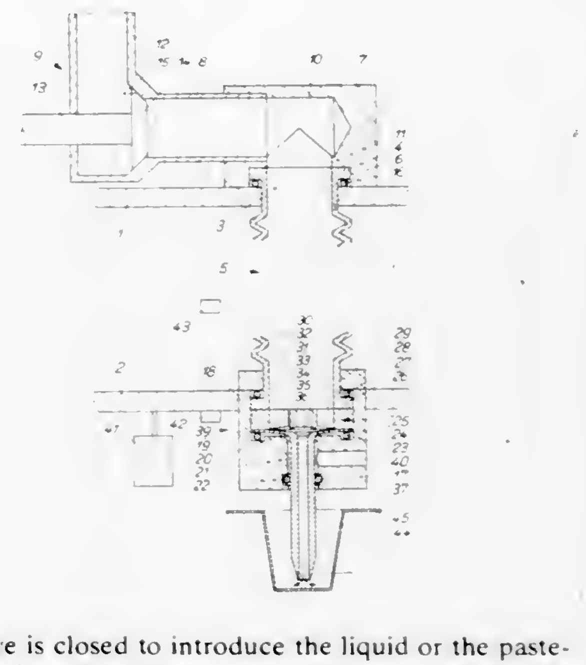


A cartridge for storing separately a plurality of ingredients, at least one of them in a separate frangible envelope within the cartridge, and then for mixing the ingredients and expelling the mixture, includes a cylindrical container apertured at each end, a piston, a piston rod slidably passing through one end of the container and through the piston and having a substantially fluid tight seal with the piston and with the side walls of the container, a mixing element affixed to the rod on the side of the piston remote from that one end of the container, and means to couple the piston to the piston rod to permit drive of the piston lengthwise of the container by the piston rod after rupture of the envelope and mixture of the ingredients by the mixing element.

3,794,222
DOSAGING DEVICE FOR LIQUIDS AND PASTE-LIKE SUBSTANCES

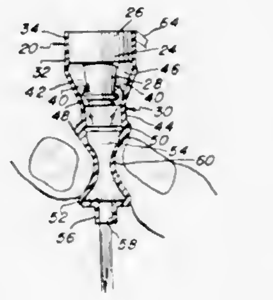
Horst Loewenthal, Tiengen, Germany, assignor to Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland
Filed Mar. 30, 1972, Ser. No. 239,509
Claims priority, application Switzerland, Apr. 6, 1971, 4993/71
Int. Cl. G01f *11/08*
U.S. Cl. 222—207 **3 Claims**

A dosaging device for liquids and paste-like substances is provided with an inlet valve mounted on a horizontal plate which also has attached thereto the upper end of a vertically disposed and vertically compressible bellows. The inlet valve introduces the liquid or paste-like substance into the upper end of the bellows the lower end of which is attached to a horizontal plate carrying a discharge valve and is vertically movable up and down with respect to the other or upper horizontal plate. In operation the inlet valve is opened and the discharge valve is closed to introduce the liquid or the paste-like substance into the bellows by said inlet valve when the lower horizontal plate is moved downwardly, and the inlet valve is closed and the discharge valve is opened to permit the discharge valve to introduce the liquid or the paste-like substance into a cup-like container when the lower horizontal plate is moved upwardly.



3,794,223
CONTAINER DRAINAGE VALVE

Bhupendra C. Patel, Elgin, Ill., assignor to The Kendall Company, Walpole, Mass.
Division of Ser. No. 172,528, Aug. 17, 1971, Pat. No. 3,750,914. This application Nov. 28, 1972, Ser. No. 310,050
Int. Cl. B65d *47/06*
U.S. Cl. 222—529 **10 Claims**



A reciprocating valve for a container, the valve including a stem and seat. The stem is movable between an outer position with the stem spaced from the seat to permit fluid flow from a cavity in the container through the valve, and an inner position with the stem sealingly engaged against the seat to prevent passage of fluid. A flexible tube extends from the valve and has a sufficient length to permit compression of the tube by a user's fingers to regulate the passage of fluid through the tube. A cap is removably positioned on an orifice adjacent the outer end of the tube to selectively close the orifice, and a strap connects the cap with a portion of the valve intermediate a reciprocating portion of the valve and the container. The strap is sufficiently long to permit placement of the cap on the orifice in the inner valve position, but is sufficiently short to prevent movement of the valve from its inner to outer position without removal of the cap from the orifice.

ERRATA

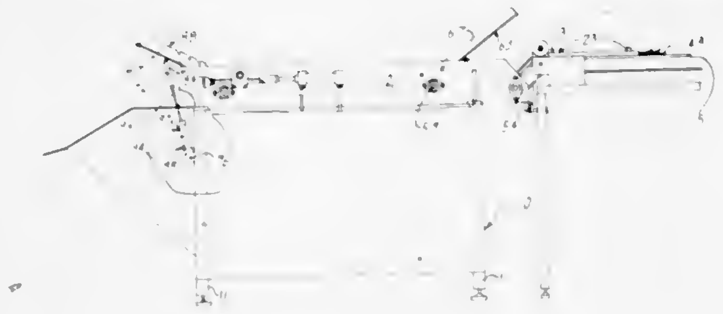
For Classes 222—218 and 222—471 see:
Patents Nos. 3,794,234 and 3,794,235

3,794,224
APPARATUS FOR FOLDING AND STACKING GARMENT PARTS

Fletcher D. Adamson, Alexander City, Ala., assignor to Russell Mills, Inc., Alexander City, Ala.

Filed Dec. 11, 1972, Ser. No. 313,928
Int. Cl. A41h *33/00*

U.S. Cl. 223—37 **10 Claims**



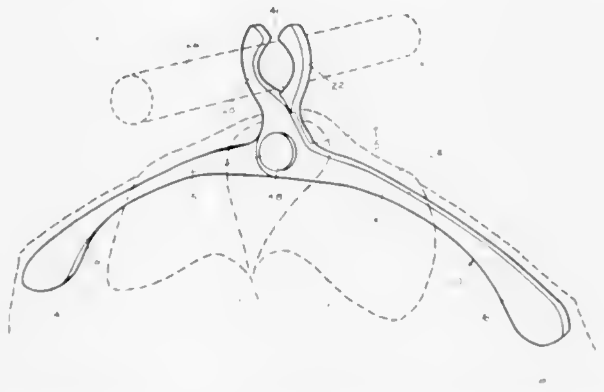
Apparatus for assembling stacks of garment parts such as T-shirt sleeves, which stacks of sleeves are adapted to be transported to a sewing station. The apparatus embodies means adapted to receive a hemmed sleeve blank from an automatic sewing machine which is delivered with the hem portion folded over the body of the sleeve blank, then to unfold the same and press the seam. Subsequent to this operation, the sleeve blank may be folded substantially at its mid-point, upon itself, essentially while in motion on a conveyor. Following the folding step the folded, transversely outstretched blank is lifted bodily from the conveyor and placed in inverted position on a stacker until a stack of a given number is formed. Then, means is provided to dump the entire stack by sliding the same off the stacking station, onto a conveyor or the like which delivers the thus stacked, folded sleeves to a sewing station where they may be closed by sewing, prior to final incorporation into the garment itself.

3,794,225
HANGER

Craig E. Ashton, 2440 Tulip St., Philadelphia, Pa. 19125

Filed June 23, 1972, Ser. No. 265,708
Int. Cl. A41j *51/08*

U.S. Cl. 223—88 **9 Claims**



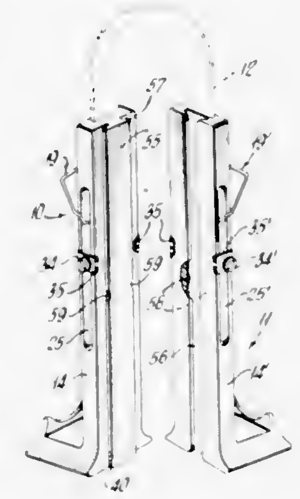
A garment hanger comprising a first L-shaped member and a second L-shaped member, said first and second members being provided at the respective corners thereof with pivot pin receiving openings. A split pivot pin locks within the openings, to pivotally join the first and second members together. The short legs of the first and second members arcuately curve to close upon and grip a hanger rod for garment hanging purposes. The weight of the garment pivots the first and second members about the pivot pin to urge the curved legs into tight engagement with the hanger rod. The split pin includes two cooperating members, each of which is provided with a cam surface and an interlocking surface whereby pressing the split pin sections together causes the members to interact along the respective cam surfaces thereof until the interlocking surfaces tightly engage to pivotally lock the first and second members together to form the garment hanger.

3,794,226
SKI BOOT CARRIER

Robert Penniman, Jericho, Vt., assignor to Barreca Products Co., Subsidiary of Shelbourne Industries, Inc., Shelbourne, Vt.

Division of Ser. No. 91,350, Nov. 20, 1970, Pat. No. 3,721,373. This application Aug. 23, 1972, Ser. No. 283,189
Int. Cl. A45f *5/00*

U.S. Cl. 224—5 R **2 Claims**



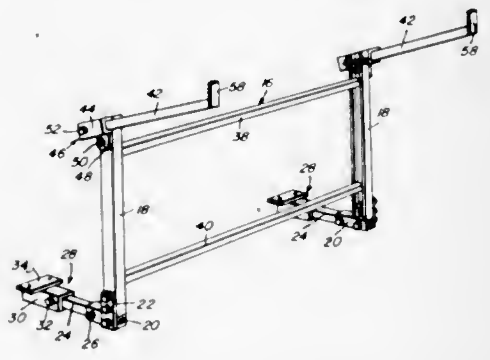
The invention contemplates a boot carrier suitable for ski boots, wherein each boot has its own separate bracket to which it is mounted and adjustably clamped. The brackets are interconnected by a flexible strap to permit the option of shoulder-slung portage. The brackets are also separately interconnectable to provide the further option of mutually braced standing support, for neat storage off the floor.

3,794,227
BICYCLE CARRIER FOR VEHICLES

Stanley D. Stearns, 1641 Coral Gate Dr., Miami, Fla. 33145

Filed May 3, 1972, Ser. No. 250,014
Int. Cl. B60r *9/10*

U.S. Cl. 224—42.01 **6 Claims**



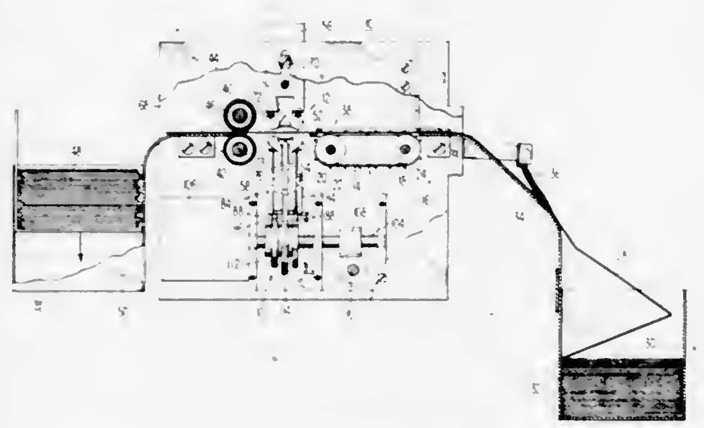
A pair of horizontally spaced uprights including mounting structure at their lower ends for securement from a vehicle end portion and including a pair of support arms having base ends thereof secured to the upper end portions of the uprights with the other ends of the support arms projecting outwardly of the uprights in a direction generally normal to a line extending between the uprights. The base ends of the support arms are pivotally supported from the uprights for angular displacement about generally aligned horizontal axes and the support arms are swingable upwardly from outwardly projecting slightly upwardly inclined positions to positions swung at least somewhat past the vertical. In addition, a support base accessory is provided and includes structure for coaction with and support of the lower end portions of the uprights therefrom by means of the aforementioned mounting structure carried thereby.

3,794,228
BURSTING AND SEPARATING APPARATUS FOR CONTINUOUS FORMS

Richard H. Colwill, Victor; William E. Dewey, Pittsford; Hans Lochmann Vanbennekom, Rochester, and William H. Mowry, Jr., Ionia, all of N.Y., assignors to Burroughs Corporation, Detroit, Mich.

Filed Dec. 22, 1971, Ser. No. 210,737
Int. Cl. B26f *3/02;* **B65h** *35/10*

U.S. Cl. 225—93 **17 Claims**



Apparatus for automatically, continuously bursting and separating individual items at relatively high speed from a continuous series of items such, for example, as manifolded document forms. The invention employs one or more oppositely disposed, substantially rigid, yet deformable members disposed in confronting arrangement in the path of the items to be separated. The deformable members are movable into face contact with the items disposed therebetween so that the items are stretched tautly between the confronting deformable members causing the leading item to be burst apart and separated from the adjoining trailing items. Means adjacent to the deformable members and in the pathway of the items cause the burst item to be rapidly discharged out of the path of the advancing items and into a stacking pocket or hopper or onto a shingling table.

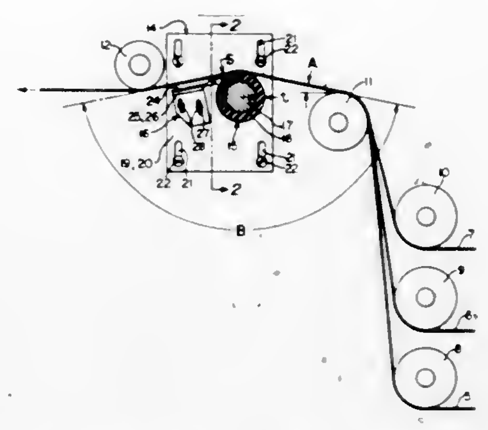
3,794,229
SENSOR FOR DETECTING WIRES TRAPPED ON A CREEL

Edward E. Hunter, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 26, 1973, Ser. No. 354,722
Int. Cl. B65h *25/22*

U.S. Cl. 226—25 **17 Claims**

A mechanism for detecting when a wire, paying out from a spool mounted on a creel, becomes trapped on the creel. The mechanism responds to deactivate the means for paying out all of the wires from the creel, when a trapped wire becomes overly tensioned. The mechanism continually monitors all of the wires while being sensitive to each of the wires should any one of them become trapped and tensioned beyond a certain desired tension.

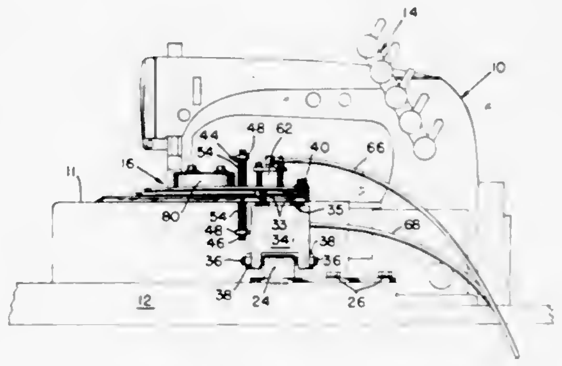


3,794,230
WORK PIECE GUIDE SYSTEM

Carney J. Bryan, Greensboro, and James B. Fulp, Summerfield, both of N.C., assignors to Blue Bell, Inc., Greensboro, N.C.

Continuation of Ser. No. 221,109, Jan. 26, 1972, abandoned, which is a continuation of Ser. No. 877,364, Nov. 17, 1969, abandoned. This application Dec. 26, 1972, Ser. No. 318,623
Int. Cl. D05b *35/10*

U.S. Cl. 226—3 **10 Claims**



A system for accurately controlling and guiding the edge portions of one or more flexible fabric work pieces as they are being fed to a sewing machine stitching zone by applying a biasing or torque force to the work pieces. The torque is responsive to a linear force applied by the feed dogs and to frictional forces applied at pinch points spaced upstream and laterally of the feed dogs which linear force urges the edges of the work pieces into engagement with a guide member for maintaining a line of stitching a predetermined distance away from the edge of each work piece.

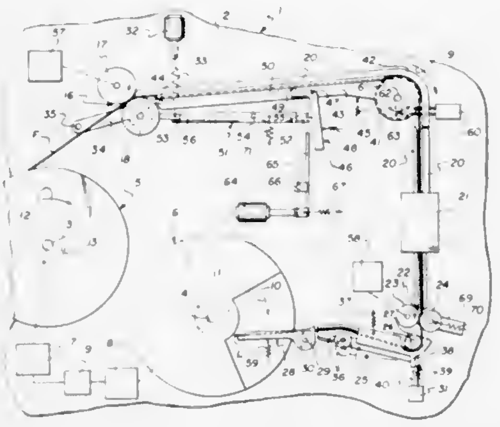
3,794,231
WEB TENSION REGULATING APPARATUS

William A. Martin, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

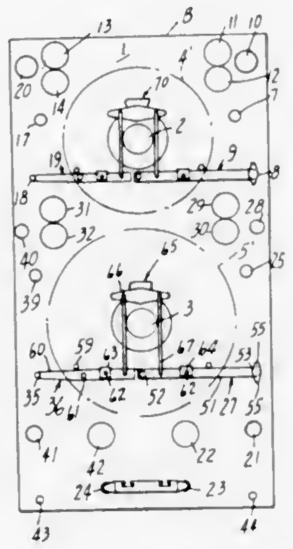
Filed Apr. 5, 1973, Ser. No. 348,446
Int. Cl. B65h *23/16*

U.S. Cl. 226—36 **19 Claims**

A web handling apparatus is adapted to move web material in forward and reverse directions and under varying degrees of web tension. In such apparatus, a web friction drive is actuatable to assume an operative mode for feeding web material, therefrom, in the forward direction toward a web drawing mechanism and at a rate in excess of that at which the drawing mechanism can draw the same material forward. The web friction drive normally assumes an idle mode in which the friction drive does not exert a web feeding affect on web material moving in the forward or reverse directions. A web tension sensing mechanism connects with the web friction drive, for actuating the friction drive to assume the operative mode in response to sensing a given tension in web material which is moving in the forward direction from the friction drive to the web drawing mechanism, and allows the friction drive to assume the idle mode after tension in the same material has eased or slackened. However, the web tension sensing mechanism and web friction drive remain disconnected as web material is moved in the reverse direction. In this way, the web tension sensing mechanism cannot actuate the web friction drive to assume the idle mode during movement of web material in the reverse direction.

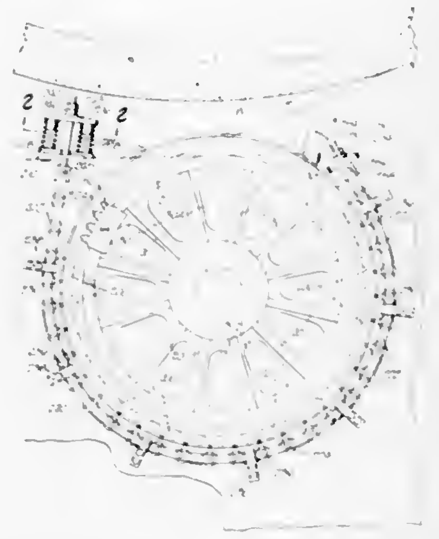


3,794,232
COLLATOR AND WEB FEED CONTROL MEANS FOR THE SAME
Nello J. Petri, 2140 Jones St., San Francisco, Calif. 94133
Filed Jan. 19, 1972, Ser. No. 219,033
Int. Cl. B65h *17/20*
U.S. Cl. 226—50 **8 Claims**



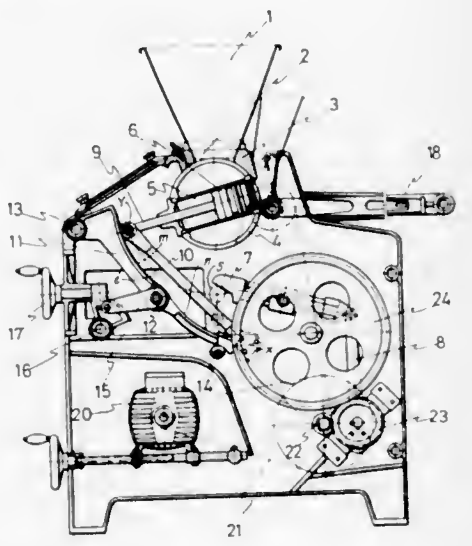
A collator comprising a plurality of rotatably supported paper rolls the paper webs of which are gathered in superimposed layers to form a unitary business form or the like. Provision is made for discharging the webs to one or the other end of the collator to permit the webs of all rolls to be discharged in one direction, all rolls to be discharged in the opposite direction or one or more rolls to be discharged in different directions so as to permit employment of the collator on two different manifolds at the same time. Unique tensioning means is provided for controlling the feed of the web.

3,794,233
MEANS AND TECHNIQUES USEFUL IN WIRE GRIPPING DEVICES
Maximiliaan J. Dykmans, 4434 Mayapan Dr., La Mesa, Calif. 92041
Filed Sept. 30, 1971, Ser. No. 185,327
Int. Cl. B65h *17/22*
U.S. Cl. 226—183 **7 Claims**



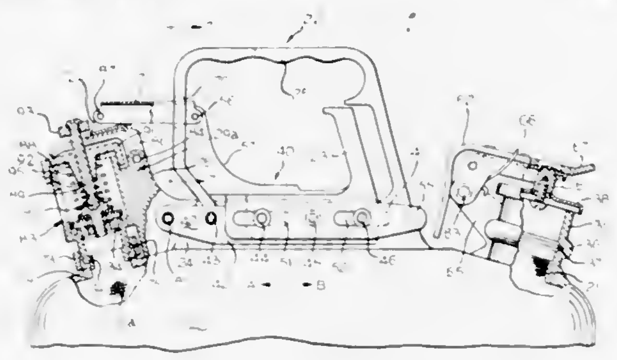
A rotatable cable or wire gripping device has a peripheral V-shaped grooved portion within which a series of pairs of gripping jaws is disposed. Each pair of jaws has its own spring means acting independently to wedge a cable between a pair of jaws. A sprocket wheel connected to the gripping device rotates the same. The cable is wrapped around the practical maximum periphery of the gripping device with a series of loosely mounted rollers retained in corresponding V-shaped grooved portions pressing the cable. These rollers are resiliently urged against the cable by their engagement with rollers of a conventional type conveyor belt generally encircling the device and having one of its ends anchored and the other one of its ends resiliently supported and adjustable to in turn adjust the force on the rollers and hence the cable gripping action.

3,794,234
DOUGH BATCHING MACHINE
Domingo Terren Pardo, Onteniente 7, Valencia, Spain
Filed Dec. 7, 1970, Ser. No. 95,711
Claims priority, application Spain, May 22, 1970, 379968
Int. Cl. G01f *11/00, 13/00*
U.S. Cl. 222—218 **5 Claims**



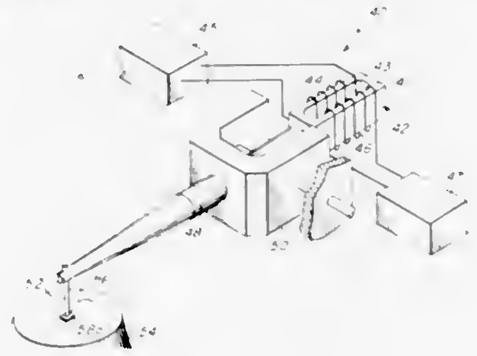
Means for batching bread dough wherein a vertical funnel has an outlet having a curved concave edge viewed in a direction transverse to the outlet. The edge is prolonged at least unilaterally in an arch approximately as wide as the outlet. A rotating body is coaxially disposed to the arched edge of the funnel opening and has a cylindrical cavity transverse to the axis of the body with a piston operating therein. The rotating body has a cylindrical lateral surface capable of closing the outlet. The cavity vertically aligns with the outlet and is capable of directly receiving from the funnel a quantity of dough contained therein so that it may then, upon rotation of the rotating body, deliver an amount of the dough to a point of utilization.

3,794,235
PLASTIC SAFETY CONTAINER FOR INFLAMMABLES
Frank S. Flider, Chicago, Ill., assignor to The Justrite Manufacturing Company, Chicago, Ill.
Continuation-in-part of Ser. No. 97,713, Dec. 14, 1970, Pat. No. 3,727,807. This application Aug. 13, 1971, Ser. No. 171,537
Int. Cl. B65d *47/08*
U.S. Cl. 222—471 **8 Claims**



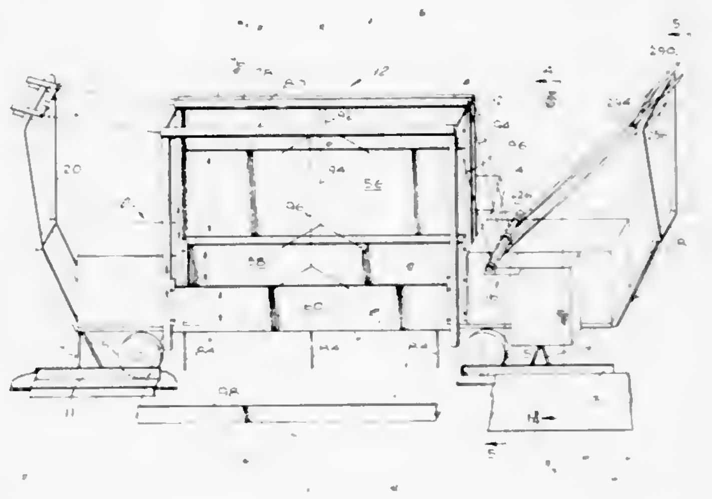
An all-plastic safety container has a hollow plastic wall with a continuously closed inner surface terminating at a pair of openings; one for venting and filling, and one for pouring. An integral, upstanding, thickened fin and handle combination formed on the outside surface of the container, facilitates the attachment of trigger controlled, safety cap linkage and hardware to the can, without breaking through the inner surface. Yet, the container and its handle are mechanically strong enough to withstand severe usage and to lift heavy weights.

3,794,236
MONITORING AND CONTROL MEANS FOR EVALUATING THE PERFORMANCE OF VIBRATORY-TYPE DEVICES
Thomas Salzer, Bedford, and Charles T. Martin, Jr., Lexington, both of Mass., assignors to Raytheon Company, Lexington, Mass.
Continuation of Ser. No. 168,231, Aug. 2, 1971, abandoned. This application May 7, 1973, Ser. No. 358,215
Int. Cl. B23k *5/20*
U.S. Cl. 228—1 **7 Claims**



Apparatus and method for determining the operative effectiveness of a vibrating means coupled to a non-linear load, said apparatus comprising a vibrating means operatively connected to a source of vibratory energy and having coupling means for connecting to a non-linear load, vibration sensing means electrically connected to a harmonic analyzing means having an output electrically connected to an indicator means which may include a display means and a control means.

3,794,237
APPARATUS FOR LAYING SHINGLES OR THE LIKE
Jesus Manuel Hernandez, 2733 Adams St., Long Beach, Calif. 90810
Filed Dec. 14, 1971, Ser. No. 207,828
Int. Cl. B27f *7/02*
U.S. Cl. 227—111 **15 Claims**



A power driven, manually controlled machine for applying and nailing roofing shingles and the like, the machine including guide means for steering the machine with respect to the row of shingles to be applied; a bin adapted for retaining a plurality of shingles vertically oriented for dropping into proper position for nailing; first and second vertically disposed and generally parallel blades selectively operable for first separating a single shingle from the bundle and then releasing it to fall forward against a guide for proper positioning; a third selectively operable vertically disposed blade member having a plurality of hammer projections; a tack separator and feeder assembly actuable with the third blade member for separating, conveying and positioning tacks with respect to a shingle for nailing by the hammer projections. Control is effected at either side of the machine by like sets of two pairs each of control levers operating cables in conjunction with a pulley assembly and drive shaft to effect the proper sequential operations.

ERRATUM

For Class 228—1 see:
Patent No. 3,794,236

3,794,238
RECLOSABLE RECTANGULAR CARDBOARD BOX
Alwin Egli, Beringen, Switzerland, assignor to Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland
Filed Feb. 28, 1972, Ser. No. 229,854
Claims priority, application Switzerland, Mar. 1, 1971, 2950/71
Int. Cl. B65d *5/66*
U.S. Cl. 229—44 CB **1 Claim**

A reclosable rectangular cardboard box is provided with a cover which is swingable about a folding line on the upper edge of the rear wall and has on its front edge a downwardly extending strip overlapping the outer upper margin of the

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has a hook at its lower end to engage the forward portion of

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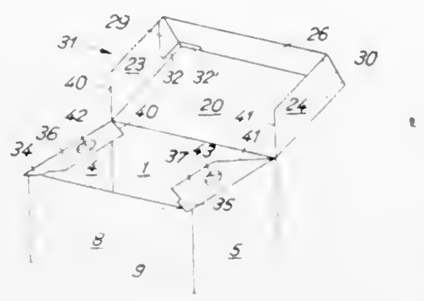
is heated in a boiler and heat transferred to radiators in an

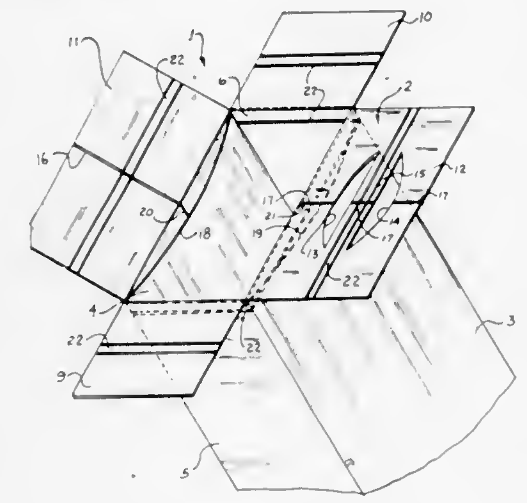
3,794,244

front wall when the cover is closed. Slot-shaped recesses are provided at the ends of the folding line between the cover and said strip for yieldably receiving locking projections formed on the front ends of horizontally disposed flaps which extend from said side walls into the box.



3,794,239
CONVENIENCE HANDLE MEANS FOR CARTON

Bruno C. Bonczyk, East Alton, Ill., assignor to Alton Box Board Company, Alton, Ill.
Filed Apr. 24, 1972, Ser. No. 247,350
Int. Cl. B65d *25/28, 5/46*
U.S. Cl. 229—52 B **16 Claims**

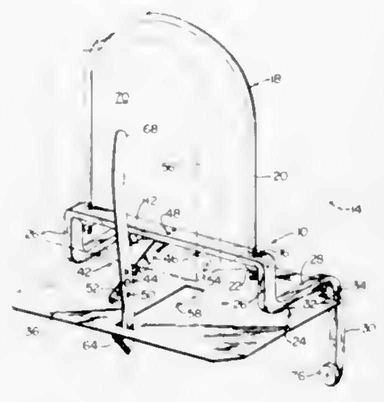


A handle is provided in the upper portion of a carton that incorporates features which facilitate the grasping of the handle means as when the carton is to be lifted and carried away. A series of score lines are arranged across the overlying flaps of the upper end closure of the carton, in addition to the disposition of prearranged score lines proximate the upper edges of select walls of the carton so that as one desires to grasp the aforesaid handle means, his fingers may slightly depress the underlying flap and bulge the carton walls to provide convenient clearance for further insertion of the hand and ease of grasping of said handle; and, reinforcing tape is provided at particular locations in this upper portion of the carton to strengthen it against tearing and for carrying as the foregoing manipulative procedures are being performed.

3,794,240
MAIL DELIVERY SIGNAL DEVICE

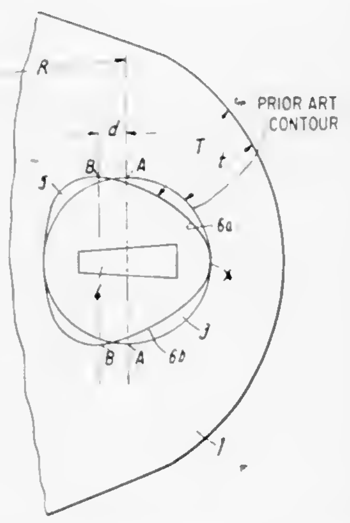
Douglas T. Myers, 206 Jackson St., Macon, Mo. 63552
Filed June 8, 1972, Ser. No. 261,008
Int. Cl. B65d *91/00*
U.S. Cl. 232—35 **14 Claims**

A signal device for use with rural mail boxes comprises a laterally extending bracket having laterally spaced depending legs. A signal flag of any desired shape is mounted at or near its aft edge to pivotal mounting means for free swinging by gravity. A latch lever is pivotally mounted to the bracket and has a hook at its lower end to engage the forward portion of the flag and hold it in retracted position. The upper end of the lever is in the path of movement of the mail box door and is angularly displaced by opening of the door to release the flag for swinging down to signaling position. The bracket may be mounted in various ways but preferably a bail overlies the box with its free ends extending through apertures in the bracket and secured thereto. The two moving parts are freely pivoted and operate by gravity. There are no springs or sliding members and no modification of the basic mail box.



3,794,241
ROTOR FOR HIGH SPEED CENTRIFUGES

Peter Szentesi, Beethoven u. 5/a, Budapest, Hungary
Filed June 19, 1972, Ser. No. 264,162
Int. Cl. B04b *5/00*
U.S. Cl. 233—26 **2 Claims**

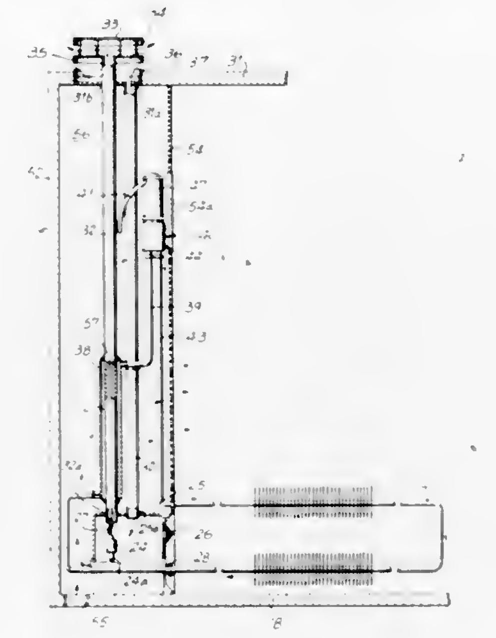


In a high speed centrifuge having a rotor with bores for receiving sample containers, having triangular cross-sectional contour in a plane transverse to the axis of rotation, with slightly curved sides and rounded corners of the triangle; one corner of each triangle pointing away from the axis of rotation.

3,794,242
TRAILER HEATING SYSTEM

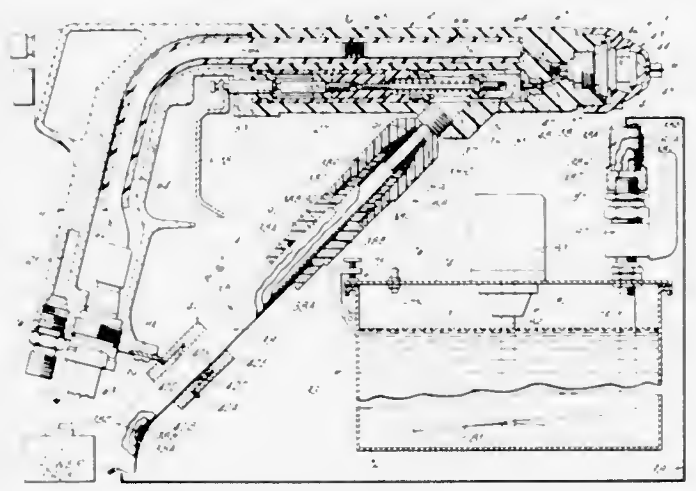
Manfred Otto Hagdorn, Stockholm; Torsten Palmeth, Sollentuna, and Jean Ivan Ragnar Boivie, Stockholm, all of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Aug. 16, 1972, Ser. No. 281,048
Claims priority, application Sweden, Aug. 20, 1971, 10578/71
Int. Cl. F24d *3/10*
U.S. Cl. 237—59 **15 Claims**

A central heating system for the enclosed space of a vehicle trailer, or motor home having circulating liquid medium which is heated in a boiler and heat transferred to radiators in an open system via an expansion vessel. The expansion vessel is situated at a high level and is so constructed that vapor in the riser conduit of the system is condensed and substantially only liquid descends in the downward conduit from the expansion vessel; the heating of the enclosed space is controlled by a thermostat operatively connected to the system.



3,794,243
ELECTROSTATIC SPRAY APPARATUS AND METHOD

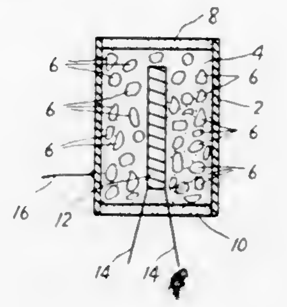
Simon Z. Tamny, Lorain; Donald R. Hastings, Elyria, and Frederick R. Wilhelm, Avon Lake, all of Ohio, assignors to Nordson Corporation, Amherst, Ohio
Filed Apr. 26, 1972, Ser. No. 247,730
Int. Cl. B05b *5/00*
U.S. Cl. 239—3 **10 Claims**



An electrostatic spray apparatus and method for spraying coating materials having conductivities ranging from moderately conductive to highly conductive, which is characterized by freedom from electrical shock and ignition hazards occasioned by a grounded operator inadvertently contacting the hose and/or grounding it during use in an explosive atmosphere. Included is a spray gun which can be moved relative to a stationary source of coating material, an improved shock-free and ignition-free conduit for transporting under pressure moderately and/or highly electrically conductive coating materials from the stationary supply to the movable gun, and a source of high voltage unidirectional current for electrostatically charging the coating material prior to deposition thereof onto the article being coated.

3,794,244
SEAL CENTERING AND RETENTION MEANS

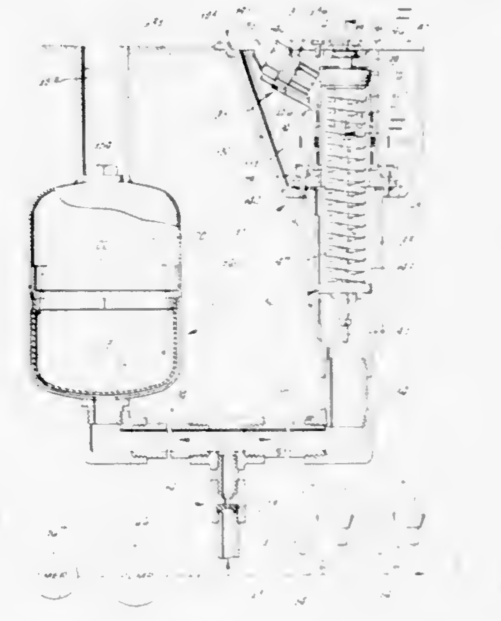
Connie W. McMath, North Palm Beach, Fla., assignor to United Aircraft Corporation, East Hartford, Conn,
Filed Dec. 20, 1971, Ser. No. 210,017
Int. Cl. B64c *15/06*
U.S. Cl. 239—265.41 **5 Claims**



A nozzle having a set of flaps is formed on the exhaust end of a turbojet engine. Seal means are provided between adjacent flaps so that the area between the nozzle flaps will have a minimum flow loss between them as they are moved between their minimum area position and maximum area position. A seal flap is located between each pair of nozzle flaps and is maintained centered by a track on the seal flap and links connected to the adjacent sides of the nozzle flaps. A guide at the free end of the links is guided on said track. A guide member positions the flap axially and prevents it from being lifted from the surface of said nozzle flaps.

3,794,245
INTERMITTENT SPRINKLER AND SYSTEM

John D. Wilson, Balboa, Calif., assignor to Williamson-Built, Inc., Santa Fe Springs, Calif.
Filed May 26, 1972, Ser. No. 257,741
Int. Cl. B05b *3/00, 15/10*
U.S. Cl. 239—206 **18 Claims**

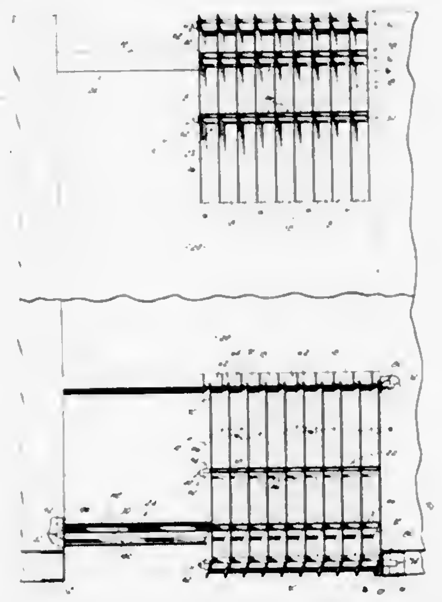


A system of pressure actuated intermittent discharge sprinkler units, in which each unit is adapted to be installed below grade level and includes an accumulator for connection to a source of water for accumulating water under increasing pressure, a pressure actuated sprinkler head connected to the accumulator and having a normally closed valve means carried by a nozzle assembly, such that the valve means responds to increasing water pressure in the accumulator and intermittently opens raising the nozzle assembly above grade level to discharge water therefrom, and a self-adjusting flow control valve connecting the accumulator to a source of water such that the periodic build-up and release of pressure in each unit accumulator does not adversely influence the operation of the remaining sprinkler units connected to the same water source. The nozzle assembly which is formed with a radially directional nozzle includes a ratchet indexing means for cyclically and incrementally rotating the nozzle assembly each time it is raised and subsequently lowered by the periodically changing water pressure in the accumulator. The nozzle assembly desirably includes a secondary or auxiliary nozzle, spaced below the principal nozzle, and adapted to deliver water to a substantially smaller radius than the effective radius of the principal nozzle. The auxiliary nozzle also serves to discharge the upper portion of water collecting in a bowl or skirt which houses the valve means and nozzle assembly, thereby preventing such water from overflowing the bowl and creating a muddy ring immediately adjacent to the bowl.

3,794,246
THRUST REVERSING CASCADE ASSEMBLY

Carl A. Weise, San Pedro, Calif., assignor to Aeronca, Inc., Middletown, Ohio

Filed Apr. 11, 1973, Ser. No. 350,088
Int. Cl. F02k *1/20;* **B64c** *15/06*
U.S. Cl. 239—265.33 **7 Claims**



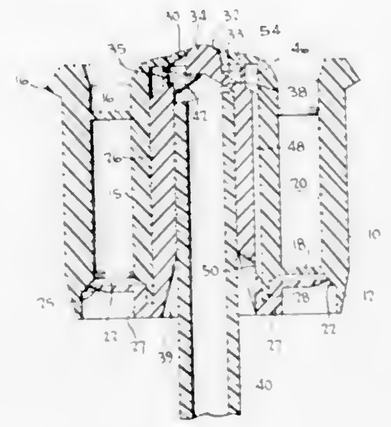
A lightweight, easily manufactured and assembled thrust reversing cascade assembly for jet engines. The assembly includes a plurality of turning vanes positioned in spaced relation and locatable aft of a jet engine exhaust. Each turning vane is rigidly supported in fixed spacial relation to other such turning vanes by a support assembly which includes a plurality of planar spacer members. Each spacer member includes a tab portion which extends from the spacer body a distance sufficient to pass through a slot in a turning vane. Each spacer also includes a notch on the end opposite the tab to receive the tab projecting through a turning vane from another spacer member. A pair of straps are positioned on both sides of the planar spacer members and also extend through the slots in each turning vane. Tensioning means is provided at opposite ends of the straps to place the straps in tension while providing compression forces on the spacers and turning vanes to rigidly support the turning vanes in spaced relation.

3,794,247
SPRAY FITMENT FOR SQUEEZE BOTTLES

Douglas F. Corsette, 6559 Firebrand St., Los Angeles, Calif. 90045

Filed Nov. 22, 1972, Ser. No. 308,648
Int. Cl. B67d *5/58*
U.S. Cl. 239—327 **13 Claims**

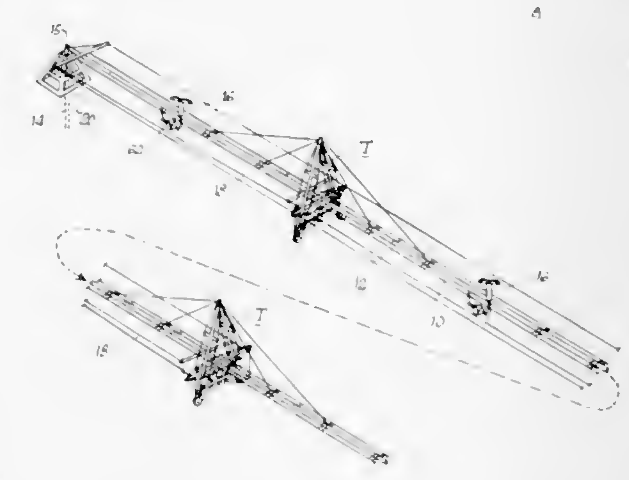
A spray fitment for squeeze bottles including a generally cylindrical plug for sealing reception in the neck opening of a conventional, flexibly resilient squeeze bottle. The plug has an axial opening therethrough, in which is supported a dispensing valve housing, between which and the inner wall of said opening is defined an axial air inlet port controlled by an air inlet valve carried by the valve housing. Formed through the valve housing are separate product and air discharge passages opening into a mixing chamber adjacent to a discharge orifice. There is provided a flexible resilient spray discharge valve in the form of a diaphragm which automatically closes the orifice at the conclusion of each squeeze or discharge stroke to prevent back-flow of air into the container. When thus closed, the spray discharge valve isolates the air discharge passage from the product discharge passage, to thereby prevent backflow of product and thus to maintain the product passage constantly primed in readiness for ejecting a full charge of product on each squeeze stroke, while preventing clogging of the air discharge passage by the product.



3,794,248
VALVE CONSTRUCTION FOR IRRIGATION SYSTEMS

Roger M. Sherman, Los Gatos, Calif., assignor to Lockwood Corporation, Gering, Nebr.

Filed Apr. 23, 1973, Ser. No. 353,589
Int. Cl. B05b *1/30*
U.S. Cl. 239—533 **10 Claims**



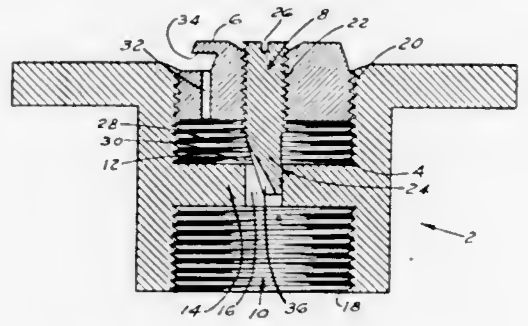
A valve construction for use in irrigation systems or other systems wherein liquid is moved through lines from one position to another. The valve is particularly utilized in a system wherein spray heads are connected to the lines with the liquid being passed through the spray heads for distribution over a relatively large area. The construction includes a valve seat located in a passage used for delivering liquid to a spray head. A valve for engaging the seat and for cutting off the flow of liquid through the passage is employed. The construction defines a cavity reciprocally receiving the valve and resilient means supported in the cavity normally urge the valve toward the valve seat. The pressure developed by the liquid source of

the system will unseat the valve under normal conditions, and due to the back pressure developed because of the restriction provided by the spray head, the valve will remain in this condition during operation. The cavity receiving the valve is vented to the atmosphere, and when the pump or other means for supplying the liquid is removed, the valve will automatically close. The vent passage may be connected to a conduit which provides an alternative source of liquid pressure for controlling the valve operation independently of the automatic control otherwise provided.

3,794,249
ADJUSTABLE SPRINKLER VALVE

George H. Lockwood, 2125 N.E. 27th Dr., Wilton Manors, Fla. 33305

Filed Sept. 27, 1971, Ser. No. 184,306
Int. Cl. B05b *1/32*
U.S. Cl. 239—539 **1 Claim**

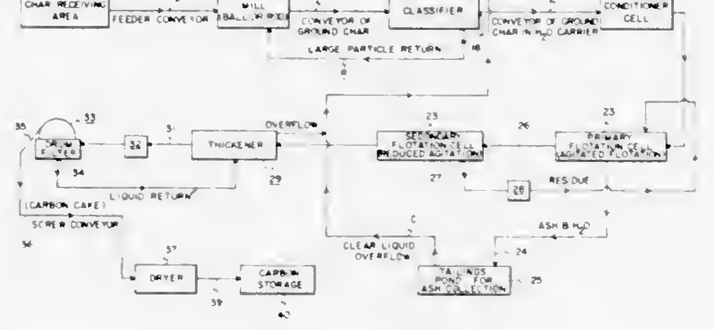


A sprinkler head including an adjustable valve with a valve opening and a movable valve means. The valve means includes a gate means movable into and out of the valve opening. The gate means and valve opening form a valve port to control fluid flow at relatively low fluid flow rates. The valve port includes a port perimeter and cross sectional port area in a plane lying generally perpendicular to the flow of fluid. The valve port is varied in size while maintaining a continuous port perimeter with a generally wide cross sectional port area.

3,794,250
PROCESS AND SYSTEM FOR RECOVERING CARBON

John C. Brewer, Salt Lake City, Utah, assignor to Garbalizer Corporation of America, Salt Lake City, Utah

Filed Feb. 23, 1973, Ser. No. 335,009
Int. Cl. B02c *21/00*
U.S. Cl. 241—21 **14 Claims**

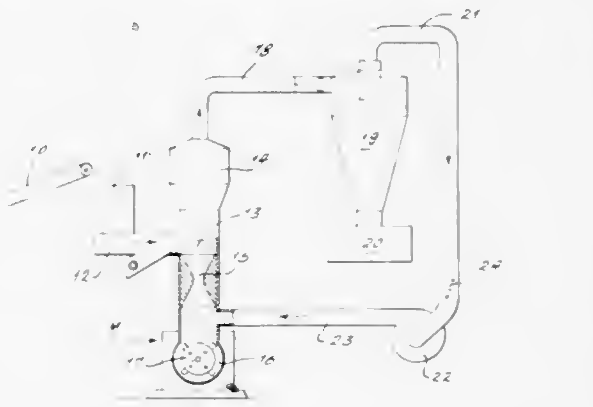


A process and system for the reduction (by milling), separation and recovery of carbon contained in char, coke and other residues resulting from distillation or destructive distillation of carbon-containing materials. The process or system includes ball or rod mill means for pulverizing incoming carbonaceous materials such as char, routing the output of the mill to a classifier so as to provide for a large particle return, conveying the output of the classifier to a flotation system wherein appropriate reagents are added to effect froth recovery, and finally, thickening the result of the material and otherwise processing it so that a carbon cake may be derived, dried, and deposited for carbon storage. Resultant carbon is thus produced in essentially a pure form, rivaling that derived through current mining processes.

3,794,251
MATERIAL REDUCING SYSTEM AND APPARATUS

Robert M. Williams, Ladue, Mo., assignor to Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.

Filed May 8, 1972, Ser. No. 251,182
Int. Cl. B02c *11/08;* **B07b** *9/00;* **B07c** *7/01*
U.S. Cl. 241—65 **11 Claims**

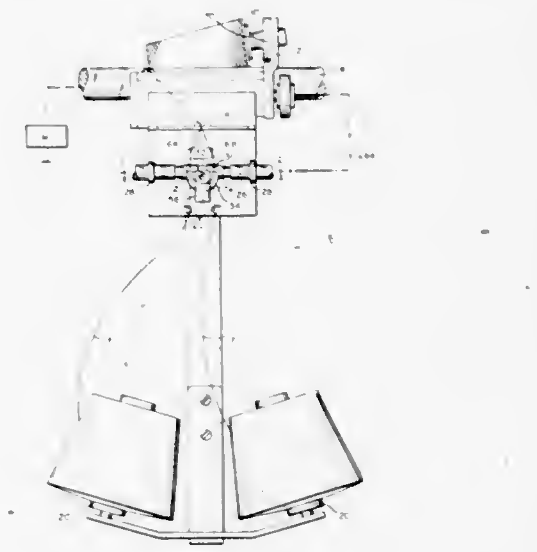


A material reducing system having apparatus in which a venturi is inserted in the air circulating means at a point or place to control the size or weight characteristics of material which is allowed to enter a reducing mill which reduces the material and returns it through the venturi to the circulating means. The system includes supporting components to enable operation with heat for drying moisture containing material, for separating the fines from the circulating air, and for supplying fines as a source of fuel to produce the drying heat.

3,794,252
DETECTING MEANS FOR YARN PROCESSING APPARATUS

Samuel L. Abbott, Wilton, N.H., assignor to Abbott Machine Co., Inc., Wilton, N.H.

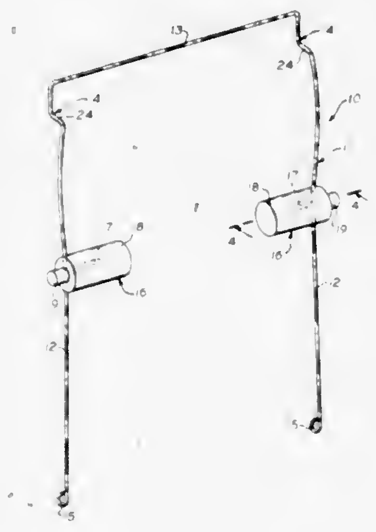
Filed June 25, 1971, Ser. No. 156,716
Int. Cl. B65h *63/02*
U.S. Cl. 242—38 **17 Claims**



Apparatus for processing yarn comprising a disc and roller supported at opposite sides of the plane of a pair of running yarns for frictional engagement with the yarns, with the roller rotating in a direction opposite to the direction of movement of the yarns and with the disc free to turn about an axis at its center perpendicular to the plane of the yarns and midway between the yarns so that the disc is adapted to be maintained in a condition of balanced equilibrium by uninterrupted movement of the yarns between the surfaces of the disc and the roller, and to stop the apparatus in the event that it becomes unbalanced.

3,794,253
COMBINED TISSUE BOX AND TOILET PAPER ROLL HOLDER

Sanford B. Megdall, 70-20 108th St., Forrest Hills, N.Y. 11375
Continuation-in-part of Ser. No. 251,314, May 8, 1972, abandoned. This application June 1, 1973, Ser. No. 366,310
Int. Cl. B65h *19/00*
U.S. Cl. 242—55.2 **5 Claims**

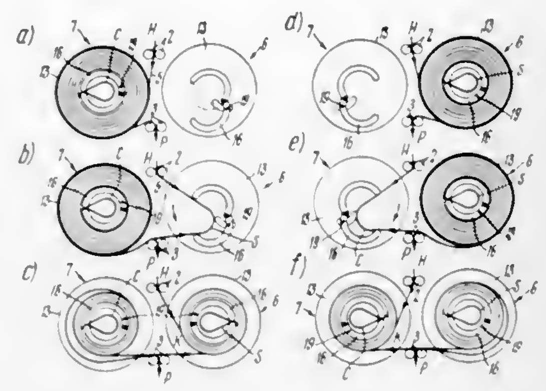


A holder equipped to support a roll of toilet paper and to receive a box of tissues in spaced above relation to the toilet paper roll to allow dispensing of tissues from the box without interfering with dispensing of toilet paper.

3,794,254
DEVICE FOR WINDING AND UNWINDING A TAPE CARRIER

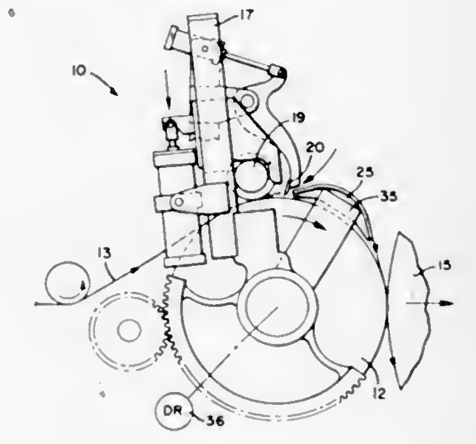
Leonid Grigorievich Tarasenko, Festivalnaya ulitsa, 22, korpus 3, kv. 442; Abram Yakovlevich Kuperman, ulitsa Priorova, 14a, kv. 72; Felix Pavlovich Noskov, ulitsa Chkalova, 41/2, kv. 80; Irina Sergeevna Derevyagina, ulitsa Dybenko, 30, korpus 5, kv. 395; Boris Lvovich Malkus, ulitsa Dvintsev, 4, kv. 42; Naum Davydovich Bernshtein, Novo-Khoroshevskoe shosse, 35, korpus 1, kv. 10, all of Moscow, U.S.S.R.; Anatoly Anatolievich Alexeev, deceased, late of Moscow, U.S.S.R.; Tatyana Vasilievna Alexeeva, and Anatoly Nikolaevich Vishnyakov, both of Novocheremushkinskaya ulitsa, 3a, korpus 2, kv. 71, Moscow, U.S.S.R. (administrators)
Filed Nov. 10, 1971, Ser. No. 197,310
Int. Cl. B65h *17/06, 65/00;* **G03b** *21/32*
U.S. Cl. 242—55.16 **5 Claims**

A device for winding and unwinding a tape carrier is intended for automatically engaging and releasing the leader, or loop of the tape carrier, and also for winding and unwinding the same, and, in case the tape carrier forms an endless loop, for bifilar winding and unwinding, with automatic rewinding of the tape carrier directly in the course of information reading. The device is used in cases when various information tape carriers, such as film copies, magnetic films and punched paper tape, are required to be conveyed through the readout unit, making specific steps such as fixing the tape carrier in the reel core and rewinding the tape carrier unnecessary. The device comprises a tape-moving means, a drive means and two reels having cores and rims, the core of at least one of the reels being adapted to open and close depending on the direction of reel rotation, thereby ensuring automatic engagement or release of the leader or the tape carrier loop.



3,794,255
WEB CUTTER FOR SINGLE DRUM WINDER

Paul E. Harmon, and Richard W. Phelps, both of Fulton, N.Y., assignors to The Black Clawson Company, Middletown, Ohio
Filed Oct. 27, 1972, Ser. No. 301,327
Int. Cl. B65h *19/26*
U.S. Cl. 242—56 R **4 Claims**

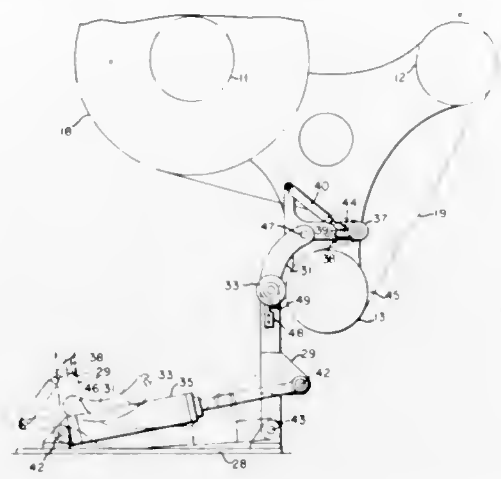


A web support moves about the drive drum from a parked position to a position supporting the web material away from the drive drum. A toothed knife then severs the web, with the teeth of the knife being received in complementary grooves in the web support so that the knife contacts only the web.

3,794,256
PROCESS OF TRANSFERRING A TRAVELING WEB FROM A PULL ROLL TO AN EMPTY CORE

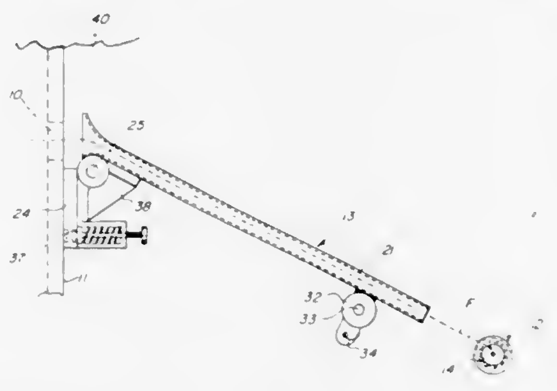
Kenneth Paul Schwarz, Marshalltown, Iowa, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Nov. 17, 1971, Ser. No. 199,662
Int. Cl. B65h *19/26*
U.S. Cl. 242—56 A **4 Claims**

In a process for continuously winding a web onto a core, the steps of transferring the web from a full roll to an empty core while significantly minimizing stub roll waste by advancing an empty positively driven core into the path of the traveling web so that the web partially wraps the empty core; deflecting the web to substantially increase the web wrap around the empty core; removing the driving torque from the empty core permitting the empty core to idle; severing the web near the surface of the empty core establishing a leading edge on the traveling web that follows the surface of the empty core as it idly rotates; and thereafter applying torque to positively drive the empty core forming a new roll.



3,794,257
WINDING DEVICE FOR A THIN FLEXIBLE MATERIAL

George M. Reitter, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed June 5, 1972, Ser. No. 259,519
Int. Cl. B65h *75/00, 27/00*
U.S. Cl. 242—67.1 R **12 Claims**

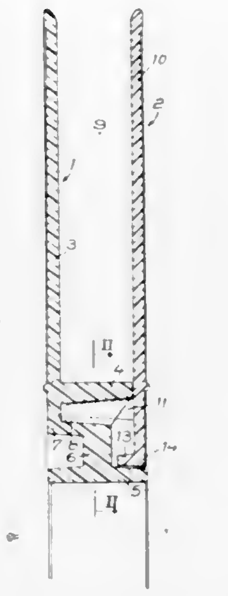


A winding device for a strip of thin, flexible material comprises guide means adjustable to the width of the material and a reel whose width can be altered to accommodate the material being wound. The guide means comprises a fixed edge guiding member and a movable edge guiding member. The latter is mounted for movement relative to the fixed member either by the edges of the material per se, or manually in accordance with the width of the material to be wound. A spindle is provided on which a core having a fixed flange at one end is slideably mounted and keyed to the spindle for rotation therewith. Any one of several flanges can be releasably secured to the other end of the core to provide a distance between the flanges that is in accordance with the width of the material.

3,794,258
REEL FOR USE WITH FLEXIBLE STRIPS

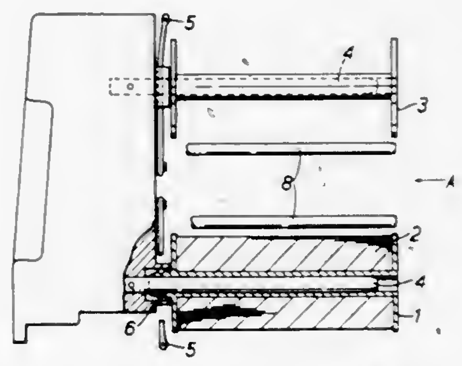
Pierre Ludovic Andre Posso, deceased, late of Lausanne, Switzerland, and Patrick Pierre Posso, 10 Avenue Jurigoz, Lausanne, Switzerland
Filed July 25, 1972, Ser. No. 275,055
Int. Cl. B65h *75/18*
U.S. Cl. 242—71.8 **7 Claims**

A reel for use with flexible strips, for example magnetic tape, assembled from two separate parts, one of the parts, which is made from a glass fiber reinforced plastics material, comprising a side piece from which a core, including a central boss, a wind-on sleeve and a tie piece, extends transversely and the other part, which is made from a transparent plastics material, having transverse projecting members which cooperate with the core to center the other part, there being a small clearance between the centering members and the core and the parts being held together by a bonding agent which remains pliable after polymerization.



3,794,259
SPOOL LOADING DEVICES

Ralph Edward Huckle, Southbourne, near Emsworth, England, assignor to English Numbering Machines Limited, London, England
Filed Oct. 21, 1971, Ser. No. 191,439
Int. Cl. G03b *1/04*
U.S. Cl. 242—71.2 **4 Claims**

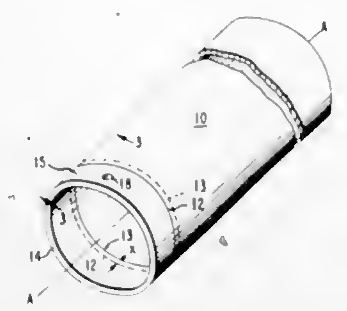


A spool loading device comprises a container which holds a pair of spools and a linking ribbon in positions corresponding to those in which they are used in a utilising machine, thus enabling the spools and ribbon to be loaded without damage to the ribbon.

3,794,260
TEXTILE CORE WITH A BREAKAWAY STRINGUP SLOT

Lyles Howard Sowell, Madison, Tenn., assignor to E.I. du Pont de Nemous and Company, Wilmington, Del.
Filed Oct. 16, 1972, Ser. No. 297,806
Int. Cl. B65h *75/28*
U.S. Cl. 242—125.1 **5 Claims**

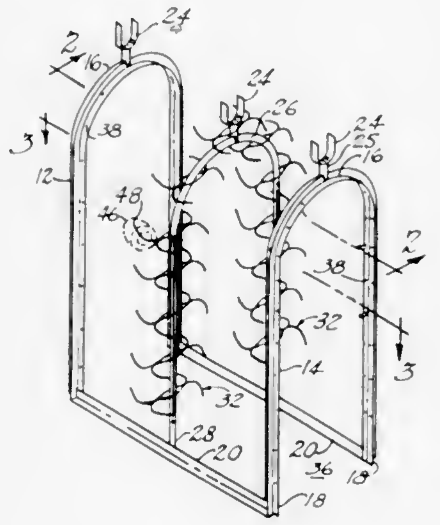
A laminated textile yarn core with a breakaway stringup slot features a circumferentially disposed groove in the outer surface of the core for initiating stringup and a second circumferentially disposed groove on the inside that is longitudinally inward from the stringup groove. The two grooves have overlapping depths to cut one common bond line between layers of



the core. The incorporation of the second groove permits removal of the section of the core between the stringup slot and the end of the core by shearing the ply bond layer between the stringup slot and inner groove.

3,794,261
BOBBIN CREEL

Aud J. Franks, Rt. 1, Rocky Face, Ga. 30740
Filed Apr. 17, 1972, Ser. No. 244,835
Int. Cl. B65h *49/02;* **D02h** *1/00;* **D03j** *5/08*
U.S. Cl. 242—131 **13 Claims**

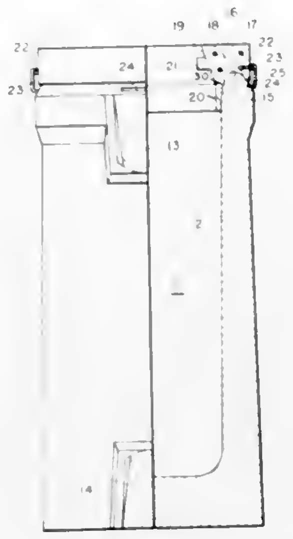


A walk-in and a walk-through bobbin creel which comprises bobbin creel units each having U-shaped frames providing a structrue of vertical members on each side and each member supports sets of a pair of bullhorn bobbin spool supports completely around the U-shaped frame. The take-off for the ends of the yarns is toward one respective end or the other on each side and thence to a plurality of plastic tubes contained in a bundle across the top of the frame.

3,794,262
INGOT MOLD AND HOT TOP THEREFOR

John Nadrich, 9756 South Ave., Ext., Youngstown, Ohio 44514, and John A. Ericson, 732 Market St., Youngstown, Ohio 44502
Continuation of Ser. No. 28,044, April 13, 1970, which is a continuation-in-part of Ser. No. 704,459, Feb. 9, 1968, abandoned. This application Sept. 20, 1971, Ser. No. 182,207
Int. Cl. B22d *7/10*
U.S. Cl. 249—106 **4 Claims**

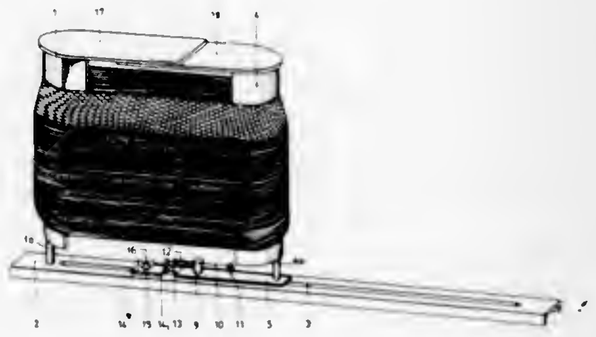
A combined ingot mold and hot top for use in the casting of ingots from molten steel. The top surface of the mold is provided with an upwardly projecting, rounded ridge immediately adjacent to the cavity walls. The hot top is composed of a single piece of reinforced insulating matrial and has a concave



groove on its lower surface which mates with the projecting ridge of the mold. Various means are provide to clamp the hot top to the mold to prevent the same from floating.

3,794,263
SUPPORT ARRANGEMENT FOR A HANK OF THREAD, AND HANKS EQUIPPED WITH SAID SUPPORT

Dominique Michel Delerue, 189, bld Descat, Tourcoing, France
Continuation of Ser. No. 108,454, Jan. 21, 1971, abandoned. This application June 29, 1972, Ser. No. 267,681
Claims priority, application France, Feb. 20, 1970, 70.06210
Int. Cl. B65h *54/56, 49/30*
U.S. Cl. 242—127 **8 Claims**



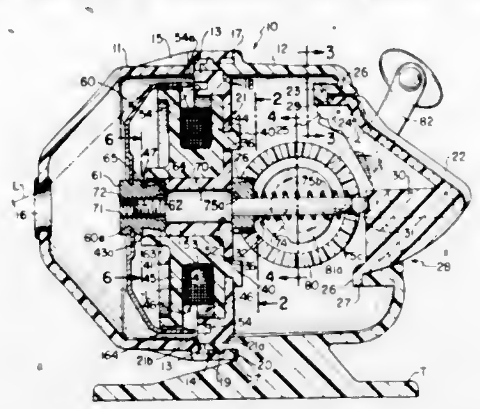
The invention relates to a support arrangement for a hank of thread and to hanks fitted with this support arrangement, which ensures correct unwinding and is made up basically of a fixed arm and a movable arm on which the coiled thread is arranged, the mobile arm co-operating with a spring and adjustable stop so as to maintain the coiled thread under tension.

3,794,264
CLOSED FACE SPINNING REEL

R. Dell Hull, 6101 E. Apache St., Tulsa, Okla. 74101
Filed Jan. 19, 1972, Ser. No. 219,038
Int. Cl. A01k *89/00*
U.S. Cl. 242—84.2 R **6 Claims**

The disclosure herein relates to fishing reels, especially so-called closed face spinning reels, and it is directed more specifically to certain structural arrangements in closed face spinning reels, including a new pickup head casting lock; a new bayonet-type line spool mount, a simplified housing structure; a simplified anti-reverse mechanism; and a simplified drag brake mechanism. These new structural arrangements

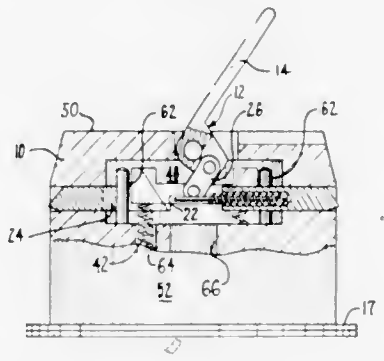
for spinning reels tend to improve the operation thereof, to accommodate the use of inexpensive new plastic materials of



construction, to simplify the manufacture of the components, and to simplify the assembly thereof in the mass production of closed face spinning reels.

3,794,265
REEL CLAMP

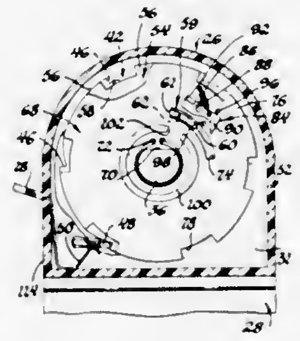
Johannes K. Jantzen, Mountain View, Calif., assignor to International Video Corporation, Sunnyvale, Calif.
Filed Oct. 24, 1972, Ser. No. 299,817
Int. Cl. B65h *17/02*
U.S. Cl. 242—68.3 **7 Claims**



A tape reel clamp which securely and accurately holds a tape reel on a spindle, the reel clamp having a finger lever linked to a wedge member which is slidably engagable with a pair of retractable fingers. The fingers are extendable over a tape reel hub mounted on the spindle, the pressure exerted on the hub being determined by a spring bias, the spring bias being opposed by said lever when retracting said fingers.

3,794,266
BELT STORAGE APPARATUS

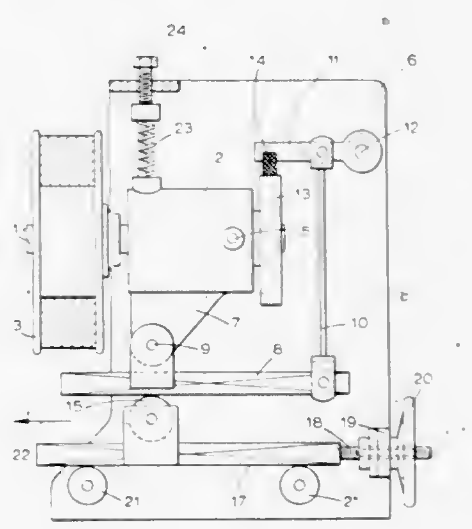
Saul Schwartz, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Apr. 6, 1972, Ser. No. 241,700
Int. Cl. A62b *35/00;* **B65h** *63/04*
U.S. Cl. 242—107.4 **4 Claims**



Belt storage apparatus of the automatic locking type including a belt storage reel disposed on a frame for rotation in a belt extending direction and a belt retracting direction, a ratchet disc rotatable with the reel and including a plurality of circumferentially spaced ratchet teeth, a pawl lever engageable on the teeth to prevent rotation in the belt extending direction, a control plate rotatable as a unit with the reel and having a latch member pivotally supported thereon, a shutter disc equal in diameter to the ratchet disc and freely rotatable on the frame, the shutter disc having a plurality of circumferential surface elements separated by recesses, a lost motion connection between the control plate and the shutter disc limiting angular relative movement therebetween to one position wherein the surface elements bridge the ratchet teeth to close the latter to the pawl lever and another position wherein the recesses expose the ratchet teeth for engagement on the pawl lever, friction generating means retarding rotation of the shutter disc so that the latter always tends to assume the one relative position during reel rotation in the belt retracting direction and the other relative position during reel rotation in the belt extending direction, and a latch actuator disposed on the control plate for transverse bodily shiftable movement in response to reel rotation. As the belt approaches a fully retracted condition the latch actuator engages the latch member and biases the latter toward a latched position engaging a keeper on the shutter disc so that upon subsequent reel rotation in the belt extending direction the shutter disc is blocked out of the other relative position. When the belt is extended to an in-use condition the latch actuator separates from the latch member so that subsequent momentary belt retraction releases the latch member to thereafter permit movement of the shutter disc to the other relative position thereof.

3,794,267
APPARATUS FOR CONTROLLING THE TENSION OF YARN, WIRE, CORD OR THE LIKE

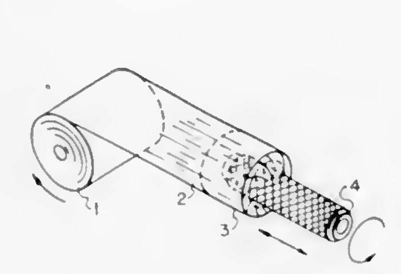
William Harry Kimpton, Prestbury, England, assignor to W.H.K. Products Limited, Cheshire, England
Filed Sept. 11, 1972, Ser. No. 287,756
Int. Cl. B65h *59/04*
U.S. Cl. 242—156.2 **4 Claims**



An apparatus for controlling the tension of yarn, wire, cord or similar elongate material being withdrawn from or taken up on to a package. A spindle is mounted for rotation about its longitudinal axis and is also rotatable about a pivot at right angles to the longitudinal axis of the spindle in dependence on the weight of the package. Brake means are operable to apply a braking force to the spindle and a lever is movable in accordance with movement of the spindle about its pivot to control the braking force. A fulcrum bears on the lever. The position of the fulcrum is adjustable lengthwise of the lever. Means are provided for applying an adjustable pressure loading on the spindle to bias movement of the spindle about its pivot.

3,794,268
TUBULAR FILMS OR WEBS

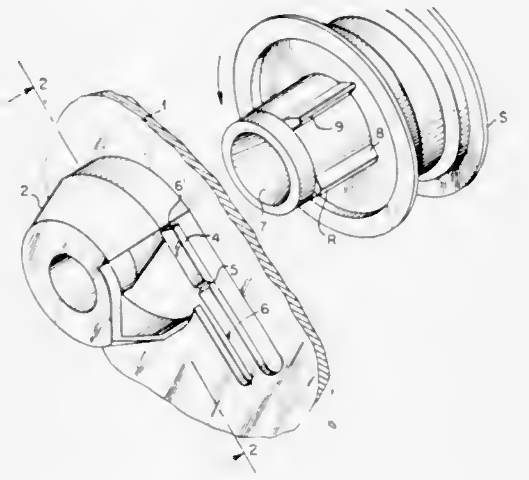
Frank M. McNeill, Danville, Ill., assignor to Tee-Pak, Inc., Chicago, Ill.
Continuation-in-part of Ser. No. 102,458, Dec. 29, 1970, Pat. No. 3,709,703. This application Jan. 28, 1972, Ser. No. 221,558
Int. Cl. B65h *17/02*
U.S. Cl. 242—55 **12 Claims**



Flexible tubular material such as tubular films, foils, or webs are inflated or otherwise held in an expanded condition and wound radially inward on a supporting core. The resulting radially wound flexible tubular material is a novel product. The tubular material may be pulled off or fed from either end of the radially wound material and may be continuously filled by introduction of any desired material through the hollow supporting core or through the radially wound material itself in the event that the core has been removed.

3,794,269
FILM CARTRIDGE

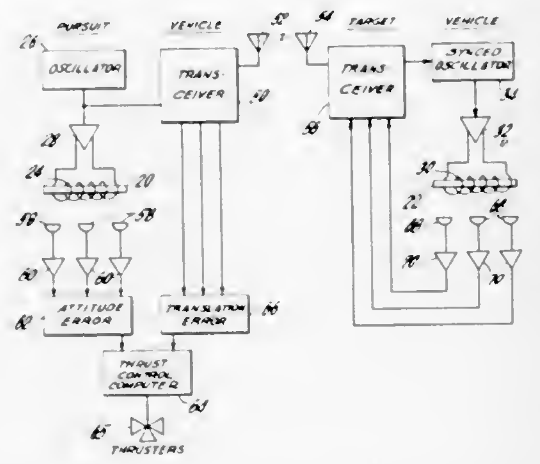
James E. Hoover, Binghamton, N.Y., assignor to GAF Corporation, New York, N.Y.
Filed June 5, 1972, Ser. No. 259,618
Int. Cl. G03b *1/04;* **G11b** *15/32*
U.S. Cl. 242—194 **5 Claims**



A super 8 mm film cartridge having a body and spool in which a finger member is integral with the body, and co-acts with the spool. A point of weakening on the finger in the form of a "V" shaped-notch responds to torsional force on such spool and rotation takes place in a direction opposite to normal film movement. Thereafter, bending of the finger at the point of weakening occurs. The bent portion on the finger is positioned away from the movement of the film as it is withdrawn from the cartridge.

3,794,270
METHOD AND APPARATUS FOR DETERMINING THE RELATIVE ATTITUDE AND POSITION OF TWO VEHICLES IN SPACE

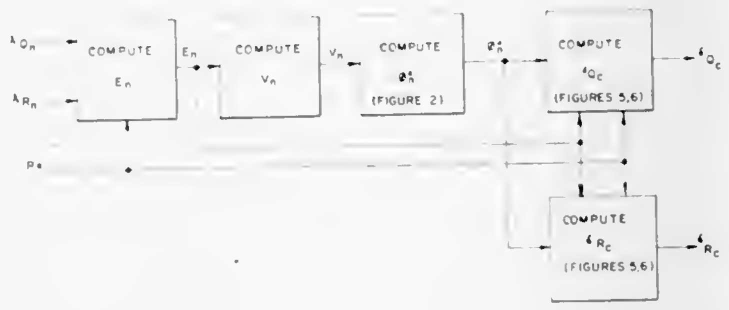
Richard W. Wilkens, Largo, Fla., assignor to Electronic Communications Inc., St. Petersburg, Fla.
Filed Mar. 21, 1972, Ser. No. 236,679
Int. Cl. B64g *1/00*
U.S. Cl. 244—1 SD **6 Claims**



A magnetic member is located in each of two vehicles. At least one of these members and preferably both are pivotally movable in two perpendicular directions. Alternating magnetic fields that are in synchronization with each other are produced in the two magnetic members causing them to assume a colinear orientation. The attitude of a vehicle relative to an imaginary axis connecting the members can be determined by sensing the orientation of a movable magnetic member relative to the vehicle in which it is located. This system can be used to, for example, facilitate the docking of two vehicles in space.

3,794,271
SELF-ORGANIZING CONTROL SYSTEM

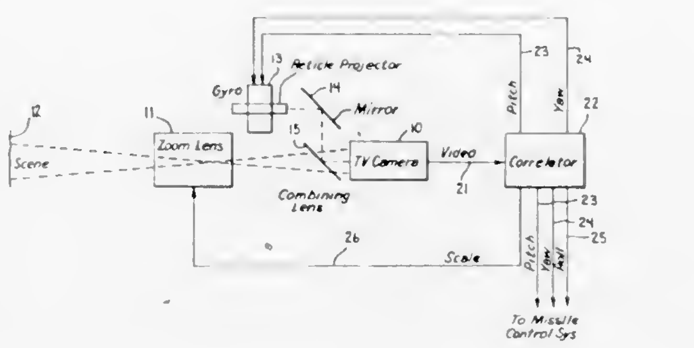
Roger L. Barron, and Dixon Cleveland, both of Annandale, Va., assignors to Adaptronics, Inc., McLean, Va.
Filed Jan. 31, 1972, Ser. No. 222,072
Int. Cl. F41q *7/00*
U.S. Cl. 244—3.15 **15 Claims**



This disclosure relates to improvements in self-organizing control logic configurations having particular application to automatically or remotely piloted vehicles. The improvements include the use of multiple-point (time-distributed) functions for control system performance assessment, the use of performance assessment value-signal magnitude information to govern parameter step sizes, and means for controlling an object that is rotating with a determinable angular rate but unknown phase angle relative to a fiducial angular position of the object.

3,794,272
ELECTRO-OPTICAL GUIDANCE SYSTEM

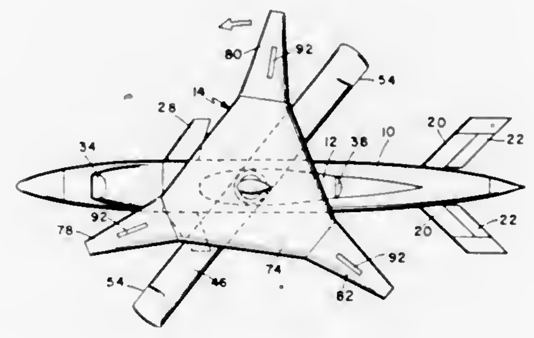
Klaus J. Hecker, Oberursel, Taunus, Germany, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Feb. 13, 1967, Ser. No. 616,437
Int. Cl. F41g *7/00;* **F42b** *15/02*
U.S. Cl. 244—3.17 **7 Claims**



The description involves area correlation of a scene viewed by a television (TV) camera carried by a missile toward a target seen preferably in the center of the scene. The initial scene is memorized in an electronic memory circuit of the correlator and digitally correlated with actual video signals viewed by the TV camera in the travel of the missile toward its target, this correlation providing pitch, yaw, roll, and zoom lens scale error signals to correct the missile direction and to correct the zoom lens focus as the target is approached. A reticle is projected onto the camera screen to provide reticle pulses for digital correlation as to scene segments.

3,794,273
VTOL ROTOR WING DRONE AIRCRAFT

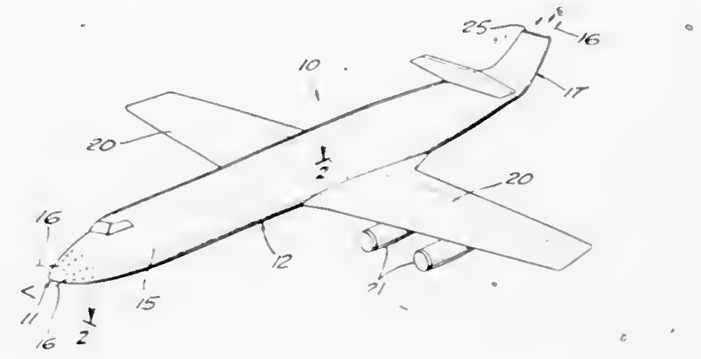
Peter F. Girard, La Mesa, Calif., assignor to Teledyne Ryan Aeronautical, a division of Teledyne Industries, Inc., San Diego, Calif.
Filed Sept. 25, 1972, Ser. No. 291,582
Int. Cl. B64c *27/24*
U.S. Cl. 244—7 A **8 Claims**



An aircraft capable of vertical take-off and landing and high speed cruising flight, utilizing a combine rotary and fixed wing. The wing has a large center body with three radial arms which are pivotal and controllable in the manner of helicopter rotor blades in the wing rotating operation, and incorporate spoilers to minimize center of pressure shift during transition between rotary and fixed modes. In fixed position the wing is stopped with one arm forward in a modified delta configuration, the lateral arms being movable for roll control in cruising flight. Propulsion is by means of a turbojet providing cruising thrust and also wing rotating thrust through tip nozzles in a beam mounted below the wing. In stopped position, the beam is streamlined in alignment with the forward arm, and for rotary wing mode the beam is rotationally displaced relative to the wing to clear the movable arm.

3,794,274
AIRCRAFT STRUCTURE TO REDUCE SONIC BOOM INTENSITY

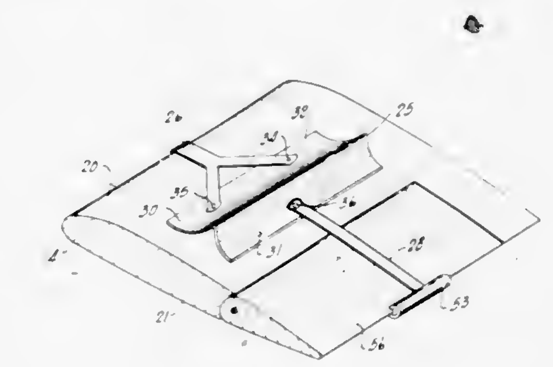
Oscar Eknes, 7850 Sunset Blvd., Los Angeles, Calif. 90046
Filed Dec. 19, 1969, Ser. No. 886,579
Int. Cl. B64c *21/02*
U.S. Cl. 244—130 **6 Claims**



The structure of a fuselage of an aircraft having a plurality of apertures therein which permit high pressure air to be received within the confines of the exterior portion of said fuselage, and means within said fuselage adapted to direct and control the flow of said air until the energy thereof has been substantially reduced or same is emitted through carefully situated ports. The effective cross-sectional area of the nose portion of said fuselage is thereby substantially reduced so as to cause a similar reduction of the drag upon said aircraft.

3,794,275
DETACHABLE LIFT SPOILER FOR STATIONARY AIRCRAFT

Sheldon M. Satter, 1555 N. Crescent Dr., Cedarburg, Wis. 53012
Filed May 12, 1972, Ser. No. 252,908
Int. Cl. B64c *3/58*
U.S. Cl. 244—41 **10 Claims**



A detachable lift spoiler for placement on the upper surface of the wing of a parked or tied-down aircraft to inhibit or prevent lift forces from being generated by the aircraft wing as wind blows therearound is generally prismatic in form and is secured on its forward side by a removable forward attachment member which is bendable to fit and grip the leading edge of the wing and is secured on its rearward side by a removable rearward attachment member which grips the trailing edge of the wing. One or more lift spoilers are used on each wing.

3,794,276

ELECTRO-HYDRAULIC ACTUATING SYSTEMS FOR AIRCRAFT CONTROL SURFACES

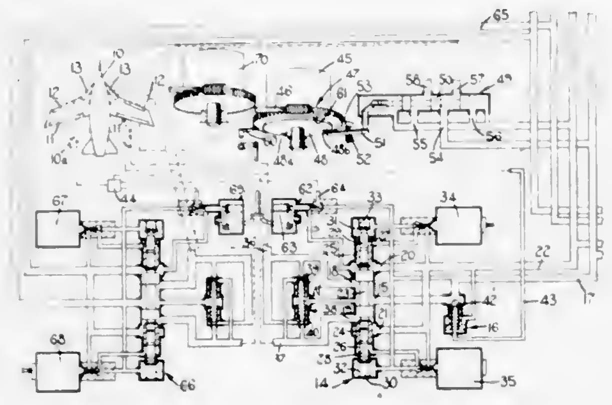
Peter John Maltby, Codsall; Alan Malpass, Dudley, and Kenneth Harold Ellis, Shareshill, all of England, assignors to Lucas Aerospace Limited, Birmingham, England

Filed Oct. 4, 1972, Ser. No. 294,785

Claims priority, application Great Britain, Oct. 7, 1971, 46626/71

Int. Cl. B64c *13/36*

U.S. Cl. 244—78 **11 Claims**



An electro-hydraulic actuator arrangement for control surfaces on aircraft wings comprises a hydraulic servo system responsive to first and second electrical signals to move the control surfaces in respective opposite directions, a position-respective means which provides third electrical signals to selected inputs of a pair of comparator circuits, and means for selecting required positions for the control surfaces. The position selecting means provides fourth electrical signals to other inputs of the comparator circuits, and the first and second electrical signals are provided at the outputs of the respective comparator circuits.

3,794,277

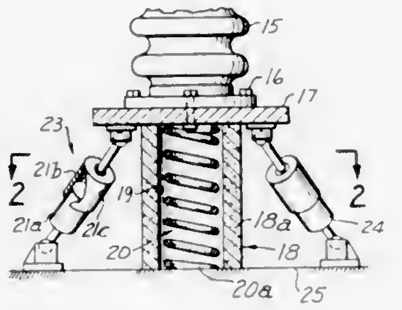
EARTHQUAKE RESISTANT SUPPORT

Paul A. Smedley, 3780 Canfield Rd., Pasadena, Calif. 91107, and Anderson B. Smedley, 834 Linda Vista Ave., Pasadena, Calif. 91103

Filed Aug. 14, 1972, Ser. No. 280,129

Int. Cl. F16f *15/00*

U.S. Cl. 248—20 **17 Claims**



An earthquake resistant support structure which comprises two types of supporting members: a frangible, substantially incompressible and rigid primary support structure and a secondary support structure which is resilient. The primary support structure supports the weight of the apparatus to be protected, until the event of an earthquake of sufficient magnitude, then the primary support structure will fail, whereupon the secondary support structure takes the load. The latter resiliently yields to protect the apparatus from earthquake damage by decoupling the apparatus from the ground. Shock absorbers may be provided to damp oscillations induced in the system.

3,794,278

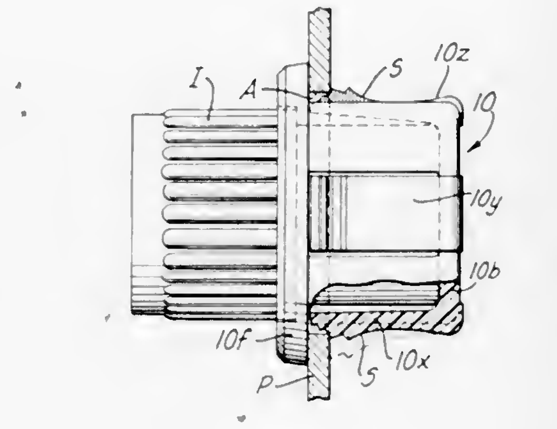
INSTRUMENT SUPPORTING DEVICE

Sydney W. Frey, Jr., Upland, and Donald L. Gaa, Riverside, both of Calif., assignors to Bourns, Inc., Riverside, Calif.

Filed Jan. 10, 1972, Ser. No. 216,400

Int. Cl. G12b *9/00*

U.S. Cl. 248—27 **4 Claims**



An instrument supporting device adapted to be pressed directly into a hole or aperture in a panel of any of a plurality of thicknesses and secure therein or thereto any of a variety of instruments, the support device automatically compensating for wear caused by vibration or repetitive removal and reinsertion into the hole in the panel, and permitting easy removal of the support from the panel without twisting or turning. A plurality of stepped resilient fingers or limbs are resiliently stressed inwardly as the support enters the aperture, and spring outwardly to engage the aperture-edge of the panel at the rear thereof and retain a portion of the support tightly against the front face of the panel. Key means may engage in a seat in the panel edge to preclude rotation of the support in the aperture. Preferably the resilient limbs are provided in two or more sets, each set being of different configuration whereby to accommodate a wider variety of panel gages.

3,794,279

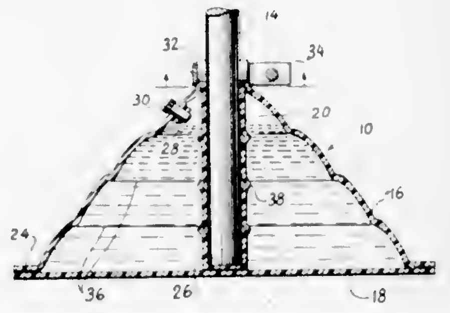
PORTABLE PEDESTAL FOR LAWN UMBRELLAS, STANCHIONS, AND THE LIKE

Hyman Kramer, c/o Hy Kramer Enterprise, Inc., 1457 Bassett Ave., Bronx, N.Y. 10461

Filed Apr. 24, 1972, Ser. No. 246,830

Int. Cl. F16m *13/00*

U.S. Cl. 248—44 **5 Claims**



A portable pedestal for lawn umbrellas, stanchions, and the like, said portable pedestal comprising a hollow, collapsible enclosure, having at least one opening formed therein through which a pole can be inserted and the enclosure can be filled with pourable material, such as sand or water, to provide it with structural strength and rigidity, preventing it from collapsing, and weighting it for stability.

3,794,280

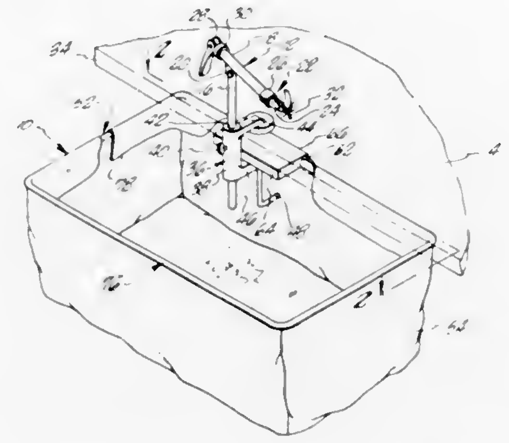
FLY TYING DISPOSAL APPARATUS

Darwin R. Atkin, 354 N. York St., Porterville, Calif. 93257

Filed Jan. 21, 1972, Ser. No. 219,662

Int. Cl. B65b *67/12*

U.S. Cl. 248—99 **9 Claims**



A fly-tying disposal apparatus for use with a fly-tying vise is suitable for both right and left hand tiers and includes a support for disposal bags which is adjustable to maintain the bag in a proper and non-interfering position and work level with respect to the working end of the vise for the collection of waste material and which is movable without dismounting to an inoperative position.

3,794,281

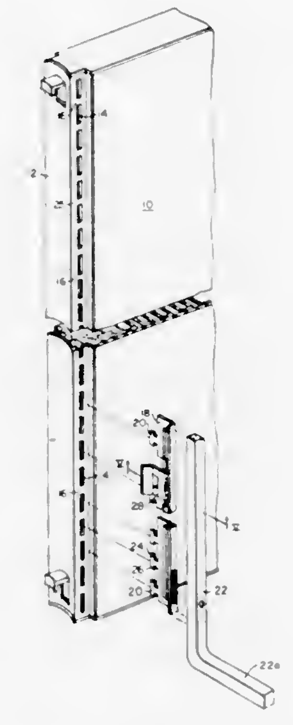
WALL PANEL LATERAL SUPPORT ASSEMBLY AND LOCKING MECHANISM THEREFOR

Robert J. Munsey, Grand Rapids, Mich., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 19, 1972, Ser. No. 264,098

Int. Cl. E04g *3/08, 7/00;* **F16b** *5/07*

U.S. Cl. 248—188 **5 Claims**



A locking mechanism for securing a lateral support to a free standing wall panel in which a plurality of T-shaped connectors extending from the lateral support engage a complementary plurality of spaced slots in a slotted standard affixed to the wall panel by containing the partitions between the slots in the bottom recesses of the T-shaped connectors. The T-shaped connectors are locked into the spaced slots by means of a latch mechanism which when rotated causes a finger detent thereon to engage the side of one of the partitions opposite that side of the partition engaging the bottom recess of the T-shaped connector to thereby securely lock the partition between the finger detent and the adjacent T-shaped connector.

3,794,282

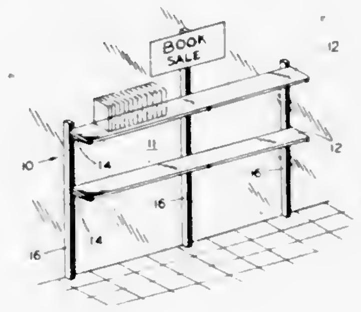
COUPLING ASSEMBLY

Irving W. Shell, 442 W. Wellington, Chicago, Ill. 60657

Filed May 17, 1972, Ser. No. 254,289

Int. Cl. A47g *29/02*

U.S. Cl. 248—244 **3 Claims**



A coupling assembly comprising in combination a support standard having a channel defined therein having opposing faces on the sides thereof, each of the faces of the channel have longitudinally extending grooves defined thereupon on either side of a pocket portion disposed therewithin; an intermediate member or connector means attachable to an article to be supported thereby and having an opening defined therethrough which extends axially of the supported article; and a bolt which extends through said opening in said intermediate member into said channel in said support standard and obtains locking engagement within said channel whereupon said standard, said intermediate member and said bolt are integrally joined to support said article. The locking engagement is obtained either by the coaction of the grooves with a threaded bolt or by the coaction of the pockets with a special end portion of a bolt.

3,794,283

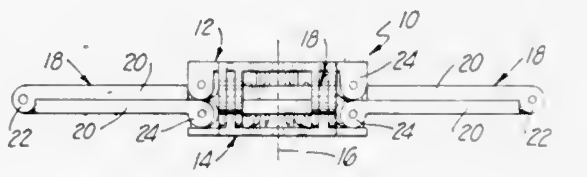
EXTENSIBLE FRAME

Harold R. Furno, 1144 W. "B" St., Ontario, Calif. 91762

Continuation of Ser. No. 73,794, Sept. 21, 1970, abandoned. This application Dec. 19, 1972, Ser. No. 316,449

Int. Cl. A47f *5/08;* **E04h** *12/10*

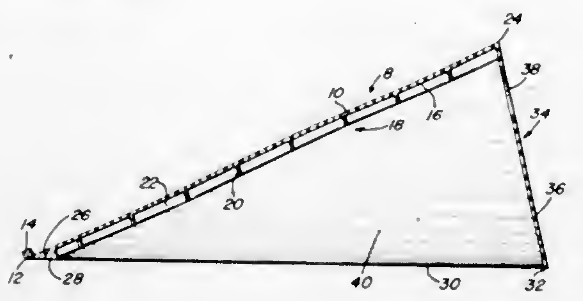
U.S. Cl. 248—276 **16 Claims**



An extensible frame having a pair of rigid end members disposed on a common axis and three articulated arms extending between the members in intersecting planes containing the common axis and hinged to the members in a manner which relative translational movement of the members toward and away from one another along the common axis and restrains the member against all other relative movement. The frame is capable of various uses such as supporting an object for horizontal or vertical movement, an adjustable instrument support, an erectable frame for a building structure, and others.

3,794,284
BOOK SUPPORTING AND READING RACK

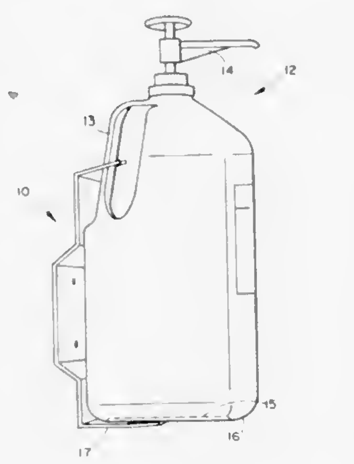
Harry M. Guenther, P.O. Box 19123, Pensacola, Fla. 32503
Filed Aug. 14, 1972, Ser. No. 280,122
Int. Cl. A47b *19/00*
U.S. Cl. 248—441 **5 Claims**



A book supporting rack, which is comparable, in a manner of speaking, to a book inclining lectern but which, instead of being atop a pedestal, is designed and adapted to be positioned for use atop a table, a desk or an equivalent relatively stationary support surface. The rack is light in weight and may, if desired, be made of colorful, moldable, plastic material and is characterized by top, side and back walls. The top wall comprises a panel which has a smooth planar surface of an area capable of receiving and supporting an open book in an inclined position and wherein said panel is elevated by an inclining base. The base comprises an upstanding back wall and complemental side walls, and said back and side walls having upper edges united with corresponding marginal edge portions of the top wall or panel. The back and side walls have longitudinal bottom edges which are disposed in a common plane to rest firmly and evenly on a table or the like. The top wall panel has a lower longitudinal edge portion provided with an upstanding rib which constitutes a book positioning and retaining ledge.

3,794,285
CONTAINER HOLDING BRACKET

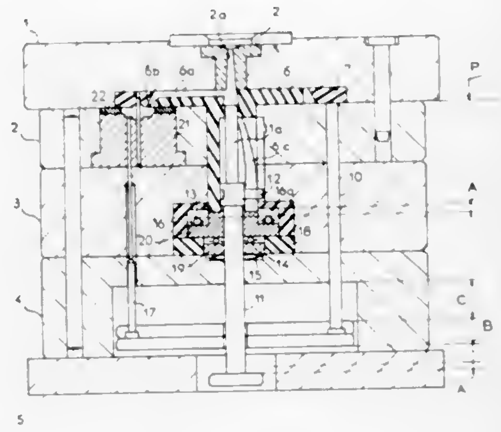
R. Richard Barts, Huntington, Ind., assignor to Huntington Laboratories, Inc., Huntington, Ind.
Filed Oct. 5, 1972, Ser. No. 295,148
Int. Cl. A47k *1/08*
U.S. Cl. 248—311 **3 Claims**



A bracket for holding a container. The bracket has a bottom shelf upon which the container is supported. The shelf has a horizontal portion which supports the bottom rim of the container and an outer distal end which extends upwardly to engage the bottom wall of the container. The shelf is integrally connected to a vertical wall which projects outwardly and has apertures thereon for receiving fasteners for the mounting of the bracket. The top portion of the bracket is provided with a recess to grippingly receive the handle of the container.

3,794,286
MOULD FOR INJECTION MOULDING PRESSES

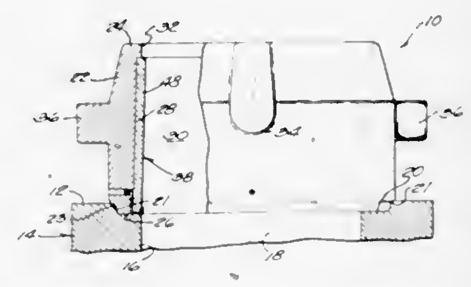
Jean Jullien-Davin, Valence, France, assignor to Crouzet, Paris, France
Filed Mar. 14, 1972, Ser. No. 234,530
Int. Cl. B28b *7/10*
U.S. Cl. 249—67 **3 Claims**



A mould for a press for the injection moulding of thermosetting or thermoplastic materials which opens in two parts in a parting plane and comprises a fixed block and a movable block, wherein there is provided a centre member which has formed therein injection passages and is associated unit the fixed block in such manners as to effect, upon the opening of the mould, a movement of translation followed by a rotation.

3,794,287
SUPERIMPOSED HOT TOP AND SEAL

Donald C. Atkinson, Ellwood City, Pa., assignor to Thiem Corporation, Milwaukee, Wis.
Continuation-in-part of Ser. No. 844,754, July 25, 1969, abandoned. This application Oct. 21, 1971, Ser. No. 191,206
Int. Cl. B22d *7/10*
U.S. Cl. 249—106 **5 Claims**



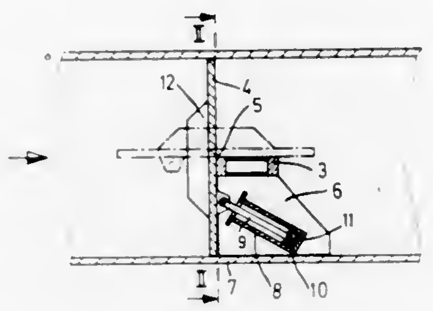
A hot top which is adjusted to be superimposed on an ingot mold having an annular recess around the opening in the top of the mold. The hot top can be in the form of a single-use structure or a metal casing having a single-use liner insert unit supported therein. The single use structure and the metal casing are adapted for placement in the recess to form a continuation of the opening in the ingot mold. The structure and the insert liner unit are formed from a heat-destructible refractory material. A heat-destructible gasket formed from a compressible plastic material is secured to the bottom of the structure or the bottom of the panels to form a seal at the juncture of the hot top with the top of the ingot mold.

ERRATUM

For Class 249—106 see:
Patent No. 3,794,262

3,794,288
BUTTERFLY VALVE

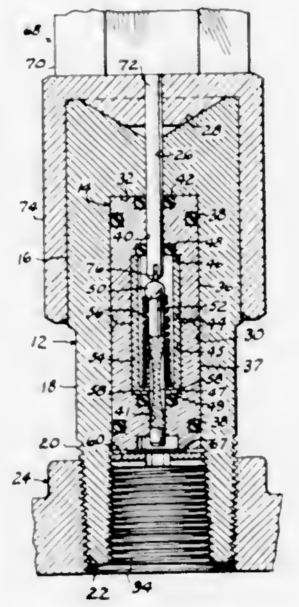
Guido Dolder, and Alfred Schmalzi, both of Zurich, Switzerland, assignors to Escher Wyss Limited, Zurich, Switzerland
Filed Mar. 8, 1973, Ser. No. 339,308
Claims priority, application Switzerland, Mar. 16, 1972, 003902/72
Int. Cl. F16k *31/143*
U.S. Cl. 251—62 **15 Claims**



Butterfly valve for ducts of hydroelectric power stations, with a web in said duct, extending transversely of said duct and being rigidly secured to said duct, and a flap pivotably mounted on said web; a drive mechanism comprising a servomotor and first connecting means between said flap and said servomotor and second connecting means between said servomotor and said web; said connecting means being arranged in a plane crossing said duct and being perpendicular to the pivoting axis of said flap.

3,794,289
PRESSURE CONDUCTING PROBE RECEIVING PLUG

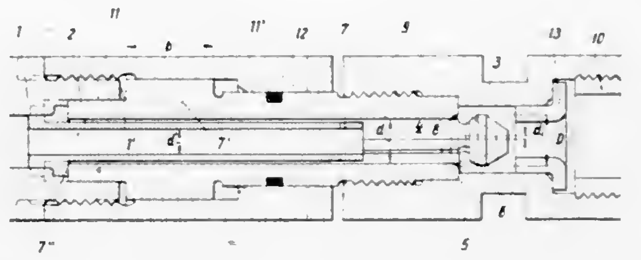
Julian S. Taylor, 8600 S.W. 8, Oklahoma City, Okla. 73128
Continuation-in-part of Ser. Nos. 876,349, Nov. 13, 1969, Pat. No. 3,630,080, and Ser. No. 89,682, Nov. 16, 1970, abandoned. This application Dec. 27, 1971, Ser. No. 214,916
Int. Cl. F16l *29/00*
U.S. Cl. 251—149.7 **12 Claims**



A vacuum and pressure probe receiving plug comprising a generally cylindrical centrally bored body threadedly connected at one end with the wall of a vessel containing a vacuum or fluid under pressure. The body is counterbored from its vessel connected end for receiving a cartridge containing a spring urged valve means movable toward and away from the vessel wall providing and interrupting fluid communication through the counterbore.

3,794,290
PRESSURE FLUID CONTROL VALVE

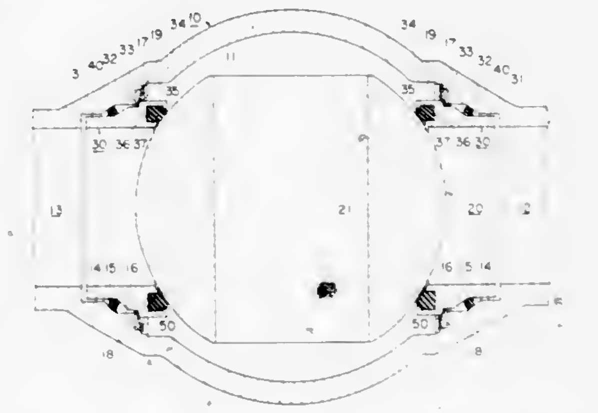
Josef Huszar, Kapfenberg, Austria, assignor to Gebr. Boehler & Co. AG, Vienna, Austria
Filed Aug. 2, 1972, Ser. No. 277,382
Claims priority, application Austria, Oct. 19, 1971, 9014
Int. Cl. F16k *31/44*
U.S. Cl. 251—347 **6 Claims**



The valve serves to control the supply of pressure fluid from a first tubular member constituting a pressure fluid outlet to a second tubular member which forms part of a pressure fluid consumer which is movable relative to said first tubular member between a first position more remote from said first tubular member and a second position nearer to said first tubular member. The valve comprises an inner sleeve secured to said second tubular member and an outer sleeve surrounding said inner sleeve and secured to said first tubular member. The inner and outer sleeves define together a flow path adapted to establish a communication between said first and second tubular members. A valve seat is secured to said outer sleeve and forms a frustoconical constriction in said flow path. A valve cone is disposed in said flow path on the side of said valve seat which is opposite to said inner sleeve and axially movable relative to said valve seat and adapted to sealingly engage the same. Said valve cone has an outside diameter which exceeds the inside diameter of said constriction. Spacing means are disposed between said valve cone and said inner sleeve and arranged to hold said valve cone clear of said valve seat unless said inner and outer sleeves are in a relative position corresponding to said second position of said second tubular member.

3,794,291
BALL VALVE APPARATUS

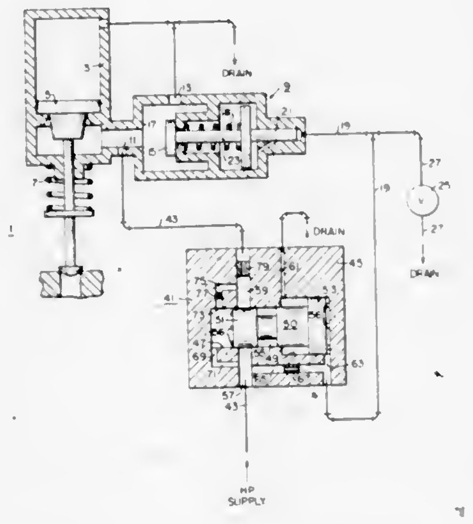
Ryoji Suyama, Yono, Japan, assignor to Kitamura Valve Mfg. Co., Ltd., Tokyo, Japan
Filed Aug. 17, 1972, Ser. No. 281,327
Claims priority, application Japan, May 18, 1972, 47-48543
Int. Cl. F16k *5/06*
U.S. Cl. 251—171 **3 Claims**



A ball valve apparatus having a hollow housing in which a spherical valve member is rotatably received. The housing has fluid passages in each of which is axially movably disposed a retainer sleeve having its inner end face formed therein with an annular groove into which a seal ring is fitted for sealing engagement with the valve member. The retainer sleeve has an axially inwardly and radially outwardly inclined outer peripheral surface which cooperates with an inner surface portion of the housing to define an annular space which communicates with the corresponding fluid passage and in which an O-ring is received. The O-ring is radially outwardly and axially inwardly displaceable along the inclined outer surface of the retainer sleeve by the pressure within the fluid passage whereby the O-ring is expanded to exert an increased axial inward biasing pressure force to the retainer sleeve.

3,794,292
SPOOL VALVE

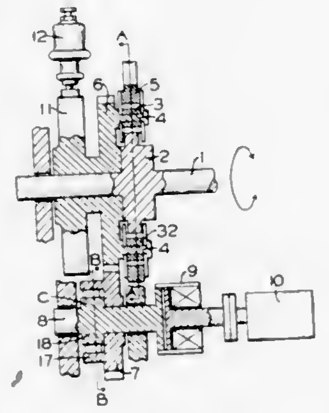
Karl O. Jaegtnes, Aston, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 15, 1972, Ser. No. 253,392
Int. Cl. F16k *31/383*
U.S. Cl. 251—31 **4 Claims**



A spool valve for automatically limiting the rate of flow of actuating fluid to an ON-OFF fast operating valve when the ON-OFF valve is closed and automatically increasing the rate of flow of actuating fluid as the ON-OFF valve begins to open.

3,794,293
PRESSURE CONTROL DEVICE FOR REMOTE CONTROL OF MARINE ENGINE

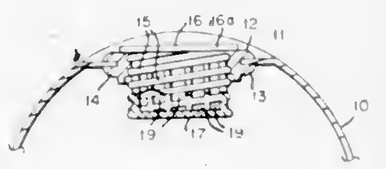
Tutomu Matuda, Akasi; Hiroo Inque, Amagasaki, and Makoto Takagi, Kobe, all of Japan, assignors to The Nippon Air Brake Co., Ltd., Kobe, Japan
Filed Nov. 30, 1972, Ser. No. 310,689
Claims priority, application Japan, Dec. 14, 1971, 46-101334
Int. Cl. F16k *31/05*
U.S. Cl. 251—130 **11 Claims**



Throttle control apparatus for a marine engine employing an electric-motor for automatically advancing the throttle at a slow, continuous rate in the navigation speed range of the engine. The apparatus further includes a planetary gear system via which the throttle control handle acts during starting speeds to advance the throttle manually. An electromagnetic clutch couples the motor to the output member of the planetary gear system when the throttle control handle is moved from the starting speed range into the navigation speed range. The planetary gear system is concurrently adjusted in accordance with the selected handle position so as to automatically terminate operation of the motor and consequently maintain the throttle setting in accordance with the selected handle position.

3,794,294
ADJUSTABLE VALVE FOR USE ON IRRIGATION PIPES

Roger M. Sherman, 3381 Stevens Creek Blvd., San Jose, Calif. 95117
Filed Apr. 23, 1973, Ser. No. 353,746
Int. Cl. F16k *31/58*
U.S. Cl. 251—145 **3 Claims**

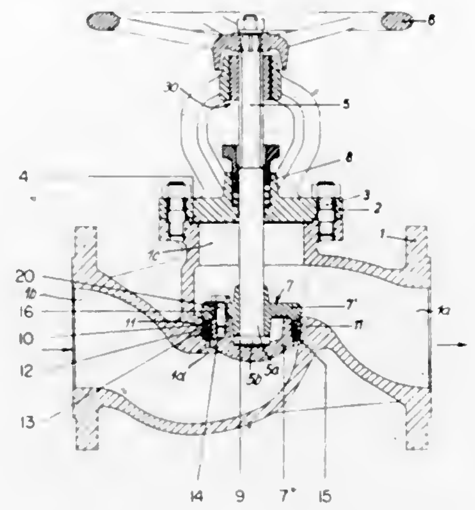


An adjustable valve for use on irrigation pipes to control the water flow from the pipe or to shut off the water flow. This device is provided with a valve member adjustable in a grommet, said grommet being flexible material. Said grommet fits into a hole in a flattened part of the irrigation pipe. The cylindrical valve member is provided with an external thread matching the internal thread of the grommet or it may have a round external surface in frictional engagement with the grommet. The valve may be of flexible material so that it may be deformed and inserted into the grommet and held by friction in a predetermined adjustment. The valve member is provided with an end wall that is received in a tapered recess of the grommet and forms a seal therewith when the valve member is in closed position. The valve member is provided with a plurality of apertures formed in the cylindrical walls thereof so that when the valve member is moved or pressed into the irrigation pipe some of these apertures are opened into the pipe to permit water to flow from the pipe into the hollow of the valve member and out thereof to irrigate the field.

3,794,295
SHUTOFF VALVE

Richard Huber, Modling Bei Wien, Austria, and Peter Wirz, Unterkulm/Aargau, Switzerland, assignors to Klinger AG, Zug, Switzerland
Filed Mar. 2, 1973, Ser. No. 337,748
Claims priority, application Switzerland, Mar. 8, 1972, 3401/72
Int. Cl. F16k *11/14*
U.S. Cl. 251—189 **13 Claims**

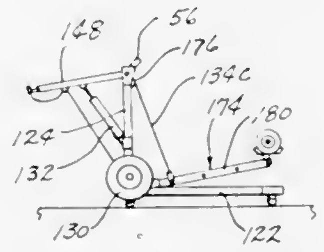
A shutoff valve incorporating a plunger piston which carries at least one axially compressible sealing ring for sealing the piston against the valve housing, and which in each actuated position is subjected to an axial elastic compression which increases in the closed position of the valve plunger piston during further movement of an actuation spindle carrying the piston in the valve closed direction. The sealing ring is clamped between a first piston part or portion and an annular spring which cooperates with a second piston part or portion. In the closed position of the plunger piston, this annular spring bears against a stop fixed to the valve housing, so that the annular spring is displaced relative to both piston parts which are fixedly connected with one another during further movement



of the actuation spindle in the closed direction of the valve in the sense of exerting an additional axial compression upon the sealing ring.

3,794,296
CRANE AND TOW UNIT

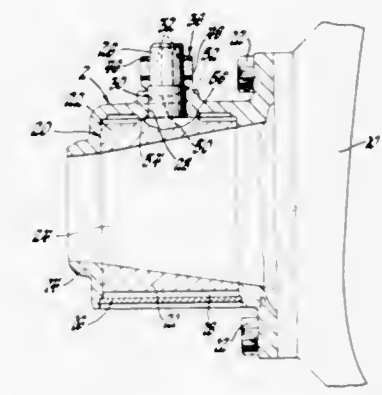
Roger D. Hasstedt, 4041 Hubbell Ave., Des Moines, Iowa 50317
Filed Aug. 10, 1971, Ser. No. 170,545
Int. Cl. B60p *3/12*
U.S. Cl. 254—8 B **6 Claims**



A portable trailerable vehicle capable of lifting and towing disabled vehicles and when stationary functioning as a crane to move movable objects to desired locations about the rotational axis of the upright standard. The upright standards and the tongue members are pivotally relative to each other to extend in the same direction or opposite directions. When the unit is collapsed a boom extends upwardly from the standard and a cable extending rearwardly therefrom allows the unit to perform pulling operations as in the straightening of body parts of vehicles. The height of the pulling action is variable with the ground support wheels used. A jack arm may be pivotally connected to the cross frame with a cable connected to the upright standard for use of the unit as a jack. Desired platform structures may be mounted on the outer end of the jack arm. For long lifting distances a winch cable may supplement the crane lifting cable. The transport wheels may be moved between raised and lowered positions through 180° pivotal action with the second set of wheels being stationary on the bottom side of the cross frame or on the wheel mounting arm opposite the first set of wheels. Also, the second set of wheels may be pivotal with the tongue members to move between downwardly and upwardly extending positions. The upper end of the upright standard may alternatively include a light unit to be seen over a disabled vehicle being towed or an extension tongue unit for moving the unit when the upright standard is horizontally disposed. A stabilizer arm extends outwardly from the tongue members and includes a jack having vertically spaced apart mounting brackets for use depending on which set of wheels are in ground engagement. The vertical standard is rotatable between positions substantially perpendicular to the cross frame while adjustable stops permit 360° rotation.

3,794,297
ROTARY VALVE WITH SEALING STRUCTURE

Morris J. Duer, Lansing, and William A. Weidman, Okemos, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Jan. 17, 1973, Ser. No. 324,524
Int. Cl. F16k *5/02*
U.S. Cl. 251—309 **2 Claims**



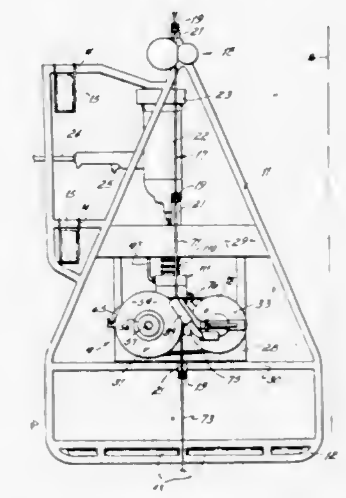
A valve comprises a housing and a valve member in the housing rotatable between two positions. The valve member has a shaft for rotation projecting through an opening in the housing. Corresponding annular sealing surfaces on the valve member encircling the shaft and on the housing encircling the opening are engageable to prevent escape of fluid through the opening. An arm fixed for rotation with the shaft and engageable with raised external stops on the housing is deformed when engaged with a stop to bias the sealing surfaces into engagement.

ERRATUM

For Class 254—873 see:
Patent No. 3,794,296

3,794,298
HOISTING MECHANISM FOR ASCENDING AND DESCENDING A CABLE

William E. Mauldin, Cincinnati, Ohio, assignor to Hi-Lo Powered Stirrups, Inc., Cincinnati, Ohio
Filed Mar. 9, 1972, Ser. No. 233,019
Int. Cl. B66d *1/30*
U.S. Cl. 254—185 R **2 Claims**



A novel hoisting mechanism for ascending and descending a freely hanging, single strand of cable that includes a dual drive sheave-pressure wheel assembly combination which provides the safety of two separate drive sheaves and the threading simplicity of an open breach, and that includes a brake which severely limits downward drift once power is cut off on descending the cable. The preferred embodiment provides a primary drive sheave and a secondary drive sheave located on axes parallel one to the other and driven through a single, main drive shaft. A pressure wheel assembly cooperates with a tension sheave mounted on the primary sheave's drive shaft, the assembly including a series of pressure wheels movable between a first position where same create an open breach between the primary and secondary drive sheaves so as to allow easy threading and unthreading of the cable with the mechanism and a second position where same are spring biased against the cable wound around the tension sheave to prevent slippage of the cable relative to the tension sheave as the mechanism ascends and descends the cable. A special magnetic brake is interconnected with the main drive shaft, the brake being energized when power is cut off on descending the cable so as to severely limit drift of the mechanism down the cable.

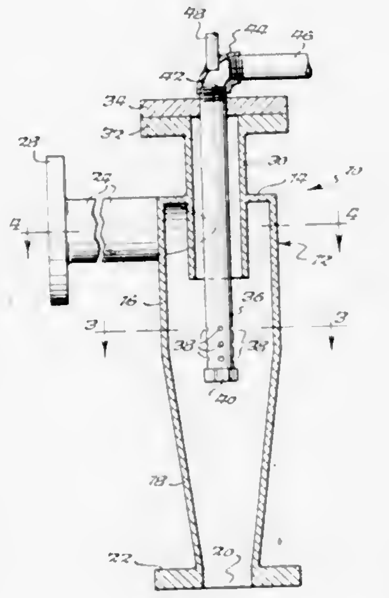
3,794,299
CENTRIFUGAL REACTOR

Louis E. Wagner, West Seneca; Andrew T. McCord, Snyder, and Joseph A. Dorn, Hamburg, all of N.Y., assignors to Chem-Trol Pollution Services, Blasdell, N.Y.

Filed Sept. 23, 1971, Ser. No. 182,941

Int. Cl. B01f *15/02*

U.S. Cl. 259—4 **10 Claims**



A centrifugal reactor comprising an enclosure having an inlet for directing a stream of waste reactant tangentially into the enclosure and forming a film moving in a downwardly spiraling path along the inner wall surfaces of the enclosure. A second waste reactant is fed through the top of the enclosure into a sparger which directs such second waste reactant as a spray against the spirally moving film at substantially right angles thereto effecting a complete blending and neutralization of the two waste reactants.

3,794,300
ANNULAR SPIRAL ISG

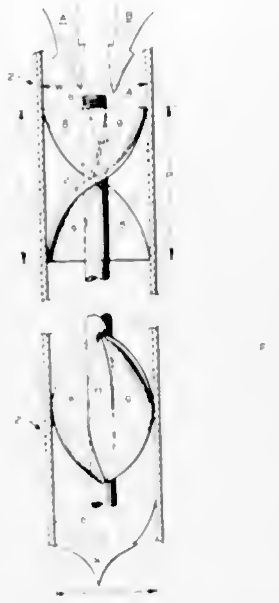
Richard E. Harder, Anderson, S.C., assignor to Dow Badische Company, Williamsburg, Va.

Filed Dec. 30, 1971, Ser. No. 213,976

Int. Cl. B01f *5/00*

U.S. Cl. 259—4 **5 Claims**

A device for generating internal surfaces within a flowing mass in a tube wherein the tube contains mixer elements adapted to mix a plurality of discrete fluids; and wherein the mixer elements are mounted on a shaft which shaft extends along the direction of flow within the tube. The mixer elements have a pitch to length ratio of about 1. In a preferred form, the mixer elements are formed from twisted involute elements of equal length mounted on the same length of the inner shaft.



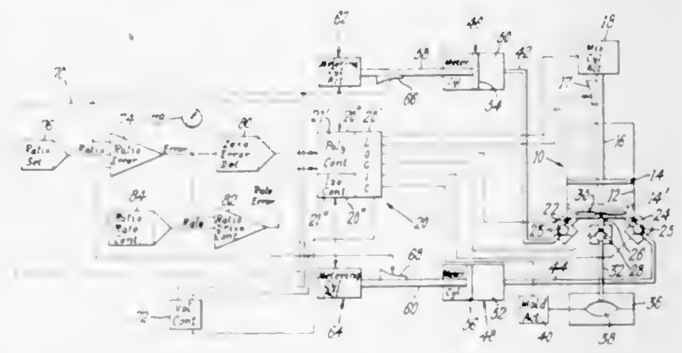
3,794,301
METHOD AND APPARATUS FOR MIXING AND DISPENSING

Robert C. Simmonds, Jr., Topsfield, Mass., assignor to USM Corporation, Boston, Mass.

Filed Oct. 13, 1972, Ser. No. 297,382

Int. Cl. B28c *7/04*

U.S. Cl. 259—7 **16 Claims**



Method and apparatus for the mixing and dispensing of a multiple component material composition wherein said component materials are supplied substantially continuously in controlled ratio in a substantially concurrent mixing and dispensing cycle, and said cycle is repeatable to form successive mixing and dispensing as required in processes such as mold filling.

3,794,302
FLOATLESS CARBURETOR FOR INTERNAL COMBUSTION ENGINES

Rudolf Diener, Zurich, Switzerland, assignor to Autoelektronik AG, Chur, Switzerland

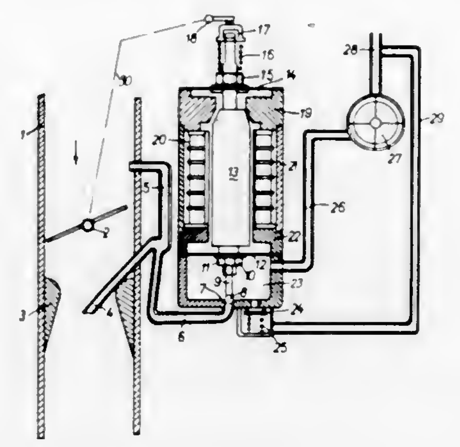
Filed Dec. 5, 1972, Ser. No. 312,263

Int. Cl. F02m *51/08*

U.S. Cl. 261—36 A **7 Claims**

A floatless carburetor for internal combustion engines comprising a suction tube, an air funnel therein, a spray tube opening within the air funnel, a throttle valve in the suction tube

ahead of the spray tube, and a main nozzle disposed in a fuel chamber for delivering fuel to said spray tube. The main nozzle is formed as a mechanically and electrically controllable regulating valve. The valve member is drivingly connected to a magnetic ram which itself is connected by means of a resilient intermediary member to the linkage which operates the throttle valve. The magnetic ram can be actuated by electric currents the intensity of which is characteristic for the parameters which determine the preparation of the combustible mixture, whereby an electromagnetic adjustment can be superposed to the mechanical basic adjustment of the throttle valve.



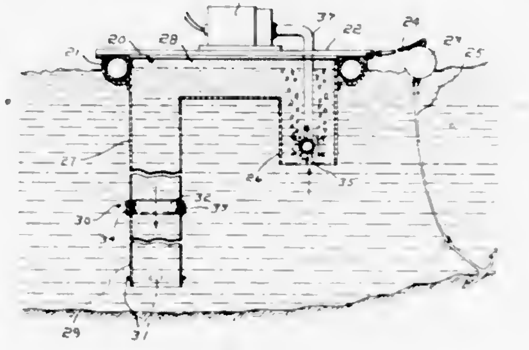
3,794,303
METHOD AND APPARATUS FOR AERATING BODIES OF WATER

Benedict E. Hirshon, 36 Kenwood Rd., Brookline, Mass. 02167

Continuation-in-part of Ser. No. 98,656, Dec. 16, 1970, abandoned. This application June 11, 1973, Ser. No. 368,724

Int. Cl. B01f *3/04*

U.S. Cl. 261—61 **36 Claims**



Method and apparatus for aerating bodies of open water utilize unbalanced water columns interconnected at their upper ends to provide continuous aeration of the water at any desired depth. The head on one column is attained by the introduction of air into the other column which serves both to raise and to aerate the water therein. Alternatively, the water may be circulated by mechanical means and the air introduced at the top of its travel. Undissolved air is permitted to escape as it passes between the columns before it enters the return column.

3,794,304
PNEUMATIC WEIR WATER LEVEL CONTROL FOR COOLING TOWER HOT WATER DISTRIBUTION BASIN

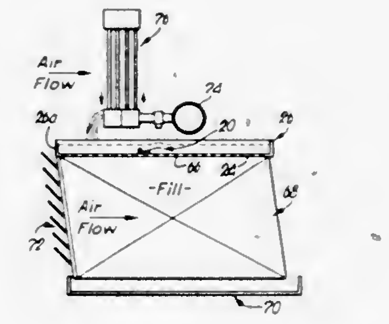
Robert E. Cates, Leawood, Kans., and Robert M. Mitchell, Kansas City, Mo., assignors to The Marley Company, Mission, Kans.

Filed June 19, 1972, Ser. No. 264,147

Int. Cl. B01f *3/04*

U.S. Cl. 261—111 **12 Claims**

A weir assembly has a rotatable weir member whose position for water level control or water diversion is governed by inflation or deflation of a collapsible wall, pneumatically operated tube supporting the weir member. The tube underlies the weir member in disposition such that charging and discharging of air from the tube to vary its cross-sectional size correspondingly raises and lowers the weir member. Segregation of the water flow in the hot water distribution basin of a water cooling tower may thereby be controlled to either vary the cooling capacity of the tower by changing the extent or pattern of water loading on an evaporative cooling structure below the distribution basin thereby affecting its cooling capacity or, in the case of a cooling tower having both wet and dry cooling sections served by a common air mover, to permit not only variation of respective water loadings but also the relative quantities of air permitted to pass through corresponding wet and dry sections. Use of the weir assembly adjacent one outer extremity of the distribution basin also permits effective prevention of ice formation on the inlet louvers associated with the evaporative cooling structure of the tower by the expedient of simply periodically raising the weir member of the assembly to a point where hot water from the distribution basin is caused to overflow the basin end wall and thereafter cascade down the louvers to the cold water collection basin.



3,794,305
APERTURED COLUMN TRAY PROVIDED WITH BUBBLE CAPS

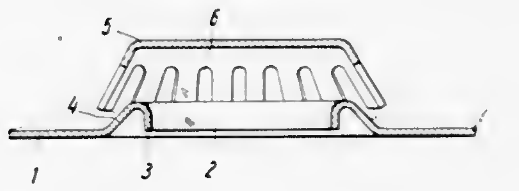
Hans Joachim Kloss, Hilden, Germany, assignor to Firma Julius Montz GmbH, Hilden, Germany

Filed Mar. 13, 1972, Ser. No. 233,998

Claims priority, application Germany, Mar. 13, 1971, 2112110

Int. Cl. B01f *3/04*

U.S. Cl. 261—114 A **6 Claims**

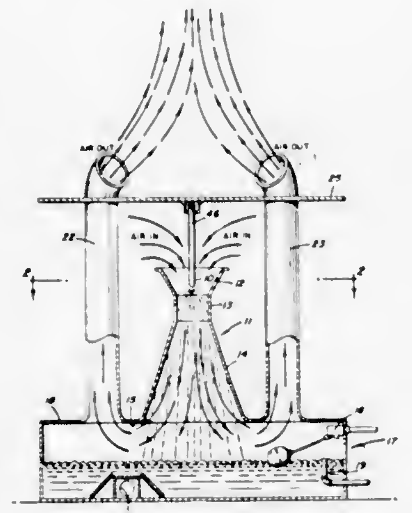


An improvement in a column tray comprising at least one bubble cap disposed over an aperture of a plate, said cap having at least one opening therein, which improvement comprises a marginal edge on said plate adjacent said aperture, which marginal edge is raised from said plate and bent downwardly to define said aperture.

3,794,306

INJECTOR TYPE COOLING TOWER

John Engalitcheff, Jr., Gibson Island, Md., assignor to Baltimore Aircoil Company, Inc., Baltimore, Md.
Continuation-in-part of Ser. No. 795,516, Jan. 31, 1969, abandoned. This application May 21, 1969, Ser. No. 826,638
Int. Cl. B01f *3/04*
U.S. Cl. 261—116 4 Claims

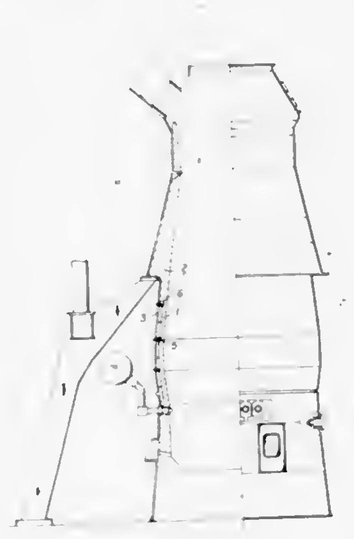


A cooling tower operating on the injection or aspiration principle in which the air is pumped by an injector designed to produce a large air-water interface and a large air-water relative movement for good heat exchange. A common exhaust stack serves a plurality of injectors to provide a construction of large capacity with savings in height requirements and avoidance of recirculation problems.

3,794,307

BLAST FURNACE COOLING SYSTEM

Yoshio Seo, Yokohama, Japan, assignor to Ishikawajima Harima Jukogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed June 25, 1971, Ser. No. 156,918
Claims priority, application Japan, July 4, 1970, 45-58442
Int. Cl. C21b *7/10*
U.S. Cl. 266—32 5 Claims

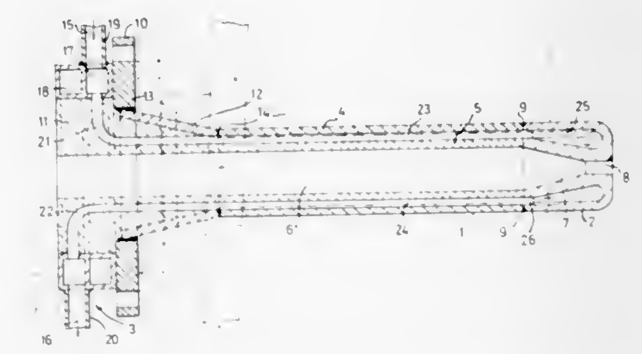


A blast furnace cooling system employing staves cooling system, and providing projection which interposed replaceable between staves arranged upper and lower direction of the furnace.

3,794,308

DEVICE FOR INJECTING HOT GASES INTO A SHAFT FURNACE

Nicolas Gerassimos Ponghis, and Claude Henri Vanosmael, both of Liege, Belgium, assignors to Center De Recherches Metallurgiques-Centrum Voor Research In De Metallurgie, Brussels, Belgium
Filed Nov. 30, 1972, Ser. No. 310,798
Claims priority, application Belgium, Nov. 30, 1971, 776093
Int. Cl. C21b *7/16*
U.S. Cl. 266—41 21 Claims

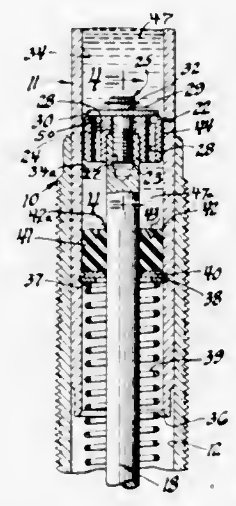


The device has a longitudinal unit comprising an outer metal tube and an inner refractory tube. A liquid-cooled nozzle at one end of the unit converges to a narrow outlet. A terminal element at the other end of the unit serves to connect the device to the outer furnace wall, to connect the bore of the longitudinal unit to a hot gas supply, and to connect the device to a cooling liquid supply.

3,794,309

ADJUSTABLE STROKE SHOCK ABSORBER

William J. Chrokey; Larry C. Ellis, both of Farmington, and Robert J. Heideman, Detroit, all of Mich., assignors to Ace Controls, Inc., Farmington, Mich.
Filed Dec. 29, 1972, Ser. No. 319,289
Int. Cl. F16g *5/00*
U.S. Cl. 267—34 12 Claims

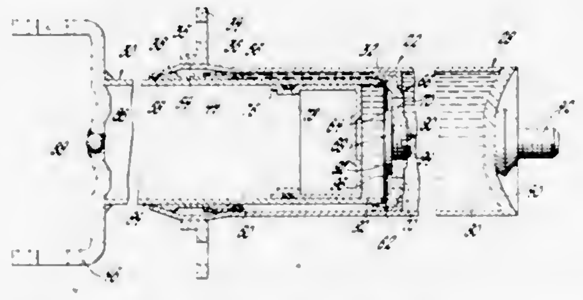


An adjustable stroke shock absorber having an outer tube slidably mounted in an inner tube and with the inner tube having an outer end adapted to receive an impact load. A piston rod is fixed in the outer tube and is extended into the inner tube and carries a fixed piston head. The piston head is provided with a fluid return passage means and a check valve to close said passage means when the inner tube is moved into the outer tube during a shock absorbing movement. A seal is disposed in the inner tube in a position around the piston rod, and it is movable with the inner tube. The inner tube is provided with fluid whereby when a shock load is taken on the outer end of the inner tube, the inner tube will move into the outer tube and force the fluid therein around the fixed piston head and into a chamber behind the fixed piston head. After the shock load has been absorbed, a return spring moves the inner tube to the initial starting position.

3,794,310

HYDROPNEUMATIC ENERGY ABSORBING UNIT

Albert B. Mewhinney, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 27, 1972, Ser. No. 301,507
Int. Cl. F16f *5/00*
U.S. Cl. 267—139 3 Claims

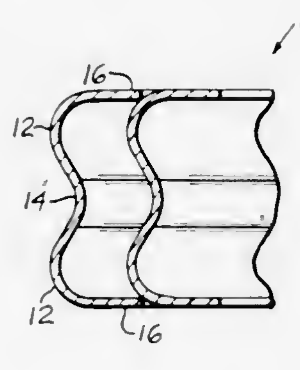


A hydropneumatic energy absorbing unit of the type including a cylinder tube subassembly having a piston tube subassembly telescopically disposed thereon and further including a valve arrangement for altering the energy absorbing characteristics of the unit and for retarding the rate of relative telescopic extension of the piston tube subassembly. The valve arrangement includes a valve disc with a circular aperture therein disposed on the piston tube subassembly, and an adjusting member mounted on the piston tube subassembly with a cylindrical boss portion projecting into the circular aperture. The boss portion cooperates with the disc in defining an annular throttling orifice the area of which is proportional to the pressure of the working fluid of the unit. The energy absorbing characteristics of the unit are adjustable through progressive movement of the boss portion further into the circular aperture.

3,794,311

COILED LOAD ELEMENT

John E. Rode, Fonda, N.Y., assignor to Temper Corporation, Fonda, N.Y.
Filed May 15, 1972, Ser. No. 253,302
Int. Cl. F16f *1/34*
U.S. Cl. 267—158 14 Claims

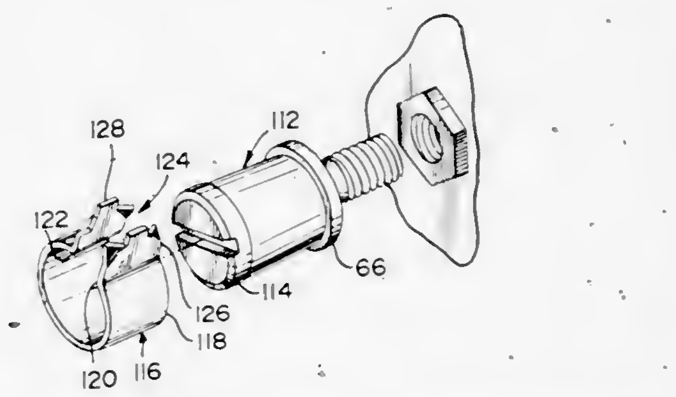


A load element consisting of a strip of material which is convoluted in cross section and which material is ductile and characterized in undergoing work hardening when stressed to beyond the elastic limit. The load element, due to the above mentioned characteristics, is characterized in deforming under substantially constant load once the resiliency thereof is overcome. The coiled load element can be in the form of a fractional part of a convolution or it can be in the form of multiple convolutions arranged either spirally or helically. The load element can be combined with a seal element and thereby form a combination which simultaneously seals between a pair of opposed members while exerting a substantially constant load therebetween.

3,794,312

CLUTCH SPRING

Leroy W. Freeby, Long Beach, Calif., assignor to Robertshaw Controls Company, Richmond, Va.
Division of Ser. No. 35,698, May 8, 1970. This application June 9, 1972, Ser. No. 261,349
Int. Cl. F16f *1/06*
U.S. Cl. 267—156 9 Claims

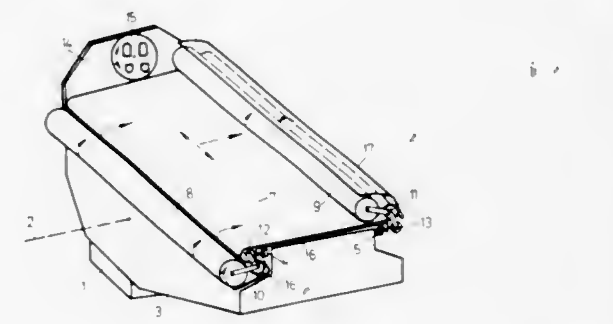


A clutch spring for use in calibration assembly including a sleeve-like body having first and second longitudinal edges spaced from each other and a leg extending from one of the longitudinal edges to form a stop. The calibration assembly includes the above described clutch spring gripping a cylindrical clutch surface of a rotatable adjustment member which is adapted to engage a thermostat of the type operating a control device in response to temperature variations and a temperature adjusting device controlling the position of the adjustment member.

3,794,313

X-RAY EXAMINING APPARATUS

Helmut Berger, and Alfred Hahn, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany
Filed Jan. 18, 1971, Ser. No. 107,169
Claims priority, application Germany, Jan. 30, 1970, P 20 04 182.1; Nov. 7, 1970, P 20 54 810.1
Int. Cl. A61g *7/08*
U.S. Cl. 269—322 2 Claims



An X-ray examining apparatus has a bed for the patient with a sheet which extends substantially over the entire length of the bed and which is moved by holding and driving means transversely to the bed so as to completely more sideways the body of the patient lying upon the bed. Means are provided to hold the patient from the sides. The invention is particularly characterized by rollers extending parallel to opposite sides of the bed and constituting a part of the holding and driving means. The sheet which is of limited length is unrolled from any one of the rollers and is simultaneously wound upon the other roller, possibly with the use of guide rollers. Means are provided for holding the sheet on the surface of the bed upon which the patient lies.

3,794,314

pensive to install is described. The apparatus comprises a plu-

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rotatably mounted on its front wall. The front wall is formed

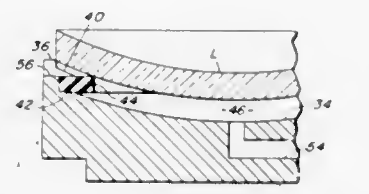
weight of the object will return it to a position of rest by gravi-

3,794,314
VACUUM CHUCK FOR OPHTHALMIC LENS FINISHING MACHINERY

Orin W. Coburn, and Joe D. Stith, both of Muskogee, Okla., assignors to Coburn Optical Industries, Inc., Muskogee, Okla.

Filed Jan. 13, 1972, Ser. No. 217,469
Int. Cl. B25b *11/00*

U.S. Cl. 269—21 **1 Claim**



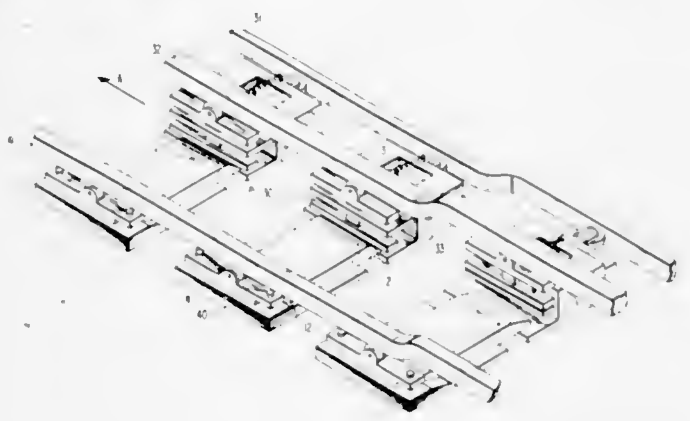
A vacuum chucking system for securing and holding an ophthalmic lens blank without the requirement of forming a block to a surface thereof.

3,794,315
BAG CONVEYOR SYSTEM WITH AUTOMATIC EDGE PRESSING

Keiji Kaneko, and Hiroshi Ishida, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara-shi, Kanagawa, Japan

Filed July 19, 1971, Ser. No. 163,693
Claims priority, application Japan, July 17, 1970, 45/62666
Int. Cl. B23q *7/04;* **B65b** *51/10, 65/00*

U.S. Cl. 269—56 **2 Claims**



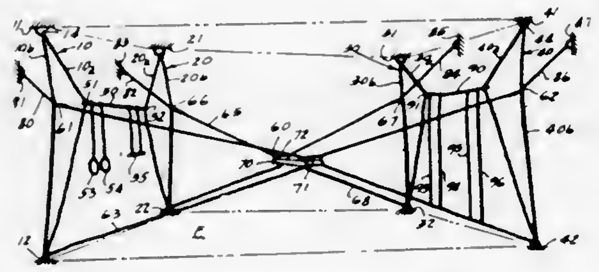
A bag, such as an envelope, a sack, etc., is clamped on a moving conveyor at a place where both edges of the bag are cut off by fixed cam controlled pressing units associated with respective edges of said bags.

3,794,316
CLIMBING ROPE GYMNASTIC APPARATUS

Thomas G. Toman, 210 S. Yale Ave., Arlington Heights, Ill. 60005

Filed Sept. 17, 1971, Ser. No. 181,349
Int. Cl. A63b *7/04, 17/04*

U.S. Cl. 272—60 **12 Claims**



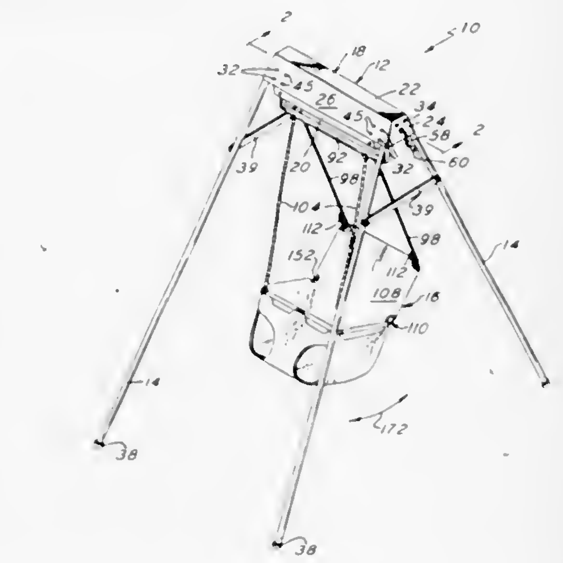
A multi-purpose gymnastic apparatus which is adaptable to indoor and outdoor play areas and which is quick and inexpensive to install is described. The apparatus comprises a plurality of thin, elongated, flexible support members which are vertically disposed by being anchored at the top and bottom ends to anchor supports and a plurality of climbing ropes horizontally and limply suspended between various ones of the support members. The ends of the climbing ropes have adjustable connectors which are detachably secured along the length of the vertically disposed flexible support members. The upright support members are of a flexible material which may include in part a chain link portion which cooperates with the adjustable connectors of the climbing ropes to provide the adjustable connections. The flexibility of the apparatus is illustrated by the fact that two, three, four or more upright support members may be arranged in various configurations between upper and lower anchor supports with the climbing ropes strung therebetween and at various levels. Additional exercising devices such as ladders, bars, rings, swings, etc., may be arranged on the apparatus.

3,794,317
AUTOMATIC SWING

Edmund Barrett, Narberth, Pa., assignor to Jenkintown Metal Products, Inc., Jenkintown, Pa.

Continuation-in-part of Ser. No. 885,525, Dec. 16, 1969, Pat. No. 3,667,756. This application Jan. 19, 1971, Ser. No. 107,663
Int. Cl. A63g *9/16*

U.S. Cl. 272—86 **4 Claims**



A child's swing operated by a spring motor. The swing includes a frame, upstanding legs supporting the frame and a swing seat suspended from the frame. The spring motor includes a coiled spring having one end secured to a ratchet wheel and the other end secured to the frame. A pair of pawls alternately engage the ratchet wheel, thereby controlling the release of the tension on the spring. The power of the spring in turn drives the seat in a reciprocating pivotal movement. The spring is formed from spring steel, and has a square cross-section. By utilizing the square cross-section, a spring of increased diameter can be used without the coils of the spring skewing. The increased diameter of the main coiled spring permits the swing to operate for at least twice as long as the prior art automatic swings which were powered by coiled springs.

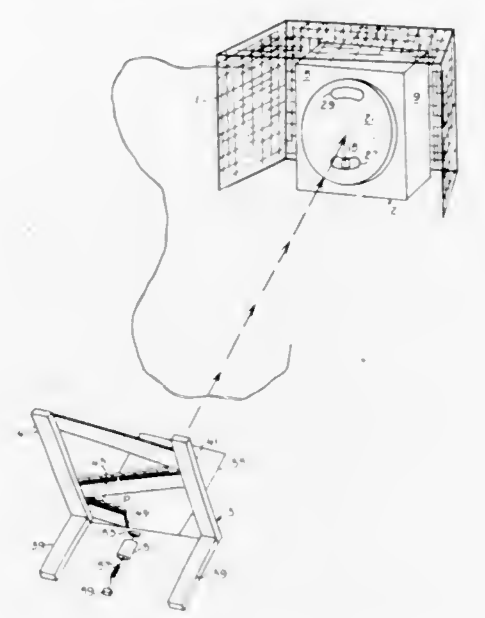
3,794,318
HOCKEY PUCK PRACTICE SHOOTING APPARATUS

Lloyd G. Holmes, 460 Wilcot Ave., St. Louis, Mo. 63122

Filed Mar. 14, 1973, Ser. No. 341,289
Int. Cl. A63b *71/02, 69/00;* **F41b** *15/00*

U.S. Cl. 273—1 B **9 Claims**

Hockey puck practice shooting apparatus includes a target comprising a housing with a rotatable disc-shaped shield rotatably mounted on its front wall. The front wall is formed with holes large enough to receive a hockey puck and spaced one or more radial distances from the axis of the shield and the shield is provided with one or more arcuate slots of equal radii with the holes so as to register with the holes for a length of time proportional to the angular length of the slots and the rotational velocity of the shield. A puck ejector is electromechanically synchronized with the operation of the shield.

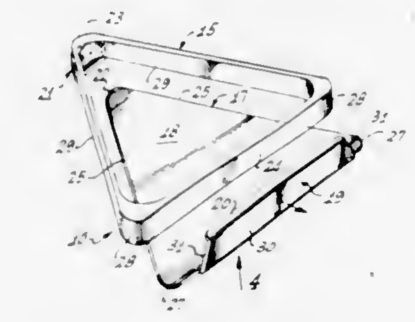


3,794,319
COMBINED BILLIARD BALL RACK AND SHOE ASSEMBLY

Marvin A. Miller, 4323 W. Pico Blvd., Los Angeles, Calif. 90019

Filed Sept. 14, 1971, Ser. No. 180,314
Int. Cl. A63d *15/00*

U.S. Cl. 273—22 **6 Claims**



A conventional triangular rack for billiard balls, combined with a removable shoe comprising a triangular base plate covering the lower side of the rack, and an integrally molded handle having a flange overhanging one sidewall of the rack. A cup-like retainer is nailed onto the nose of the rack with the bottom wall of the retainer spaced below the bottom edge of the rack a sufficient distance to define a slot for slidably receiving and holding the nose of the base plate.

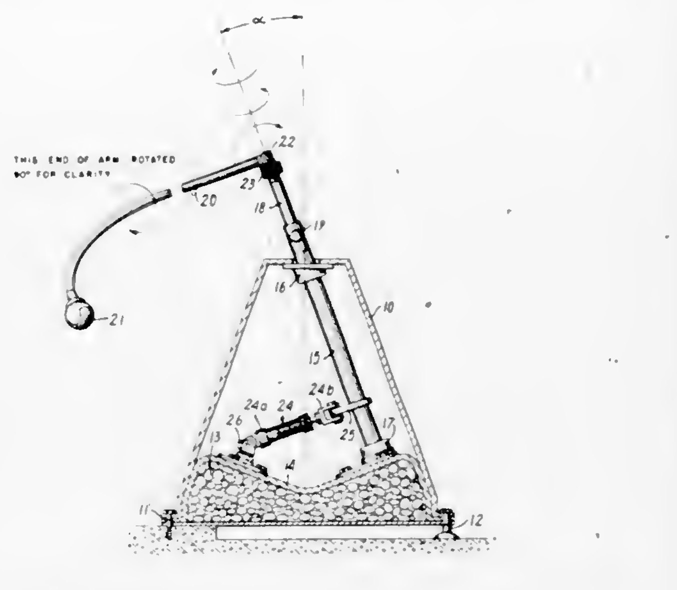
3,794,320
RECREATIONAL APPARATUS

Gustave H. Salmont, 916 Greentree Rd., Pacific Palisades, Calif. 90272

Filed June 17, 1971, Ser. No. 154,003
Int. Cl. A63b *69/40*

U.S. Cl. 273—29 A **16 Claims**

A stroke developing apparatus in which a tethered object is supported from a shaft rotatable on an inclined axis so that the weight of the object will return it to a position of rest by gravity, and in which provision is made for limiting the rotation of the shaft to less than a complete rotation and cushioning the rotation of the shaft in one direction when the object has been subjected to impact and for controlling the rate of return of the object by gravity toward the rest position.

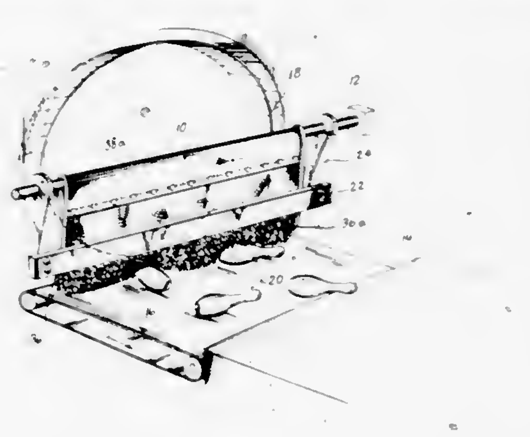


3,794,321
COMBINED BOWLING PIN WIPING MECHANISM, CONVEYOR AND PICK-UP MECHANISM

Lynn Goldstein, and Joe W. Bounds, both of Dallas, Tex., assignors to Texel Industries, Inc., Cleburne, Tex.

Filed Mar. 28, 1973, Ser. No. 345,701
Int. Cl. A63d *5/10*

U.S. Cl. 273—54 R **4 Claims**



A pin wiping cloth is suspended above a pin conveyor immediately forward of a pin pick-up mechanism. The wiping cloth is provided with chemically treated tufts on opposite sides thereof with the tufts on one side being engaged with pins as they are carried toward the pick-up mechanism by the pin conveyor and the tufts on the opposite side being engaged with pins which have been carried to the opposite side of the wiping cloth by the pin conveyor and before they are picked up by the pick-up mechanism.

3,794,322
WATER VOLLEYBALL NET

John N. Rosekrans, Jr., San Francisco, Calif., assignor to Kransco Manufacturing, Inc., South San Francisco, Calif.

Filed Sept. 8, 1972, Ser. No. 287,539
Int. Cl. A63b *71/00*

U.S. Cl. 273—95 R **7 Claims**

A water volleyball net has a rectangular frame having floats attached to an upper portion thereof, and a weight suspended

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from a lower portion thereof whereby any deflection of the

supports at one end thereof a swingably-mounted drive ball to

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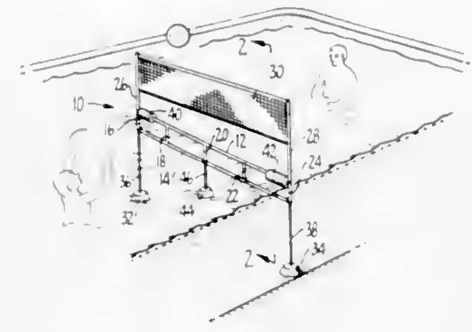
King, respectively. Each player alternately throws the dice and is permitted to move one of his own pieces corresponding to

stantially midway between the top and bottom surfaces of the head and are spaced from each other, with one passage being from a lower portion thereof whereby any deflection of the rectangular frame from a vertical plane will produce a couple tending to return the frame to an upright position.



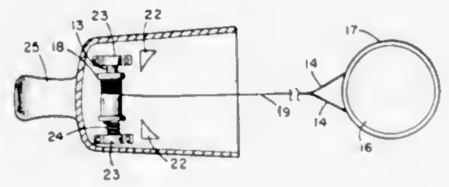
The frame has upwardly extending arms at each end thereof and a net suspended between the arms. The frame is anchored in the water by lines attached from the frame to the weights on the bottom of the pool.

3,794,323

CENTRIFUGAL EXPULSION AND RETRACTION APPARATUS WITH TETHERED OBJECT

Preston Johnson, c/o 399 Deli, 399 8th Ave. (30th), New York, N.Y. 10001

Filed Feb. 21, 1973, Ser. No. 334,475
Int. Cl. A63b *71/02*
U.S. Cl. 273—97 R **5 Claims**



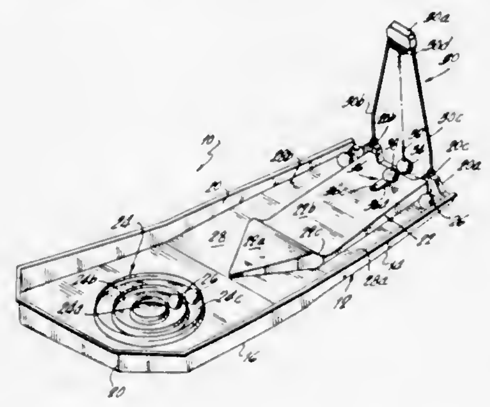
A hand held device for repeatedly ejecting and receiving ball-like objects. The ball is fastened to a string that is connected to a rewinding mechanism. This mechanism is powered by a spring that stores potential energy for the return of the object when the ball is flung out from its housing chute. The rewinder causes the ball to return within close proximity of the chute but not necessarily directly therein. Other ball-like objects are discs or even rotating dual disks.

3,794,324

TARGET GAME WITH SWINGABLY MOUNTED PROJECTING BALL

Walter Moe, Huntington, N.Y., assignor to Aurora Products Corp., West Hempstead, N.Y.

Filed June 22, 1971, Ser. No. 155,529
Int. Cl. A63b *68/04*
U.S. Cl. 273—101 **6 Claims**



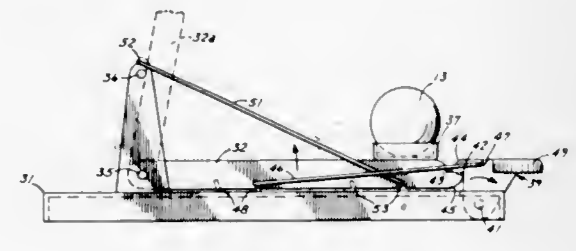
A game of skill which is a modified form of the indoor target game of skee-ball. The game includes a playing alley which supports at one end thereof a swingably-mounted drive ball to be manipulated by the player for propelling a series of playing balls along a ramp. The ramp is constructed to catapult the playing balls into concentric scoring troughs located at the other end of the playing alley. An adjustable impact-transfer device is mounted on the ramp and supports successive playing balls in impact-transfer relation to a stationary impact ball. The impact-transfer device is adjusted to aim the playing ball supported thereon towards one of the scoring troughs and the drive ball is swung into contact with the impact ball for propelling the playing ball into the aimed-for scoring trough.

3,794,325

TARGET CUPS IN TEN PIN CONFIGURATION AND PROJECTOR HAVING FORCE VARYING CAPABILITY

Herbert O. Stender, 1678 Paris, Apt. 102, Aurora, Colo. 80010

Filed Aug. 12, 1971, Ser. No. 171,087
Int. Cl. A63b *71/02*
U.S. Cl. 273—101 **5 Claims**



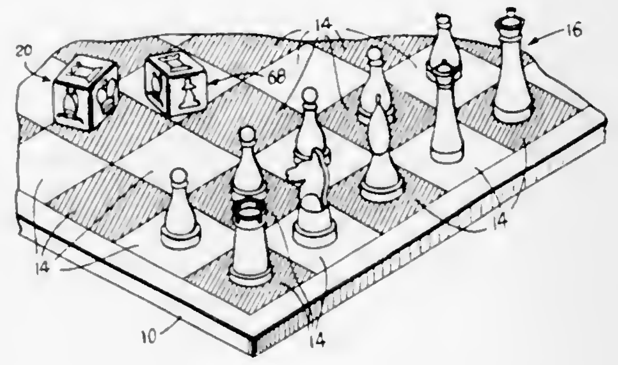
An aerial bowling game has a target assembly with open receptacles arranged in a tenpin configuration and an upright backboard behind the receptacles to deflect a projectile into a desired of the receptacles according to the skill of the player. An improved catapult-type projectile launcher tosses the projectile toward the target assembly with a preselected force, the scoring of the game closely following that of bowling. The launching catapult arm is biased to vary the force of launch. An independent biasing element is also supplied to hold the launching arm in place by a trigger member.

3,794,326

CHESS GAME APPARATUS INCLUDING DICE

Norman Bialek, 14 Broadview Rd., Westport, Conn. 06880

Filed Jan. 2, 1973, Ser. No. 320,439
Int. Cl. A63f *3/02*
U.S. Cl. 273—131 KC **1 Claim**



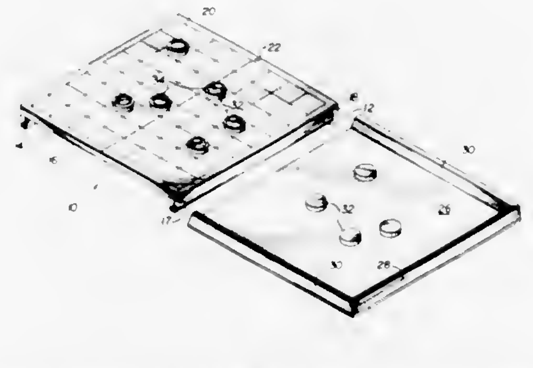
A modified chess game comprising a game board, 32 chess pieces, and a pair of dice adapted to be used during play, in order to impart an element of chance to the game. The dice have six symmetrical and square faces, the faces being marked with identifying designations resembling the profiles of different playing pieces of a conventional chess set. In one embodiment, a die has its six faces marked with symbols resembling the profiles of a Pawn, Rook, Knight, Bishop, Queen and King, respectively. Each player alternately throws the dice and is permitted to move one of his own pieces corresponding to the symbol appearing on the upward face of either die, or if this is not possible, he can then move any one of his other pieces. In an alternate embodiment, the dice each have one blank face, indicating a free move, whereby a player is permitted to move any one of his pieces when such a blank face has appeared on either of the thrown dice. The permissible moves of each playing piece follow conventional chess rules.

3,794,327

GAME BOARD SUPPORT AND INVERTING TRAY

William H. Washington, 5404 Sheriff Rd., N.E., Washington, D.C. 20027

Filed Mar. 15, 1973, Ser. No. 341,797
Int. Cl. A63f *3/0*
U.S. Cl. 273—148 R **1 Claim**



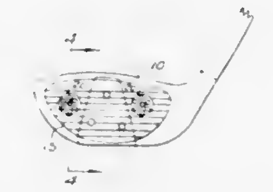
A support including a pair of transversly extending members and a pair of longitudinally extending members mounted on and extending from one transverse member to a point beyond the other transverse member. A game board with playing pieces is supported on this framework. A tray with upstanding rear and side edges is inverted over the board and support framework. The side edges of the tray are spaced apart a distance greater than that of the spacing of the longitudinal members. By inverting the whole device and then removing the support and gameboard and playing pieces are left in inverted position in the tray.

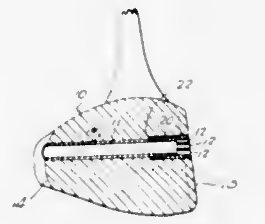
3,794,328

GOLF CLUB HEAD

Earl B. Gordon, 1617 Rangeland Rd., Louisville, Ky. 40219

Filed Dec. 1, 1972, Ser. No. 311,107
Int. Cl. A63b *53/04*
U.S. Cl. 273—167 E **7 Claims**





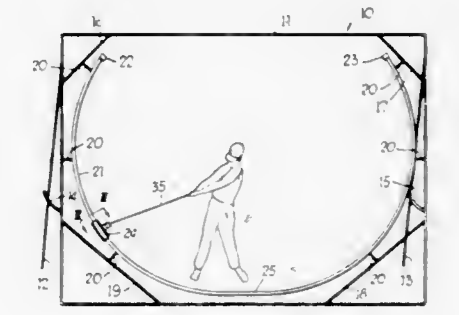
A conventional wooden golf club head, contains a pair of parallel air passages beginning at the ball striking area and terminating at the rear of the club. The passages are located substantially midway between the top and bottom surfaces of the head and are spaced from each other, with one passage being located near the toe of the head and one near the heel. A perforated insert occupies each passage and is coplanar with the ball striking surface. The inserts are threadedly engaged with hollow brass tubes which fill the portion of the passageways extending away from the striking surface.

3,794,329

GOLF TEACHING APPARATUS

Kenneth Wilson, 70 Maida Vale, London W.9, England

Filed Dec. 30, 1971, Ser. No. 214,171
Claims priority, application Great Britain, Jan. 1, 1971, 136/71
Int. Cl. A63b *69/36*
U.S. Cl. 273—191 A **6 Claims**



Apparatus for assisting in the teaching of the game of golf comprising a substantially rigid, ovately curved track lying substantially in a single plane and preferably supported in a frame which is adjustable so that the plane of the track to the vertical is adjustable, a runner mounted on the track so as to be freely slidable along the track and an extensible shaft pivotally attached to the runner preferably by a ball and socket joint so as to give universal pivotal and rotational movement of the shaft relative to the runner. In use, the outer end of the shaft is grasped by the user and the shaft is swung in the manner of a golf club so as to move the runner along the track on a plane similar to that taken by the head of a golf club during the swing. If the user by incorrect use of his wrists, arms or body moves the runner out of the plane of the track, friction is set up between the runner and the track and the runner stops, indicating to the user the point at which his swing has started to deviate from the plane of the track. An important feature of the apparatus is the provision of a flat portion at the lowermost point of the track in the hitting area of the swing which imparts to the user a correct follow through in the impact area.

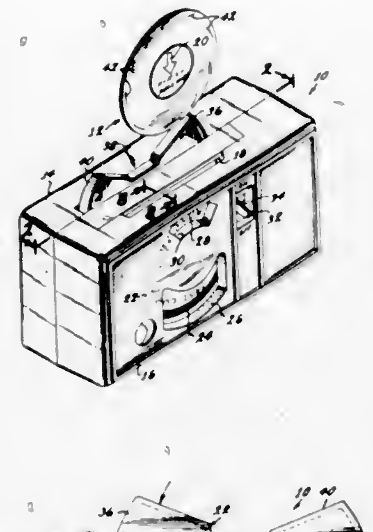
3,794,330

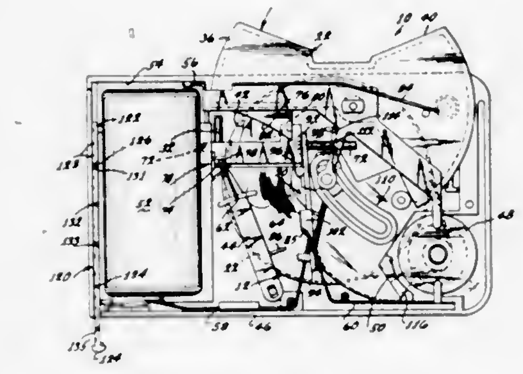
GAME PHONOGRAPH

Gordon H. Buck, Torrance; John H. Northrop, both of La Canada, and Don C. Willis, Marina del Rey, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed June 9, 1972, Ser. No. 261,190
Int. Cl. G11b *3/00*
U.S. Cl. 274—1 G **1 Claim**

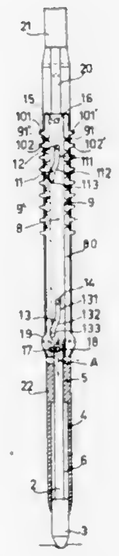
A toy phonograph suitable for use in a game where one player secretly chooses one of several records and inserts it into the phonograph while the other player chooses an initial rotational position of the record, including a mechanism for readying the phonograph to play but which prevents actual playing until a switch is manually operated. Every time the record is changed or replayed, a lift cam is pivoted to lift the





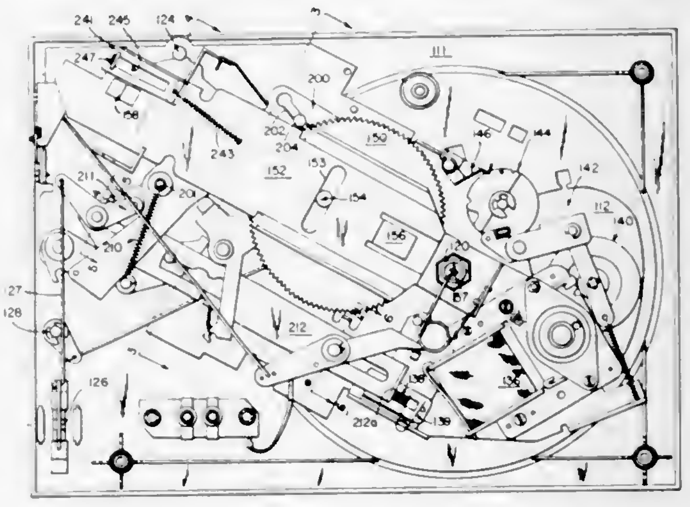
tone arm, the lift cam being latched in the lift position until a manual switch is operated. The lift cam also moves a switch actuator which wedges between a pair of resilient switch contacts to separate them.

3,794,331
CHANGE SPINDLE FOR USE IN AN AUTOMATIC RECORD CHANGER
Martinus Johannes Holl, La Lande Patry, France, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 28, 1971, Ser. No. 193,401
Claims priority, application France, Nov. 2, 1970, 7039410
Int. Cl. G11b *17/04*
U.S. Cl. 274—10 S **9 Claims**



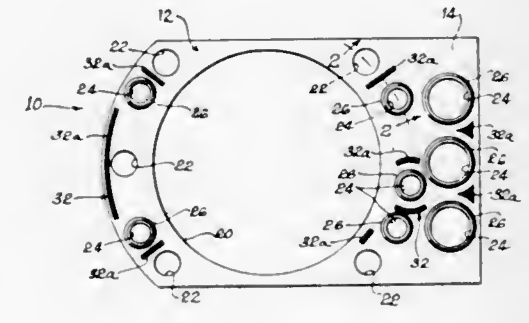
The invention relates to a change spindle for use in an automatic record changer, and more particularly to a spindle having a hollow cylindrical body and a central operating rod which is axially movable in the cylindrical body and cooperates with elements for supporting the records. The elements are retractable into the cylindrical body and support the records in spaced relation.

3,794,332
AUTOMATIC RECORD CHANGER
David C. Bailey, Occoquan, Va., assignor to General Electric Company, Syracuse, N.Y.
Filed Dec. 28, 1971, Ser. No. 212,896
Int. Cl. G11b *15/00*
U.S. Cl. 274—10 R **22 Claims**



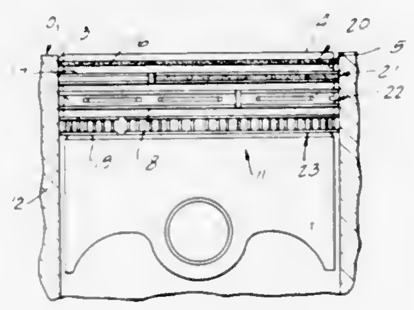
An automatic record changer, including a velocity tripping mechanism for initiating a record-changing cycle, is provided with a disabler which prevents operation of the velocity tripping mechanism responsive to the positioning of a control handle carried by the changer. A tone arm positioning mechanism is provided which positions the tone arm for the playing of records of various sizes responsive to the setting of a control knob carried by the changer. A cueing mechanism, which functions independently of the tone arm positioning mechanism, may be operated by an operator to raise the tone arm from a record and return it thereto after the tone arm position has been manually laterally adjusted by the operator. In conjunction with the tone arm positioning and cueing mechanism, there is provided a clutch for resisting undesirable lateral tone arm motion whenever the tone arm is displaced from the turntable. An automatic shutoff mechanism, responsive to the position of the balance arm after play of the last record is provided to cease operation of the record changer upon completion of the last record.

3,794,333
GASKET
Daniel E. Czernik, Hinsdale, and Donald J. McDowell, Riverside, both of Ill., assignors to Felt Products Mfg., Co., Skokie, Ill.
Filed July 20, 1972, Ser. No. 273,408
Int. Cl. F16j *15/10*
U.S. Cl. 277—180 **7 Claims**



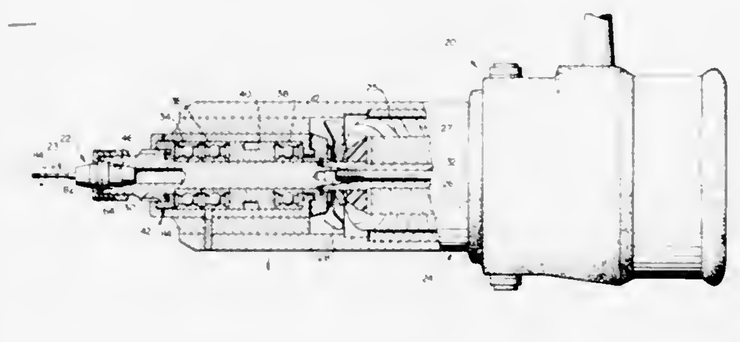
A method of making a gasket and a gasket having an elastomeric sealing pattern and a control pattern for limiting the degree of compression of the sealing pattern. A relatively incompressible material, such as an epoxy resin formulation is positioned on the face of a gasket to protect a relatively compressible material, such as a silicone rubber and prevents its destruction. The epoxy and silicone patterns may be deposited by silk screening processes.

3,794,334
PISTON RING FACINGS
Herbert F. Prasse, St. Louis, and Harold E. McCormick, Ballwin, both of Mo., assignors to Ramsey Corporation, St. Louis, Mo.
Division of Ser. No. 36,143, May 11, 1970, Pat. No. 3,697,091. This application Oct. 12, 1971, Ser. No. 188,482
Int. Cl. F16j *9/00*
U.S. Cl. 277—235 A **4 Claims**



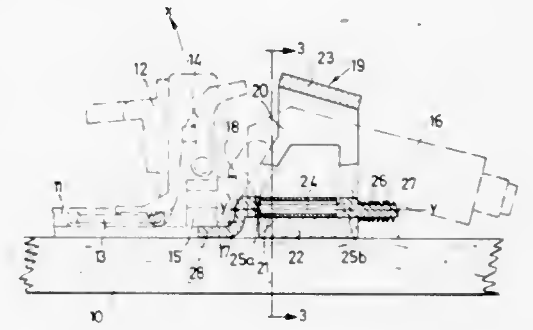
This invention covers piston rings, including compression and oil control rings for internal combustion engine pistons, having a bearing face coated with a hard coating, particularly exhibiting good scuff-resistance comprising a zirconium oxide base coating. The coating is preferably a plasma jet applied coating formed in situ on the bearing face.

3,794,335
DEVICES FOR ATTACHING ACCESSORIES
Clyde David Thackston, Columbia, S.C., and Jack Kasabian, Frankville, Wis., assignors to Rockwell International Corporation, Pittsburgh, Pa.
Continuation of Ser. No. 7,068, Jan. 30, 1970, abandoned. This application May 19, 1972, Ser. No. 255,249
Int. Cl. B23b *31/10*
U.S. Cl. 279—23 **6 Claims**



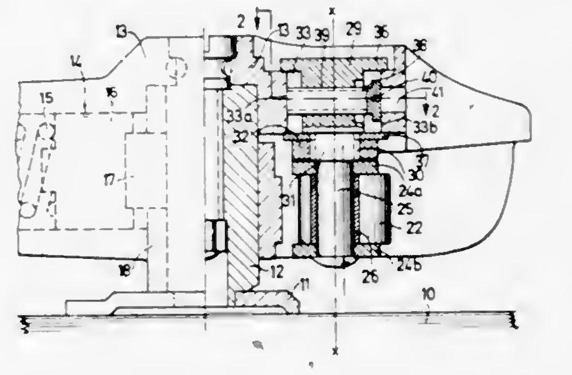
Devices for attaching accessories to the rotatable output members of tools in which the accessory is inserted in a chuck member which rotates with the tool output member and in which a spring in the chuck member fixes the accessory to the chuck member for rotation therewith.

3,794,336
SKI BINDING WITH SKI BRAKE
Brigitte Sittmann, Stuttgart, Germany, assignor to Vereinigte Baubeschlagfabriken Gretsch & Co./G.m.b.H., Leonberg near Stuttgart, Germany
Filed Oct. 18, 1971, Ser. No. 190,352
Claims priority, application Germany, Oct. 23, 1970, G 70 39 190.1
Int. Cl. A63c *7/10*
U.S. Cl. 280—11.13 B **24 Claims**



A ski binding which is provided with a ski brake for slowing down or stopping a ski which has separated from the boot of a skier, comprising a brake member pivotable about an axis adjacent to and along one lateral edge of the ski and in an inactive nonbraking position directly or indirectly engaging with the lower side of the boot sole and especially with the lower side of a sole plate which is separated from the ski only if a strong force acts upon the boot, and spring means for pivoting the brake member to its braking position when released from the boot.

3,794,337
FRONT SUPPORTING MECHANISM OF A SKI SAFETY BINDING
Brigitte Sittman, Stuttgart, Germany, assignor to Baubeschlagfabriken Gretsch & Co. G.m.b.H., Leonberg near Stuttgart, Germany
Filed Feb. 5, 1971, Ser. No. 112,917
Claims priority, application Germany, Feb. 7, 1970, 2005664; Dec. 23, 1970, 2063359
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **37 Claims**



A mechanism for supporting the front or toe part of a ski boot and for normally locking it in a central position on the ski and for releasing it laterally when excessive torsional forces occur. The mechanism comprises a supporting unit which is normally locked in a central position and adapted to be released therefrom and is provided with a pair of boot supporting arms which may be rigid with the main part of the unit or pivotably adjustable to different positions. Between these arms the supporting unit is provided with one or a pair of rotatable rollers upon which the boot likewise engages and on which it may roll laterally with a rolling friction when the supporting unit is released.

3,794,338
SAFETY RELEASE SKI BINDINGS

3,794,340
ADJUSTABLE SKID FOR PIPE INSPECTION OR SURVEY EQUIPMENT

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sled is provided with integrally formed foot supports adapted to provide a means to enable a passenger to stand on the platform during forward motion thereof, while the steering arm is

wheel and its hub structure is shorter than the radius of the wheel. Resilient support for the frame on its arms is in the form of at least one elastomeric rubber body above each arm.

3,794,338
SAFETY RELEASE SKI BINDINGS

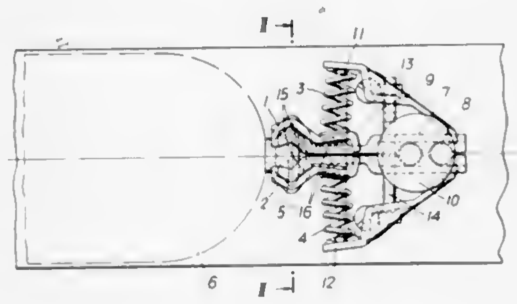
Thomas Gordon Smolka, Wien-Mauer, and Gottfried Schweizer, Wien, both of Austria, assignors to Gertsch AG, Zug, Switzerland

Filed Apr. 12, 1972, Ser. No. 243,174

Claims priority, application Austria, May 3, 1971, A 3793/71

Int. Cl. A63c *9/00*

U.S. Cl. 280—11.35 T **10 Claims**



A knob-like element is fixed rigidly to one end of the boot. A pair of spring loaded levers are pivotally mounted onto the ski and arranged for embracing the knob-like element when the boot carrying same is appropriately positioned on the ski. Spring loading of the levers is such as to permit them to separate, which separation permits insertion and removal from a position of embracement thereof of said knob-like element. The levers further define a funnel-shape portion immediately behind the release edges of the levers to facilitate entry between said levers of said knob-like element or to permit separation of said levers by insertion into said funnel-shaped opening of a ski pole.

3,794,339
RELEASABLE SKI BINDING

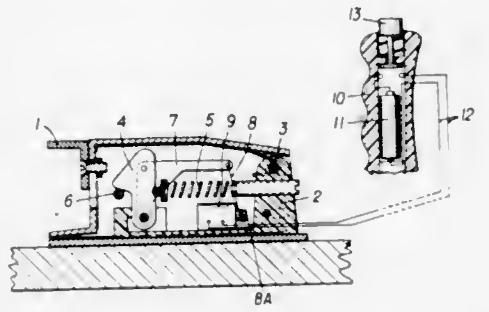
Thomas Gordon Smolka, Wien-Mauer, Austria, assignor to Gertsch AG, Zug, Switzerland

Filed Apr. 12, 1972, Ser. No. 243,291

Claims priority, application Austria, May 21, 1971, A 4384/71

Int. Cl. A63c *9/08*

U.S. Cl. 280—11.35 M **13 Claims**



A ski binding is held in normal operating position by releasable, mechanical parts and is preferably urged into such position by resilient means. A rotatable electric motor is mounted in association with such ski binding and is provided with suitable means responding to activation of the motor for withdrawing said mechanical parts against said resilient means out of holding position. Said motor may be activated in any convenient manner, as manually by the closing of a switch by the skier or by remote control or automatically in response to bio-electrical currents within the muscles of the skier.

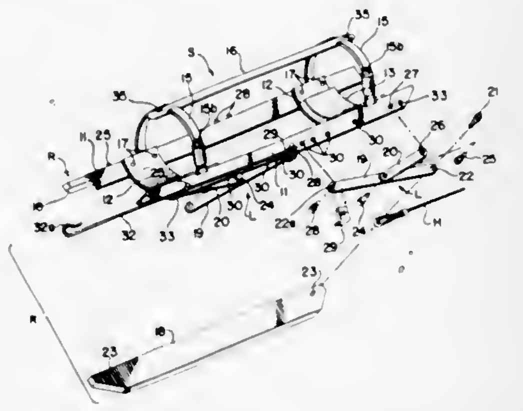
3,794,340
ADJUSTABLE SKID FOR PIPE INSPECTION OR SURVEY EQUIPMENT

Joseph J. Tartabini, Independence, and Frank L. Sirk, South Euclid, both of Ohio, assignors to United Survey, Inc., Cleveland, Ohio

Filed July 13, 1972, Ser. No. 271,566

Int. Cl. B62b *13/16*

U.S. Cl. 280—15 **9 Claims**



A basic clamping cradle for an elongated tubularly cased TV or photo strip camera, used in pipe survey or inspection and similar operations, has a pair of like elongated bottom runners each connected to a respective longitudinal frame element at front and back ends through a pivotally extensible linkage having variable points of shiftable attachment, whereby the runner spacing may be adjusted to support a camera substantially at the axis of pipes of different sizes within its range.

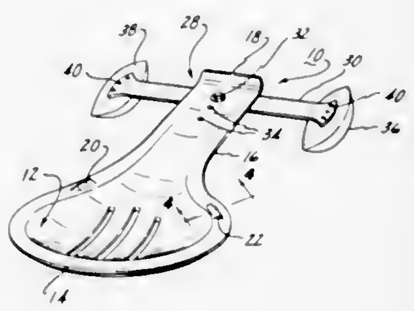
3,794,341
SNOW SLED AND THE LIKE

Robert Torok, 1116 W. Stewart Ave., Flint, Mich. 48504

Filed Jan. 31, 1972, Ser. No. 221,914

Int. Cl. B62b *13/08*

U.S. Cl. 280—21 R **9 Claims**



A sled, particularly adapted for use over snow, having a disc-shaped platform with traction ribs disposed along the bottom surface thereof and an annular rim formed along the upper circular edge of the platform. A steering support member formed with the rim extends in a cantilever fashion outwardly from the platform in a plane which is elevated above the bottom surface of the disc-shaped platform. The outermost end of the steering support member has an upwardly flared section adapted to mount a cable to permit towing of the sled. The steering support member has a plurality of longitudinally spaced apertures which permit the mounting at selected locations along the length of the steering support member of a steering arm which, in turn, has mounted at its opposite ends elongated spherical steering elements which function to change the direction of the sled when the steering arm is rotated about its point of attachment to the steering support member. The sled is provided with a pair of support handles disposed on opposite sides of the rim and angularly spaced from the support member to provide the rider thereof with a means for supporting himself. In one embodiment, the sled is provided with integrally formed foot supports adapted to provide a means to enable a passenger to stand on the platform during forward motion thereof, while the steering arm is provided at its opposite ends with means for mounting a cable or the like to permit the passenger to steer the sled while the passenger stands.

3,794,342
AUTOMOBILE VEHICLE

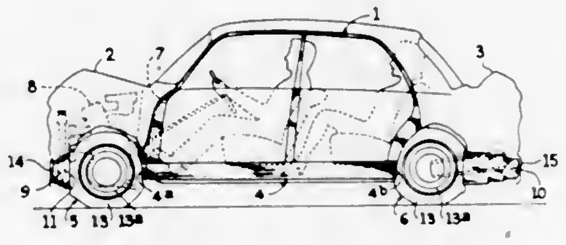
Armand Froumajou, Pontoise, and Claude Chillon, La Celle, both of France, assignors to Automobiles Peugeot, Paris and Regie Nationale Des Usines Renault, Billancourt, both of, France

Filed Dec. 3, 1971, Ser. No. 204,587

Claims priority, application France, Dec. 16, 1970, 70.45367

Int. Cl. B62d *21/00;* **B60r** *19/04*

U.S. Cl. 280—106.5 R **11 Claims**



Vehicle having a passenger compartment constituted by a rigid unit, a relatively more deformable front part and rear part. There is provided in front of each front wheel and/or at the rear of each rear wheel a shoe which is located substantially mid-way of the height of the wheel and substantially in a longitudinal plane containing the wheel. The shoe is designed to deform plastically under the effect of a predetermined violent shock to absorb a part of the energy involved in the shock.

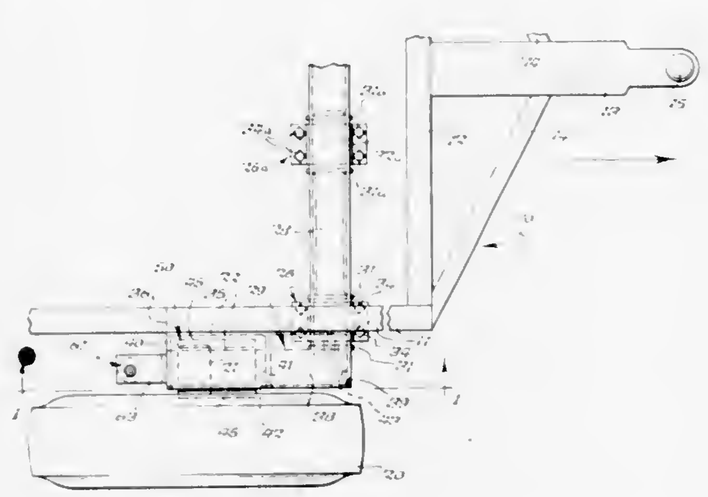
3,794,343
INDEPENDENT WHEEL VEHICLE SPRING SUSPENSION

Albert F. Hickman, 8009 N. State Rd., Eden, N.Y. 14045

Continuation-in-part of Ser. No. 133,566, April 13, 1971, abandoned. This application Dec. 26, 1972, Ser. No. 318,696

Int. Cl. B60g *11/22;* **F16f** *1/36*

U.S. Cl. 280—124 A **7 Claims**



The vehicle suspension is a so-called independent wheel suspension, each wheel being journalled on a stub axle fixed to the free end of a straight arm extending lengthwise of the line of travel and the other end of which is fixed to a transverse hub structure journalled in spaced frame bearings. This arm is very short, the axis of the hub structure intersecting the wheel so that that portion of each arm between the axes of each wheel and its hub structure is shorter than the radius of the wheel. Resilient support for the frame on its arms is in the form of at least one elastomeric rubber body above each arm. Telescopic shock absorbers are severally between the free ends of their arms and their frame brackets so that they have a long action and can be of light weight, inexpensive construction.

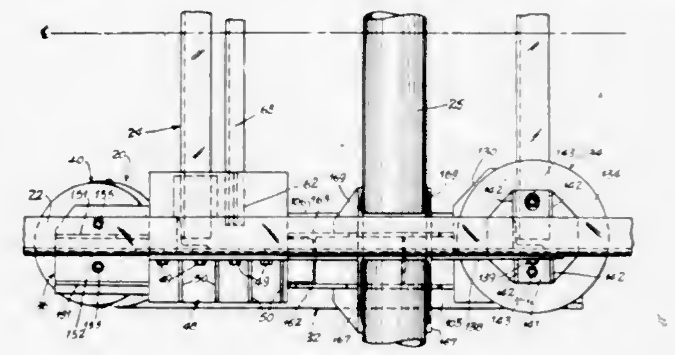
3,794,344
VEHICLE AIR SUSPENSION ASSEMBLY

John E. Raidel, Rt. 9, Box 400-M, Springfield, Mo. 65804

Filed Joly 10, 1972, Ser. No. 270,253

Int. Cl. B60g *11/28*

U.S. Cl. 280—124 F **20 Claims**



A vehicle air suspension assembly comprising a first beam, a first air spring mounted between the forward end of the first beam and the vehicle chassis, and a second air spring mounted between the rearward end of the first beam and the vehicle chassis. The assembly also includes a second beam, means for pivotally supporting the forward end of the second beam from the vehicle chassis near the first air spring, and means for pivotally supporting the rearward end of the second beam near the rearward end of the first beam. The vehicle axle is mounted to the first beam, whereby the first beam, and hence the vehicle axle, totally support the vehicle chassis on the air springs, the second beam acting to push and pull the vehicle axle and stabilize the assembly.

Inherent in the assembly design are means for retracting the vehicle axle and means for allowing for oscillation of the axle as caused by one end of the axle moving up or down relative to the other under various load and road conditions.

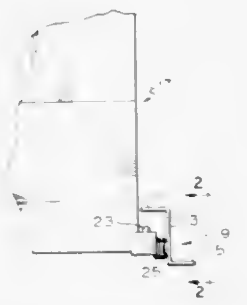
3,794,345
ADJUSTABLY MOUNTED CAMPER STEP ASSEMBLY

Oscar Vernon Locke, 913 Evans St., Milton-Freewater, Oreg. 97862

Filed June 8, 1972, Ser. No. 261,095

Int. Cl. B60n *3/02*

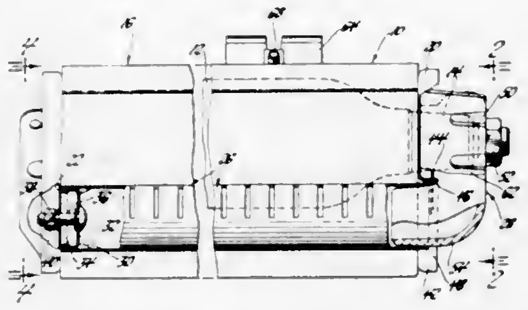
U.S. Cl. 280—163 **6 Claims**



A camper step having dual function mounting means so that it can be mounted on a mounting bar selectively in either of several horizontally displaced positions or various vertical positions. The bar has mounting means so that it can be mounted in a left hand projecting position for left hand doors, or a right hand projecting position for right hand doors. The two mounting means are so related as to permit center mounting of the step member.

3,794,346
OCCUPANT RESTRAINT SYSTEM

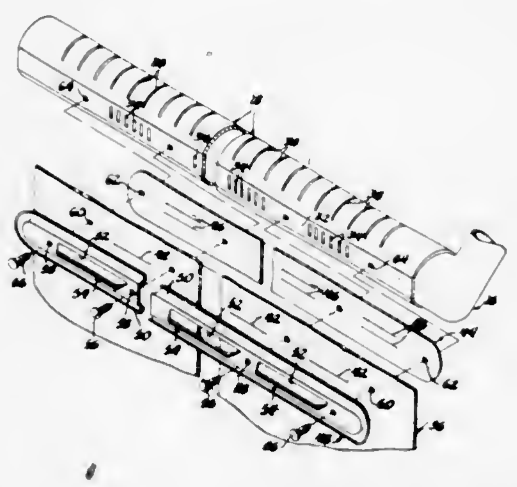
Henry J. Brockman, Warren, and Lawrence A. Gloomis, Utica, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed May 5, 1972, Ser. No. 250,673
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **3 Claims**



An occupant restraint system includes a gas generator and a reaction plate assembly located in generally parallel relationship. The reaction plate assembly includes an elongated U-shaped member having spaced end plates, one being provided with a U-shaped flanged slot or opening. An elongated diffuser between the end plates with one open end thereof terminating within the flanged opening of the one end plate. The other closed end of the diffuser is bolted to the other end plate. The open end of the diffuser includes a generally T-shaped radially extending tab having the shank thereof received within a slot of the flange of the opening to rotatably index the diffuser with respect to the reaction plate assembly. A manifold connects to the outlet end of the gas generator and includes a tapered neck received within the open end of the diffuser. The manifold is bolted to the one end plate.

3,794,347
OCCUPANT RESTRAINT SYSTEM

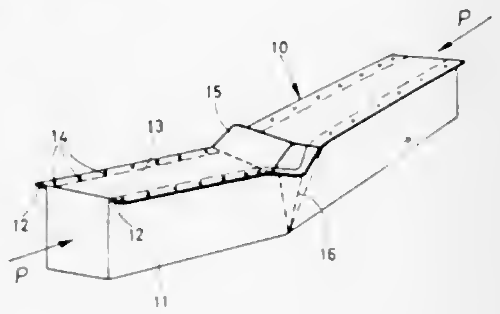
John F. Zens, Algonac, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 18, 1972, Ser. No. 254,698
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **11 Claims**



An occupant restraint system includes an inflator which communicates with a manifold. The manifold communicates with one open end of a generally elongated hollow cylindrical diffuser. The diffuser extends between the end plates of a reaction plate assembly and the other closed end of the diffuser is secured to one of the end plates. The diffuser includes two axially extending diametrically opposite flats and two radially spaced rows of slots, one row being in one flat and being divided into spaced groups, and the other row being between the flats. A torso cushion surrounds the diffuser and is fed from the other row of slots. A knee cushion fits within the torso cushion and has slits which are indexed in a predetermined position transversley of respective groups of slots. A planar seal covers the one row of slots and has spaced pairs of slits. The number of pairs is equal to the number of groups of slots. The seal is indexed to the diffuser, but regardless of which side of the seal covers the one row, at least one of the slits of each pair traverses a respective group of diffuser slots and is aligned with a respective cushion slit. An elongated retainer plate within the knee cushion includes louvered openings equal in number to the groups of slots. Fixed studs extending from the plate, one to each side of each such opening, extend through respective aligned openings in the cushion, seal, and diffuser to index the cushion and seal slits to each other and to the groups of respective slots of the diffuser. The studs are threaded to tapped posts which extend through openings in the other flat of the diffuser and engage the inside of the one flat to prevent deformation of the diffuser when the studs are secured to the posts. The openings in the diffuser are irregularly spaced to ensure that the bracket can be installed only one way and that the louvers of the bracket are correctly positioned with respect to the cushion slits. The posts in the diffuser act as baffles and create turbulence in the flow of pressure fluid through the diffuser.

3,794,348
AUTOMOTIVE VEHICLE FRAMES

Hans Karl Wilhelm Fischer, Strinz-Margaretha, Germany, assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 5, 1972, Ser. No. 286,193
Claims priority, application Germany, Sept. 27, 1971, 2148108
Int. Cl. B62d *21/00*
U.S. Cl. 280—106 **4 Claims**

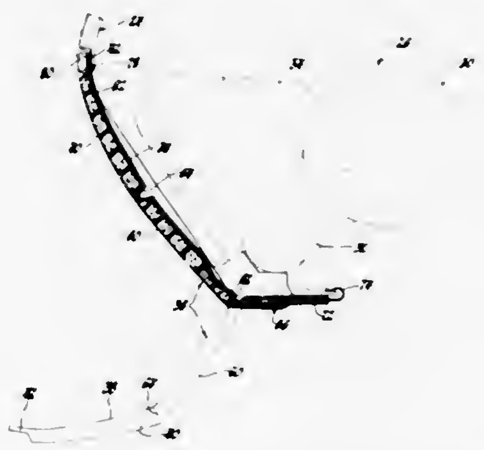


An automotive vehicle frame comprising hollow longitudinal members including a forward region, a rear region, and a central region, each of said forward and rear regions having weakened areas providing lower compressive stiffness compared with that of the central region. The hollow longitudinal members may be formed from U-section channel with a cover plate secured (as by welding) to the channel to cover the open side thereof, and the weakened areas are provided by interruptions in the securement of the plate to the channel. The frame member may alternatively be formed by assembling plates together to form a hollow box-like structure. The cover plate or plates may be shaped at the weakened areas to ensure a buckling of the frame member under impact in a preferred direction.

3,794,349
OCCUPANT RESTRAINT SYSTEM

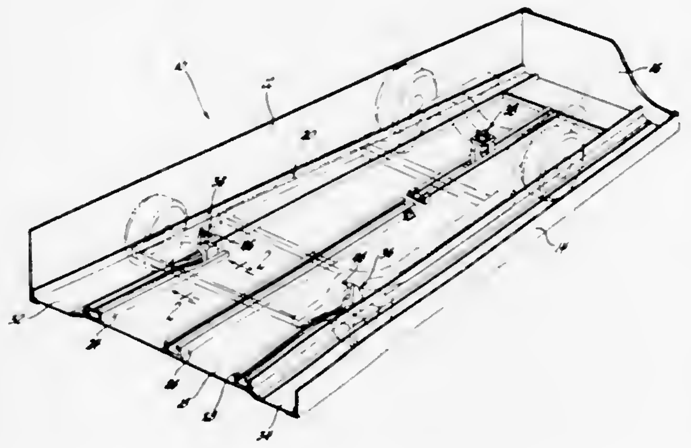
Frederick S. Fuller, Romeo, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 19, 1972, Ser. No. 255,028
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **4 Claims**

An occupant restraint system for a vehicle body includes an inflatable cushion mounted within the instrument panel and deployable through an opening of the panel when inflated from a source of pressure fluid. A cover for the opening of the instrument panel includes inner and outer members of plastic material having their edge portions secured to each other to provide an envelope. The inner member is shaped to provide a pair of spaced generally parallel vertical grooves which are bonded to the outer member and define the rupturable or severable side edges of an integral flap. The inner member is further shaped to provide a pair of spaced generally parallel horizontal grooves which extend toward the outer member. One groove connects the vertical grooves intermediate the ends thereof and the other connects the vertical grooves at the lower ends thereof. The space between the inner and outer members is filled with foam material and a reinforcing plate is provided between the members in the area to each side of the vertical grooves and below the other horizontal groove. The one horizontal groove, the juxtaposed portion of the outer member and the foam therebetween provide a first horizontal hinge dividing the flap into two interconnected portions. The other horizontal groove, the juxtaposed portion of the outer member and the foam therebetween provide a second horizontal hinge connecting the flap to the remainder of the cover. When the cushion deploys, the flap is severed along the side edge portions thereof and swings outwardly about the second horizontal hinge. When the flap engages the knees of the seated occupant it folds relative to itself about the first horizontal hinge.



3,794,350
DEVICE FOR SECURING VEHICLE TO TRANSPORTER

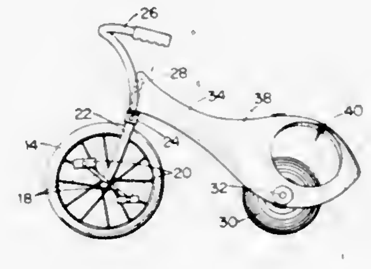
Walter Cwycyshyn, Detroit; Anthony Buccellato, Harper Woods, and Henry C. Hoffman, Lansing, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Dec. 1, 1972, Ser. No. 311,400
Int. Cl. B60p *7/08*
U.S. Cl. 280—179 R **2 Claims**



A tie-down device for connecting a vehicle frame to a guide rail carried by a transporter and having a body portion which is formed at its upper end with a horizontal mounting member that is adapted to be received by an aperture in the side of the frame. The lower of the tie-down device has a shoe member with laterally spaced outwardly extending arms which are adapted to be received by the guide rail.

3,794,351
VELOCIPEDE

Patrick Cudmore, 9 Fallon St., Cambridge, Mass. 02138
Filed Apr. 24, 1972, Ser. No. 246,727
Int. Cl. B62k *17/00*
U.S. Cl. 280—204 **9 Claims**

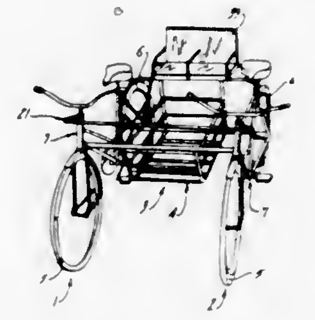


A velocipede having a tractor unit and a detachable semi-trailer unit. The tractor unit includes a front wheel, cranks and foot pedals to drive the front wheel, and a fork and a handlebar to steer the front wheel. The semi-trailer includes a very wide single rear wheel which is shaped like a bulging barrel, and a molded plastic frame which supports the rear wheel and detachably engages the tractor unit fork. The frame has an integral seat formed thereon.

The velocipede is self-stabilizing because its center of gravity (including the rider) is located substantially below the rotational axis of a cone formed in part by the curvature of the rear wheel tread. Therefore, the velocipede is stable like a tricycle at rest and handles like a bicycle when ridden. Furthermore, additional trailer units can be coupled together to form a train behind a single tractor unit.

3,794,352
FRAME ASSEMBLAGE FOR BICYCLES CONNECTED IN PARALLEL

Lester Popp, 12111 W. Good Hope Rd., Milwaukee, Wis. 53224
Filed Aug. 18, 1971, Ser. No. 172,753
Int. Cl. B62k *13/06*
U.S. Cl. 280—209 **12 Claims**

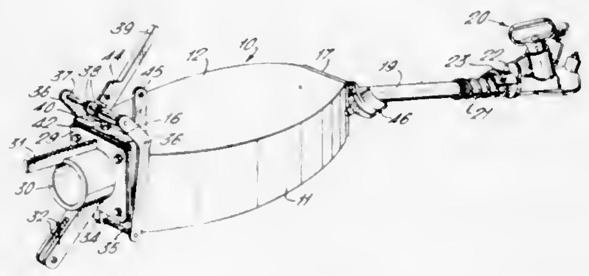


The disclosure provides for a frame assemblage for connecting or coupling a pair of bicycles in side-by-side or parallel relation. The frame assemblage includes carrier means rigidly connected between the several transversely extending frame elements of the assemblage.

3,794,353
FOOT REST FOR ROAD VEHICLE
John L. Oliver, 8846 Alondra Blvd., Bellflower, Calif. 90706
Filed Aug. 18, 1972, Ser. No. 281,872
Int. Cl. B62j *25/00*
U.S. Cl. 280—291 **1 Claim**

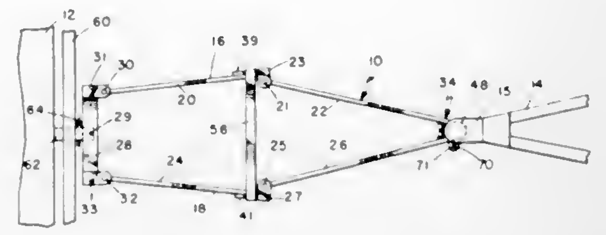
A foot rest for a road vehicle, for example, a motorcycle, is disclosed that is in the form of a square steel bar having the ends twisted 135°. The twisted sections are spaced from their respective ends, leaving a center portion untwisted, as well as the two end portions. To attach the bar to the motorbike, the center portion has formed two axially spaced slots having their openings on opposite sides of the square bar so that U-clamps around the motorcycle frame bars can engage the slots. The end portions each have a bolt hole extending between opposite sides. One bolt hole is disposed 90° to the other, to allow the bar to be formed by twisting it 270° in one operation, so that the bolt holes are aligned and are disposed at 45° to the slots. Pivotable foot pedals are bolted to the bolt holes, and the foot pedals can be pivoted to a vertical position out of the way when not in use.

3,794,354
COUPLING FOR CARAVANS AND TRAILERS
Leslie Everingham, New South Wales, Australia, assignor to Alexander Papp, Tweed Heads, New South Wales, Australia, a part interest
Filed Aug. 8, 1972, Ser. No. 278,822
Claims priority, application Australia, Aug. 10, 1971, 5850/71
Int. Cl. B60d *1/04*
U.S. Cl. 280—478 R **2 Claims**



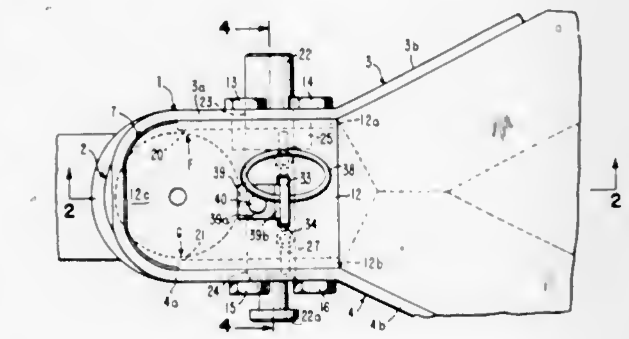
A coupling for a caravan or trailer has a body for mounting on the caravan or trailer tow-bar, and a shaft, with a coupling socket at its front, slidable through the ball of a ball and socket joint in the front of the body, so the shaft may be extended, until stopped by an enlarged rear-end piece, or retracted. The body is shaped so that when the shaft is extended, its coupling socket may be swung to either side or up or down, and when the shaft is retracted the rear-end piece is guided to, and releasably engaged by, a lock.

3,794,355
EXPANSION TRAILER HITCH
William N. Cracolice, 1832 Galveston, San Diego, Calif. 92110
Filed Oct. 1, 1971, Ser. No. 185,702
Int. Cl. B60d *1/00*
U.S. Cl. 280—482 **11 Claims**



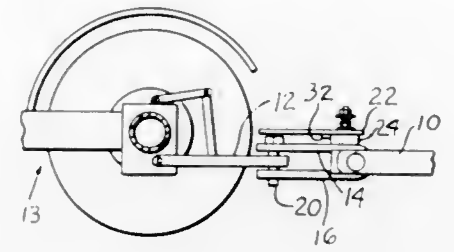
An expansion trailer hitch for use in towing a vehicle at either an extended position or a normal position. The hitch has particular applicability to the launching of small boats and enables the launching vehicle to back the boat into a sufficient depth of water to float the boat off the trailer, without the launching vehicle becoming itself immersed in the water to a significant depth. The hitch is normally secured to the towing vehicle and mounts a standard hitch ball to cooperate with the hitch tongue on a trailer. The distance between the towing vehicle and the trailer is increased by disconnecting the hitch ball and allowing it to be extended through the use of expansion links attached to the towed vehicle at one end thereof and to the hitch ball mount at the other end. The expansion links comprise elongated members hinged at the mid-point of the expansion links. They are maintained in their expanded condition by an expansion lock comprising expansion bars connecting the two elongated members or a tie bar connecting adjacent expansion links. A caster is provided under the hitch ball to support the trailer and provide better tracking.

3,794,356
COUPLING DEVICE FOR USE WITH A BALL-TYPE HITCH
Russell E. Hollis, Jr., 502 Merrick Dr., Xenia, Ohio 45385
Filed Oct. 26, 1971, Ser. No. 192,504
Int. Cl. B60d *1/06*
U.S. Cl. 280—513 **19 Claims**



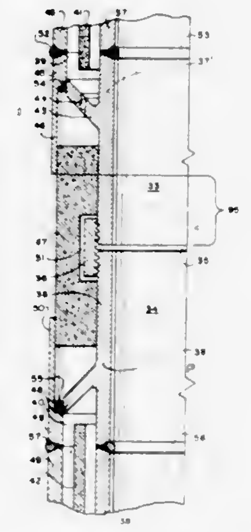
A coupling device for use with a ball-type hitch having a body comprising a U-shaped, strap-like member with a rounded forward end and spaced legs extending rearwardly therefrom. A reinforcing member is affixed to the legs adjacent the rounded forward end of the body and forms with the rounded forward end a ball-receiving pocket. A thrust block for the hitch ball is located between the body legs and is spaced from the rounded forward end. The thrust block is shiftable between a position wherein it retains the hitch ball within the pocket and a position wherein it will release the hitch ball from the pocket. Means are provided to lock the thrust block in its ball-retaining position. The free ends of the legs of the U-shaped body may be affixed in any suitable manner to any conventional trailer or vehicle frame means.

3,794,357
HITCH DEVICE
Howard S. Frye, R.D. No. 1, Ligonier, Pa. 15658
Filed May 3, 1972, Ser. No. 249,797
Int. Cl. B60d *1/06*
U.S. Cl. 280—515 **5 Claims**



A hitch device for connecting an implement or a wagon or the like to the draw bar of a draft implement such as a tractor in which the hitch device comprises upper and lower plates connected to the drawn device and adapted to receive the draw bar therebetween and having apertures to receive a pin or bolt which also passes through an aperture in the draw bar. A lock bar is pivotally mounted on the upper plate and has a first latched position where it overlies the pin and prevents disengagement thereof from the apertures and a second position wherein the bar exposes the apertures for insertion and removal of the pin.

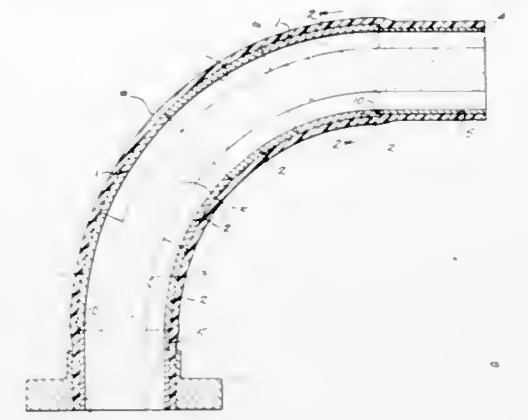
3,794,358
WELL PRODUCTION
William G. Allen; James A. LeVelle, and Frank J. Schuh, all of Dallas, Tex., assignors to Atlantic Richfield Company, New York, N.Y.
Division of Ser. No. 241,131, April 5, 1972, Pat. No. 3,720,267, Division of Ser. No. 77,647, Sept. 2, 1970, Pat. No. 3,680,631. This application Sept. 21, 1972, Ser. No. 290,897
Int. Cl. F16l *59/14*
U.S. Cl. 285—47 **4 Claims**



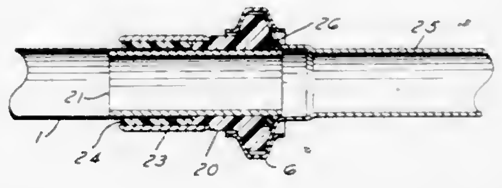
A method and apparatus for producing a warm fluid from a well through casing, the casing passing through a permafrost zone, wherein the permafrost is insulated from melting by the combined use of vacuum and solid thermal insulation.

3,794,359
ABRASION RESISTANT PIPE FITTING
James T. Fisher, Little Rock, Ark., assignor to A. O. Smith-Inland Inc., Milwaukee, Wis.
Filed Oct. 30, 1972, Ser. No. 301,892
Int. Cl. F16l *9/14*
U.S. Cl. 285—55 **5 Claims**

A tubular pipe fitting adapted to withstand abrasive and corrosive attack in changing the direction of fluid flowing therein. The fitting is made of a plurality of wear plates of ceramic material molded or cast to a semi-circular shape and assembled in circumferentially spaced opposed relationship in the area of the fitting subject to attack. Grout consisting of a mixture of epoxy resin and metallized ceramic pellets is disposed in semi-circular form in the circumferential space between the opposed wear plates and longitudinally of the fitting fiber glass filaments impregnated with resin which surround the wear plates and grout, and the entire assembly is cured to present a completed fitting.

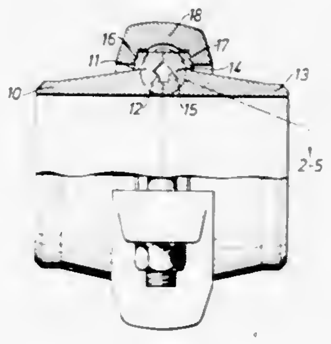


3,794,360
EXTERNAL SWAGE END FITTING
Wilfred H. Bachle, Long Beach; Gilbert Segovia, Santa Ana, and H. Andre Parker-Jones, Newport Beach, all of Calif., assignors to Philco-Ford Corporation, Philadelphia, Pa.
Filed Nov. 1, 1971, Ser. No. 194,123
Int. Cl. F16l *33/20*
U.S. Cl. 285—256 **1 Claim**



This invention describes a unique externally swaged end fitting for a single or multi-layer, braid-covered cast membrane tube of the type used in fluid filtration systems. It can be used as a coupling between dissimilar tubing or two tubes of like characteristics.

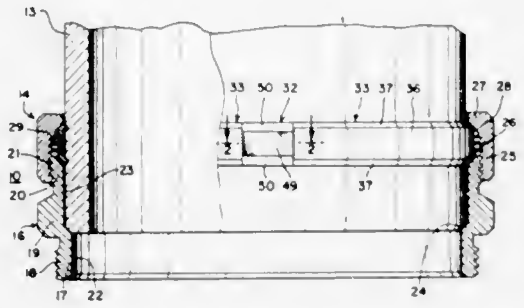
3,794,361
PIPE COUPLINGS
Alvar Torsten Westberg, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden
Filed Oct. 4, 1971, Ser. No. 186,153
Claims priority, application Sweden, Oct. 13, 1970, 13814/70
Int. Cl. F16l *23/00*
U.S. Cl. 285—336 **2 Claims**



The pipe coupling of the invention is characterized in that the channel, formed by opposed grooves provided on opposed faces of flanges on the ends of two pieces of pipe to be coupled, is composed of at least one essentially triangular groove in the contact face of each of the flanges; in addition, the channel has at least one radially directed groove whose cross-sectional area is essentially rectangular or trapezoidal. The groove is so shaped that at least one edge directed towards the sealing ring is formed between the last-mentioned groove and the other part of the channel.

3,794,362
RAINTIGHT CONNECTOR FOR ELECTRICAL CONDUIT

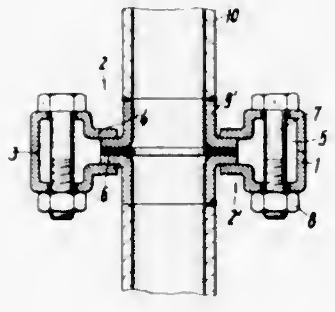
Thomas Mooney, Mt. Sinai, and Richard A. Bauer, Mastic Beach, both of N.Y., assignors to Electrical Fittings Corporation, East Farmingdale, N.Y.
Filed Oct. 16, 1972, Ser. No. 297,656
Int. Cl. F16l *19/08*
U.S. Cl. 285—340 **11 Claims**



A vapor-proof connector on a metal electric conduit includes an externally threaded tubular body engaging the end of the conduit and a gland nut spaced inwardly of an engaging the tubular body. The gland nut has an inwardly directed peripheral flange with a tapered inside face confronting a tapered end face of the body to delineate an annular space which surrounds the conduit and houses a channel-shaped resilient split metal ring having inwardly directed diverging flanges provided at its split ends with opposing reduced width tongues having enlarged arrow-shaped heads terminating in vertical flat end faces. A coupler of external shape similar to but thicker than that of the split ring has a rectangular longitudinal bore interrupted by a transverse wall. The tongues engage the bore and the tightening of the gland nut compresses the ring to urge the end faces of the ring and head into sealing engagement with the coupler end faces.

3,794,363
FLANGE

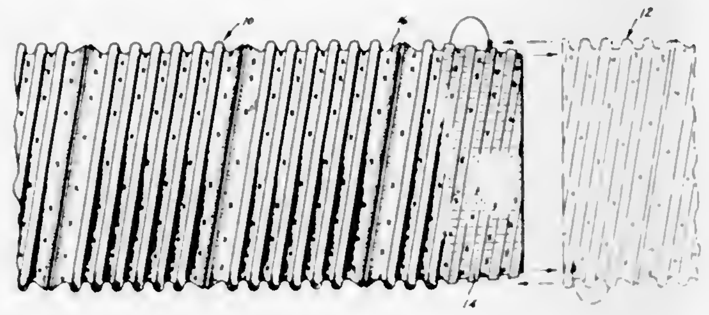
Wilhelm Schulz, Kuhleshuette 83, 415, Krefeld, Germany
Filed June 10, 1971, Ser. No. 151,771
Claims priority, application Germany, Dec. 3, 1970, 2059486
Int. Cl. F16l *19/00*
U.S. Cl. 285—363 **5 Claims**



A pipe flange adapted to be welded to a section of pipe to effect a seal between two adjoining pipes. The flange includes an annular disc with an inner and outer wall depending therefrom to form an annular trough. The trough walls are deformed outwardly when a fastening bolt passing through the disc is tightened to compress the flange against an abutting member which may be an identical flange in oppositely facing relation. A sealing face extends from the inner wall parallel to the annular disc and is adapted to engage a seal or in one embodiment a pipe flange. A small pipe section may extend upwardly from the inner portion of the sealing face to permit welding the flange to one of the adjoining pipes.

3,794,364
CONDUIT END CONNECTION

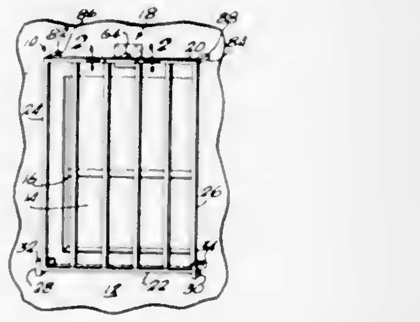
Frank Thomas Williams, Somerville, N.J., assignor to Johns-Manville Corporation, New York, N.Y.
Filed Dec. 27, 1971, Ser. No. 212,402
Int. Cl. F16i *15/00*
U.S. Cl. 285—390 **1 Claim**



A method of reforming one end of a length of helically corrugated sheet metal conduit by providing a tapered crimp so that said end is adapted to be lockingly received into an unreformed end of another length of like conduit for establishing an axial connection therebetween.

3,794,365
INSIDE EMERGENCY EXIT LATCH

Michael P. Richberg, 1120 S.W. 74th Ave., Miami, Fla. 33144
Filed Oct. 19, 1972, Ser. No. 299,006
Int. Cl. E05c *5/02, 19/10*
U.S. Cl. 292—62 **14 Claims**



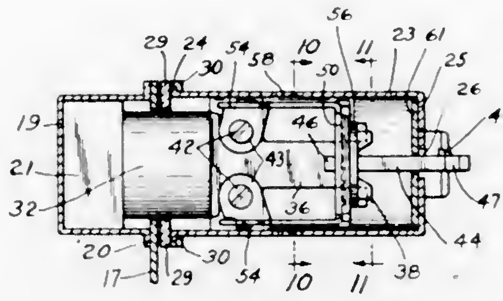
A latching means, normally holding iron grille coverings for windows and doors in a covering relation thereto and providing inside release means and co-operating spring means whereby a single, simple manipulation by a person within a structure will simultaneously unlatch the covering grille and swing it to an open condition.

3,794,366
MAGNETIC LATCH AND LOCK

Percy R. Graham, 7342 24th Ave. N.W., Seattle, Wash. 98117
Continuation-in-part of Ser. No. 296,827, Oct. 12, 1972, abandoned. This application Dec. 11, 1972, Ser. No. 314,087
Int. Cl. E05c *17/56, 19/16, 1/12*
U.S. Cl. 292—251.5 **7 Claims**

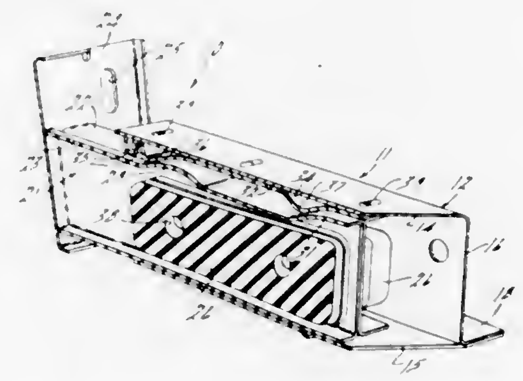
This latch and lock means includes a magnetized bolt and a strike in which at least a part thereof is either magnetized and

of opposite polarity from the bolt or is of material magnetically attractable to the bolt. The bolt is movable in a bolt housing of magnetically attractable material. It is moved by magnetic attraction to a door locking position within the strike member when it is aligned with the same by closing of the door and is yieldingly held there by magnetic attraction. In addition pawl means is provided to positively secure the bolt against retraction by picking methods using thin instruments inserted between the edge of the door and the jamb. Extensible pull back members, normally held contracted relative to each other by spring means, will first release the pawl means and then retract the bolt in response to a key or knob actuated pull. Magnetic attraction between the bolt and bolt housing will hold the bolt retracted when the door is open.



3,794,367
ELASTOMERIC ENERGY ABSORBER

John M. Slessor, Northville, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed July 21, 1972, Ser. No. 273,881
Int. Cl. B60r *19/06*
U.S. Cl. 293—88 **7 Claims**

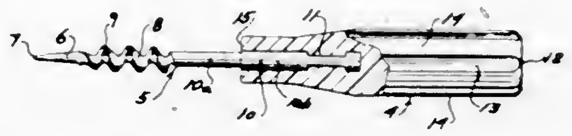


The energy absorbing support device comprises a ram attached to and particularly adapted to support the impact bar of a vehicle bumper system. The ram is telescopically received in an outer casing adapted to be supported on a vehicle frame member. Elastomeric puck members bonded to the case and ram yieldably position the ram within the case. A wedge plate is welded internally to the case and has wedging engagement with the ram to prevent withdrawal of the latter from the case and vibration within the case. The energy of an impact on the bumper or impact bar is transmitted through the ram to the puck members and is absorbed or controlled by the elongation (stretch) of the pucks.

3,794,368
IMPLEMENTS FOR HOLDING AND TURNING COMESTIBLES

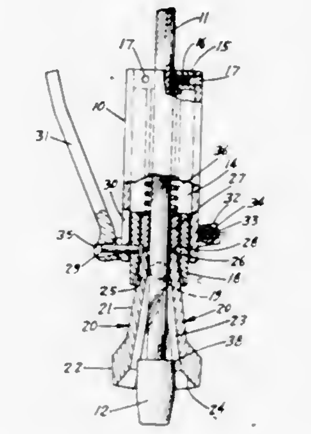
John Majeske, 2835 Garrett Rd., Drexel Hill, Pa. 19026
Continuation of Ser. No. 88,660, Nov. 12, 1970, abandoned. This application May 3, 1972, Ser. No. 250,025
Int. Cl. A47g *21/00*
U.S. Cl. 294—5 **1 Claim**

There is disclosed an implement for holding and turning a comestible, such as an ear of corn, adapted to be manipulated by hand, having a ridged hand-grip member, from the inner end of which extends a rigid rod member, formed, progressively, with a sharp point, a tapered portion, and a screw portion, and, inboard of the screw portion, a shank which is interlocked with the handle member, but a portion of which shank is preferably exposed so as to extend into the core of the comestible when the implement is screwed home.



3,794,369
LIFTING TOOL

Karl J. Hnatko, Hibbing, Minn., assignor to Taconite Engineering & Manufacturing Co., Hibbing, Minn.
Filed Oct. 2, 1972, Ser. No. 294,492
Int. Cl. B66c *1/56*
U.S. Cl. 294—96 **12 Claims**

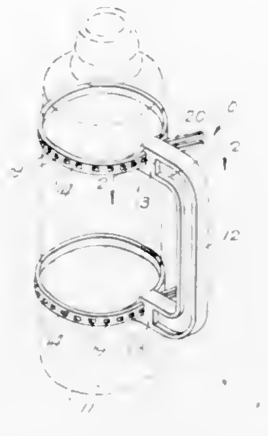


A tool for lifting objects having an opening into which the tool may be inserted and its jaws expanded to grip the article. Although especially adapted to facilitate moving liner segments of rod and ball mills, the tool is adapted to lifting other articles having holes or other openings into which the tool may be inserted, such as pipe, drill rod, etc. The tool is characterized by an easily insertable tip associated with manual squeeze operated positive jaw contraction for ease of insertion in openings, spring assistance to expand the jaws into gripping position and eye means for crank hook-up to permit the load to actuate the jaws for positive gripping as the article is lifted. While the article being lifted is in transit, the lifter operating handle is inoperative and cannot release.

3,794,370
HANDLE FOR THERMOS BOTTLE

Bill E. Lockhart, and Solomon P. Scholl, both of 5509 N. 10th St., Phoenix, Ariz. 85014
Filed Apr. 28, 1972, Ser. No. 248,600
Int. Cl. A47j *49/00*
U.S. Cl. 294—31.2 **4 Claims**

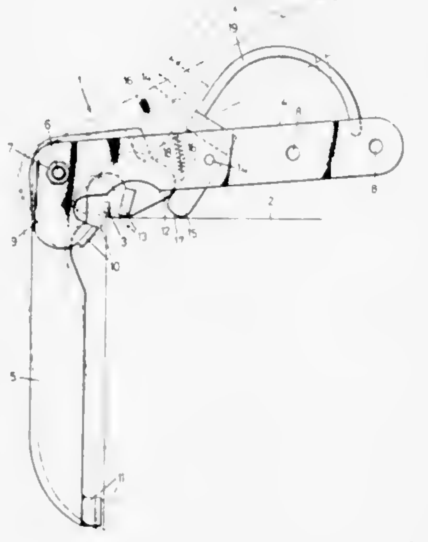
A one piece plastic handle for attachment to thermos bottles including two strapped pieces which encircle the thermos bottle and can be drawn tight by utilizing the elasticity of the plastic. The straps have a plurality of attaching apertures of a generally rectangular configuration and the body of the handle has a serpentine passage with generally rectangular teeth formed centrally thereof. The strap is fed through the serpentine passage and pulled taut with a portion of the apertures engaged over the teeth. The teeth each have a sloping face in the



direction from which the strap is moving when being tightened with the opposite face perpendicular to prevent withdrawal of the strap.

3,794,371
DRUM GRIPPER

Johannes Arbouw, Marnixstraat 32-34, Rotterdam, Netherlands
Filed Oct. 6, 1972, Ser. No. 295,447
Claims priority, application Netherlands, Oct. 8, 1971, 7113835
Int. Cl. B66c *1/66*
U.S. Cl. 294—90 **5 Claims**

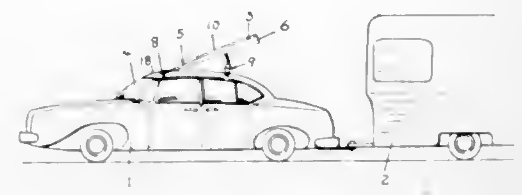


A grip to be applied to the chime of a drum for the latter to be hoisted in upright position is provided with means which automatically locks the two arms of the grip in a pre-determined angular position.

3,794,372
MEANS FOR DECREASING TRAILER DRAG

William Webb, R.R. 7, Guelph, Ontario, Canada
Filed Sept. 28, 1972, Ser. No. 295,359
Int. Cl. B62d *35/00*
U.S. Cl. 296—1 S **9 Claims**

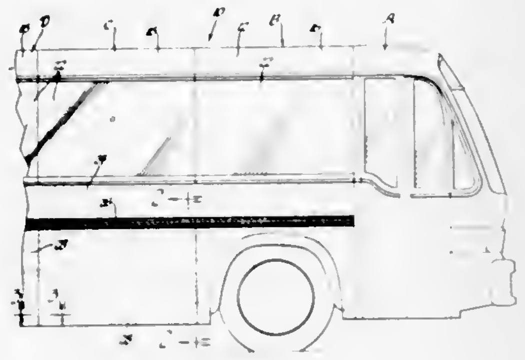
An air deflector is mounted on the roof of a towing vehicle to deflect air upwardly and sideways relative to a trailer, thereby decreasing the drag of the trailer. The air deflector inclines rearwardly and upwardly from a front edge which rests sealingly on the roof of the towing vehicle as close as possible to the top of the windshield, the deflector widening



rearwardly and having depending side surfaces, with means extending between the roof and the deflector for varying the inclination of the deflector.

3,794,373
BUS SIDE PANEL

Donald L. Manning, Orchard Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 30, 1972, Ser. No. 257,759
Int. Cl. B62d *31/04*
U.S. Cl. 296—28 A **2 Claims**

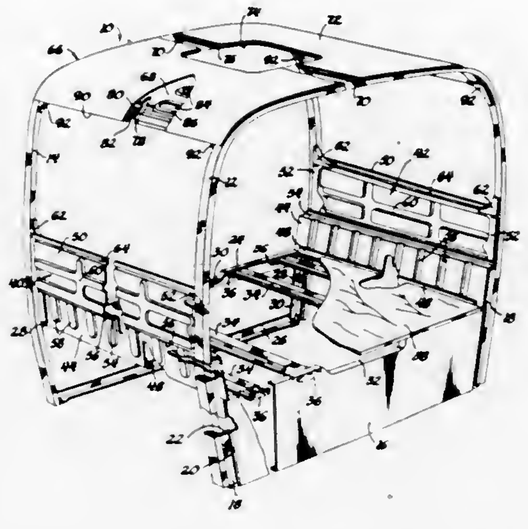


The structural framework of a bus body includes carlines of tubular steel construction spaced longitudinally thereof. The outer sidewall construction of the bus body includes a plurality of lower side panels. The lower edge portion of each side panel is attached to the carlines in laterally spaced relation therefrom by resilient links of tire carcass. The upper edge portion of the lower side panel includes an inwardly offset continuous flange which is juxtaposed to an outwardly extending flange on an upper side panel. A rubber rubrail attached to the upper side panel includes a downwardly extending portion having a groove in which an insert may be installed to spread the lower portion downwardly and inwardly to hold the inwardly offset flange of the lower panel against the outwardly extending flange of the upper panel and thereby attach the lower side panel to the body. When the lower side panel is impacted it pivots about its upper edge portion as permitted by yielding of the rubber rubrail as its lower side portion is moved inwardly toward the carlines as the resilient links yield.

3,794,374
TRANSIT VEHICLE BODY MODULE

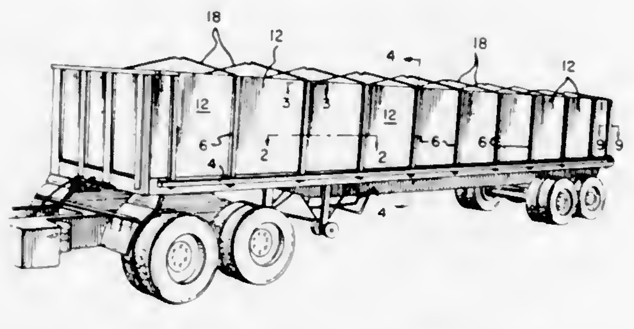
Donald Lee Manning, Orchard Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed June 5, 1972, Ser. No. 259,599
Int. Cl. B62d *31/02*
U.S. Cl. 296—28 A **3 Claims**

A body module for a transit vehicle includes a pair of U-shaped carlines which open downwardly. The legs of each are interconnected transversely extending bulkhead structures. The carlines are connected in longitudinally spaced relation by side-wall structures including upper and lower side panels extending between the longitudinally aligned legs of the carlines. The carlines are joined at their upper portions by a roof structure including inner and outer roof panels extending therebetween and welded thereto. The floor of the passenger compartment is mounted on supports extending between the upper edges of the bulkhead structures. A plurality of the body modules are aligned longitudinally and welded end to end to provide the transit vehicle body. The sidewall structures and the roof structure provide the integral longitudinal stress sustaining frame structure of the vehicle. The sidewall structures are located above the floor line of the passenger compartment and accordingly do not obstruct the space beneath the passenger compartment floor which is used for the storage of passenger luggage, fuel tanks and electric storage batteries.



3,794,375
DETACHABLE VEHICLE ENCLOSURE

Ernest F. Woodward, 11 Circle Drive, Camp Hill, Pa.
Filed Oct. 4, 1971, Ser. No. 186,051
Int. Cl. B62d *27/06, 33/04*
U.S. Cl. 296—36 **7 Claims**

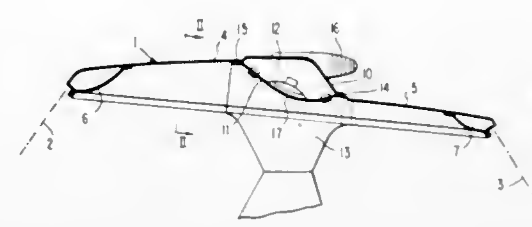


A load carrying vehicle such as a flat-car, flat-bed trailer or truck having no sides but which have stake pockets, can be converted to a side enclosed platform by utilizing stakes having panel edge retaining brackets thereon, in which panels can be slidably inserted in order to build up walls of any desired length. The panels may be assembled or removed one at a time in random order by one person without tools.

3,794,376
MOTOR VEHICLE, ESPECIALLY PASSENGER MOTOR VEHICLE

Bela Barenyi, Silcherstr. 25, Maichingen, and Heinrich Haselmann, Brunnenweisenstr. 17, Sindelfingen, both of Germany
Filed Oct. 20, 1971, Ser. No. 190,828
Claims priority, application Germany, Oct. 20, 1970, P 20 51 373.9
Int. Cl. B62d *25/06*
U.S. Cl. 296—137 R **28 Claims**

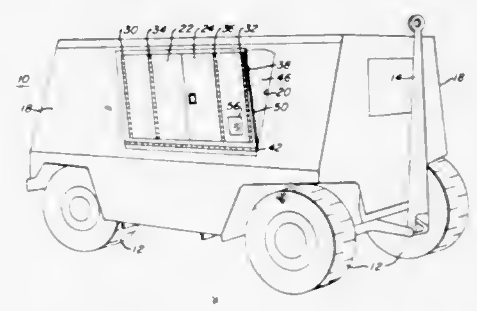
A motor vehicle, particularly a passenger motor vehicle, with a roof surface offset in the vehicle longitudinal direction, which is composed of at least two sheet metal panels connected with each other at their respective ends; these ends are



also provided with transversely extending bent portions, offsets, shoulders or the like so that a transversely extending bearer is formed thereby.

3,794,377
COMPRESSOR ENCLOSURE

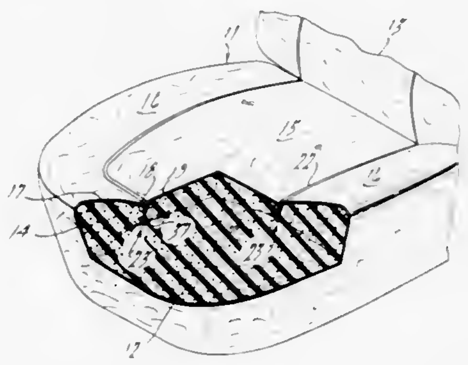
Erich A. Wachsmuth, 1810 Ridgemoor Dr., Long Beach, and Charles F. Goede, R.R. No. 4, Michigan City, both of Ind. 46360
Filed June 5, 1972, Ser. No. 259,955
Int. Cl. B60j *5/04*
U.S. Cl. 296—146 **8 Claims**



Compressor enclosure door arrangement whereby the doors are maintained closed to attentuate operating noise while the entire door configuration is hingedly opened with the uppermost portion forming a ventilation space with a minimum of noise transmission and also including selectively opened end panels for providing additional ventilation or additional noise dampening as desired.

3,794,378
SEAT ASSEMBLY

Harry Haslam, Detroit; Giulio Massetti, and Herbert W. Truesdale, both of Dearborn Heights, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Nov. 24, 1972, Ser. No. 309,573
Int. Cl. A47c *27/00*
U.S. Cl. 297—219 **5 Claims**



A seat assembly in which the improvement comprises an elastomeric cushion having at least one elongated groove of sustantial depth extending across its surface. An elongated anchor means is moulded into the cushion contiguous to the bottom of the groove and is adapted to receive in retention engagement a retention member secured to a cushion cover, thereby securely retaining the cover over the cushion.

3,794,379

CHILD'S BASSINET, SEAT, BED OR CARRIER

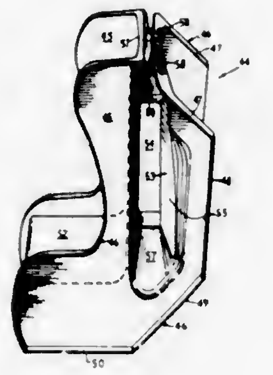
Dillon Charles Furey, Kirribilli, New South Wales, Australia, assignor to Charles Furey and Associates Proprietary Limited, North Sydney, New South Wales, Australia

Filed Feb. 1, 1972, Ser. No. 222,530

Claims priority, application Australia, Feb. 8, 1971, 3955/71

Int. Cl. A47d *1/10*

U.S. Cl. 297—250 **1 Claim**



The device is a carrier suitable for carrying a baby or small child and is so constructed that the carrier may be readily secured to a vehicle or aircraft seat in one of two alternative positions.

The carrier has a base in four sections secured together end to end, there being an outer and an inner foot section and an outer and an inner head section. Each section may be flat or may comprise at least two similar parallel runners. The base sections are angularly disposed to each other at their junctions so that when the inner foot section is on the seat, the outer head section is against the seat back and when the outer foot section is on the seat the inner head section is against the seat back.

3,794,380

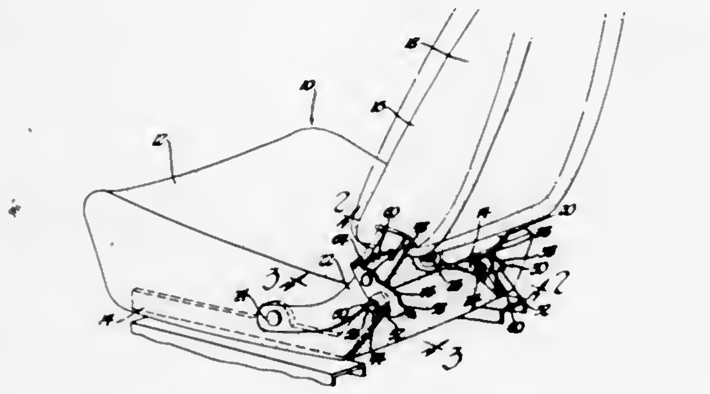
SEAT BACK ANGLE ADJUSTER AND LATCH

Edward H. Mertz, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 15, 1972, Ser. No. 262,953

Int. Cl. B60n *1/02;* **A47c** *3/00*

U.S. Cl. 297—379 **2 Claims**



A seat back angle adjuster and latch for a vehicle seat including a seat back having laterally spaced inboard and outboard support arms pivotally supporting the seat back for movement between use and easy enter positions. The seat back angle adjuster includes a two-position lever operated cam which is pivotally mounted on the seat frame and engages the inboard support arm to selectively define first and second angular use positions of the seat back relative the vertical. A seat back latch lever pivotally mounted on the outboard support arm has a pair of spaced recesses selectively engaging a pin extending from the seat frame to lock the seat back in either of the first or second use positions defined by the angle adjuster.

3,794,381

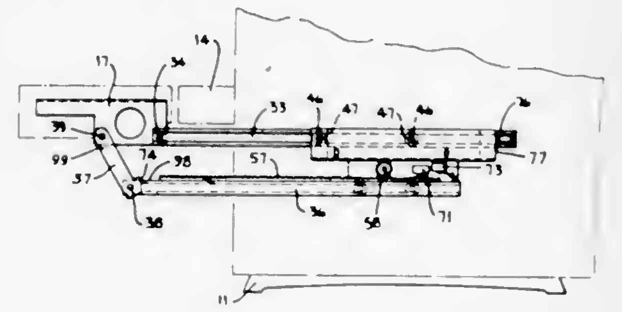
FOOTREST FOR RECLINING CHAIR

Daniel F. Caldemeyer, 4300 Jennings Ln., Evansville, Ind. 47712

Filed Oct. 26, 1971, Ser. No. 192,537

Int. Cl. A47c *7/50*

U.S. Cl. 297—430 **2 Claims**



Footrest assemblies include motorized slides extendable from the front of the chair to elevate and incline a footrest under fingertip electric control by the occupant. A slide for footrest extension is also shown. A footrest and seat assembly is mountable to an arm frame as a unit.

3,794,382

SUPPORT SYSTEMS FOR THE SEATED HUMAN BODY

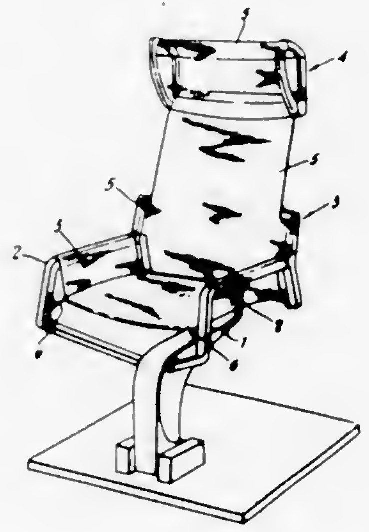
Jack Bloomfield; Paul Branton, and Kenneth Grange, all of London, England, assignors to British Railways Board, London, England

Continuation of Ser. No. 878,849, Nov. 21, 1969, abandoned. This application Nov. 8, 1971, Ser. No. 196,484

Claims priority, application Great Britain, Nov. 27, 1968, 56,324/68; July 16, 1969, 35,924/69

Int. Cl. A47c *7/02, 1/08*

U.S. Cl. 297—457 **7 Claims**



A support system for the seated human body comprising a two-dimensional material such as a length of netting constrained under tension to define a three-dimensional support form including in an upwardly extending length of the material a localised forwardly projecting support portion for the upper pelvic/lumbar area of the human body, the tension in the forwardly projecting support portion being preferably higher than in the remainder of the upwardly extending length of the material. In a generally horizontally extending seat portion the tension in a zone immediately forward of the ischial tuberosities supporting zone is preferably higher than the tension in the ischial tuberosities supporting zone itself.

3,794,383

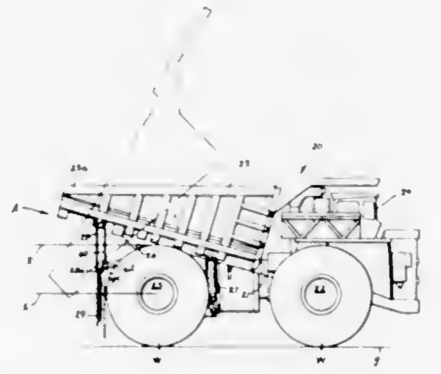
TILTING DUMP TRUCK MUD FLAP ASSEMBLY

Jimmie J. France, Roanoke; Fred J. Neubert; Eugene L. Caldwell, both of Peoria; Howard D. Springer, and Max E. Sutton, both of Washington, all of Ill., assignors to Westinghouse Air Brake Company, Peoria, Ill.

Filed May 24, 1972, Ser. No. 256,603

Int. Cl. B60p *1/16;* **B62d** *25/18;* **B65g** *67/24*

U.S. Cl. 298—1 SG **10 Claims**



A mud flap assembly for a dump truck or the like having: an upper flap mounted to the dump box; and a lower flap carried by a support element which is suspended by flexible members from the dump box and is connected to the vehicle frame by a pair of spaced rockable members carrying stops for limiting the downward movement of said support element, and hence the lower flap, when the dump box is raised for unloading.

3,794,384

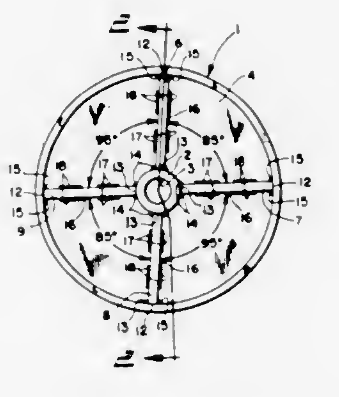
DISK WHEEL

James E. Rice, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 17, 1972, Ser. No. 254,022

Int. Cl. B60b *1/08, 19/00*

U.S. Cl. 301—5 R **13 Claims**



A rotatable disk wheel in which radially extending ribs are connected to the disk with the angles between a rib and adjacent ribs on either side of the rib being unequal to minimize undesirable vibrations resulting from the forces applied during rotation of the wheel.

3,794,385

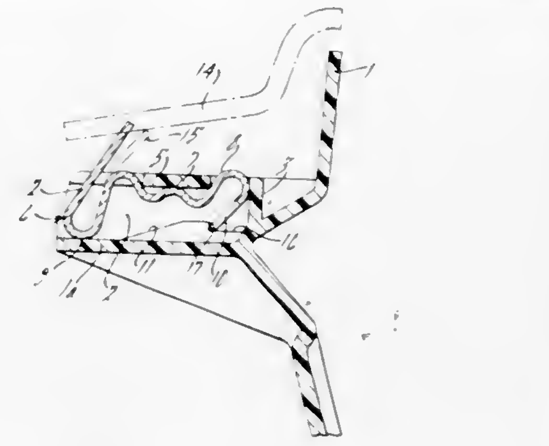
FASTENING ARRANGEMENT FOR DECORATIVE WHEEL RINGS

Paul Kretschmer, Hohenstr. 18, Waldaschaff, Germany

Filed July 10, 1972, Ser. No. 270,222

Int. Cl. B60b *7/06*

U.S. Cl. 301—37 P **3 Claims**



A plurality of axial clip-receiving recesses each having an axial ramp are provided on an axial flange of a decorative wheel ring. A clip for fastening the ring to a vehicle wheel is inserted in each recess and axially interlocked behind the end of each ramp.

3,794,386

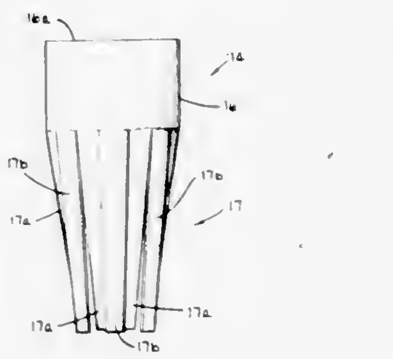
GRAIN FLOW CONTROLLER

Thomas W. Hite, Ligonier, Ind., assignor to LML Engineering & Manufacturing Corp., Columbia City, Ind.

Filed Apr. 11, 1973, Ser. No. 349,982

Int. Cl. B65g *53/42*

U.S. Cl. 302—60 **6 Claims**



Disclosed is a flow controlling device or nozzle which is adapted for attachment to a discharge spout delivering a turbulent fluid flow, such as the grain flow from a grain transport auger. The device has a barrel portion with extending, staggered stave portions which smooth out the flow of grain and which prevent clogging of the device when large quantities of grain are introduced into it.

3,794,387

APPARATUS FOR STORING A FLUENT MATERIAL

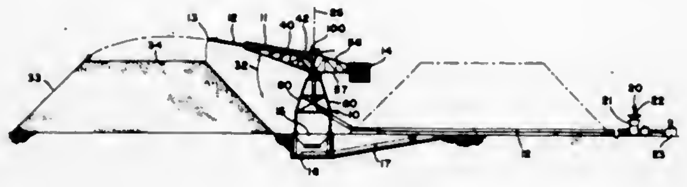
Eduard F. Fischer, West Vancouver, B. C., Canada; Edwin Farnworth, Everett, and Elmer Christensen, Kirkland, both of Wash., assignors to The Black Clawson Company, Hamilton, Ohio

Division of Ser. No. 35,180, May 6, 1970, Pat. No. 3,661,283. This application Apr. 10, 1972, Ser. No. 242,626

Int. Cl. B65g *65/28*

U.S. Cl. 302—10 **6 Claims**

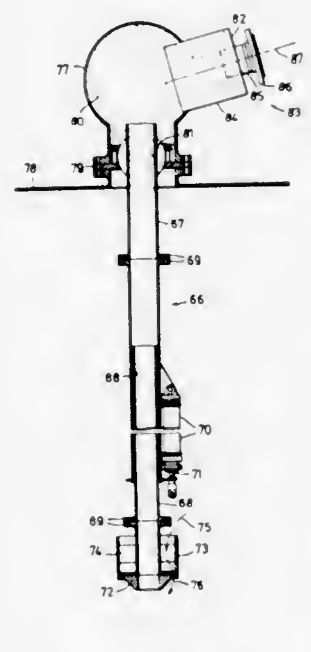
Wood chips or other fluent materials are stored in an annularly shaped pile by means of a boom mounted, pneumatically fed pipe. The boom is supported by a stationary tower, and the boom and pipe are provided with coincident pivotal and rotational joints which permit the boom and pipe assembly to be driven in vertical and horizontal planes separately or simultaneously by drive mechanism located on the tower to control the annular and transverse dimensions of the pile.



3,794,388

METHOD AND ARRANGEMENT FOR CONVEYING PARTICULATE MATERIAL FROM A LOWER LEVEL TO AN UPPER LEVEL

Martin Westenberg, Klosterstrasse 34 502, Frechen, Germany
Filed Sept. 8, 1971, Ser. No. 178,655
Claims priority, application Germany, Sept. 14, 1970, P 20 45 317.2; Apr. 3, 1971, P 21 16 462.5
Int. Cl. B65g *53/28, 53/42*
U.S. Cl. 302—58 **5 Claims**



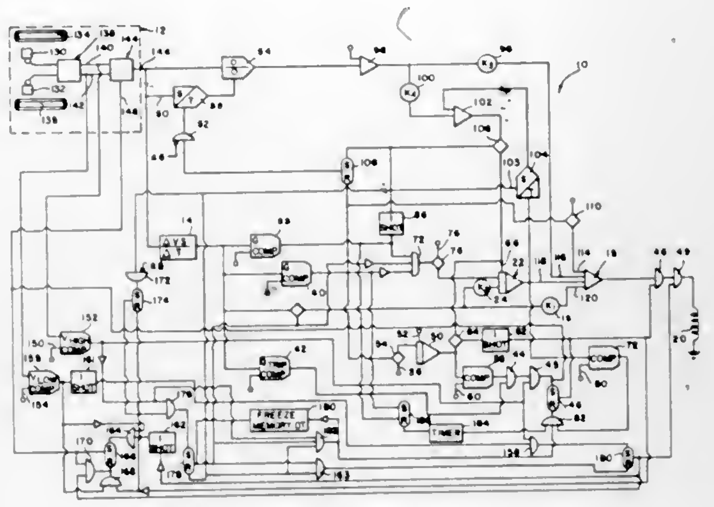
The grit used for blast-scouring the interior of a tank or compartment in a ship, accessible only through a manhole, is entrained and raised by suction off the floor of the tank by a small distance, and is thereupon entrained and conveyed to the level of a deck above the tank by pneumatic pressure.

3,794,389

ADAPTIVE BRAKING SYSTEM

Dennis J. Davis, and John E. Juhasz, both of Elyria, Ohio, assignors to The Bendix Corporation, Elyria, Ohio
Filed Dec. 21, 1972, Ser. No. 317,489
Int. Cl. B60t *8/08*
U.S. Cl. 303—21 P **24 Claims**

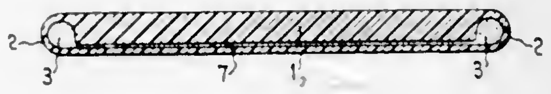
An adaptive braking system for an automotive vehicle is disclosed. The system is adapted to simultaneously control both wheels mounted on a common axle by a single modulating device and control unit. The control unit is designed to compensate for differences in the rates of wheel rotation of the wheels controlled by the single unit, and is also provided with circuitry which selects the wheel speed signal from either the high speed wheel or the low speed wheel. Furthermore, the system is designed to terminate adaptive control at some predetermined low level of wheel velocity so that the vehicle may be brought to a stop.



3,794,390

SLIDING AND DEFORMABLE BEARING FOR INSERTION BETWEEN BUILDING COMPONENTS

Fredy Kilcher, Wengisteinstrasse 9A 4500, Solothurn, Switzerland
Filed Nov. 9, 1971, Ser. No. 197,083
Claims priority, application Switzerland, Dec. 16, 1970, 18627/70
Int. Cl. F16c *17/00*
U.S. Cl. 308—3 R **8 Claims**



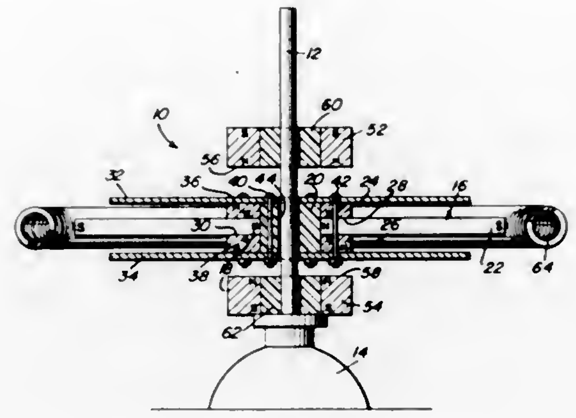
A sliding and deformable bearing for insertion between building components liable to limited respective movement or creep, consisting of a flattened tube with loops at the ends of the flat part as seen in cross-section, means within the tube to facilitate relative sliding movement between the inner faces of the tube, and a flat deformable thickening of one wall of the tube to function as a bearing body. The dimensions of the parts are such that initial movement between the components is accommodated by sliding movement, and final limited movement, when one of the loops has been reduced in size, by deformation of the bearing body.

3,794,391

MAGNETIC ROTOR ASSEMBLY

Gregory Grosbard, 353 W. 19th St., New York, N.Y.
Filed Sept. 15, 1972, Ser. No. 289,361
Int. Cl. F16c *39/06*
U.S. Cl. 308—10 **12 Claims**

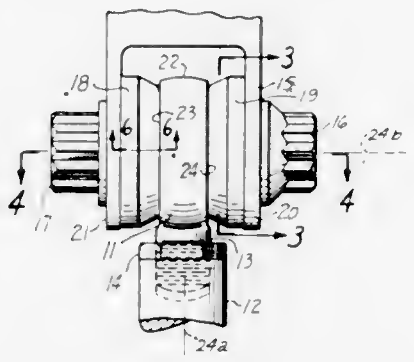
A rotor assembly having a plurality of magnetic fields extending from radially projecting magnets, the fields being reinforced at the radially inner portion of the rotor by magnetic discs between which the magnets are clamped to create relatively strong repelling forces for floating support of the rotor between rotationally fixed, magnetic suspension members. The radially outer ends of the rotor magnets are of the same polarity.



3,794,392

BEARING SEAL

Gene W. Scott, 9103 E. Garvey Blvd., Rosemead, Calif. 91770
Filed Apr. 10, 1972, Ser. No. 242,407
Int. Cl. F16c *33/74*
U.S. Cl. 308—36.1 **4 Claims**



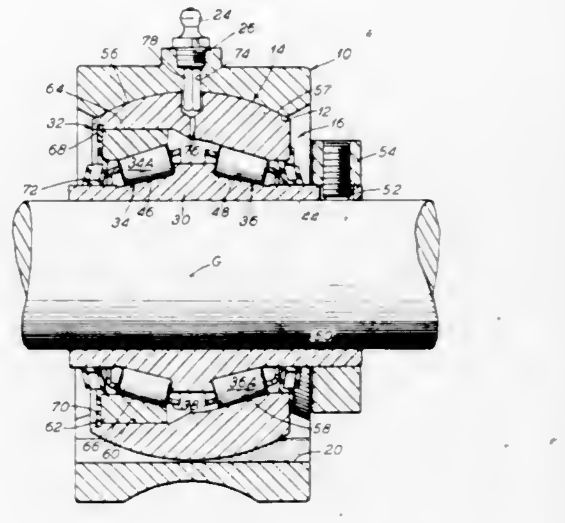
Labyrinth seals for rod-end swivel bearings having outer annular lips of a yieldable elastomer and inner annular lips of lesser height. The seals are mounted on metal plates which have parallel planar surfaces perpendicular to a central bore which accommodates standard rod-end attachment bolts, the planar surfaces react the tensile pre-load in the bolt and also pre-load and deflect the yieldable lips of the seals against the rod-end bearing housing to seal the swivel action against external contamination, and to retain grease or other lubricant in the swivel bearing area.

3,794,393

ROLLER BEARING ASSEMBLY

Charles B. Hurd, Aurora; Gerald W. Richmond, Montgomery; Leo E. Richmond, and Earl F. Tidholm, both of Aurora, all of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.
Filed June 29, 1972, Ser. No. 267,306
Int. Cl. F16c *33/00*
U.S. Cl. 308—207 **7 Claims**

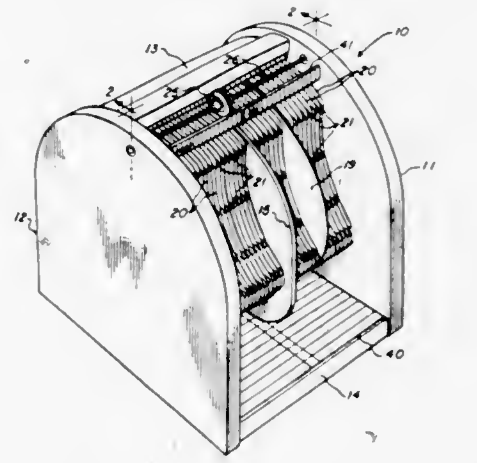
A housing with a self-aligning, sealed roller bearing, the bearing having an inner race and an outer race assembly with rollers therebetween. The bearing can be pre-lubricated and is capable of being re-lubricated. The outer race assembly has a continuous outer spherical surface mating with an interior spherical surface of the housing. The outer race assembly is of two pieces, one race being formed on a cylindrical member received by the other piece having the continuous outer spherical surface. The cylindrical member is held in position by various means which enable the manufacture to supply the customer with any pre-loading required for a particular installation.



3,794,394

RECORD STORAGE RACKS

Lloyd E. Berggren, Minneapolis, Minn., assignor to Technology Application Corporation, Minnetonka, Minn.
Filed Apr. 24, 1972, Ser. No. 246,742
Int. Cl. A47b *81/06*
U.S. Cl. 312—19 **8 Claims**

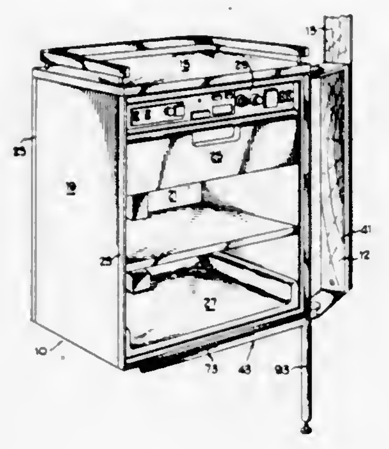


An improved record storage rack is provided having a plurality of compartments for holding a plurality of records in a vertical position, the storage rack including a rotatable mounted wheel for frictionally engaging the edge of the record in order to displace the record from the stack thus allowing the user to quickly and easily pull the record from the storage rack.

3,794,395
CABINET

Frank J. Damico, Cincinnati, Ohio, and William H. Stein, Jr., Batesville, Ind., assignors to Hill-Rom Company, Inc., Batesville, Ind.

Filed May 1, 1972, Ser. No. 249,225
Int. Cl. A47b *81/00*
U.S. Cl. 312—209 4 Claims

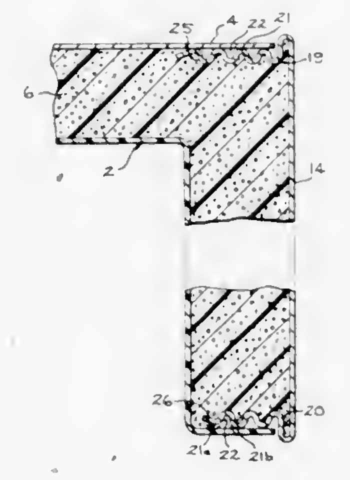


A cabinet suitable for hospital room use including a pivotally connected support bracket adapted to support the cabinet in spaced relation to the floor and allow pivotal movement between a plurality of positions of use.

3,794,396
REFRIGERATOR CABINET CONSTRUCTION

Leonard L. Vick, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed June 21, 1972, Ser. No. 264,939
Int. Cl. F25d *11/00*
U.S. Cl. 312—214 **4 Claims**

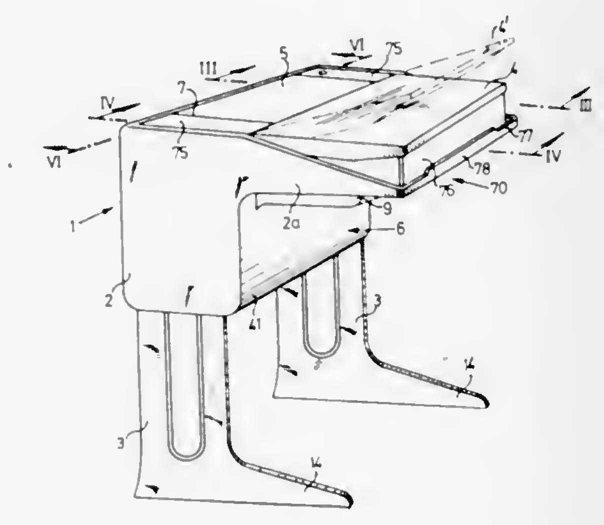


A refrigerator cabinet including insulated walls comprising a plurality of sheet members collectively forming the spaced case and liner surfaces of the walls. In the joints or seam areas in which edge portions of adjacent sheet members overlap, the edge portion of one of the members is provided with corrugations running parallel to the sheet member edge. These corrugations and the overlapping surface of the adjacent sheet form a plurality of parallel passages extending transversely of the path of any foam flow into the joint which permit the expansion of foam therein to prevent leakage of foam through the joint.

3,794,397
VERTICALLY ADJUSTABLE SCHOOL DESK WITH AN INCLINED TOP

Fritz Flototto, 4830 Gutersloh 16, Gutersloh, Germany

Filed June 21, 1972, Ser. No. 264,822
Claims priority, application Germany, June 30, 1971, P 21 32 626.1; England, Dec. 10, 1971, 57,589/71; Austria, Nov. 2, 1971, 9442
Int. Cl. A47b *27/00*
U.S. Cl. 312—231 **11 Claims**



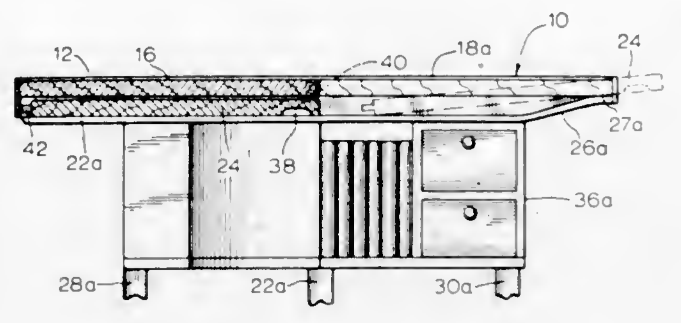
A school desk comprises an oblique desk top arranged between two spaced vertical side boards. The desk has a compartment on which the side of the desk remote from the user, which adjoins the desk top, extends over the whole width of the desk and is accessible from above. A covering board of the compartment is capable of being slid between a closing position and an oblique use position and a non-use position in which the covering board is covered by the top of the desk. This sliding movement is made possible by means of guide grooves and guide rails arranged on the inner side of the desk. On each side of the desk there is a lower support and each such support is adapted to be slid into a cavity between the associated side board and the compartment side wall spaced from the side board. The support can be attached in a detachable manner at different vertical positions on the side wall of the compartment. On the side remote from the user of the desk the desk top is connected by means of a hinge at the top of the front wall of each support accommodating space. The upper connecting board extends at the same height as the surface of the covering board in the closing position and on the extended compartment side wall the guides for the covering board are arranged. In the oblique position the covering board lies on a frame board connected integrally with the desk side boards and the front wall. In a coplanar position it lies with the covering board in its closing position on the support rail, which is pivoted on the side, adjacent to the user, of the frame board and can be swung upwards into a vertical support position.

3,794,398
CONVERTIBLE DESK AND CONFERENCE TABLE

Eugene A. Lindsay, 211 Essex, Kenilworth, Ill. 60506

Filed Mar. 27, 1972, Ser. No. 238,439
Int. Cl. A47b *85/00*
U.S. Cl. 312—241 5 Claims

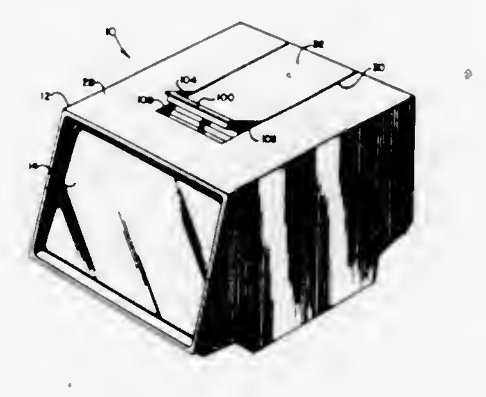
A convertible desk and conference table having a table-top surface supported by a pillar means. The table-top surface includes a central section and two wing sections disposed along and rearwardly of the central section to define an open area. A leaf conforming in shape to the open area is disposed on guides beneath the central section of the table-top surface. A pair of camming ramps are disposed adjacent the sides of the wing sections and operate to raise the leaf upward to the table-top surface. The convertible desk and conference table is changed from a desk configuration to a conference table configuration by pulling the leaf along the guides and up the camming ramps. The leaf is then joined with the central section of the table-top surface to complete the formation of the conference table.



3,794,399
PHOTOGRAPHIC APPARATUS FOR MOTION PICTURE PROJECTION

James M. Conner, Mamaroneck, N.Y., and Henry J. Salvador, Whittier, Calif., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 174,374, Aug. 24, 1971, Pat. No. 3,736,051. This application Jan. 22, 1973, Ser. No. 325,857
Int. Cl. G03b *19/04, 23/02;* **A47b** *95/02*
U.S. Cl. 312—244 **8 Claims**

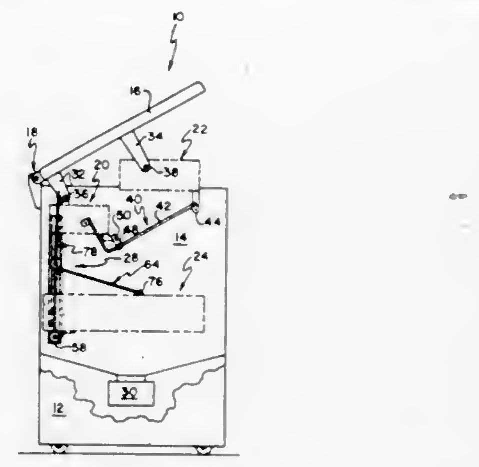


Projector for use with a motion picture film cassette, employing a housing having a front viewing face and a cassette-receiving cavity in communication with the top surface of the housing. A door member mounted at the rear of the opening and configured to block the opening when pivoted into closing position thereacross, carries a cassette-receiving guide which is adapted to receive the cassette from the front of the projector when the door is in its open position and to carry it to an operative location in the cavity when the door is pivoted to its closed position. The door is adapted to displace a drive mechanism of the apparatus into operative relation with the cassette, and the guide is coupled to the door through a lost motion member such that the cassette remains fixed in its operative location during engagement and disengagement of the drive mechanism. Additionally, a handle member is pivotally attached to the apparatus for selective displacement from a first position flush with a surface of the housing to a depressed position where it effects displacement of the door from its closed position and to an upright position where it is accessible for carrying of the unit.

3,794,400
RACK MECHANISM FOR TOPLOADING DISHWASHER

Lauren W. Guth, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed June 26, 1972, Ser. No. 266,264
Int. Cl. A47b *49/00, 81/00*
U.S. Cl. 312—269 **10 Claims**

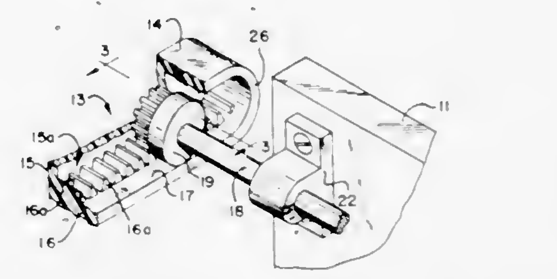


There is disclosed a top opening dishwasher having a lid pivoted along the rear edge thereof for selectively closing an upwardly open washing tub. A pair of upper racks are pivotally connected to the lid for movement into and out of the tub as an incident of lid closing and opening respectively. A bottom rack is mounted in the tub for vertical movement and is interconnected with the lid for raising and lowering as an incident of lid opening and closing respectively. The connection between the bottom rack and the lid is such that the bottom rack does not load the lid until the lid is partially open.

3,794,401
DOOR GUIDE

Carl J. Dean, Southbridge, and David M. Wright, Shrewsbury, both of Mass., assignors to Barry Wright Corporation, Watertown, Mass.

Filed Oct. 20, 1971, Ser. No. 190,915
Int. Cl. A47p *88/00*
U.S. Cl. 312—323 1 Claim



A simplified and dependable construction for the support and guidance of retracting doors and other closures of the type that are patricularly useful in business type file cabinets. A preferred construction employs a shaft attached to the door and is provided with gears at its opposite ends which serve as the hinge of the door. The gears are confined within a pair of door guides that contain linearly arranged gear teeth or a gear rack or projections within a guide track which is open on one side. The gear rack teeth mesh with the gears on the door and confine the path of travel of the door along the path of the guides. The outer walls of the guide track prevent derailing of the shaft and confine the movement of the door to rectilinear translation along the trackways without undesired twisting movement. The multiple gear-rack arrangement ensures a timed uniform rectilinear movement of the door. The front and rear ends of the guides are closed to prevent removal of the door and to provide door stop locations.

3,794,402

METHOD OF MANUFACTURING AN ELECTRIC DISCHARGE TUBE OR AN ELECTRIC LAMP

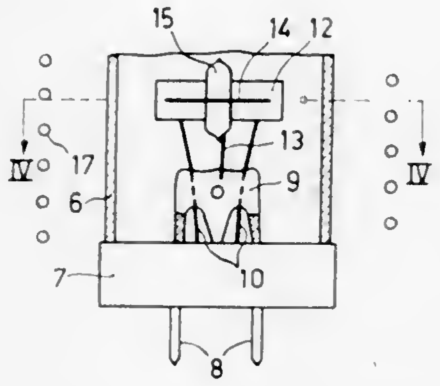
Johannes Antonius Maria Ridders; Rein Willemse Van Der Wolfe, and Adrianus Josephus Theresia Mollet, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 49,379, June 24, 1970, abandoned. This application July 12, 1972, Ser. No. 271,058

Claims priority, application Netherlands, June 27, 1969, 6909890

Int. Cl. H01j *9/38*

U.S. Cl. 316—14 **2 Claims**



A method of manufacturing an electric discharge tube or an electric lamp starting from a vessel wherein a closed holder is placed which is provided with a quantity of one or more substances to be introduced into the vessel. Subsequently, a desired gas atmosphere is brought about in the vessel and the vessel is closed. Finally the holder is opened by means of current passage through a heating element present in the vessel. The heating element is connected to the ends of an electric conductor placed in the vessel, for example, a coil, between which ends an electric voltage difference is profuced by means of induction with the aid of a current-conveying primary coil placed outside the vessel.

3,794,403

APPARATUS FOR INTRODUCING A SUBSTANCE INTO A DISCHARGE TUBE OR ELECTRIC LAMP

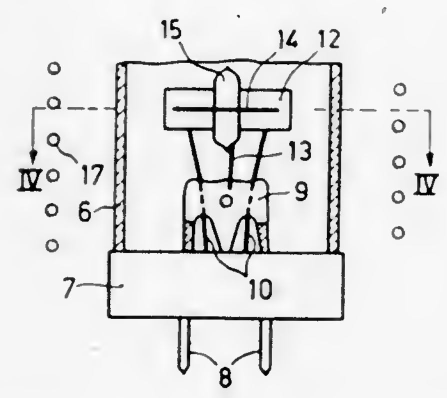
Johannes Antonius Maria Ridders; Rein Willemse Van Der Wolf, and Adrianus Josephus Theresia Mollet, all of Emmasingel, Eindhoven, Netherlands

Division of Ser. No. 49,379, June 24, 1970, abandoned. This application July 10, 1972, Ser. No. 270,340

Claims priority, application Netherlands, June 27, 1969, 6909890

Int. Cl. H01j *9/38*

U.S. Cl. 316—30 **6 Claims**



A method of manufacturing an electric discharge tube or an electric lamp starting from a vessel wherein a closed holder is placed which is provided with a quantity of one or more substances to be introduced into the vèssel. Subsequently, a desired gas atmosphere is brought about in the vessel and the vessel is closed. Finally the holder is opened by means of current passage through a heating element present in the vessel. The heating element is connected to the ends of an electric conductor placed in the vessel, for example, a coil, between which ends an electric voltage difference is profuced by means of induction with the aid of a current-conveying primary coil placed outside the vessel.

3,794,404

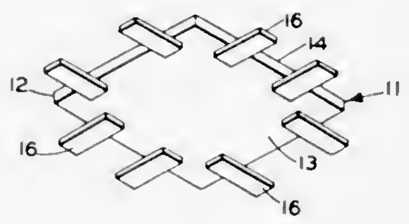
METHODS OF MICROSCOPICALLY INSPECTING OPPOSITE SIDES OF OBJECTS

William R. Wanesky, Wescosville, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 30,379, April 21, 1970, Pat. No. 3,680,947. This application May 18, 1972, Ser. No. 254,550

Int. Cl. G02b *21/00*

U.S. Cl. 350—81 **4 Claims**



Microscopic inspection of objects such as beam-lead integrated circuits is accomplished by positioning the objects mounted on platforms in a spaced relationship under a vacuum pickup needle located in the field of view of the microscope. Rapid and accurate positioning is aided by air bearing facilities. One of the platforms includes a transparent disc for supporting the bottom sides of the objects. The disc is parallel to and spaced from a mirror which reflects an image of the bottom sides to the microscope. The microscope is first raised to its upper position along its principal axis and focused on the top sides of the objects so that the mirror image of the bottom sides is out of focus and not visible. The top sides are then individually inspected. Next, the microscope is moved to its lower position along its axis and then focused on the mirror image of the bottom sides of the objects so that the top sides are out of focus. Preferably, the magnification of the microscope while in its lower position is increased to provide a larger image of the bottom sides to thereby facilitate their inspection. The increasing of the magnification also decreases the depth of field of the microscope so that an image of the top sides is far out of focus and therefore not visible. This improves the clarity of the image of the bottom sides to further facilitate their inspection. The bottom sides are then individually inspected. During the inspection the objects are separated in accordance with certain characteristics with the aid of a vacuum pickup needle. The movement of the needle is limited by a ball plunger to prevent damage to the objects.

3,794,405

LIQUID CRYSTAL CELL AND METHOD FOR ITS MANUFACTURE

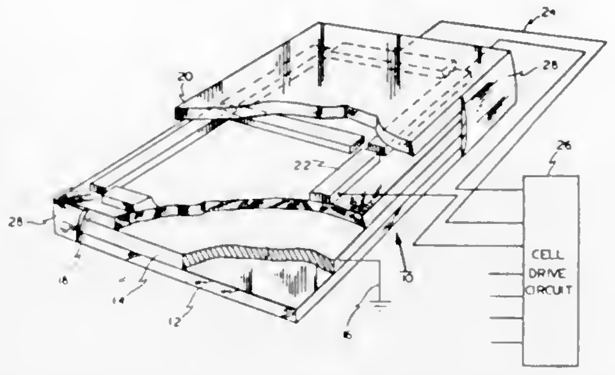
James Vincent Masi, 36-Belle Vale St., Monroe, Conn. 06468

Division of Ser. No. 225,264, Feb. 10, 1972, Pat. No. 3,746,426, which is a continuation of Ser. No. 76,739, Sept. 30, 1970, abandoned. This application Mar. 29, 1973, Ser. No. 346,101

Int. Cl. G02f *1/16*

U.S. Cl. 350—160 LC **4 Claims**

A liquid crystal cell and method for its manufacture. The cell has a strip of microglass paper impregnated with liquid crystal material sandwiched between two substrates, each of which has conductive material plated thereon. If coincident selection of a point in the cell is desired, the conductive material on the substrates are in the form of parallel strips with the strip on one substrate being perpendicular to the strips on the other substrate and a layer of non-linear resistance material is deposited over the conductive material on one of the substrates.



3,794,406

METHOD OF AND APPARATUS FOR OPTICAL MULTIPLE FILTERING

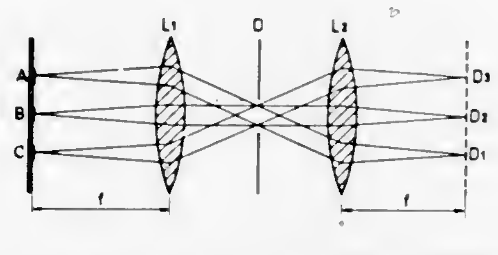
Manfred Kock, Norderstedt, and Hermann Weiss, Hamburg, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 11, 1972, Ser. No. 288,106

Claims priority, application Germany, Sept. 18, 1971, 2146729

Int. Cl. G02b *5/18*

U.S. Cl. 350—162 SF **10 Claims**



A method of, and an apparatus for, optical multiple filtering in which an object is simultaneously compared with a plurality of filters are described. By causing the object to modulate the spatially separated and spatially incoherent Fourier spectra of the filters and by imaging the modulated spectra on a detector plane in a spatially separated configuration an object may be compared with a large number of filters in a simple optical arrangement.

3,794,407

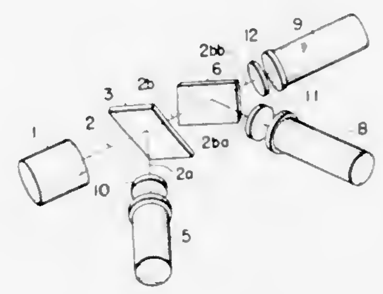
COLOR PICK-UP DEVICE

Shigeru Nishimura, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 883,795, Dec. 10, 1969, abandoned. This application May 1, 1972, Ser. No. 248,899

Int. Cl. G02b *27/10*

U.S. Cl. 350—171 **14 Claims**



A pick-up device adapted to generate a video color signal by the use of a plurality of pick-up tubes, wherein at least two dichroic mirrors are used to defocus an image forming light ray corresponding to the "red" signal and an image forming light ray corresponding to the "blue" signal in the vertical direction only, thereby preventing a decrease of the apparent resolution of a reproduced picture which tends to result from an imperfect registration of the respective color signals.

3,794,408

OPTICAL FILTER

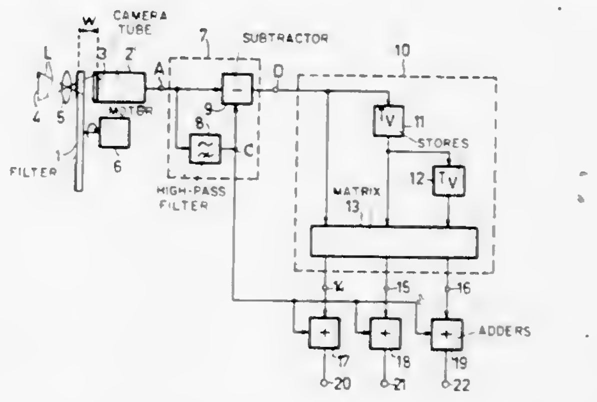
Sing Liong Ian; Jan August Marcel Hofman, and Gijsbentus Bouwhuis, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 14, 1972, Ser. No. 280,083

Claims priority, application Netherlands, Aug. 14, 1971, 7111227

Int. Cl. G02b *5/18*

U.S. Cl. 350—162 R **12 Claims**



An optical filter for use in a field-sequential colour television camera, for which purpose it is rotatably arranged in front of a light-integrating camera tube. The filter partly comprises sections which produce a reduction in definition and for this purpose are provided with a plurality of diffraction gratings having different spacings. The optical filter which owing to the provision of the diffraction gratings has a discontinuous light transmission characteristic, after integration of the light has a more or less continuous light transmission characteristic which corresponds in a desirable manner to an electric filter characteristic.

3,794,409

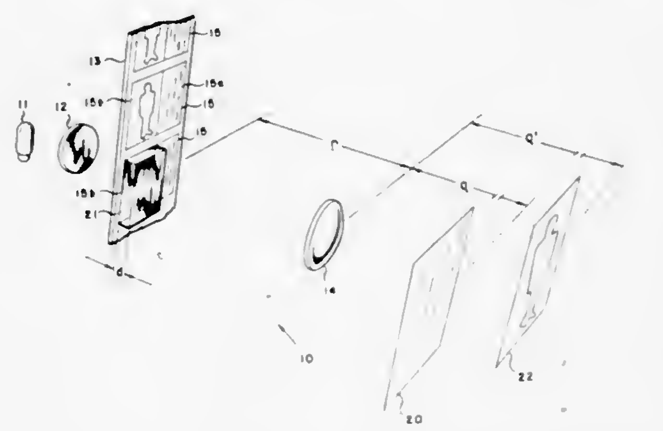
METHOD AND APPARATUS FORMING PLURAL FOCUSED IMAGES WITH A COMMON LENS SYSTEM

Winston O. Johnson, Atlanta, Ga., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Continuation of Ser. No. 26,971, April 9, 1970, abandoned. This application Dec. 17, 1971, Ser. No. 209,399

Int. Cl. G02b *27/00*

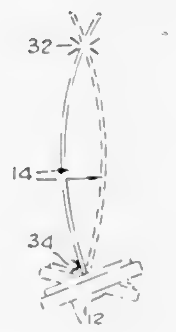
U.S. Cl. 350—194 **12 Claims**



Method and apparatus for focusing a selected portion of an object at a conjugate plane different from the conjugate plane of focus of other portions of the object. A focus change member made of a material having a refractive index different from that of air is placed adjacent the object, which may be a film negative or transparency. The portion of the object which is covered by the focus change member appears to lie closer to the focusing lens than does the uncovered portion of the object, so that the lens projects the focused image of the portion covered by the focus change member to a greater distance than the focused image of the uncovered portion of the object. A technique is also described for photographically enlarging an object to obtain discrete areas of dissimilar magnification on an image plane, and to obtain a magnification which is variable along a dimension of the image plane.

3,794,410
ARTICULATED MIRROR

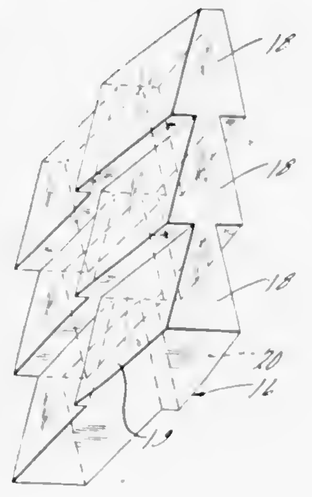
James E. Elliott, San Pedro, Calif., assignor to MCA Disco-Vision, Inc., Universal City, Calif.
Filed Feb. 20, 1973, Ser. No. 333,559
Int. Cl. G02b *7/24*
U.S. Cl. 350—285 **7 Claims**



An improved articulated mirror provides "fine" tracking control for a transducer arm and tracking assembly which is servo controlled from the playback circuits to follow the information track on a video disc. A polycrystalline piezoelectric bimorph motor driver is constrained to bend in an arcuate bow shape. The mirror is mounted on a free end that moves through an angle as the main body bows.

3,794,411
MOTOR VEHICLE REAR VIEWING SYSTEM

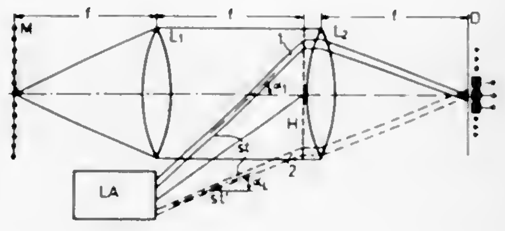
Ronald G. Gray, Westcliff-On-Sea, England, assignor to Ford Motor Company, Dearborn, Mich.
Filed Mar. 26, 1973, Ser. No. 345,030
Int. Cl. G02b *5/08*
U.S. Cl. 350—302 **4 Claims**



A rear viewing system in which light is deflected onto a mirror by a prism, the prism being divided into vertical strips each with a slightly different horizontal angle to expand the field of view.

3,794,412
HOLOGRAPHIC MEMORY WITH IMAGE LOCATION CORRECTION

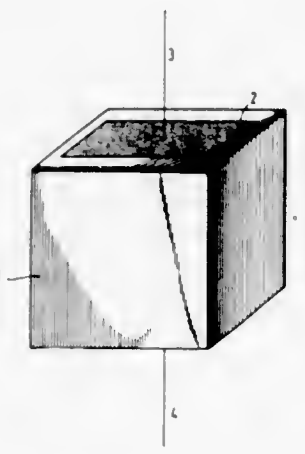
Bernhard Hill, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 197,891, Nov. 11, 1971, abandoned. This application Jan. 26, 1973, Ser. No. 327,130
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **1 Claim**



An apparatus for digital deflection of a radiation beam, in particular for use in a holographic storage system, is described. It is shown that if the apparatus is provided with a system which digitally varies the beam direction and with a system which is capable of digitally displacing the radiation beam parallel to itself the defects due to optical elements which cooperate with the deflection apparatus may be compensated for.

3,794,413
STRONTIUM FORMATE NONLINEAR DEVICE

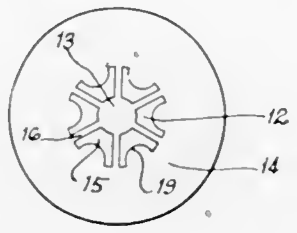
Siegfried Haussuehl, Weyertal 82, 5 Cologne 41, Germany
Filed Mar. 7, 1972, Ser. No. 232,409
Claims priority, application Germany, Mar. 26, 1971, P 21 14 842.5
Int. Cl. G02f *1/00;* **H03f** *7/00*
U.S. Cl. 350—160 R **2 Claims**



A nonlinear optical component having a single crystal which has electro-optical properties characterized by the single crystal being an orthorhombic crystal of strontium formate. The nonlinear optical component is particularly useful in a system for handling electromagnetic radiation in the infrared, visible and ultraviolet spectral ranges and for producing a harmonic frequency of a basic frequency of light radiated of the component.

3,794,414
MULTIPLE FOCAL CONTACT LENS

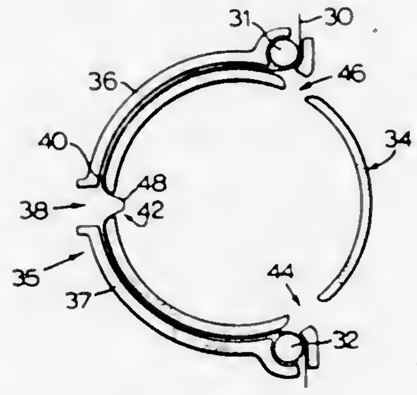
Newton K. Wesley, Chicago, Ill., assignor to Wesley-Jessen Inc., Chicago, Ill.
Continuation of Ser. No. 536, Jan. 5, 1970, abandoned, which is a continuation-in-part of Ser. No. 632,398, April 20, 1967, abandoned. This application May 12, 1972, Ser. No. 252,758
Int. Cl. G02c *7/04*
U.S. Cl. 351—161 **2 Claims**



A contact lens construction suitable for use by individuals ordinarily requiring a bifocal prescription. The lens includes a light transmitting area interrupted by spaced-apart opaque portions. Continuous focal characteristics are achieved by utilizing light transmitting portions for providing vision requirements and for achieving a sufficient peripheral field, adequate illumination, and normal centering. A distance vision correction is provided in a centrally located lens area.

3,794,415
ROLLING LOOP TRANSPORT MECHANISM

Peter Ronald Wright Jones, Brisbane, Queensland, Australia, assignor to Multiscreen Corporation Limited, Galt, Ontario, Canada
Filed July 13, 1972, Ser. No. 271,503
Int. Cl. G03b *1/20*
U.S. Cl. 352—184 **2 Claims**

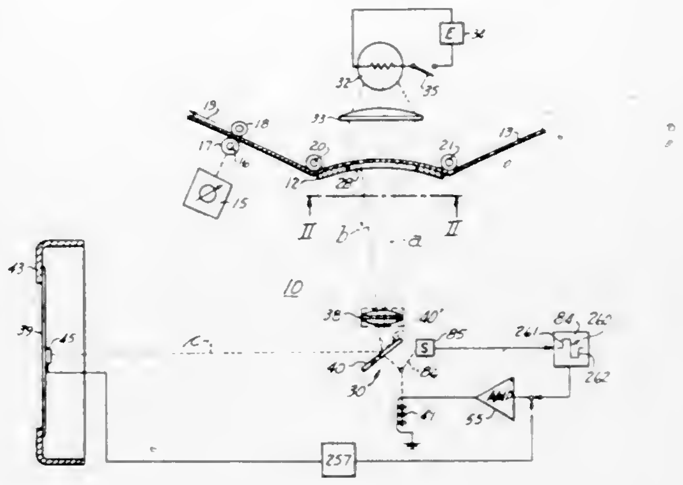


The invention provides a mechanism for transporting photographic film past an aperture in a projector, camera or other motion picture machine, and more particularly to a rolling loop film transport mechanism which transports film between a rotor and a stator for placing frame lengths of the film against an aperture in the stator such that each frame length then has substantially the same curvature as the aperture independently of the curvature of the stator.

3,794,416
SENSING FIDUCIAL MARKINGS FROM MOTION PICTURE FILM

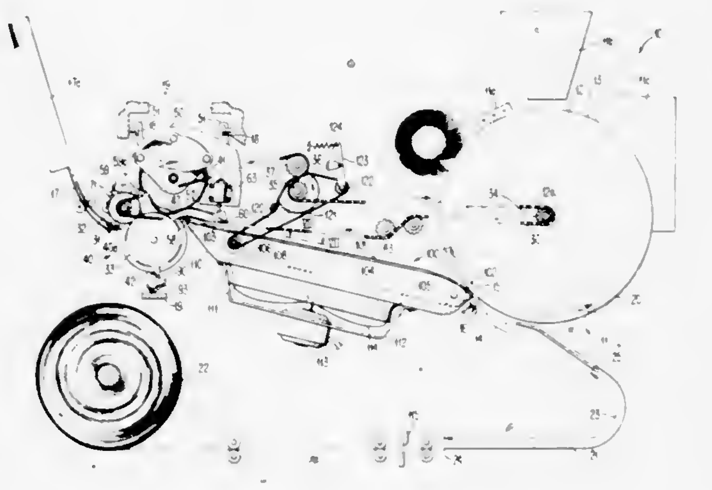
Robert F. Johnston, Wildwood, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Division of Ser. No. 175,483, Aug. 27, 1971, Pat. No. 3,713,733. This application May 22, 1972, Ser. No. 255,892
Int. Cl. G03b *41/10*
U.S. Cl. 352—92 **6 Claims**

Fiducial markings having different relative contrasts are sensed from an information carrier. Different first electric signals corresponding, respectively, to the different relative contrasts are generated in response to the fiducial markings. Sensing signals indicative of the fiducial markings substantially independently of the different relative contrasts are produced by converting the different first electric signals into corresponding second electric signals having at least one common characteristic.



3,794,417
HIGH SPEED PRINTING SYSTEM WITH HEATED ROLL FUSER

James Andrew Machmer, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 21, 1972, Ser. No. 317,482
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **14 Claims**



Thermoplastic powder images delivered in succession from the transfer station of a copy machine or the equivalent station of another electrostatic printer at a high rate of speed are fixed to a support sheet by heat and pressure in a substantially slower moving fusing roll couple. This differential speed enables the operation of the fusing roll couple at lower temperatures and pressures to make practical the use of an internally heated fusing roll having a deformable surface. The speed of the fusing roll couple is perferably selected to substantially eliminate the space between successively delivered copies such that the rolls of the roll couple need not be separated between successive copies. A conveyor that transports copies to the roll couple is preferably driven with a programmed speed to match the speed at which a copy is generated and to alternately match the slower speed of the fusing roll couple as the copy is introduced thereto.

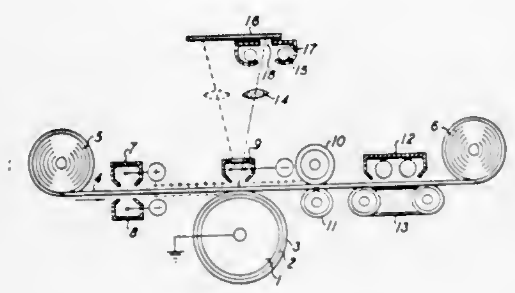
3,794,418
IMAGING SYSTEM

Katsuo Makino, Odawara; Akira Yoshikawa, and Toshio Nagashima, both of Tokyo, all of Japan, assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 121,052, March 4, 1971, Pat. No. 3,719,481. This application Oct. 2, 1972, Ser. No. 294,409

Int. Cl. G03g *15/00*

U.S. Cl. 355—3 **11 Claims**



An electrically insulating web is charged on a first side with an electrostatic charge of one polarity and charged on a second side with an electrostatic charge of a second polarity. The first side of the web is brought into contact with a photoconductive layer and the layer is then exposed to a light pattern. The second side of the web is subjected to ions having a polarity of charge opposite to the polarity of charge on the second side. The resulting electrostatic latent image formed on the second side of the web may be developed with electroscopic toner particles.

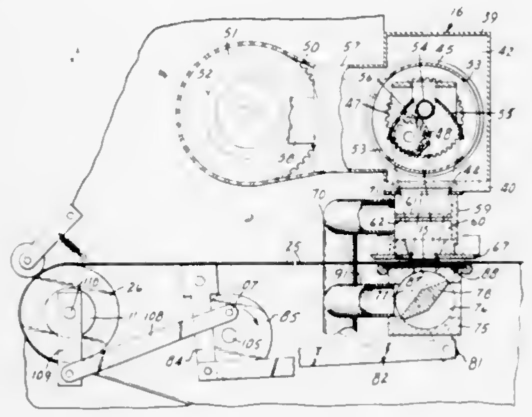
3,794,419
DUPLICATING MACHINE TO CONVERT MICROFILM TO MICROFICHE

Lawrence A. Flor, Anoka, and Earl K. Hoyne, Fridley, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 3, 1972, Ser. No. 250,040

Int. Cl. G03b *27/20*

U.S. Cl. 355—91 **7 Claims**



A film exposing device for use in a machine to convert information on a strip of microfilm to information in the form of microfiche. The exposing device comprises a light source about which a rotary shutter is positioned. Light from the source is directed onto the strip of microfilm which is placed and held by air pressure and a resilient platen in intimate contact with a wide duplicating film advanced through the device in a direction normal to that of a strip.

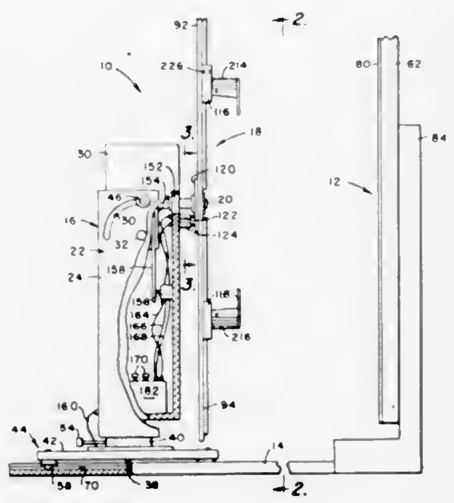
3,794,420
PHOTOMECHANICAL APPARATUS FOR MANIPULATING IMAGE FORM

Clarence R. Gilman, Vienna, Va., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Division of Ser. No. 219,742, Jan. 21, 1972, Pat. No. 3,743,415. This application Feb. 8, 1973, Ser. No. 330,817

Int. Cl. G03b *27/68*

U.S. Cl. 355—78 **5 Claims**



Photomechanical apparatus and procedures are applied to obtain controlled manipulations of image representations having particular unity in topographic mapping including slope mapping, relief mapping, and symbol discrimination. Negative and positive transparencies are made photographic copy in the apparatus for enabling production of enhanced and reduced versions of representations, respectively. Spaced beams from revolving light sources are directed to pass through such copy so as to expose photographic film materials maintained spaced from the copy. Selective adjustments of light spacing and dispositions and exposure limits in the apparatus adapt it for use in differing procedures.

3,794,421
PROJECTED IMAGE VIEWING DEVICE

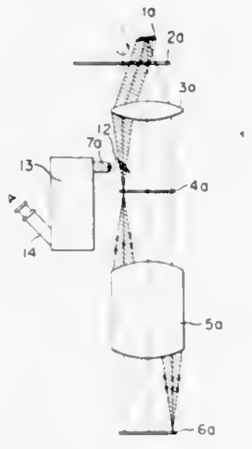
Ichiro Kano, Yokohama, and Yu Yamada, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 21, 1972, Ser. No. 236,686

Claims priority, application Japan, Mar. 22, 1971, 46/4616313

Int. Cl. G03b *13/26*

U.S. Cl. 355—45 **9 Claims**



A projected image printing device in which a photo-sensitive plate on the surface of which printing is done is provided at an exit side of an imaging lens used for mask printing and has such exit pupil as being infinity or almost infinity, and at the same time a mask is positioned at incident side of said imaging lens at such position as being conjugate with the photo-sensitive plate, and also has an illuminating optical system to illuminate said mask.

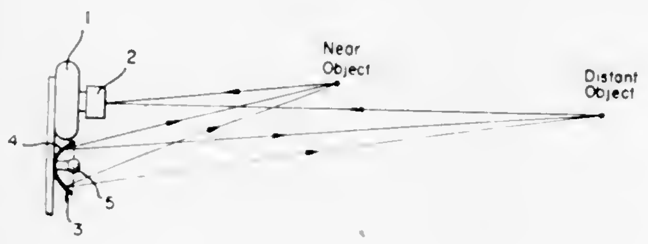
3,794,422
METHOD AND APPARATUS FOR PHOTOGRAPHING BY ARTIFICIAL ILLUMINATION

Anwar Chitayat, 8 Gilbert Ln., Plainview, N.Y. 11803

Filed June 7, 1972, Ser. No. 260,583

Int. Cl. G03b *27/76*

U.S. Cl. 355—67 **15 Claims**



This invention relates to method and apparatus for simultaneously photographing near and distant objects by means of artificial illumination so as to obtain substantially uniform reflected illumination from such objects on the film of the camera. The invention resides broadly in a greater attenuation of the reflected light returned to the camera from the near objects than from the distant objects.

3,794,423
COPYING APPARATUS

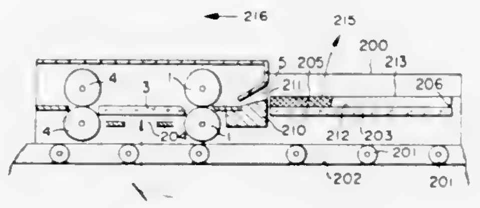
Gerhard Petersdorf, Pohlheim, Germany, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed July 13, 1972, Ser. No. 271,272

Claims priority, application Germany, July 20, 1971, 2136142

Int. Cl. G03b *27/62*

U.S. Cl. 355—75 **2 Claims**



This specification discloses improvements in a copying apparatus of the type wherein sheet originals or thicker books may be selectively moved along a copying window and wherein a conventional transport mechanism for sheet originals is connected to a transparent book support positioned on an extension of the transport mechanism, said transport mechanism for sheet originals and said book support being selectively moved in common. The improvements consist in a threshold means provided in front of the transport mechanism and a thick cover cloth provided for the book support. The threshold means is projected upwardly beyond the plane of the book support and positioned at a lower level than the cover cloth.

3,794,424
METHOD AND APPARATUS FOR DETERMINING THE COLOR OR CUT DIAMONDS

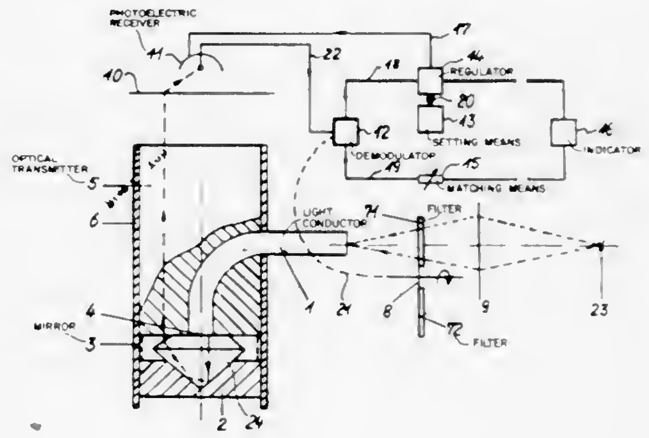
Manfred Eickhorst, Hans-Henny-Jahnn-Weg 21, and Godehard Lenzen, both of Hamburg, Germany, assignors to said Eickhorst, by said Lenzen

Filed Mar. 4, 1971, Ser. No. 121,111

Claims priority, application Germany, Mar. 13, 1970, P 20 11 931.7

Int. Cl. G01j *3/50*

U.S. Cl. 356—30 **12 Claims**



The diamond is held by a well known holder below its holder or mounting edge leaving its upper portion with the planar surface and the facets fully exposed. A light ray of a predetermined wave length entering the diamond through the upper planar surface is totally reflected within the diamond in accordance with the geometric configuration of rays and emerging from the facets of the diamond. The amount of attenuation between the entering and the emerging light ray is measured photoelectrically, whereby attenuations of the entering light ray caused by surface reflections and by varying adjustments of the diamond are avoided.

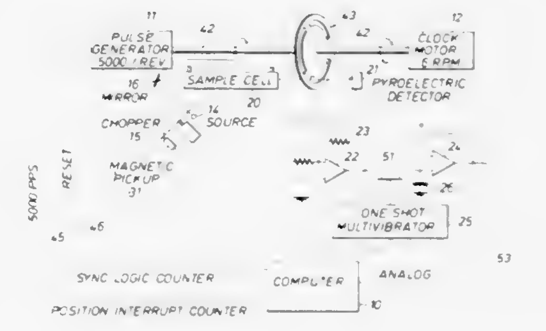
3,794,425
SCANNING INFRARED SPECTROSCOPIC ANALYZER USING ROTATING VARIABLE FILTER

Vigo N. Smith, Houston, Tex., and Richard C. Bowers, Richmond, Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 22, 1972, Ser. No. 282,802

Int. Cl. G01n *21/34;* **G01j** *3/48*

U.S. Cl. 356—51 **7 Claims**



A fast spectroscopic analyzer wherein chopped infrared light is passed through a sample cell, a rotating variable filter and to a detector. The angular position of the filter corresponds to various wave lengths of light and is used to synchronize a recording system, recording signals of interest.

pending upon the profile of the specimen; and the projected

3,794,430

3,794,432

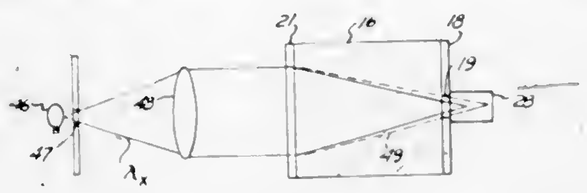
3,794,426
HOLOGRAPHIC SPECTROMETER

Rolf K. Mueller, Brighton, Mich., and Adolf W. Lohmann, La Jolla, Calif., assignors to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 176,623, Aug. 31, 1971, abandoned. This application Dec. 8, 1972, Ser. No. 313,228

Int. Cl. G01j *3/28*

U.S. Cl. 356—98 9 Claims



A spectrometer employing the principles of single point holograms, that is, Fresnel zone plate patterns (FZP), is described. The holographic recording medium and the pinhole required for making an FZP are permanently arranged on opposite sides of a transparent support medium. The interference pattern is then recorded by illuminating the recording medium with monochromatic light of a selected wavelength. Spectral analysis of light which is not monochromatic can later be made by illuminating the recorded interference pattern and by varying the optical path length between the interference pattern and a second pinhole positioned in front of a detector. Changes in the optical path between the second pinhole and the interference pattern correspond to changes in the wavelength of light which is focused on the permanently positioned pinhole. Different wavelengths can thus be detected by varying the optical path length between the second pinhole and the interference pattern and noting the intensity which passes through the fixed pinhole. The permanent mounting relationship of the illuminated pinhole and the interference pattern eliminates the usual difficulty of aligning these two components to some small fraction of a wavelength, and any aberrations produced by the structure or recording medium are cancelled during the illumination of the pattern.

3,794,427
OPTICAL PROFILE DETECTOR WHOSE FUNCTION IS NOT ADVERSELY AFFECTED BY SURFACE CONDITIONS OF STRIP-SHAPED MEMBER

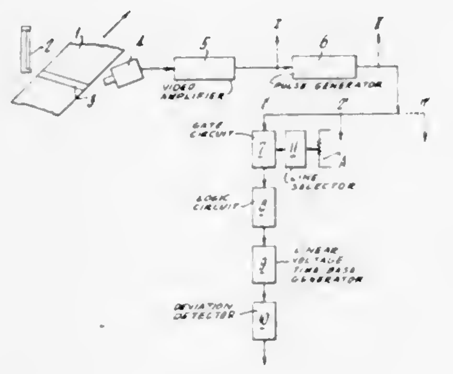
Hideo Shibata; Takashi Emori, both of Yokohama; Kazuo Kurasawa; Masao Okabe, both of Hamamatsu, and Tamio Santo, Amagasaki, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo-to and Hamamatsu Terebi Kabushiki Kaisha, Hamatsu-shi, Shizuoka-ken, both of, Japan

Filed June 6, 1972, Ser. No. 260,072

Claims priority, application Japan, June 8, 1971, 46-40890

Int. Cl. G01n *21/32*

U.S. Cl. 356—120 2 Claims



An optical profile detector is provided in which a light pattern projected upon the surface of a specimen is varied depending upon the profile of the specimen; and the projected light image is scanned into electrical signals which in turn are shaped into pulses so that the deviations in profile of the specimen from the standards may be detected from the deviations of the time intervals between the pulses from a predetermined time interval.

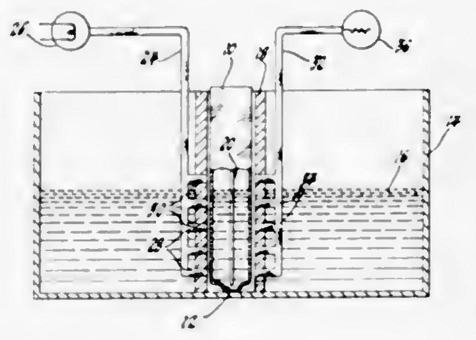
3,794,428
OPTICAL LIQUID LEVEL INDICATOR

Heinz Giesecke, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 21, 1972, Ser. No. 246,434

Int. Cl. G01b *11/00*

U.S. Cl. 356—156 3 Claims



A transparent standpipe in a liquid container has plano-convex cylindrical lenses integrally formed in opposite sides thereof and has aligned with the lenses a diaphragm containing a slit. An elongated light source and an elongated light detector are placed on opposite sides of the standpipe in alignment with the lenses. The light is focused through the slit onto the detector only where liquid is present.

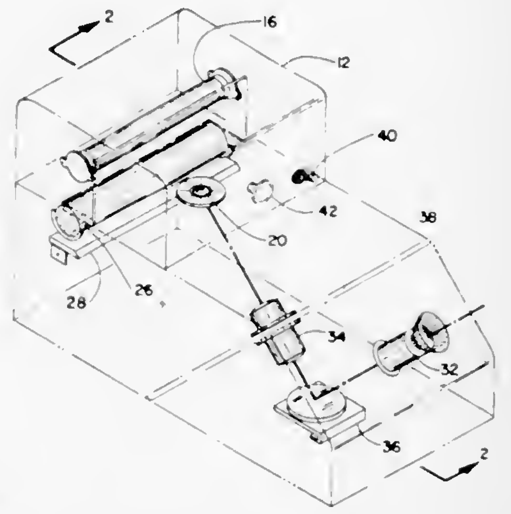
3,794,429
DEVICE FOR INSPECTING EYE-CONTACTING SURFACES OF CONTACT LENSES

Erich A. Koeniger, 5600 Bridget St., New Orleans, La. 70002

Filed Oct. 6, 1972, Ser. No. 295,745

Int. Cl. G01b *9/00*

U.S. Cl. 356—124 6 Claims



A closed device in which interior illumination is wholly provided and controllable to dimly and diffusively illuminate a contact lens from above, and slantingly and more brightly illuminate it from below. Magnification optics are positioned in the device to direct a line of sight slantingly upward and approximately normal to the slanting illumination from below, to but not through a part of the inner peripheral eye-contacting surface of a contact lens, whereby malformations in said surface are magnified by said optics to be plainly seen in profile and not looked through without seeing.

3,794,430
EXPOSURE METER HAVING MEANS FOR PREVENTING ERRONEOUS METERING

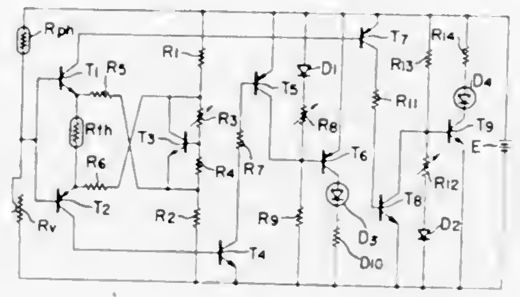
Osamu Maida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Aug. 21, 1972, Ser. No. 282,171

Claims priority, application Japan, Sept. 2, 1971, 46-78862

Int. Cl. G01j *1/44, 1/42*

U.S. Cl. 356—226 8 Claims



An exposure meter comprises exposure detecting means connected with an electric power source and including a photoelectric element, means connected with the photoelectric element to introduce exposure influencing factors thereinto, and means connected with the photoelectric element and with the introducing means to produce a proper exposure signal. Indicating means is connected with the exposure detecting means and operable to indicate a proper exposure in response to the proper exposure signal. Means is connected between the exposure detecting means and the indicating means to render the indicating means inoperable for any voltage drop of the source voltage below the minimum usable voltage.

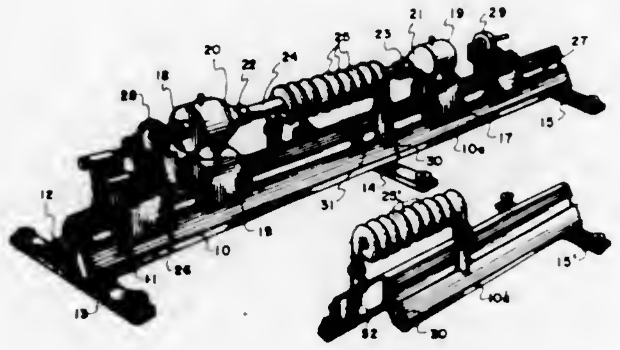
3,794,431
METHOD AND APPARATUS FOR STANDARDIZING OPTICALLY PUMPED LASER MATERIALS

Larry R. Rothrock, Poway, Calif., assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 47,430, June 18, 1970, abandoned. This application Aug. 17, 1972, Ser. No. 281,390

Int. Cl. H01e *3/00*

U.S. Cl. 356—256 7 Claims



A system for standardizing optically pumped laser materials includes a given light pumping lamp of defined energy output, a given access area in fixed light coupling realtionship with the lamp for receiving laser material, and a resonant optical cavity for the access area of given defined characteristics. The arrangement is such that any reflected radiation from the lamp is prohibited from passing into the access area. Successive laser materials may then be received in the access area and subjected to substantially identical light pumping conditions to cause stimulated emission of laser light and the output laser light of each material monitored so that the materials may be categorized in accordance with their output characteristics.

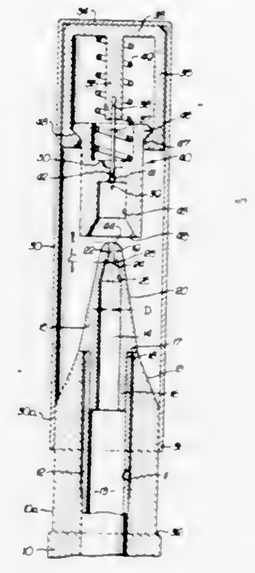
3,794,432
APPLICATOR FOR FLUIDS

Walter B. Spatz, Santa Monica, Calif., assignor to Spatz Corporation, Venice, Calif.

Filed Mar. 17, 1972, Ser. No. 235,689

Int. Cl. B43k *9/00*

U.S. Cl. 401—262 8 Claims



An applicator for fluids, such as cosmetic fluids to be applied to a person's skin, includijg a container for the fluid adapted to flow through a passage or orifice in its tip, the passage being of such length and diameter that the fluid tends to rise in the orifice to a greater extent than the length of the orifice for discharge onto a person's skin. When not applied to the skin, surface tension of the fluid in the orifice prevents leakage. A cap carries a small diameter punch or wire which is inserted into the orifice whenever the cap is replaced over the container to be assured that the orifice is clear, or to unplug it if restricted.

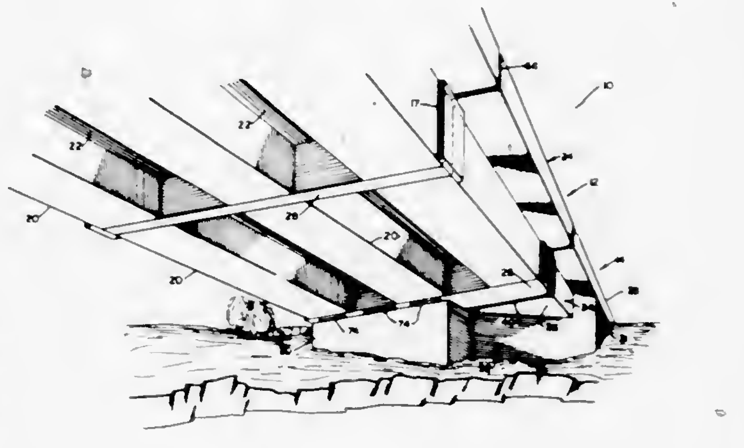
3,794,433
SEGMENTAL PRECAST CONCRETE POST-TENSIONED OVERPASS BRIDGES WITH CANTILEVERED ABUTMENT

Morris Schupack, c/o Schupack Associates, 2701 Summer St., South Norwalk, Conn. 06905

Filed July 8, 1971, Ser. No. 160,707

Int. Cl. E01d *7/02*

U.S. Cl. 404—1 4 Claims



A bridge structure particularly adapted for construction in skewed orientation with respect to a lower, overpassed roadway comprises a bridge portion, end abutments, and an intermediate support column. The bridge portion is constructed by supporting a plurality of precast concrete open-topped box-beams and precast L-shaped parapet-sidewalk members on

3,794,435

temporary falsework at the bridge site. Upstanding from the precast box beams are wooden flanges which are trimmed in place to provide temporary supports of desired heights for precast slabs forming a bed for the upper roadway. The variable-height supports are used to form a crown in the roadbed, or to form an inclined roadbed which may be part of a banked curve. The precast box-beams are joined together by formed-in-place concrete diaphragms which are poured simultaneously with a concrete roadbed, whereby a monolithic squared off bridge portion is formed. An intermediate support column engages one of the diaphragms, thereby eliminating an exposed transverse support beam. The bridge portion is post tensioned by means of longitudinal and transverse post tensioned tendons.

The squared-off bridge portion extends between two abutments, and any skew angle between the upper and lower roadways is accommodated in the abutments by a diagonal rake or relief "chamfer" of the abutment corner closest to the roadway. The far side of the squared off end of the bridge portion engages the top of the unraked portion of the abutment wall at an expansion joint, and is supported thereon; the remainder of the end of the squared off bridge portion being supported in cantilever manner, projecting beyond the diagonally raked corner of the abutment. The diagonally raked portion of the base wall of the abutment is substantially parallel to the lower roadway, thereby providing adequate horizontal clearance therefrom. The top of the abutment provides the approach roadway for the bridge. The top of the abutment is supported on and integral with the base walls of the abutment, with a portion cantilevered outward beyond the raked portion of the base wall to meet the squared off bridge portion.

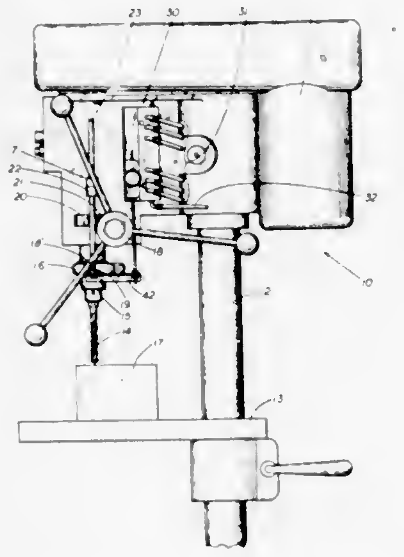
3,794,434
ATTACHMENT FOR OPERATING TOOL ACCESSORIES

John B. Woodmansee, 7632 Fall Creek Rd., Indianapolis, Ind. 46256

Filed May 5, 1972, Ser. No. 250,515

Int. Cl. B23b *51/06*

U.S. Cl. 408—56 **9 Claims**



An attachment mountable to a tool for operating fluid actuable tool accessories. The attachment has a main body with a plurality of chambers in which a plurality of pistons are slidably mounted. Each chamber has an inlet and an outlet with each piston having a seal engageable with a chamber seat to control the flow of fluid from the inlet to the outlet. The head of each piston extends externally from the body and is contactable by a slide movable against the body. The slide is connected to the spindle sleeve of the tool and is movable in unison with the cutter to and from the work piece. The slide by contacting the piston heads forces the piston seals away from the chamber seats thereby allowing fluid flow from the chamber inlets to the chamber outlets which are connected to the tool accessories.

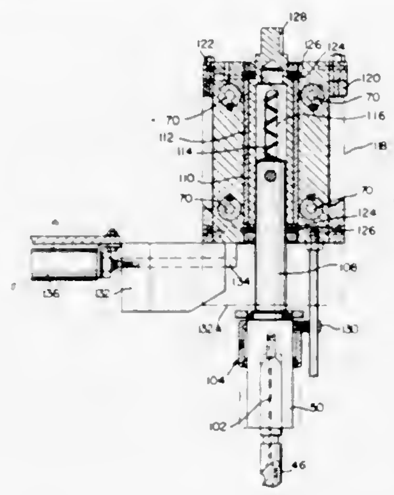
3,794,435
ADJUSTABLE HORIZONTAL HOLE DRILLING APPARATUS

Ernest K. Haley, 134 Northwestern Parkway, Louisville, Ky. 40212

Division of Ser. No. 211,897, Dec. 27, 1971, Pat. No. 3,749,507. This application Apr. 12, 1973, Ser. No. 350,545

Int. Cl. B23b *51/06*

U.S. Cl. 408—59 **2 Claims**



Adjustable horizontal hole drilling apparatus for simultaneous drilling of a plurality of holes in work pieces such as steel beams and the like, wherein reciprocably movable horizontally opposed heads mount drills in horizontally opposed movable relationship for operating engagement with opposite sides of the work piece, the drills being positionally vertically adjustable conjointly and severally, and wherein work piece hold down and element clamping means are provided. The apparatus is especially suited for, although not restricted to, drilling of holes in I-beam flanges.

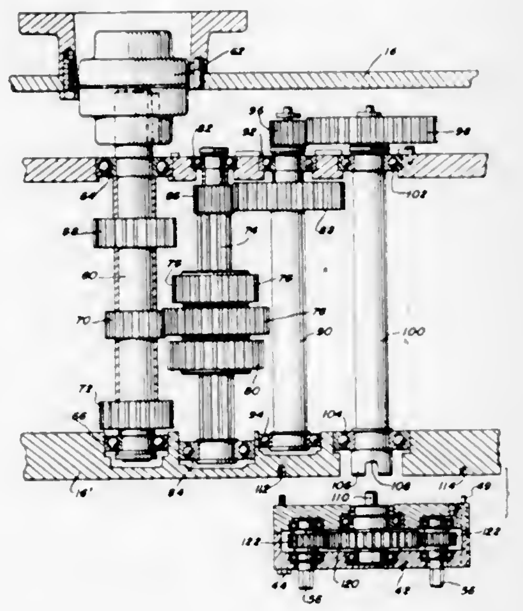
3,794,436
MACHINE TOOL HAVING PLURAL INTERCHANGEABLE TRANSMISSIONS

Thomas H. Rowlett, Antioch, Ill., assignor to Rowlar Manufacturing Co., Franklin Park, Ill.

Filed Oct. 27, 1971, Ser. No. 193,126

Int. Cl. B23b *47/14, 39/16*

U.S. Cl. 408—124 **2 Claims**



A spindle-driving machine tool is provided which has a number of interchangeable gear boxes. The gear boxes are simultaneously operated by being coupled to a number of transmission output shafts. Each of the gear boxes has a number of hex takeoffs all rotating at the same speed, but at different speeds from the hex takeoffs of the other gear boxes. The hex takeoffs are connected through universal drive assemblies to conventional spindles.

3,794,437
BORING HEAD WITH AXIAL ADJUSTMENT MEANS

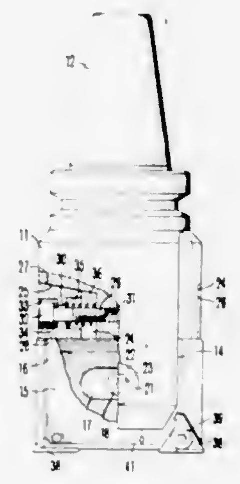
Sutemarj Mazoguchi, No. 1738-Kita, Tawara-cho, Nara, Japan

Division of Ser. No. 239,647, March 30, 1972, which is a division of Ser. No. 93,932, Dec. 1, 1970, Pat. No. 3,730,636. This application Apr. 10, 1973, Ser. No. 349,844

Claims priority, application Japan, Apr. 30, 1970, 45-42643

Int. Cl. B23b *29/10;* **B23q** *3/00*

U.S. Cl. 408—146 **1 Claim**



A boring head with bit adjusting means. The head has a body having a shank portion and a transverse channel in the lower part thereof and a transverse hole therein intersecting the channel and at right angles thereto. A pair of bit mounting bases is slidably positioned in the channel and a transverse hole extends through the bases generally aligned with the transverse hole in said body. A bolt is rotatably mounted in one end of the transverse hole in the body, extending through the transverse hole in the bases and threaded into the other end of the transverse hole in the body, the hole in the bases is larger than the bolt for permitting some relative movement between the bases and the bolt. A bit is secured to each of the bases, one being at one end of one base and the other being at the other end of the other base. Wedge means is provided for adjusting the positions of the bases downwardly in the channel when the bolt is only gently tightened.

3,794,438
COUNTERSINK ASSEMBLY

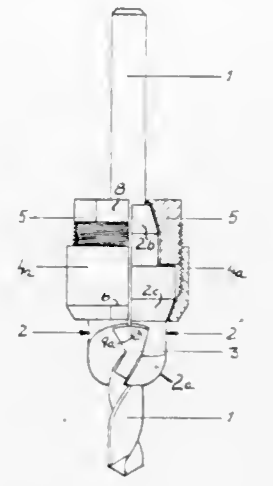
Ake Knutsson, Strandvagen 10, Traryd, 280-50, Stromsnasbruk, Sweden

Filed Feb. 10, 1972, Ser. No. 225,150

Int. Cl. B23b *51/10, 51/16*

U.S. Cl. 408—231 **4 Claims**

The assembly includes at least two countersink cutting elements having a cutting edge structure. Each cutting element has an internal structural configuration adapted to enclose a drill member whereby a cutting tool is formed around the drill member to countersink any hole formed by the drill member. The external tool surface has a configuration that is operatively associated with a tightening mechanism. The tightening mechanism includes a top case section and a bottom case section which have mutually cooperating surfaces allowing the case sections to be tightly pulled toward each other. The inner surface configurations of the case sections are operatively associated with the external tool surface configuration in such a manner that the cutting elements are pressed tightly against the drill member when the case sections are tightened with respect to each other. Means are also provided to prevent filings from appearing between the assembly and the internal walls of the holes being formed.



3,794,439
RADIAL BLOWER

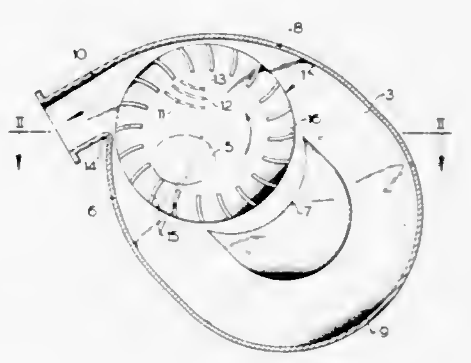
Dietrich E. Haase, 544 Mayen, Habsburgring 90, Germany

Filed Nov. 29, 1972, Ser. No. 310,473

Claims priority, application Germany, Dec. 3, 1971, P 21 60 047.5

Int. Cl. F04d *5/00*

U.S. Cl. 415—54 **12 Claims**



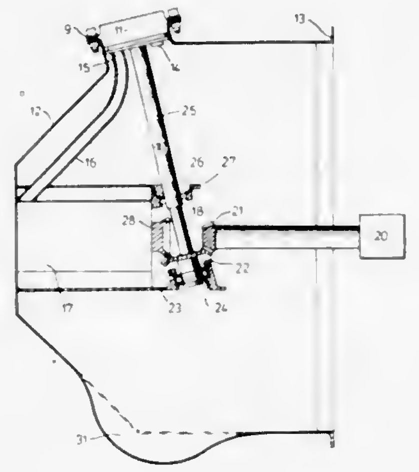
A radial blower has an impeller with a radially vaned rim rotatably mounted in a housing adjacent a discharge conduit. The portions of the housing on both sides of the discharge conduit incline outwardly away from the impeller to form wedge-shaped inlet and discharge chambers on both sides of the impeller. The larger ends of the suction and discharge chambers are joined by a return or bypass channel which directs the main portion of flow away from the back into the impeller. The portion of the impeller between the suction and discharge chambers is bordered by a concavely curved flow diverting element having a radius of curvature slightly smaller than the impeller and a maximum distance at its mid-section, which is substantially equal to the radial length of the vanes on the rim of the impeller. An inlet or suction opening in the front wall of the housing is eccentrically disposed relative to the impeller and adjacent the inlet chamber. The inlet conduit is inclined toward the suction chamber. A set of curved deflectors is disposed substantially parallel to each other in the central chamber of the housing within the impeller vanes and substantially in line with the discharge chamber and conduit and having tip ends fairly close to the inner ends of the impeller vanes of the discharge conduit.

ERRATUM

For Class 415—90 see:
Patent No. 3,794,449

3,794,440
LIQUID DISPENSING DEVICES

David Roberts McMurtry, Bristol, England, assignor to Rolls-Royce Limited, London, England
Filed May 4, 1972, Ser. No. 250,362
Claims priority, application Great Britain, May 15, 1971, 15183/71
Int. Cl. F01m *11/00;* **F04d** *13/14, 13/16*
U.S. Cl. 415—88 **8 Claims**



A liquid supply system comprising a rotatable housing for attachment to a variable pitch fan or propeller and to rotate therewith. The housing contains a pitch-control mechanism for the fan, and a quantity of lubricating oil sealed therein. The system includes a pump for dispensing the oil to the pitch control mechanism. The pump is connected to the periphery of the housing so as to receive at its inlet, during rotation of the housing, oil under centrifugal pressure and to dispense the oil radially inwardly to a point within the housing.

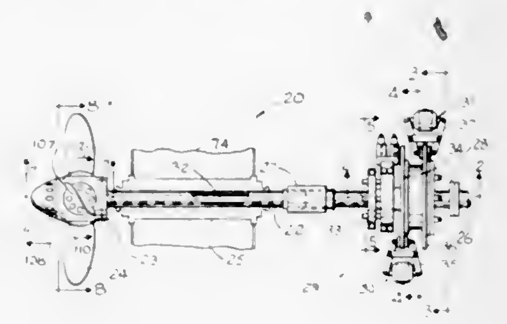
ERRATUM

For Class 415—122 see:
Patent No. 3,794,456

3,794,441
VARIABLE PITCH PROPELLER

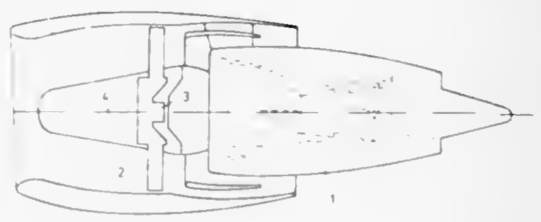
Norman Allen Johnson, 5325 Tenth Ave., South Delta, British Columbia, Canada
Filed Sept. 11, 1972, Ser. No. 288,050
Int. Cl. B63h *3/04*
U.S. Cl. 416—152 **10 Claims**

This disclosure pertains to novel means whereby the blade pitch in a propeller may be varied by employing unidirectional rotation of a propeller shaft, a portion of the power driving the propeller, and a pair of braking means. A propeller hub having a plurality of pivotally mounted blades is mounted on the propeller shaft. A blade pitch actuator member having a hub-end and a brake-end extends through the propeller shaft into the propeller hub. An eccentric slider block secured to the hub-end of the actuator member is interconnected to each of the propeller blades. An actuator gear is screw-mounted on the brake-end of the actuator member. Three pairs of planetary each pair secured to a common shaft, are mounted on the propeller shaft in substantially parallel spaced relation to the axis of rotation of the propeller shaft. One of each pair of planetary pinions is meshed with the actuator gear and further meshed with an outer sun gear secured to a first brake actuated member. The other of each pair of planetary pinions is meshed with an inner sun gear secured to a second brake actuated member. Each brake actuated member has a brake actuator means. Application of the first brake means causes the actuator gear to rotate in one direction and application of the second brake means causes the actuator gear to rotate in the other direction. Rotation of the screw-mounted actuator gear causes movement of the actuator member and eccentric slider block, thus altering the propeller blade pitch.



3,794,442
VARIABLE PITCH ROTARY BLADING

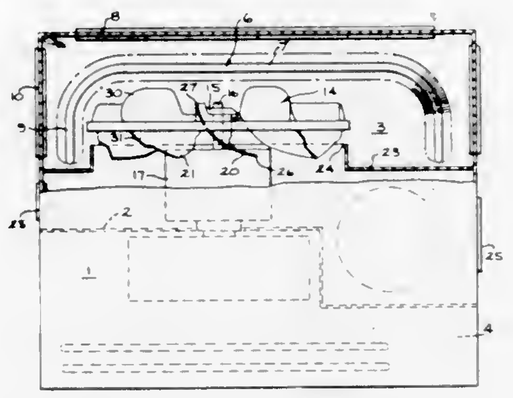
David Roberts McMurtry, Alveston, England, assignor to The Secretary of State for Defense in Her Brittanic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
Filed Apr. 17, 1972, Ser. No. 244,650
Claims priority, application Great Britain, Apr. 27, 1971, 11728/71
Int. Cl. B64c *11/06*
U.S. Cl. 416—145 **4 Claims**



The centrifugal turning moments on a variable pitch fan blade are counter balanced by the centrifugal force on a cam follower member which is reacted by a cam member connected to the blade to provide a turning moment on the blade opposite to the centrifugal turning moment. The cam member is a cylinder surrounding the blade root and having at least one cam track. A reaction member in the form of a second cylinder concentric with the cam member and having oppositely inclined corresponding cam tracks is connected to structure stationary relative to the blade. The cam follower member is a roller engaging the cam tracks on both the cam member and the reaction member.

3,794,443
WIDE DISPERSION FAN IMPELLER

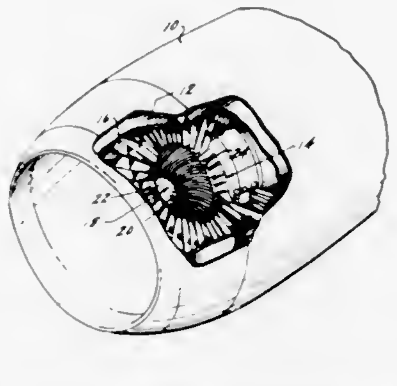
William J. McCarty, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Aug. 30, 1972, Ser. No. 285,073
Int. Cl. F04d *29/38*
U.S. Cl. 416—175 **2 Claims**



A wide air dispersion propeller fan comprising a plurality of backwardly curved blades some of which are shaped to provide axial air flow and others of which additionally have trailing edge portions substantially parallel to the fan axis for providing radial air flow therefrom.

3,794,444
ANTI-ICING SPINNER CONSTRUCTION

William B. Campbell, and Arthur P. Adamson, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio
Filed Oct. 4, 1971, Ser. No. 186,074
Int. Cl. B64c *11/14*
U.S. Cl. 416—201 **7 Claims**

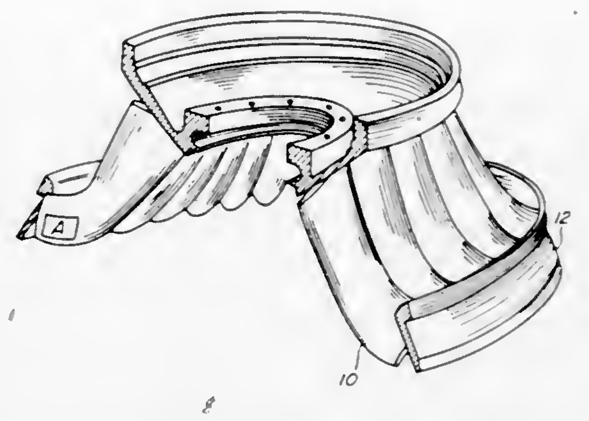


A spinner construction for maintaining ice accumulation thereon to an acceptably low level during operation of a gas turbine engine under icing conditions wherein a plurality of spaced fins extend from the arcuate outer surface of the spinner. The fins are sized and arranged relative to impinging water droplets so that ice formation occurs principally on the fins rather than the spinner arcuate outer surface.

3,794,445
WATER TURBINE RUNNER

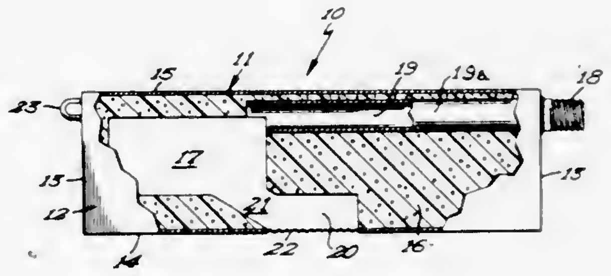
Kiyoshi Watanabe; Kazuel Saito, and Tadaaki Kobayashi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 84,524, Oct. 27, 1970, abandoned. This application Apr. 28, 1972, Ser. No. 248,681
Claims priority, application Japan, Oct. 31, 1969, 44-86833
Int. Cl. F01d *5/28*
U.S. Cl. 416—241 **21 Claims**

A water turbine runner comprising a plurality of blades coaxially fixed to one axis each of said blades is composed of an iron-based material, wherein each blade is provided with a smooth surface weld metal on the surface where erosion due to cavitation liable to take place, said weld metal being made of an erosion-resistant metal consisting essentially of up to 0.5 wt% of C, 10 to 30 wt% of Cr, 0.5 to 30 wt% of Co, up to 1 wt% of Si, up to 3 wt% of Mn, and the balance of Fe.



3,794,446
FLOATABLE SUCTION HEAD

Harvey A. Ost, Rt. 1, Bay 229, Glasgow, Mont. 59230
Filed Dec. 13, 1972, Ser. No. 314,772
Int. Cl. F04b *21/00*
U.S. Cl. 417—61 **6 Claims**

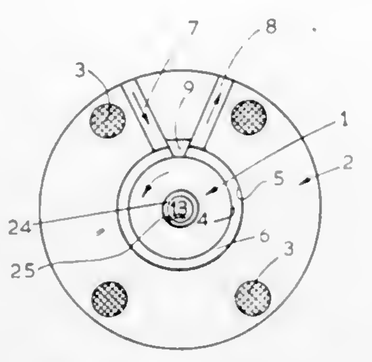


A floatable suction head is used with a hydraulic pump and is adapted to float in a body of water such as a settling pond. The floatable suction head is especially adapted for use with a hydraulic pump of the type used in drilling operations, and includes a housing having a bouyant body positioned interiorly thereof, the bouyant body having a ballast chamber therein. The ballast chamber communicates with the inlet and outlet of the suction head and, when filled with water, serves as a counter balance for the weight of the hose connected to the outlet of the suction head. With this arrangement, during operation of the pump, the suction head will float on the body of water in a horizontal level condition.

3,794,447
COMBINED VISCOSITY PUMP AND ELECTRIC MOTOR

William Alan Bullough, Croosways, Hood Green, near Barnsley, England
Filed Mar. 31, 1972, Ser. No. 239,928
Claims priority, application Great Britain, Apr. 3, 1971, 8594/71
Int. Cl. F04b *17/00, 35/04;* **F01d** *1/36*
U.S. Cl. 417—356 **9 Claims**

A viscosity pump comprises an electrical stator, an electrical rotor, end plates, said electrical rotor being housed within said stator and within said end plates, a radial gap defined by said rotor and said stator and said end plates, said rotor or said stator and said end plates being rotatably drivable with respect to one another when electrical energy is supplied to said stator or said rotor, at least one pair of ports comprising an inlet port for the supply of fluid to be pumped in communication with said gap at one part thereof and an outlet port for fluid in communication with said gap at another part thereof and barrier means corresponding in number to the number of pairs of ports between said pair of inlet and outlet ports.



3,794,448

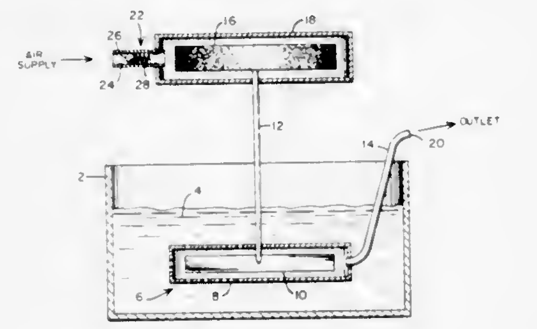
AIR DRIVEN PUMP

Robert V. Albertson, 2100 Shadowood Rd., Wayzata, Minn. 55337

Filed Aug. 14, 1972, Ser. No. 280,506

Int. Cl. F04h *17/00*

U.S. Cl. 417—406 **4 Claims**



An air driven pump having a vane-type pump connected to a brush-type impeller which is rotated by air striking the bristles of the brush at an angle tangential to the periphery thereof and thereby causing said vane to pump fluids without the use of electricity or other spark generating devices which could ignite flammable fluids.

3,794,449

VISCOSITY PUMP

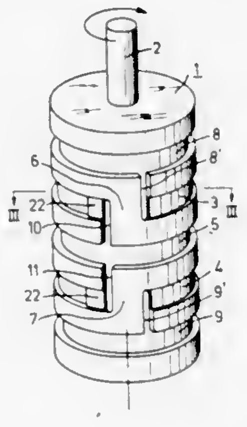
Geert Brouwer, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 23, 1972, Ser. No. 283,213

Claims priority, application Netherlands, Aug. 31, 1971, 7111948

Int. Cl. F01d *1/36*

U.S. Cl. 415—90 **6 Claims**



A viscosity pump for dosing small quantities of liquid including a rotor and driving shaft, and a housing surrounding the rotor, the cooperating surfaces of rotor or housing being provided with at least one pattern of shallow pumping grooves which communicate on one side with a liquid supply and on the other side with a liquid outlet, the side of the grooves communicating with the outlet being shallower than the rest of the groove.

3,794,450

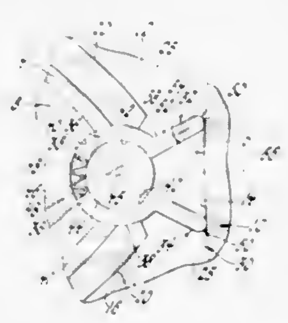
ROTARY MACHINE APEX SEAL

Edward D. Klomp, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 9, 1972, Ser. No. 224,883

Int. Cl. F01c *19/02*; **F03c** *3/00*; **F04c** *27/00*

U.S. Cl. 418—117 **4 Claims**



A rotary machine apex seal arrangement having a pair of seal members that are pivotally mounted on a pin on the machine's rotor and are biased by chamber pressure, centrifugal force and a compression spring therebetween to contact the machine's internal peripheral wall to provide leading and trailing seals.

3,794,451

INTRODUCTION OF REACTANTS INTO MOULDS

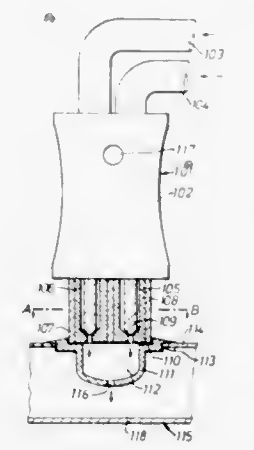
Karl Breer, Cologne, and Klaus Schulte, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 21, 1971, Ser. No. 155,086

Claims priority, application Germany, June 26, 1970, 2031737

Int. Cl. B29d *27/02*

U.S. Cl. 425—4 **18 Claims**



In the production of moulded articles wherein reactants are combined, react, and form the material, e.g. foam, composing the article, filling the mould, a mixing chamber for the reactants is combined with the mould. The reactants are introduced and mix in the mixing chamber and issue therefrom into the mould where they react for the formation of the article. In the reaction the mixing chamber can become integrated with the article. The mould can be a shell which becomes integrated with the material produced by the reaction, forming an outer skin of the article.

3,794,452

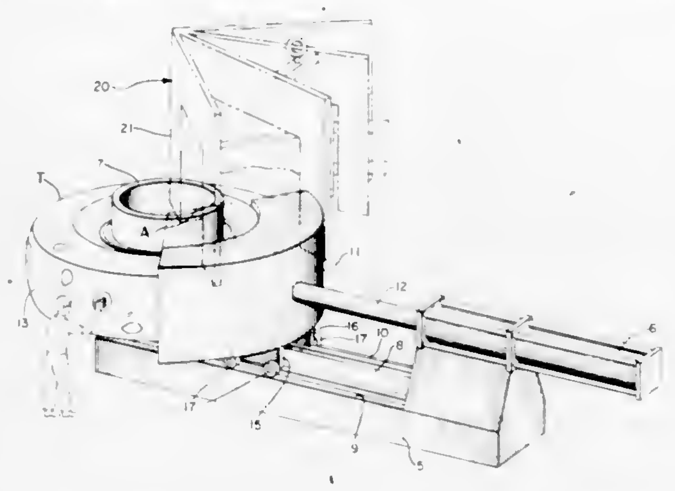
APPARATUS USED IN REPAIRING DEFECTIVE SPOTS IN LARGE TIRES

Merritt W. Wolfe, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sept. 5, 1972, Ser. No. 285,987

Int. Cl. B29h *5/02*

U.S. Cl. 425—15 **14 Claims**



A portable apparatus used on the job site for repairing minor injuries in large earthmover tires which are not conveniently transportable. An arcuate segment with smooth inner faces for engaging the tire, is mounted for movement along a horizontally disposed trackway. A hydraulic cylinder is coupled to the segment for reciprocating the segment on the trackway towards and away from a vertically disposed hollow post around which a tire, to be repaired, is placed. A specially configured C-type clamp is coupled between the post and segment to bring the segment into greater compressive engagement with the tire positioned around the post.

3,794,453

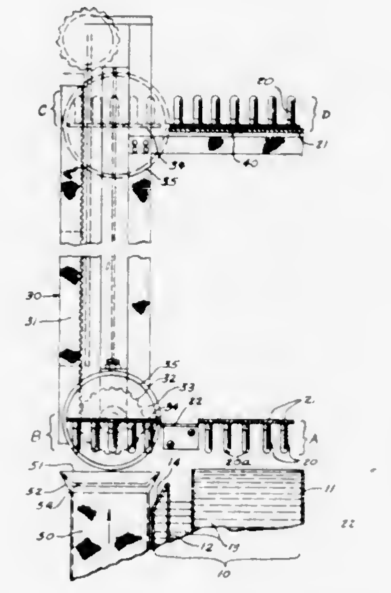
CAPSULE MAKING APPARATUS

Salvador A. Padilla, 14819 Horger, Allen Park, Mich. 48101, and Richard A. Curtis, 36400 Howard Rd., Farmington, Mich. 48024

Filed Aug. 2, 1972, Ser. No. 277,396

Int. Cl. B29c *13/00*

U.S. Cl. 425—270 **5 Claims**



An improvement in capsule making apparatus is provided in the form of air duct means for conditioning freshly dipped capsule mold pins at a point in the work cycle just prior to the elevation of the pin bars to the drier stage. The film coating on the pins is thereby stabilized so that asymmetric film flow during transfer and elevation is substantially decreased.

3,794,454

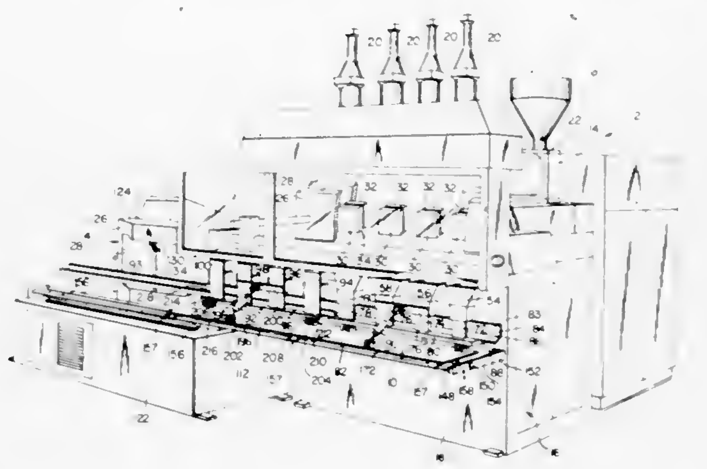
APPARATUS FOR AUTOMATICALLY TRIM FINISHING BLOW MOLDED PLASTIC ARTICLES

Lloyd D. Higginbotham, Williamston; Lars U. Graff, Okemos, and William A. Scott, Chelsea, all of Mich., assignors to Haskon Incorporated, Wilmington, Del.

Filed July 31, 1972, Ser. No. 276,461

Int. Cl. B29d *23/03*

U.S. Cl. 425—387 B **16 Claims**



A method and apparatus for initially blow-molding a plurality of hollow plastic articles and thereafter trimming the articles so that the top walls and tails formed in the blow molding operation are removed. The trim apparatus includes a set of transfer supports positioned below the molds at a mold station to receive the articles discharged from the molds. The articles are moved by the transfer supports horizontally in a direction parallel to the vertical plane of the tails in a first path from the mold station to a gripping station. The transfer supports release the articles at the gripping station and are returned to the mold station for receiving a second set of molded articles. A set of gripping supports positively grip the molded articles delivered to the gripping station by the transfer supports upon return of the transfer supports to the mold station. The gripping supports are movable in a second path from the gripping station to a conveying station. Cutting means are positioned in the second path for removing the excess top walls and tails of the molded articles as they move from the gripping station to the conveying station.

3,794,455

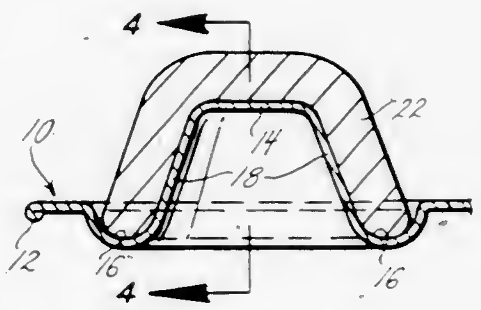
MOLD FOR BUNS WHICH HAVE CENTRALLY-LOCATED RECESSES

Theodore B. Heiderpriem, 4225½ Ravenwood, Pine Lawn, Mo. 63121

Filed July 31, 1972, Ser. No. 276,746

Int. Cl. B29c *1/00*

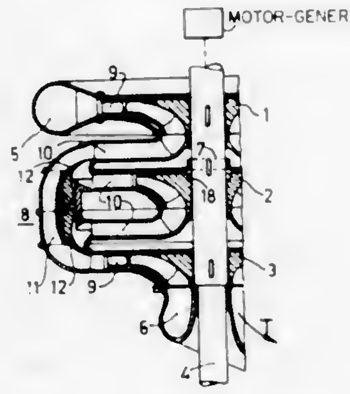
U.S. Cl. 425—403 **8 Claims**



A mold has a support of heat-resistant material, a surface which is displaced in the upward direction from that support, a recess of semi-circular cross section which is displaced in the downward direction from that support and which extends around and extends laterally outwardly relative to that surface, and an inclined wall which extends upwardly from the inner periphery of that recess to the periphery of that surface. Yeast-raised dough can be placed so the center thereof rests on that surface, so the edge thereof extends into that recess, and so the intermediate portions thereof are supported by the inclined wall; and that dough will "proof" on the mold, and can then be baked to form a bun which has a centrally-located recess defined by an upwardly and outwardly inclined wall with gently-rounded upper edge.

3,794,456
MULTI-STAGE PUMP-TURBINE

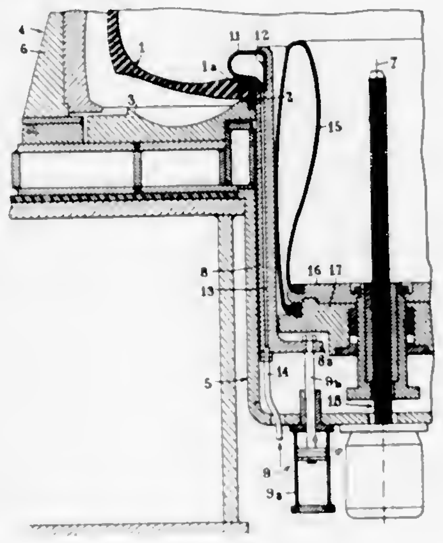
Fedor Jelusic, Zagreb, Yugoslavia, assignor to Escher Wyss Limited, Zurich, Switzerland
Filed Aug. 7, 1972, Ser. No. 278,232
Int. Cl. F01d *1/08, 1/28*
U.S. Cl. 415—122 **7 Claims**



A multi-stage pump turbine, especially for pumped-storage power station; the stages, operating on a common shaft, arranged in series; actuating means such as fixed connecting conduits passing the power medium between the individual stages as well as adjustable elements for shutting off the connecting conduits for the purpose of switching at least one stage on or off from the power medium side; optionally a clutch as an actuating means between the shaft and the rotor contained in the stage that can be switched on or off; all the stages and all the actuating means arranged in a common housing.

3,794,457
TIRE CURING PRESS TIRE BEAD POSITIONING DEVICE

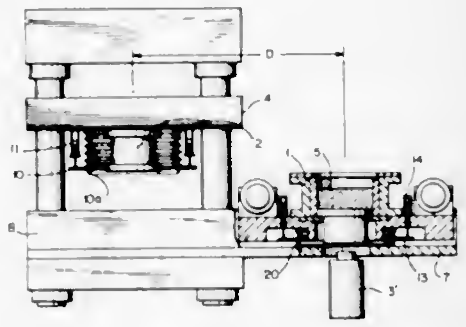
Georges Gazuit, Chemin, Chauneau, 03, Montlucon, France
Filed Dec. 29, 1972, Ser. No. 319,915
Claims priority, application France, Jan. 3, 1972, 72.0021
Int. Cl. B29h *5/02*
U.S. Cl. 425—28 R **5 Claims**



In a tire curing press comprising a mold including several component elements, said mold comprising as one of its component elements a lower flange provided with a centering ring, and a well extending coaxially downwards from said centering ring, a device for positioning the lower bead of a horizontally disposed crude tire around the centering ring of the lower mould member, said device being housed in said well and comprising a tubular member slidably disposed coaxially in said well and centering ring, said tubular member having a cavity formed in the outer peripheral wall thereof at the upper end of said tubular member, means for axially moving at will said tubular member up- and downwards in said well, and an inflatable bladder entirely housed in said cavity and adapted, when inflated, to project radially outwards from said cavity.

3,794,458
VACUUM BRICK PRESS HAVING MOVABLE LOADING AND UNLOADING MEANS

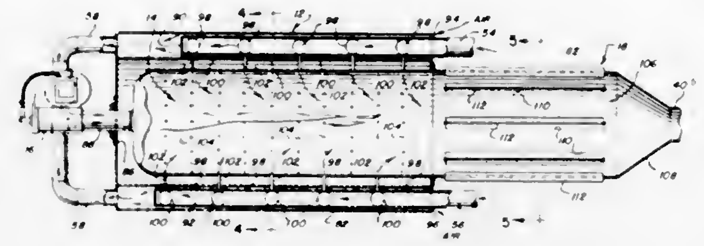
Shigeo Iwasaki, Okayama, Japan, assignor to Mitsuishi Fukai Tekkosho, Ltd., Okayama, Japan
Filed June 23, 1972, Ser. No. 265,739
Claims priority, application Japan, Aug. 2, 1971, 46-58161
Int. Cl. B28b *3/08*
U.S. Cl. 425—353 **6 Claims**



A brick press includes a fixed lower frame and an upper movable frame. The upper movable frame has thereon an upper movable piston. Mounted on the lower fixed frame are parallel rails. A transfer table has mounted thereon a mold and is movable horizontally along the rails into and out of alignment with the upper movable piston. A lower piston is carried with the transfer table in alignment with the mold. First movable chamber forming means are mounted coaxial with the upper piston and adapted to seal against the top of the mold when the mold is aligned with the upper piston to create a sealed chamber, the pressure of which may be selectively reduced. Mounted beneath the transfer table and coaxial with the lower piston is a second chamber forming means which may be selectively engaged with the top of the lower fixed frame to form a second chamber, the pressure of which may be selectively reduced. When the mold is filled with brick material, the transfer table, mold and lower piston are moved into alignment with the upper piston. The upper and lower chamber forming means are then actuated to isolate the brick material. The pressure within these chambers and within the brick material is then reduced, and the upper piston is actuated to press the brick material against the lower piston. After the pressing operation, the upper piston is raised, the two chamber forming means are retracted, and the transfer table and mold are again moved along the rails out of alignment with the upper piston. Then the finished brick may be removed from the mold, and new brick material may be added thereto.

3,794,459
FURNACE EXHAUST TREATMENT SYSTEM

Cyril F. Meenan, Lincolnwood, Ill., assignor to Meenan Corporation, Skokie, Ill.
Filed Nov. 29, 1972, Ser. No. 310,651
Int. Cl. F23d *13/20;* **F23j** *15/00*
U.S. Cl. 431—5 **14 Claims**

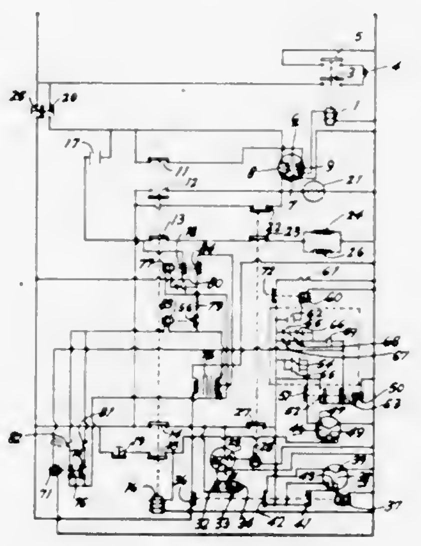


An exhaust treatment process and apparatus for eliminating contaminated air by-products emitted by a hot air furnace or the like. The process includes transporting the contaminated air to a second furnace, providing in addition to said contaminated air, primary and secondary air to said second furnace, burning the contaminated air for a sufficient period of time to produce substantially contaminant free air, mixing the contaminant free air with outside air and transporting the mixed contaminant free air back to the first furnace and to the atmosphere.

The apparatus employed to effect the above process includes a second furnace for burning the contaminated air having a combustion chamber with a burner having a fuel discharge nozzle disposed at one end of the chamber which is adapted to produce a flame by igniting a fluid fuel discharged under pressure through the nozzle. A conduit disposed in the chamber at positions along the length thereof carries the contaminated air in the chamber. The burner is supplied with fluid fuel and two sources of air to support combustion. The contaminated air is burned in the chamber which results in substantially contaminant free air. The contaminant free air is then put through a mixer and is recycled to the first furnace and vented to the atmosphere.

3,794,460
CONTROL ARRANGEMENT FOR AIR VENTILATING AND AIR HEATING SYSTEMS HAVING AUTOMATIC RESET AND MANUAL RESET SAFETY DEVICES

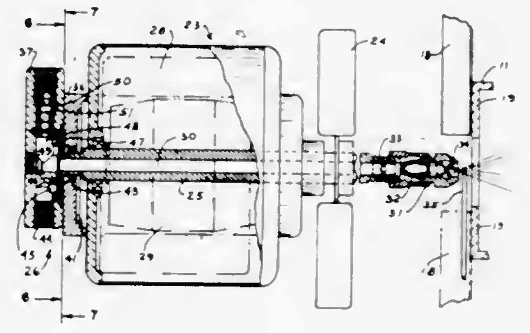
Harold L. Kirk, Kirkwood, Mo., assignor to American Air Filter Company, Inc., Louisville, Ky.
Filed Oct. 3, 1972, Ser. No. 294,557
Int. Cl. F23n *5/20*
U.S. Cl. 431—37 **6 Claims**



An improved control system for an air heating and air ventilating apparatus having a multi-volt electrical power source, a first power control circuit for energizing air ventilating means, and a second power control circuit for energizing the air ventilating means and an air heating means, the second power circuit including safety control means for energizing the second power control circuit in response to an unsafe operating condition and means to energize fuel preheat means at relatively low temperatures.

3,794,461
MOTOR MEANS FOR SPACE HEATER AND METHOD OF USE

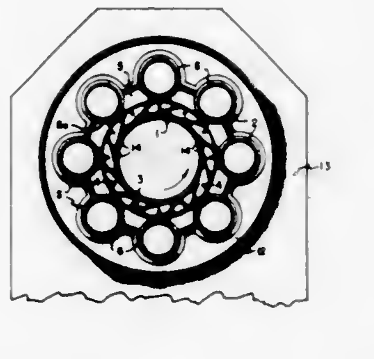
Donald K. Brazee, Florissant, Mo., assignor to Lambert Engineering Company, St. Louis, Mo.
Filed Apr. 11, 1973, Ser. No. 350,010
Int. Cl. F23l *9/04*
U.S. Cl. 432—29 **32 Claims**



In a space heater incorporating a motor driven fan blade for propelling an ignitable fuel through an ignition means and into a heating chamber for generating heat for discharge into a space to be warmed, the motor incorporates a rotor means having a channel or passageway formed axially therein, with the fan blade mounted on one end of said rotor and a pump operatively associated with the other end of said rotor. Upon energization of the motor, the pump transfers the fuel from a reservoir through the rotor channel for discharge through the ignition means creating combustion in the heating chamber.

3,794,462
ROTARY KILNS WITH UPHILL COOLER TUBES

Karl Jens Sylvest, Copenhagen-Valby, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.
Filed July 21, 1972, Ser. No. 273,795
Claims priority, application Great Britain, Aug. 3, 1971, 36428/71
Int. Cl. F27b *7/38*
U.S. Cl. 432—80 **8 Claims**



A rotary kiln equipped with specially constructed means for supporting the outlet ends of uphill cooler tubes independently of the kiln shell is disclosed. This support means includes a tubular body encircling the kiln shell in spaced apart relationship. The outlet ends of the cooler tubes are connected to this tubular body which itself is independently supported for rotation with the kiln shell.

then applied to provide one fluid flow path passing through the plutonium metal so as to dissolve the same in the

CHEMICAL

3,794,463
DYEING WATER SWELLABLE CELLULOSIC MATERIALS WITH BORATES IN A GLYCOL DYE SOLUTION

John F. Neumer, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Original application Sept. 18, 1970, Ser. No. 73,664, now Patent No. 3,711,245. Divided and this application Aug. 8, 1972, Ser. No. 278,779
Int. Cl. D06p *3/82*
U.S. Cl. 8—21 C **5 Claims**

An improved process for dyeing water swellable cellulosic fibers, alone or blended with synthetic fibers, by contacting the fibers throughout with an aqueous solvent—or a solvent solution of a preformed disperse dye, said solvent consisting of ethylene glycol or a derivative thereof, the improvement comprising increasing the fixation of dye on the cellulosic fibers by adding an effective amount of boric acid, borax or a mixture thereof.

3,794,464
ALKOXYLATED ALIPHATIC POLYETHYLENIMINES TO INHIBIT OZONE FADING OF DYED POLYAMIDES

Robert Alden Lofquist, Peter Reginald Saunders, and Gene Clyde Weedon, Richmond, Va., assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Feb. 4, 1972, Ser. No. 223,772
Int. Cl. D06p *5/02*
U.S. Cl. 8—165 **4 Claims**

When from about 0.3% to about 5% of polytertiary amines formed from the reaction of polyethylenimine with alkylene oxides are coated on nylon fiber, or are added to the dyebath, improved dyefastness is achieved compared to an untreated dyed nylon fiber when this fiber is exposed to ozone.

3,794,465
FINISHES FOR TEXTILE FABRICS

Joseph J. Baron, Jr., Morris Plains, N.J., assignor to Sun Chemical Corporation, New York, N.Y.
No Drawing. Filed Apr. 16, 1970, Ser. No. 29,305
Int. Cl. D06m *13/16, 13/20*
U.S. Cl. 8—115.6 **3 Claims**

Crease-resisting and soil-releasing finishes for textile fabrics comprise esters of polyalkylene glycols alone or combined with copolymer acid emulsions, said finishes being curable by irradiation.

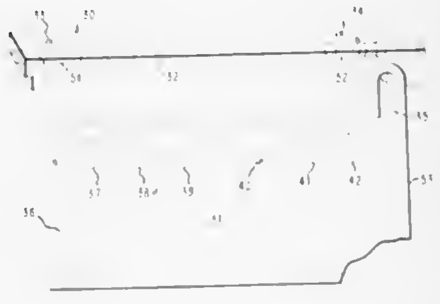
3,794,466
SINGLE BATH CHROMIC CHLORIDE MINERAL DYEING PROCESS FOR CELLULOSICS

Charles J. Conner, Metairie, La., assignor to the United States of America as represented by the Secretary of Agriculture
No Drawing. Original application Aug. 31, 1971, Ser. No. 176,736. Divided and this application Apr. 27, 1972, Ser. No. 248,247
Int. Cl. C09b *61/00;* **D06p** *3/60*
U.S. Cl. 8—52 **3 Claims**

Conventional "pearl gray" chrome green mineral dyeings require a double decomposition process for depositing green chromium oxide in cellulosics. By forming a unique alkaline complex of a chromic chloride with ammonium oxalate and zirconyl ammonium carbonate, a single dye bath is produced, enabling the dyes to apply the "pearl gray" chrome green mineral dyeing by a simple pad, dry, cure, and wash procedure. The dyeings are uniform and the cellulosic is not tendered or physically degraded. Not only does this invention reduce processing steps, but it eliminates the conventional problem of tendering resulting from drying the chromic chloride on cellulosics prior to processing through a second bath of soda ash and soap. The invention makes it possible to prepare a modified chromic chloride stock solution that can be used for either the conventional "pearl gray" processing or the single bath process described above.

3,794,467
REMOVING SUBSTANCES FROM A LIQUID BY PRECIPITATION IN POROUS GLASS BEADS

Thomas H. Adams, Newark, and Warren K. Miller, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 28, 1971, Ser. No. 193,475
Int. Cl. G01n *31/02, 33/16*
U.S. Cl. 23—230 R **16 Claims**



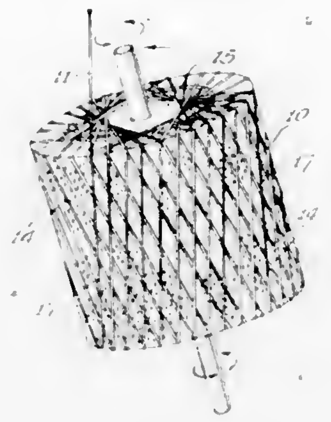
A method and device for removing substances from a liquid sample. The device involves a receptacle containing porous particles and an agent that will precipitate the substance to be removed. The porous particles retain any precipitate formed. Also included is a method and apparatus for analyzing a liquid sample for a particular constituent where interfering substances may be present. The method comprises forcing substantially all of the sample through porous particles containing a liquid that will effect precipitation of the interfering substance and into a reaction chamber and determining the presence of the particular constituent. The liquid within the porous particles is chosen to precipitate substantially all of the interfering substance from the sample without removing substantially any of the particular constituent. Normally at least one reagent reactive with the particular constituent must be introduced into the liquid sample before the determination is made.

3,794,468
MASS TRANSFER DEVICE HAVING A WOUND TUBULAR DIFFUSION MEMBRANE

Ronald J. Leonard, Elk Grove Village, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.
Filed Jan. 10, 1972, Ser. No. 216,669
Int. Cl. A61m *1/03;* **B01d** *13/00*
U.S. Cl. 23—258.5 **13 Claims**

A mass transfer device is made by winding a hollow tubular conduit of semi-permeable membrane about a core to form a multilayer winding of the conduit in which individual adjacent windings in the same layer are generally parallel to each other, but individual adjacent windings of the conduit in adjacent layers define an angle to each other. The ends of the core transverse to the tubular conduit windings are then potted with a curable sealant. After cure of the sealant, the ends of the wound core are cut transversely through medial portions of the cured sealant to sever the conduit into a plurality of individual conduit sections, the resulting sections being secured together at their ends by portions of the cured sealant, and having their hollow bores open to the exterior. Manifolds are

then applied to provide one fluid flow path passing through the hollow bores of the conduit portions and anther fluid



flow path percolating between the exteriors of the conduit portions.

3,794,469
BLOOD TEST SYSTEM

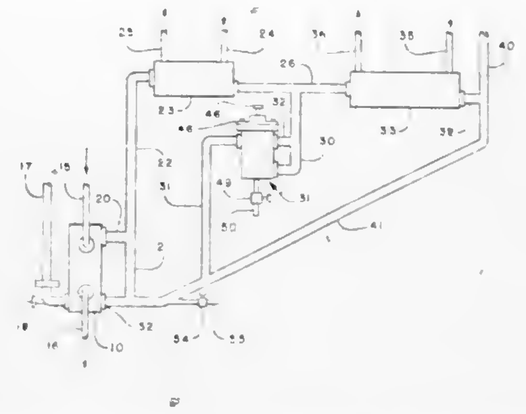
Edward J. Rapoza, Butler, and Maxwell E. Siegel, Sussex, N.J., and Weems E. Estelle, Southport, Pasquale M. Petrucci, Orange, Joseph S. Linarducci, Wilton, John Hamma, Milford, and John Montgomery, Trumbull, Conn., assignors to Becton, Dickinson and Company, East Rutherford, N.J.
Original application Mar. 2, 1970, Ser. No. 15,469, now Patent No. 3,706,499, dated Dec. 19, 1972. Divided and this application Aug. 18, 1972, Ser. No. 281,945
Int. Cl. B01l *3/00*
U.S. Cl. 23—292 **6 Claims**

A cap adapted to hold a micro-pipette in substantially coaxial position within a vial. The cap has an outer cylindrical flange which releasab'y engages the mouth of the vial, and an inner cylindrical resilient tubular plug positioned coaxially within the flange. A flap with an aperture in its lower end extends from the free end of the tubular plug into the vial. The tubular plug and the flap hold the micro-pipette. Protuberances extending from the top of the cap are used to attach a record card.

3,794,470
CONTINUOUS PLUTONIUM DISSOLUTION APPARATUS

Frank G. Meyer and Charles N. Tesitor, Boulder, Colo., assignors to the United States of America as represented by the United States Atomic Energy Commission
Filed June 6, 1972, Ser. No. 260,155
Int. Cl. B01d *11/02*
U.S. Cl. 23—272.6 S **1 Claim**

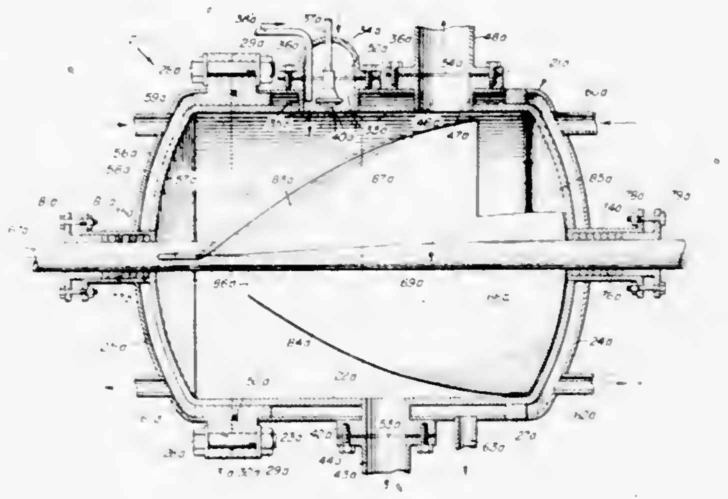
This invention is concerned with continuous dissolution of metals such as plutonium, wherein a high normality acid mixture is fed into a boiler vessel, vaporized and subsequently condensed as a low normality acid mixture, then conveyed to a dissolution vessel and contacted with the plutonium metal so as to dissolve the same in the dissolution vessel, reacting therewith forming plutonium nitrate, and the reaction products are then conveyed to



the mixing vessel and maintained soluble by the high normality acid, with separation and removal of the desired constituent.

3,794,471
CONTINUOUS POLYMERIZATION APPARATUS

George A. Latinen, deceased, late of Springfield, Mass., by May V. Latinen, administratrix, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.
Filed Aug. 16, 1971, Ser. No. 172,145
Int. Cl. C08f *1/98*
U.S. Cl. 23—285 **8 Claims**



Apparatus for continuous mass polymerization under conditions which are substantially isothermal and substantially homogeneous with respect to composition adapted for use with high viscosity polymerizing fluid masses with a vapor space thereabove with remarkably high rates of thermal energy removal. The apparatus employs a reactor wherein there is a paddle assembly adapted to produce in a highly viscous fluid a combination of cyclical vertical mixing, rolling action and axial recirculaton. The reactor is equipped with a reflux condenser and control means regulating the amount of polymer withdrawn from the reactor when in use during polymerization.

3,794,472
METHOD FOR PREVENTING THE FREEZING TOGETHER OF COAL PARTICLES

Russell A. Macaluso, Oak Park, and Raymond J. Michalski, Riverdale, Ill., assignors to Nalco Chemical Company, Chicago, Ill.
No Drawing. Filed Dec. 11, 1972, Ser. No. 313,735
Int. Cl. C10l *9/50, 10/00*
U.S. Cl. 44—6 **4 Claims**

Coal particles are prevented from freezing together and/or to the surfaces of coal storage containers by coat-

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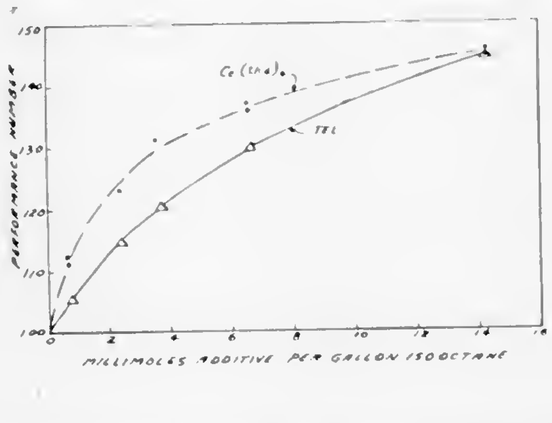
thickness is formed. All operations are carried out with

3,794,477

sures sufficient to cause plastic flow in the KCl while the ing either the coal particles and or the surfaces of said storage containers with a thin film of a composition comprising a hydrocarbon liquid which has emulsified therewith from 5 to 75% by weight of an aqueous solution of a polyhydric alcohol.

3,794,473
RARE EARTH β-KETOENOLATE ANTI-KNOCK ADDITIVES IN GASOLINES

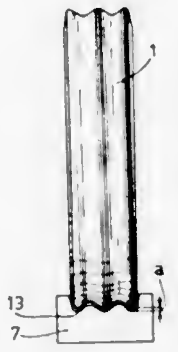
Kent J. Eisentraut, 1827 Trebein Road, Xenia, Ohio 45385; Robert L. Tischer, 3421 Idlewilde Blvd., Dayton, Ohio 45414; and Robert E. Sievers, 2628 N. Emerald Drive, Fairborn, Ohio 45324
Filed Sept. 20, 1972, Ser. No. 290,604
Int. Cl. C10l *1/30*
U.S. Cl. 44—63 **16 Claims**



There is disclosed a motor fuel composition which consists essentially of gasoline and, as an antiknock agent, a small amount of a rare earth β-ketoenolate.

3,794,474
METHOD OF MANUFACTURING A PROFILED GRINDING WHEEL

Hendrikus Johannes Josephus Megens, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 30, 1971, Ser. No. 176,127
Claims priority, application Netherlands, Sept. 5, 1970, 7013165
Int. Cl. B24b *5/26*
U.S. Cl. 51—295 **3 Claims**

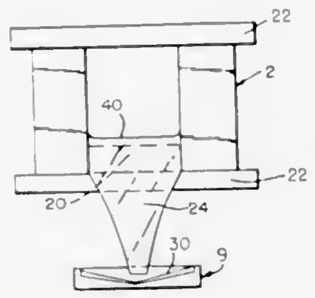


A method of manufacturing a profiled grinding wheel in which a grinding band is provided on the profiled circumference of a supporting disc, the band being built up from a synthetic binder and diamond grains. Starting material is a ceramic grinding wheel which, after profiling, is used for grinding a counter profile in a mould. By reducing the diameter of the supporting disc, a gap is formed between the circumference of said disc and the counter profile in the mould, the height of said gap being equal to the thickness of the grinding band to be provided. A mixture of synthetic binder and diamond grains is provided on the circumference of the supporting disc. By rotating the supporting disc in the counter profile, said mixture is distributed across the gap and a grinding band of constant thickness is formed. All operations are carried out with the same fixture of the supporting disc and the mould.

3,794,475
METHOD OF PREPARING SOLUBLE SILICATE FLAKES OR FIBERS

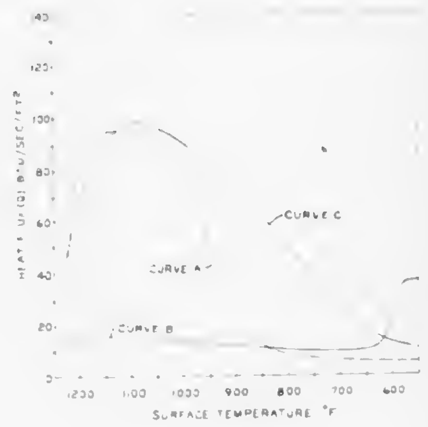
Frank J. Lazet, Media, Pa., and John R. Ahern, Jeffersonville, Ind., assignors to Philadelphia Quartz Company, Philadelphia, Pa.
Continuation-in-part of abandoned application Ser. No. 238,819, Mar. 28, 1972. This application Apr. 18, 1973, Ser. No. 352,857
Int. Cl. C03b *37/06*
U.S. Cl. 65—5 **14 Claims**

Fine particulate glass, a significant portion of which can be in the form of fine short fibers or flakes, is produced by passing a molten silicate glass at a carefully regulated viscosity in the range of from about 500 to about 10,000 poises across a nozzle having a horizontal slit-like orifice while simultaneously passing a pressurized gas through the orifice and against the molten glass in order to atomize the molten glass to a fine particulate mass.



3,794,476
METHOD FOR THERMALLY TEMPERING GLASS SHEET BY LIQUID QUENCHING

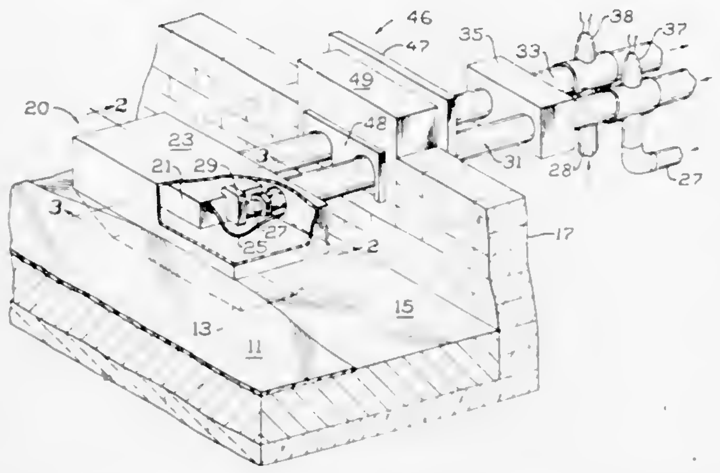
Edmund R. Michalik, West Mifflin, and Harold R. Gorman, Oakmont, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of abandoned applications Ser. No. 136,351, Ser. No. 136,352 and Ser. No. 136,353, all Apr. 22, 1971. This application Dec. 26, 1972, Ser. No. 318,360
Int. Cl. C03b *27/00*
U.S. Cl. 65—116 **8 Claims**



A method for tempering glass sheet is disclosed in which the glass is heated to a temperature above its strain point, but below its softening point and then contacted with an oxyalkylene polymer quenching medium. The oxyalkylene polymers provide a relatively high and uniform heat transfer which makes them particularly useful as tempering media for the tempering of thin glass.

3,794,477
GLASS SHEET FLOAT APPARATUS WITH HEAT FLUX EDGE DETECTOR

Aloysius W. Farabaugh, Verona, and Joseph A. Gulotta, New Kensington, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed June 9, 1972, Ser. No. 261,497
Int. Cl. C03b *18/02*
U.S. Cl. 65—158 **18 Claims**



An apparatus for detecting the position of the edge of a body of hot glass floating on a pool of molten metal combines an elongated heat flux detector in a cooled enclosure and provides an output signal that is proportional to the amount of hot glass facing the detector. The device imposes no external forces upon the glass, does not contact the glass and may be held in a fixed position while providing a continuous signal despite glass movement.

3,794,478
FERTILIZER COMPOSITION CONTAINING MICRONUTRIENTS

Alvin J. Dirksen, De Kalb, Ill., assignor to Kalium Chemicals Limited, Regina, Saskatchewan, Canada
Continuation-in-part of application Ser. No. 177,294, Sept. 2, 1971, which is a continuation-in-part of application Ser. No. 765,761, Oct. 8, 1968, both now abandoned. This application Sept. 29, 1972, Ser. No. 293,722
Int. Cl. C05d *9/02*
U.S. Cl. 71—1 **17 Claims**

A novel phosphate-free granular potassium chloride (KCl) fertilizer composition is described in which the KCl has embedded within it predetermined amounts of micronutrient values. Optionally, macronutrients, e.g., secondary nutrient values and/or a source of the primary nutrient nitrogen, e.g., nitrogen-containing compounds are also embedded in the KCl. The novel KCl composition (other than for the absence of phosphorus) provides a balanced plant nutrient composition in that substantially each KCl granule is a balanced plant nutrient containing predetermined amounts of selected nutrients. Incorporation of the various nutrients in KCl is accomplished by compacting KCl and the added selected nutrients at pressures sufficient to cause plastic flow in the KCl while the KCl is in intimate contact with the added source of the selected nutrients. Typically pressures of 8,000 to 30,000 pounds per linear inch are used. Specific micronutrients exemplary of those incorporated in the KCl are the elements boron, manganese, copper, iron, zinc, molybdenum and cobalt. KCl compositions disclosed contain at least 0.05 percent by weight of the desired micronutrients. The quantity of micronutrient compound incorporated in the KCl varies considerably and depends upon soil and crop demand. Quantities of micronutrient incorporated can vary from 0.05 to 50, e.g., 0.1 to 30, weight percent based on KCl, disclosed include calcium, magnesium and sulfur.

3,794,479
SOIL CONDITIONING PROCESS

John M. Loving, 404 E. Anderson Ave., Round Rock, Tex. 78664
Continuation of abandoned application Ser. No. 67,894, Aug. 28, 1970. This application July 14, 1972, Ser. No. 271,701
Int. Cl. C05f *11/08*
U.S. Cl. 71—9 **3 Claims**

A selective biochemical destruction of the viable portion of selected type plant material provides a liquid composition with microscopic sized particulate organic material therein, which liquid composition improves the mechanical characteristics of soil and the plant growth supporting characteristics thereof.

3,794,480
DIETHYNYLBENZYL ALCOHOLS AS HERBICIDES

Robert D. Dillard, Indianapolis, and Donald E. Pavey, Greenwood, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
No Drawing. Filed Jan. 25, 1971, Ser. No. 109,704
Int. Cl. A01n *9/24*
U.S. Cl. 71—122 **5 Claims**

Herbicidal compositions and methods in which an α,α-diethynylbenzyl alcohol or an ester thereof is the herbicidally active ingredient, employed pre-emergently.

3,794,481
METAL FOAMS AND PROCESS THEREFOR

Leonard M. Niebylski, Birmingham, Chester P. Jarema, Detroit, and Peter A. Immethun, Southfield, Mich., assignors to Ethyl Corporation, Richmond, Va.
No Drawing. Continuation-in-part of abandoned application Ser. No. 202,603, Nov. 26, 1971. This application Feb. 12, 1973, Ser. No. 331,620
Int. Cl. C21d *1/18*
U.S. Cl. 75—20 F **11 Claims**

Metal foams produced from heat treatable alloys can be given improved strength by maintaining them, for a time sufficient for strengthening to occur, at a temperature at which a solid solution solute formation occurs. Additional strength can be achieved by subsequently subjecting the foam to a precipitation hardening. Preferred foams are of aluminum alloys, especially where the aluminum is alloyed with copper, magnesium, zinc or silicon.

pervious to light rays that can affect photographic material. wherein each of R_1, R_2, X, Y, and Z is an alkyl group

3,794,482

CARBOTHERMIC REDUCTION METHOD FOR CONVERTING METAL OXIDES TO METAL FORM

Robert N. Anderson, Palo Alto, and Norman A. D. Parlee, Los Altos Hills, Calif., assignors to Parlee Anderson Corporation, San Mateo County, Calif.
Continuation-in-part of abandoned application Ser. No. 851,299, Aug. 19, 1969. This application Feb. 5, 1971, Ser. No. 113,036
Int. Cl. C22b *21/02, 29/00, 35/00*
U.S. Cl. 75—84.1 R **24 Claims**

A carbothermic reduction method wherein oxides of chemically reactive metals such as titanium, uranium; aluminum and boron are reacted with carbon in a molten metal solvent with the resultant production of carbon monoxide gas and of free metal which is present in solution in said solvent. In one embodiment, said carbothermic reduction takes place under an atmosphere of nitrogen gas whereby the metal oxide is converted to a solid metal nitride which, in the presence of the molten metal solvent, may thereafter be converted to a solution of the pure metal in said solvent as nitrogen pressures over the system are reduced.

The pure metal going into solution as derived from either the oxide or the nitride can be recovered from the solution by various phase separation methods, including those wherein the metal to be recovered or the solvent metal is distilled off or a liquid-liquid phase separation method is practiced. Furthermore, a phase separation may be accomplished by lowering the temperature of the system until the reactive metal precipitates but while the solvent is still in liquid form.

3,794,483

PROCESS FOR DELIVERING FUEL AND AIR TO A ROTARY REDUCTION KILN

Eugene F. Rossi, Wauwatosa, Wis., assignor to Allis Chalmers Corporation, Milwaukee, Wis.
Filed Oct. 31, 1972, Ser. No. 302,606
Int. Cl. C22b *5/12*
U.S. Cl. 75—91 **2 Claims**

A process and apparatus are disclosed for delivering fuel and air to a rotary reduction kiln wherein both the fuel and air alternately flow through the same nozzle.

3,794,484

MASTER ALUMINUM NICKEL ALLOY

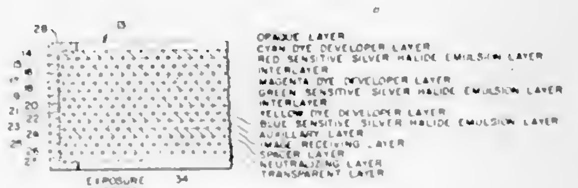
Enrique C. Chia and Roger J. Schoerner, Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.
No Drawing. Continuation-in-part of abandoned application Ser. No. 147,196, May 26, 1971. This application July 2, 1971, Ser. No. 159,545
Int. Cl. C22c *21/00*
U.S. Cl. 75—147 **4 Claims**

Master aluminum alloy containing from about 8 percent to about 64 percent by weight nickel, from about 6 percent to about 52 percent by weight iron, from about 0.04 percent to about 40 percent by weight magnesium, and from about 24 percent to about 85.96 percent by weight aluminum. The alloy is particularly suited for use with additional amounts of aluminum in preparing a commercial alloy which may be cast, rolled and drawn into an electrically conductive aluminum alloy wire having improved properties of increased thermal stability, tensile strength, percent ultimate elongation, ductility, fatigue resistance and yield strength. The alloy may also be used in the preparation of articles of commerce conventionally prepared from aluminum alloys.

3,794,485

COLOR DIFFUSION TRANSFER FILM WITH INCORPORATED DYE AND DESENSITIZING AGENT PRECURSOR

Stanley M. Bloom, Waban, Alan L. Borror, Lexington, and Richard B. Greenwald, Framingham, Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed June 9, 1972, Ser. No. 261,270
Int. Cl. G03c *7/00*
U.S. Cl. 96—3 **27 Claims**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24
26
OPAQUE LAYER
CYAN DYE DEVELOPER LAYER
RED SENSITIVE SILVER HALIDE EMULSION LAYER
INTERLAYER
MAGENTA DYE DEVELOPER LAYER
GREEN SENSITIVE SILVER HALIDE EMULSION LAYER
INTERLAYER
YELLOW DYE DEVELOPER LAYER
BLUE SENSITIVE SILVER HALIDE EMULSION LAYER
AUXILIARY LAYER
IMAGE RECEIVING LAYER
SPACER LAYER
NEUTRALIZING LAYER
TRANSPARENT LAYER
EXPOSURE SURFACE
34

The present invention is directed to a photographic film unit adapted to provide, by diffusion transfer processing, selective dye image recordation of incident actinic radiation as a function of the point-to-point degree of photosensitive element exposure, which film unit includes a plurality of layers including a photosensitive silver halide layer having associated therewith dye image-forming material which is diffusible as a function of the point-to-point degree of silver halide layer exposure to actinic radiation; and, associated with at least one of said silver halide layers an initially substantially colorless, photographically inactive compound, adapted to provide a colored moiety which can function to prevent photoexposure of the silver halide layer when the film unit is removed from the camera for processing.

3,794,486

METHOD FOR PREPARING PRINTING FORMS AND THE LIKE FOR CONTINUOUS PATTERNS

Harald Johan Luther, Alingsas, Sweden, assignor to Misomex Aktiebolag, Hagersten, Sweden
Filed Sept. 30, 1971, Ser. No. 185,248
Int. Cl. G03c *5/04*
U.S. Cl. 96—37 **4 Claims**

A method of preparing printing forms is disclosed wherein two photographic reproductions are sequentially made of the same template having two separate patterns thereon, each pattern having corresponding edges that can be positioned in exact coinciding register with the other. The photographic reproductions are then mounted by means of coinciding common punched holes in predetermined positions in an apparatus for printing the pattern onto a printed cylinder such that the front edge of one reproduction is positioned in an exact coinciding register with the rear edge of the other reproduction. A substantially invisible joint is thereby formed between the front and rear edges of the pattern printed onto the printing cylinder.

The separate patterns are formed by first covering one end of a pattern master or report pattern with a film impervious to light rays that can affect photographic material. A plurality of holes exactly corresponding to buttons on a template foil are punched through both the report pattern and the film and both are then mounted on the template foil. After the other end of the report pattern is secured to the template foil, the ends of the report pattern and the film having the holes is cut through by a substantially waveformed cut line, and the ends, denoted the mask, are removed without disturbing the position of the portion of the report pattern still attached to the template foil. The first photographic reproduction is made of the combination of the template foil and the attached report pattern after the second portion of the film has been removed. The second photographic reproduction is made of the template foil and the mask which has been remounted on the buttons of the template foil, the previously attached portion of the report pattern having been first removed.

3,794,487

PROCESS FOR DEVELOPING DIAZOTYPE PHOTOPRINTS WITH AMMONIA GAS

Lüto Röhrig, Naurod, Günter Killan, Mainz-Kostheim, and Herbert Ewald Müller, Wiesbaden, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany
No Drawing. Filed Jan. 17, 1972, Ser. No. 218,589
Claims priority, application Germany, Jan. 20, 1971, P 21 02 558.1
Int. Cl. G03c *5/34*
U.S. Cl. 96—49 **8 Claims**

This invention relates to an improvement in a process for developing photoprints on lacquered or unlacquered diazotype films or on lacquered diazotype papers, with ammonia gas, the improvement comprising exposing the photoprint, prior to the action of the ammonia, to an atmosphere containing at least one organic solvent vapor.

3,794,488

PHOTOSENSITIVE AND THERMOSENSITIVE ELEMENT, COMPOSITION AND PROCESS

Richard W. Henn, Pittsford, Burton D. Wilson, Webster, and Paul E. Woodgate, Chili Center, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed June 14, 1972, Ser. No. 262,905
Int. Cl. G03c *1/06, 5/30*
U.S. Cl. 96—50 R **12 Claims**

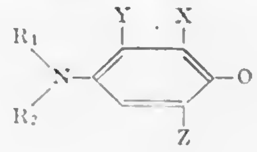
Amidoximes are active developing agents for photographic silver salts in strongly alkaline solutions. They may be incorporated in silver halide emulsions and they can be activated by immersion in alkali or by application of heat. They may be used in chemical or physical development; such as, diffusion transfer processing.

3,794,489

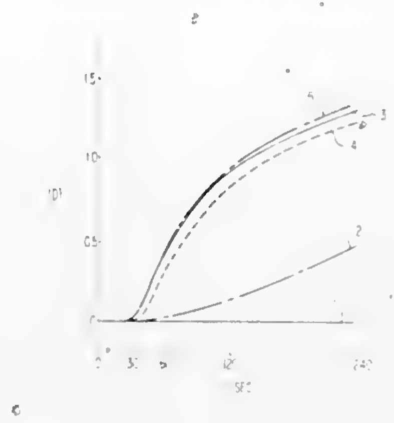
METHOD OF DEVELOPING SILVER HALIDE PHOTOSENSITIVE MATERIAL

Atsuaki Arai, Mitsugu Tanaka, Kinji Ohkubo, Tatsuya Tajima, and Yoshinori Tsuchiya, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Dec. 10, 1971, Ser. No. 206,820
Claims priority, application Japan, Dec. 10, 1970, 45/109,869
Int. Cl. G03c *5/30*
U.S. Cl. 96—66 R **18 Claims**

A photographic developing process which comprises developing an exposed light-sensitive silver halide emulsion layer of a photographic material with an alkaline solution in the presence of hydroquinone and a derivative of p-amino-phenol having the general formula:



wherein each of R_1, R_2, X, Y, and Z is an alkyl group containing 1 to 4 carbon atoms is disclosed.

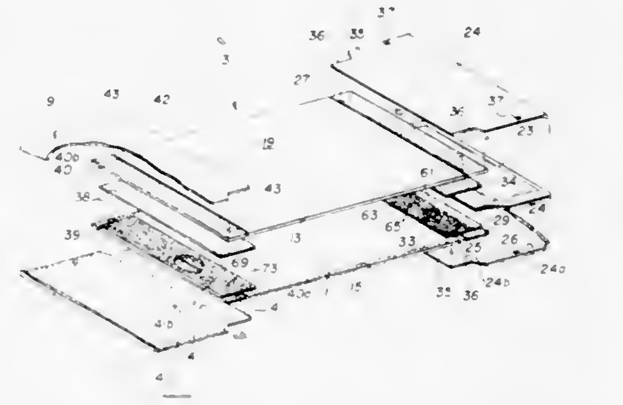


Also disclosed is the above compound and the method of preparation.

3,794,490

PHOTOGRAPHIC DIFFUSION TRANSFER FILM UNIT WITH DISPOSABLE POD AND TRAP

Hubert Nerwin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sept. 7, 1971, Ser. No. 178,101
Int. Cl. G03c *1/48*
U.S. Cl. 96—76 C **12 Claims**



A photographic film unit of the self-processing type, including an image-recording portion and reservoir means for accommodating a processing fluid. The reservoir means preferably includes a pod for supplying the processing fluid to the leading end of the recording portion, and/or a trap for collecting any excess of the fluid from its trailing end. The reservoir means is coupled to and supported on the image-recording portion in a relatively stiff manner, to facilitate handling of the film unit, and to improve certain of its other properties, but easily can be parted after processing of the film unit has been initiated, to separate the reservoir means from the image-recording portion.

3,794,491

AMPLIFICATION OF LOW-DENSITY POLYYNE IMAGES

Paul M. Borsenberger, Hilton, Alfredo R. Guevara, Webster, and Joseph W. Manthey, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed June 14, 1972, Ser. No. 262,912
Int. Cl. G03c *5/24, 5/32*
U.S. Cl. 96—48 R **12 Claims**

Images formed in a layer of polyacetylenic material can be amplified by subjecting the imaged layer to radiation which is preferentially absorbed by the image areas.

3,794,492

PROCESS FOR PRODUCING AN IMAGE BEARING SCREEN TRANSPARENCY

Thomas D. Bertini, Tewksbury, Mass., assignor to Tober, Inc., Malden, Mass.

Filed June 17, 1971, Ser. No. 154,018

Int. Cl. G03c *5/04*

U.S. Cl. 96—41 **12 Claims**

A process for producing an image bearing transparency which includes exposing one side of a light sensitive film through a master photo negative of a printed circuit and exposing the opposite side of the film through an opaque drilled mask. During exposure, the master photo negative, film and drilled mask are held together with the pad holes shown on the master photo negative aligned axially with the holes in the drilled mask. Thereafter, the film is developed to produce an image bearing screen transparency.

3,794,493

PHOTOGRAPHIC LAYERS WHICH CONTAIN UV-ABSORBERS

Johannes Sobel, Leverkusen, Fritz Nittel and Willibald Pelz, Cologne, and Wolfgang Himmelmann, Opladen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed June 17, 1971, Ser. No. 154,229

Claims priority, application Germany, July 24, 1970, P 20 36 719.5; Switzerland, June 19, 1970, 9,319/70

Int. Cl. G03c *1/84*

U.S. Cl. 96—84 R **6 Claims**

The light stability of color photographic images is improved by overcoating the image carrying layer with a UV-protective coating which contains a UV-absorbing compound.

The UV-absorbing layer contains as UV-absorbent a 2-phenolbenzotriazole, the benzo ring of which is substituted with 2 butyl groups.

3,794,494

PHOTOSENSITIVE COMPOSITIONS FOR RELIEF STRUCTURES

Tsunetoshi Kai, Saitama, Mitsuhiro Inoue and Matuo Yoshida, Asaka, and Jun-Ichi Ueda, Wakoh, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

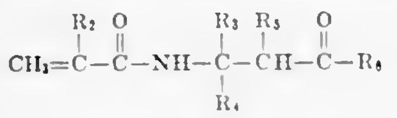
No Drawing. Filed Nov. 24, 1971, Ser. No. 201,992

Claims priority, application Japan, Mar. 11, 1971, 46/13,009

Int. Cl. G03c *1/70*

U.S. Cl. 96—35.1 **7 Claims**

A photosensitive composition comprising (A) about 100 parts by weight of an unsaturated polyester produced from an alcoholic component comprising at least one polyol and an acidic component comprising at least one unsaturated dicarboxylic acid, its anhydride or its methyl or ethyl ester and having an average molecular weight of about 400 to 30,000 and ethylenic double bond equivalent of about 160 to 3.200, (B) about 1 to 50 parts by weight of an ethylenically unsaturated compound (i) of the formula



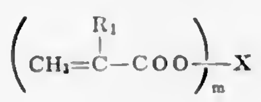
$$\mathrm{CH_2{=}}\underset{}{\overset{R_2}{\mathrm{C}}}-\overset{O}{\overset{\|}{\mathrm{C}}}-\mathrm{NH}-\underset{R_4}{\overset{R_3}{\mathrm{C}}}-\overset{R_5}{\mathrm{CH}}-\overset{O}{\overset{\|}{\mathrm{C}}}-\mathrm{R_6}$$

wherein

R_2 represents a hydrogen atom or methyl group; and

R_3, R_4, R_5 and R_6 represent a hydrogen atom, an alkyl group or cycloalkyl group having at most 10 carbon atoms,

and about 10 to 100 parts by weight of a compound (ii) of the formula



$$\left(\mathrm{CH_2{=}}\overset{R_1}{\mathrm{C}}-\mathrm{COO}\right)_m\!\!-\mathrm{X}$$

wherein

R_1 represents a hydrogen atom or methyl group;

m is an integer from 2 to 4; and

X represents a radical of a polyol having a molecular weight of at most 1,000 and m terminal hydroxy groups from which the terminal hydroxy groups are excluded, and,

(C) about 0.0001 to 10 parts by weight of a photopolymerization initiator.

The compositions are exposed to a light source through an image-bearing transparency to effect polymerization, and unpolymerized unexposed monomer is washed away, leaving a relief structure suitable for printing plates. The plates are characterized by good flexibility, hardness and water resistance.

3,794,495

PREVENTION OF STATIC IN LIGHT-SENSITIVE PHOTOGRAPHIC MATERIALS USING BIS-AMINIMIDE COMPOUNDS

Masao Ishihara, Tsuneo Wada, and Hisashi Yamaguchi, Tokyo, and Sadao Sugita, Hanno, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

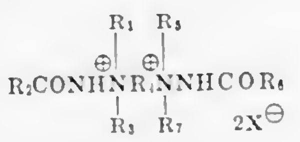
No Drawing. Filed Dec. 16, 1971, Ser. No. 208,891

Claims priority, application Japan, Dec. 18, 1970, 45/113,103

Int. Cl. G03c *1/82*

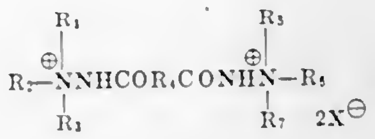
U.S. Cl. 96—87 A **5 Claims**

Antistatic agents for use in light-sensitive silver halide photographic materials comprise bis-acyl hydrazinium salts having the formula



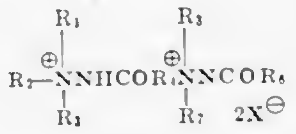
$$\mathrm{R_2CONH}\underset{R_3}{\overset{R_1}{\overset{\oplus}{\mathrm{N}}}}\mathrm{R_4}\underset{R_7}{\overset{R_5}{\overset{\oplus}{\mathrm{N}}}}\mathrm{NHCOR_6}\quad 2\mathrm{X}^{\ominus}$$

(I)



$$\mathrm{R_2}-\underset{R_3}{\overset{R_1}{\overset{\oplus}{\mathrm{N}}}}\mathrm{NHCOR_4CONH}\underset{R_7}{\overset{R_5}{\overset{\oplus}{\mathrm{N}}}}-\mathrm{R_6}\quad 2\mathrm{X}^{\ominus}$$

(II)



$$\mathrm{R_2}-\underset{R_3}{\overset{R_1}{\overset{\oplus}{\mathrm{N}}}}\mathrm{NHCOR_4}\underset{R_7}{\overset{R_5}{\overset{\oplus}{\mathrm{N}}}}\mathrm{NCOR_6}\quad 2\mathrm{X}^{\ominus}$$

(III)

wherein R_1, R_3, R_5 and R_7 are individually a lower alkyl group; R_2 and R_6 are individually an alkyl, aralkyl or aryl group or a hetero ring; R_4 is a divalent group; and X is an anion residue.

3,794,496

PHOTOGRAPHIC PROCESSES AND IMAGING MEDIA THEREFOR

John R. Manhardt, Nashua, N.H., assignor to Itek Corporation, Lexington, Mass.

No Drawing. Continuation-in-part of application Ser. No. 45,909, June 12, 1970. This application May 26, 1972, Ser. No. 257,103

Int. Cl. G03c *1/02, 1/72*

U.S. Cl. 96—114.1 **12 Claims**

An imaging medium comprises a photosensitive layer comprising a radiation-sensitive silver halide salt which upon exposure to an image pattern of activating radiation produces a catalyst capable of accelerating the decomposition of a decomposable metal compound and an image-forming material comprising the decomposable metal compound. The exposed photosensitive layer may be developed by heating, by exposure to electromagnetic radiation or by merely prolonging the initial exposure to an image pattern of activating radiation. Examples of suitable image forming materials are metal complexes such as silver EDTA.

3,794,497

PHOTOGRAPHIC ELEMENT COMPRISING AN OLEFINICALLY UNSATURATED MONOMER AND A PHOTO-LABILE ORGANO COBALT COMPOUND

John Macdonald Pratt, Whitegate, and Brian Ronald David Whitear, Ilford, England, assignors to Imperial Chemical Industries Limited, London, and Ilford Limited, Ilford, England

No Drawing. Filed Oct. 22, 1970, Ser. No. 83,207

Claims priority, application Great Britain, Oct. 24, 1969, 52,246/69

Int. Cl. G03c *1/00, 1/64, 1/68*

U.S. Cl. 96—115 P **1 Claim**

This application describes a process for recording an image which comprises subjecting to image-wise light exposure a layer comprising a photo-labile organo metallic compound so as to produce an image-wise distribution of one or more active species in said layer, the said photo-labile organo metallic compound being a photo-labile cobalt or iron complex of a specified formula.

3,794,498

DOUBLE PEAK SENSITIZATION OF SENSITIZING DYES FOR PHOTOGRAPHIC SILVER HALIDE EMULSIONS IN LIPOPHILIC SYSTEMS

Shi-Kuang Yao, Binghamton, N.Y., assignor to GAF Corporation, New York, N.Y.

Continuation of abandoned application Ser. No. 875,079, Nov. 10, 1969. This application Feb. 14, 1972, Ser. No. 226,211

Int. Cl. G03c *1/14*

U.S. Cl. 96—124 **46 Claims**

The double peak sensitization of photographic emulsions by particular cyanine dyes is disclosed. The double peak sensitization is achieved by the use of a combination of compatible dyes. The combination includes a symmetrical carbocyanine dye derived from a benzimidazole which carries in the 5-position a trifluoromethyl group and is substittued on one of the nitrogen atoms by a lower alkyl carboxy group or by a sulfoalkyl group. The second dye in the combination is selected from one of two groups. The first group of dyes are the selena-pseudocyanines. The second group of dyes are carbocyanines in which one of the nuclei is a benzimidazole and the other a benzothiazole or a benzoxazole.

3,794,499

ARTIFICIAL FEED FOR DOMESTIC SILKWORMS

Minoru Shirota, Tetsuo Fukuda, and Mayumi Ogata, Kyoto, and Hiromi Yamada, Uji, Japan, assignors to Kabushiki Kaisha Yakult Honsha, Tokyo, and Hiromi Yamada, Uji, Japan

No Drawing. Filed Dec. 22, 1971, Ser. No. 211,035

Claims priority, application Japan, Dec. 24, 1970, 45/116,747

Int. Cl. A23k *1/18*

U.S. Cl. 426—210 **2 Claims**

The disclosed feed includes a known artificial feed containing a powder of mulberry leaf and a unicellular green alga such as a chlorella or scenedesmus in an amount of at least 30% based upon the total weight of the feed.

3,794,500

DEACTIVATION OF INNER CORE ENZYMES BY RETAINED BLANCHING HEAT

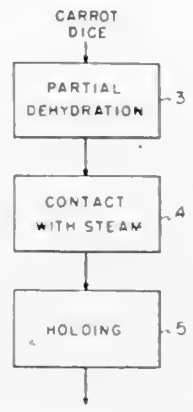
Melvin E. Lazar, Oakland, Calif., and Daryl B. Lund, Madison, Wis., assignors to the United States of America as represented by the Secretary of Agriculture

Filed Mar. 31, 1971, Ser. No. 129,736

Int. Cl. A23l *1/00*

U.S. Cl. 426—511 **5 Claims**

Enzyme inactivation procedures, particularly applicable to fruits and vegetables, which provide important benefits, including: Decreased exudate from the material under treatment, better maintenance of texture, flavor, and color of the material, and more efficient use of equipment. Example: Carrot dice are dehydrated to a weight loss of 5–15%, then contacted with steam for a brief period of time, and finally held under adiabatic conditions to permit heat to be transferred from outer portions of the dice to inner portions thereof.



3,794,501

MARINE ANTIFOULING PAINTS

Emanuel H. De Nio, Garden City, N.Y., assignor to Woolsey Marine Industries, Inc., New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 195,839, Nov. 4, 1971. This application July 7, 1972, Ser. No. 269,677

Int. Cl. C09d *5/14, 5/16*

U.S. Cl. 106—15 AF **2 Claims**

A novel paint composition, highly effective against encrustation of marine underwater structures, is herein presented. Basically, there is herein described a novel paint composition having the dual properties of being highly resistant to marine fouling organisms and the accumulation of slime, consisting essentially of a non-volatile organic vehicle, cuprous oxide, tri-n-butyltin fluoride and a polyethylene polymer.

3,794,502

GLASS FOR CATHODE-RAY TUBES FOR TELEVISION DISPLAY

Coenraad Maria La Grouw, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 651,119, July 5, 1967. This application Feb. 17, 1971, Ser. No. 116,251

Claims priority, application Netherlands, July 9, 1966, 6609666

Int. Cl. C03c *3/04*

U.S. Cl. 106—52 **1 Claim**

A glass especially suitable for the window of a cathode-ray tube for displaying color television images which is substantially opaque to X-radiation, non-discoloring under electron bombardment, and which can withstand high sealing temperatures. This glass contains in addition to silica, barium and calcium oxide, sodium and potassium oxides, arsenic and antimony oxides, and cerium oxide. The amounts of barium and potassium oxides are such as to insure that this glass has a suitable coefficient of expansion and temperature differences between its softening point and annealing point.

3,794,503

HOLLOW SPHERES CONSISTING OF ALKALI METAL SILICATE AND A POLYSALT

David I. Netting, Springfield, Pa., assignor to Philadelphia Quartz Company, Philadelphia, Pa.

No Drawing. Filed May 12, 1972, Ser. No. 252,763

Int. Cl. C08h *17/02*

U.S. Cl. 106—288 B **11 Claims**

The invention relates to a process for the manufacture of an economical filler of low bulk density that is especially useful for incorporation in unsaturated polyester systems and which does not react with the components of the unsaturated polyester system. Solutions of sodium silicate and inorganic polysalts are mixed, spray dried, and the product from the spray drier is then further dried to a water content below about 7%.

3,794,504

FAST SETTING, CRACK RESISTANT CEMENTITIOUS COMPOSITION HAVING INHIBITED SHRINKAGE

Henry Nash Babcock, 4 Quintard Ave., Greenwich, Conn. 06830

No Drawing. Filed Feb. 24, 1969, Ser. No. 801,781

The portion of the term of the patent subsequent to Aug. 4, 1990, has been disclaimed

Int. Cl. C04b *7/02*

U.S. Cl. 106—87 **11 Claims**

A cementitious composition suitable for repairing highway and being capable of developing sufficent strength to withstand normal traffic in less than two hours is prepared from a hydraulic cement mixture with a chemical analysis of SO_3 less than about 2.0% by weight of the cement in which a sufficient amount of fluid coke to offset the shrinkage during setting and early hardening are mixed therewith. The early strength of the resultant patch can be further improved by the addition therein and mixed therewith up to 100% by weight of the cement, a pressure-calcined gypsum. The addition of pressure-calcined gypsum to the composition also substantially reduced the long-term shrinkage of the resultant patch.

3,794,505

METHOD OF PRODUCING CALCIUM SILICATE HYDRATE INSULATION MATERIAL DEVOID OF ASBESTOS

Jerry L. Helser, Hebron, and Richard F. Shannon, Lancaster, Ohio, assignors to Owens-Corning Fiberglas Corporation

No Drawing. Filed Apr. 28, 1972, Ser. No. 248,376

Int. Cl. C04b *1/00*

U.S. Cl. 106—119 **8 Claims**

A dispersion of reactive CaO and reactive SiO_2 ingredients are mixed with water into a dispersion stabilized by stable dispersion producing cellulose fibers having an average diameter of less than approximately ten microns, and from 0.30 to 2% by weight of total solids of an aluminum hydroxide gel forming material. The dispersion is heated to a temperature between 180 and 210° F. for more than ½ hour to cause some of the silica to be dissolved and reacted with the CaO into a hydrated calcium silicate gel having a CaO to SiO_2 ratio of approximately 2.0. The gel dispersion is thereafter steam autoclaved for a sufficient amount of time to solubilize substantially all of the remaining SiO_2 and to convert the calcium silicate gel into a calcium silicate hydrate which is stable above 600° F. and which has an SiO_2 to CaO ratio of approximately 0.95 or more.

3,794,506

CEMENTITIOUS COMPOSITIONS CONTAINING PHOSPHONIC ACID

Donald L. Schmidt, Midland, Ronald H. Cooper, Clare, and Gerald H. Brandt, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 2, 1972, Ser. No. 294,330

Int. Cl. C04b *7/02, 7/34*

U.S. Cl. 106—90 **11 Claims**

An improved cementitious composition curable by hydration and having enhanced properties, such as less water absorbency, decreased spalling or greater strength retention, comprises a cementitious material and a small but effective amount of a phosphonic or phosphinic acid or soluble salt thereof containing various hydrophobic substituents.

3,794,507

MODIFIED ALKALI METAL HEXATITANATE AND PROCESS OF PRODUCING SAME

Gerhard Winter and Manfred Mansmann, Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 26, 1972, Ser. No. 292,443

Claims priority, application Germany, Sept. 29, 1971, P 21 48 600.0

Int. Cl. C09c *1/36*

U.S. Cl. 106—299 **19 Claims**

Fibrous modified alkali metal hexatitanates characterized by a content of polyvalent metal ions in an amount of from 0 to 10% by weight of polyvalent metal and by a content of phosphate and/or arsenate ions in an amount of from 0.02 to 5% by weight of P_2O_5 and/or As_2O_5, based on the weight of titanium dioxide in the alkali metal hexatitanate, and process of producing the same by reacting a titanium compound with an alkali metal compound which reacts basically, in the presence of a mineralizer at a temperature of from 700 to 1200° C. and in the presence of phosphates and/or arsenates in an amount of from 0.5 to 10% by weight, based on the weight of the dry reaction mixture, and the utility thereof as pigments, insulating materials, catalysts and catalyst supports.

3,794,508

MODIFIED ALKALI HEXATITANATE AND PROCESS OF PRODUCING SAME

Gerhard Winter and Manfred Mansmann, Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 29, 1972, Ser. No. 293,658

Claims priority, application Germany, Sept. 29, 1971, P 21 48 599.4

Int. Cl. C09c *1/36*

U.S. Cl. 106—299 **15 Claims**

Modified fibrous alkali metal hexatitanates characterized by a content of polyvalent metal ions in an amount of from 0.025 to 30% by weight of metal and by a content of fluorine ions in an amount of from 0.05 to 10% by weight of fluorine, based on the weight of titanium dioxide in the alkali metal hexatitanate, and process of producing same by reacting a titanium compound with an alkali metal compound which reacts basically in the presence of a mineralizer at a temperature of from 700 to 1200° C. and in the presence of a polyvalent metal fluoride in an amount of 0.1 to 15% by weight, based on the weight of the dry reaction mixture, and the utility thereof as pigments, insulating materials, catalysts and catalyst supports.

3,794,509

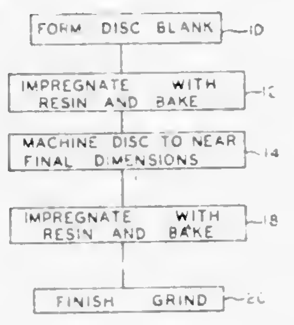
CARBON DISK PROCESSING TECHNIQUE TO RETARD OXIDATION

Ronald L. Trauger, Tallmadge, and Robert L. Zarembka, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed June 29, 1971, Ser. No. 157,954

Int. Cl. B44d *1/20*

U.S. Cl. 117—4 **6 Claims**


FORM DISC BLANK
10
IMPREGNATE WITH RESIN AND BAKE
12
MACHINE DISC TO NEAR FINAL DIMENSIONS
14
IMPREGNATE WITH RESIN AND BAKE
18
FINISH GRIND
20

A method of processing disk blanks made from resin impregnated graphite or carbon cloth to improve the oxidation resistance of the end product. The disk blanks are processed by resin impregnation and baking and machined to almost the final desired configuration and subsequently subjected to further resin impregnation and bake cycles to form a hard residue on the exposed surfaces of the disk blanks. The disks are then ground to size with the residue remaining on all but the wear surfaces thereof.

3,794,510

ELECTRON BEAM MASKING METHOD

Luciano C. Scala, Murrysville, and David F. Ciliberti, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

No Drawing. Filed Jan. 21, 1972, Ser. No. 219,881

Int. Cl. B44d *1/50;* **C08f** *3/16*

U.S. Cl. 117—8 **19 Claims**

A method of masking a substrate by coating the substrate with a diene-derived linear polymer having at least one active hydrogen for every ten repeating units, insolubilizing the polymer by exposing it to an electron beam, and removing the unexposed portions of the polymer coating. Specifically, a substrate of SiO_2 on a silicon chip may be masked from an HF etchant by applying a benzene solution of 1,2-syndiotactic polybutadiene or a random copolymer of styrene and butadiene to the substrate. The solution is spun to dryness and the resulting polymeric layer is exposed to an electron beam which traces desired patterns on the polymeric layer. The chip is then washed in benzene and etched in HF.

3,794,511

COATING PROCESS FOR A SUPERALLOY ARTICLE

Sanford Baranow, Woodbridge, Conn., assignor to Avco Corporation, Stratford, Conn.

No Drawing. Continuation of abandoned application Ser. No. 686,852, Nov. 30, 1967. This application Oct. 22, 1971, Ser. No. 191,819

Int. Cl. C23c *9/02*

U.S. Cl. 117—22 **5 Claims**

The coating of nickel- and cobalt-base alloy articles to improve both thermal fatigue and sulfidation resistance of said articles. The coating is applied by pack cementation in an inert or non-reactive atmosphere or in a vacuum, using as a pack powder an alloy of aluminum and one or more rare earth elements.

3,794,512

PRODUCT FOR THE FORMATION OF FLUORESCENT IMAGES

Thomas Harland Brownlee, Westport, and Ken Matsuda, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Original application Aug. 8, 1969, Ser. No. 848,686, now Patent No. 3,683,336. Divided and this application Jan. 27, 1972, Ser. No. 221,471

Int. Cl. B44d *1/24, 1/40*

U.S. Cl. 117—33.5 R **4 Claims**

Product for processing information which comprises a substrate having incorporated therewith endoperoxide derivatives of polycyclic aromatic compounds which do not fluoresce, but which may be converted to fluorescent compounds by the action of heat or short wave ultraviolet radiation, and recoverted to the original non-fluorescent form by longer wavelength ultraviolet radiation.

3,794,513

PROCESS OF APPLYING A POLYMERIC ADHESIVE LAYER BETWEEN A PHOTOCHROMIC SPIROPYRAN COMPOUND CONTAINING LAYER AND A POLYESTER FILM SUPPORT

Werner Krafft, Leverkusen, and Peter Kruck, Cologne-Flittard, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 12, 1972, Ser. No. 243,413

Claims priority, application Germany, Apr. 14, 1971, P 21 18 021.2

Int. Cl. B44d *1/092;* **G03c** *1/00, 1/80*

U.S. Cl. 117—34 **1 Claim**

In a photochromic material containing on a polyester film support photochromic spiropyrans incorporated in poly(meth)acrylate binders, there is an adhesive layer arranged between the photochromic layer and the support, which adhesive layer consists of copolymers of vinyl chloride and vinyl acetate which may be partly saponified, and/or poly(meth)acrylic acid esters of aliphatic or cycloaliphatic alcohols having 1 to 8 carbon atoms. The adhesive layer is applied to the film support from an organic solvent containing chloral hydrate or chloral methylate as swelling agent, and this layer is dried at between 60° C. and 90° C.

3,794,514

COATED COMPOSITE METAL PART

Harold J. Michael, Columbus, Ohio, assignor to Rockwell International Corporation

No Drawing. Original application Nov. 27, 1970, Ser. No. 93,493, now Patent No. 3,702,770, dated Nov. 14, 1972. Divided and this application Mar. 3, 1972, Ser. No. 231,769

Int. Cl. C23c *7/00*

U.S. Cl. 117—46 FS **4 Claims**

A coated composite metal part comprised of two or more metallic components each having a fused-on cermet protective coating and a metallic weld area joining the components is provided with a novel flame-sprayed protective coating over portions of the fused-on cermet coating and over the adjoining weld area to develop improved metal part resistance to surface corrosion attack.

3,794,515

SARAN COATING OF CELLULOSIC CASING

Albin F. Turbak and Henry J. Rose, Danville, Ill., assignors to Tee-Pak, Inc., Chicago, Ill.

No Drawing. Filed Apr. 3, 1968, Ser. No. 718,343

Int. Cl. B32b *23/08*

U.S. Cl. 117—145 **9 Claims**

An oxygen- and water vapor impermeable food casing is prepared by coating a regenerated cellulose or fiber reinforced regenerated cellulose food casing with a coating composition comprising a saran, a plasticizer, a polymeric polyisocyanate, an activator, such as a polyol or reaction product of a polyol with ethlene oxide or the like, and a solvent system comprising a high boiling solvent, such as buytrolactone, and a low boiling solvent such as methyl ethyl ketone or tetrahydrofuran. The coated casing is heated to dry and cure the coating thereon. The coating composition is self-priming and forms a more adherent coating having an oxygen- and vapor permeability less than about 1.0 cc./100 in.^{2}/24 hr.-atm.

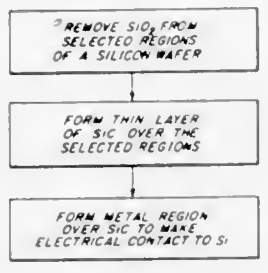
3,794,516
METHOD FOR MAKING HIGH TEMPERATURE LOW OHMIC CONTACT TO SILICON

William E. Engeler, 88 St. Stephens Lane W., Scotia, N.Y. 12302, and Linus F. Cordes, 1145 Godfrey Lane, Schenectady, N.Y. 12309

Original application Dec. 15, 1970, Ser. No. 98,266, now Patent No. 3,714,520. Divided and this application Dec. 17, 1971, Ser. No. 209,400

Int. Cl. B44d *1/14, 1/18*

U.S. Cl. 117—217 **3 Claims**


REMOVE SiO2 FROM SELECTED REGIONS OF A SILICON WAFER
FORM THIN LAYER OF SiC OVER THE SELECTED REGIONS
FORM METAL REGION OVER SiC TO MAKE ELECTRICAL CONTACT TO Si

A high temperature low ohmic electrical contact is made to a silicon body by forming a very thin layer of silicon carbide over the silicon body and then forming a metallic layer, such as a refractory metal, over the silicon carbide to form a high quality low ohmic contact to the surface of the silicon body.

3,794,517
ELECTRIC CIRCUIT ELEMENTS AND METHODS OF MANUFACTURING SUCH ELEMENTS

Jean Michel Baudry Ghislain Yperman, Sint-Stevens-Woluwe, and Charles Belhomme, Evere, Belgium, assignors to U.S. Philips Corporation, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 601,342, Dec. 13, 1966. This application Dec. 28, 1971, Ser. No. 213,176

Claims priority, application Netherlands, Dec. 15, 1965, 6516296

Int. Cl. H01l *1/14*

U.S. Cl. 117—217 **3 Claims**

A method is shown for increasing the stability of the electrical resistance of n-type semiconductor bodies provided with ohmic contact electrodes. The method comprises first vacuum depositing chromium on the semiconductor body and then vacuum depositing a solderable metal on the chromium layer. This abstract is in no way intended to be a description of the invention defined by the claims.

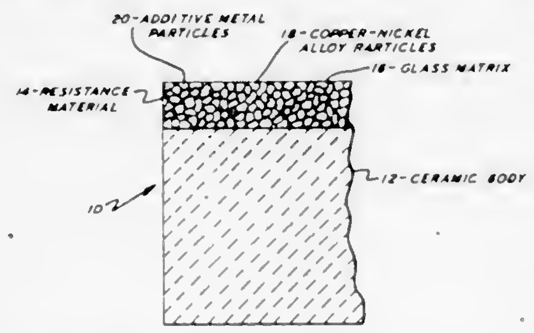
3,794,518
ELECTRICAL RESISTANCE MATERIAL AND METHOD OF MAKING THE SAME

Robert Gene Howell, Boone, N.C., assignor to TRW, Inc., Cleveland, Ohio

Continuation-in-part of abandoned application Ser. No. 8,941, Feb. 5, 1970. This application May 1, 1972, Ser. No. 249,401

Int. Cl. H01b *1/02;* **H01c** *7/00*

U.S. Cl. 117—227 **16 Claims**



An electrical resistance material comprising a mixture of a glass frit and finely divided particles of an alloy of copper and nickel. The resistance material may also include finely divided particles of an additional metal having a positive temperature coefficient of resistance and which may readily oxidize at high temperatures. The resistance material is adapted to be applied to and fixed on a substrate to form an electrical resistor which will readily fuse or open when subjected to an overload to prevent excessive overheating of the resistor.

3,794,519
PROCESS FOR THE PRODUCTION OF A MAGNETIC RECORD MEMBER

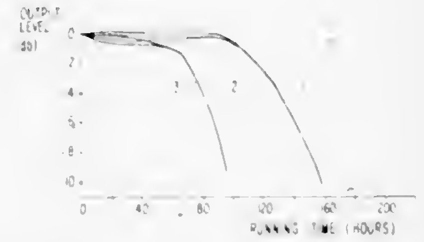
Goro Akashi, Masaaki Fujiyama, Akira Kasuga, Yasuyuki Yamada, Osamu Suzuki, Matsuaki Nakamura, Kenji Sega, and Hiroshi Kato, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 4, 1970, Ser. No. 86,924

Claims priority, application Japan, Nov. 4, 1969, 44/88,272

Int. Cl. H01f *10/02*

U.S. Cl. 117—235 **6 Claims**



A method for preparing a magnetic record member free from sulfate (SO_4^{--}) and chloride (Cl^-) ions, which comprises: (a) reacting an iron salt to form goethite powder, (b) heating said goethite, thus converting it to magnetite or γ-hematite, (c) washing the resulting matter of (b) with an aqueous solvent to remove any water-soluble impurities therefrom, (d) dispersing the purified product so obtained in a solution of film-forming resin and (e) applying said dispersion to a suitable backing receptive to a magnetic recording layer, and the product so obtained.

3,794,520
NONREACTIVE REFRACTORY SEPARATING COATINGS FOR ELECTRICAL STEELS

Norman M. Pavlik, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 22,683, Mar. 25, 1970, which is a division of application Ser. No. 681,026, Nov. 6, 1967, now Patent No. 3,523,837. This application Mar. 30, 1972, Ser. No. 239,755

Int. Cl. H01f *1/04*

U.S. Cl. 117—230 **3 Claims**

An aqueous slurry comprising about 60% by weight of Al_2O_3, based on the weight of the water, and small amounts of polyvinyl alcohol and an organic suspending agent (more particularly, a cellulosic suspending agent), is applied to electrical sheet steel and dried thereon to provide a relatively thin and uniform separating coating. A plurality of such coated sheets may be stacked or a single such sheet may be coiled for final annealing at elevated temperature.

3,794,521
DIFFUSION TOWER

Walter Dietzel and Siegfried Matusch, Braunschweig, Germany, assignors to Braunschweigische Maschinenbauanstalt, Braunschweig, Germany

Filed Jan. 10, 1972, Ser. No. 216,496

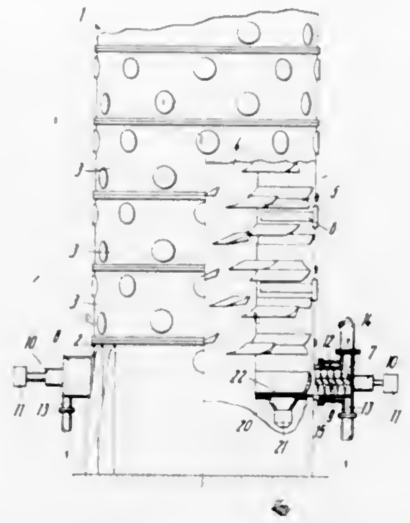
Claims priority, application Germany, Feb. 11, 1971, P 21 06 464.2; Jan. 15, 1971, G 71 01 390.6

Int. Cl. C13d *1/12*

U.S. Cl. 127—5 **8 Claims**

A diffusion tower for the extraction of juices from sugar beet cossettes is provided at its lower end with sieve

or screen worm means which are supported in respective housings at one end thereof so as to reach with its free, overhang end toward an opening in the tower whereby the tower facing turn of the screen worm means keeps the cossettes in the tower and permits the escape of the juice. Each housing comprises a sieve or screen area, preferably a cylindrical sieve surrounding the screen worm proper. At least one of the worms is provided with a solid wing for the infeed of the sugar beet cossettes into the tower.



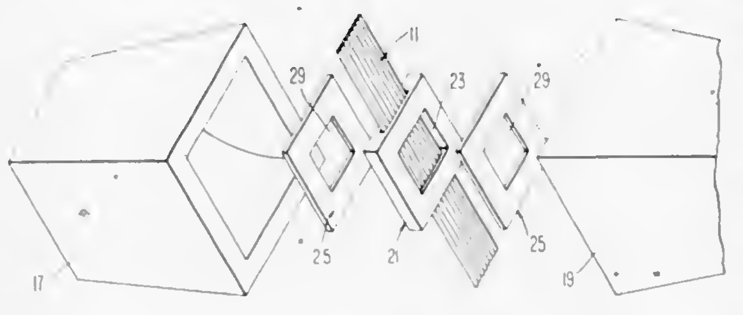
3,794,522
STRIPPING INSULATED WIRE

Harry B. Mueller, Westchester, and Gilbert R. Reid, Norristown, Pa., assignors to Burroughs Corporation, Detroit, Mich.

Continuation of abandoned application Ser. No. 803,567, Mar. 3, 1969. This application Jan. 24, 1972, Ser. No. 220,146

Int. Cl. B08b *7/02, 7/04, 11/00*

U.S. Cl. 134—1 **2 Claims**



Method and apparatus for stripping insulation from a conductive wire using clean thermal energy. A jig and mask positioned between two thermal energy sources expose only that portion of the insulation to be removed. A portion of insulation adjacent to the exposed wire is cut and slid over the previously exposed wire. The wire thus exposed is free of contamination and thermal distortion.

3,794,523
SCALE REMOVAL

James L. Thompson, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed July 8, 1971, Ser. No. 160,882

Int. Cl. B08b *9/08;* **C23g** *1/02*

U.S. Cl. 134—3 **6 Claims**

An aromatic solvent in aqueous acid solution emulsion is provided which is useful for treating materials which are normally solubilized by said acid but which are occluded, e.g. coated, with an organic deposit.

3,794,524
STRIPPING METHOD

Andrew Nogueira, Cincinnati, and Harry J. Packer, Dayton, Ohio, assignors to Chemed Corporation, Cincinnati, Ohio

No Drawing. Continuation of abandoned application Ser. No. 49,206, June 23, 1970. This application Nov. 21, 1972, Ser. No. 308,610

Int. Cl. B08b *5/00;* **C09d** *9/00*

U.S. Cl. 134—31 **1 Claim**

Method for stripping resin-base deposits and similar coatings from a substrate which includes contacting vapor evolved from a boiling azeotropic mixture with the substrate disposed deposit. The present method is particularly useful for stripping durable resin-base paint adhered to a metal substrate in the form of coatings and other deposits.

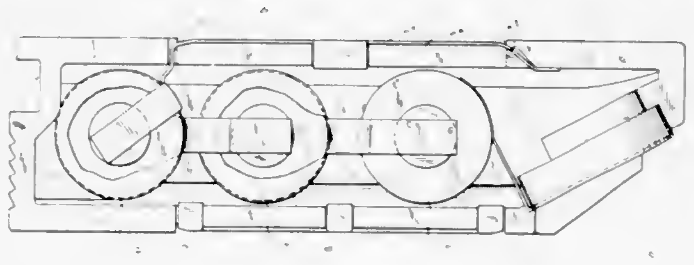
3,794,525
BATTERY ASSEMBLY

Gordon E. Kaye, 140 N. Broadway, Irvington, N.Y. 10533

Filed Apr. 12, 1972, Ser. No. 243,387

Int. Cl. H01m *1/02*

U.S. Cl. 136—108 **1 Claim**



A two-part molded cartridge utilizes one part as an assembly tray or shell for assembling one or more electric cells in position to permit electrical interconnections between the cells, and to support contact terminal surfaces for connection to external circuit contact terminals, and then utilizes the second molded part as a cover, and the two parts are then sealed to constitute a housing for the cells as a battery unit.

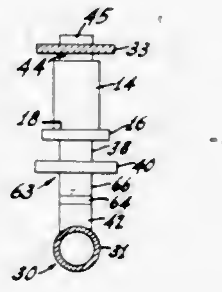
3,794,526
THERMOELECTRIC GENERATOR

Nicholas E. Pryslak, Summit, N.J., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Apr. 21, 1967, Ser. No. 634,805

Int. Cl. H01v *1/04*

U.S. Cl. 136—205 **1 Claim**



A thermoelectric generator having a rigid coupling or "stack" between the heat source and the hot strap joining the thermoelements. The stack includes a member of an insulating material, such as ceramic, for electrically isolating the thermoelements from the heat source, and a pair of members of a ductile material, such as gold, one each on each side of the insulating member, to absorb thermal differential expansion stresses in the stack.

3,794,527

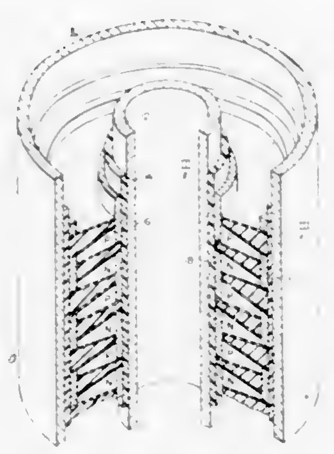
THERMOELECTRIC CONVERTER

Chang-Kyo Kim, McMurray, Pa., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Jan. 15, 1970, Ser. No. 3,183

Int. Cl. H01v *1/32*

U.S. Cl. 136—208 **5 Claims**



This invention relates in general to thermoelectric units and more particularly to a tubular thermoelectric unit which includes an array of tandemly arranged radially tapered annular thermoelectric pellets having insulation material of a lower density than the thermoelectric pellets positioned between each pellet.

3,794,528

THERMOMECHANICAL METHOD OF FORMING HIGH-STRENGTH BETA-TITANIUM ALLOYS

Louis A. Rosales, Manhattan Beach, Alfred W. Sommer, Los Angeles, and Kanji Ono, Granada Hills, Calif., assignors to the United States of America as represented by the Secretary of the Navy

Filed Aug. 17, 1972, Ser. No. 281,593

Int. Cl. C22f *1/18*

U.S. Cl. 148—12.7 **8 Claims**

Beta-titanium alloys containing a relatively large fraction of a beta-phase stabilizer are thermomechanically treated to provide increased strength levels of greater than 220 k.s.i. with only a minimum loss of ductility, the treatments involving heating the stock a point near its beta-transus, rapid cooling, cold rolling and aging, the last step including either a single final aging at a temperature in the alpha-forming temperature range or a multi-step aging process which includes pre-aging in the omega-forming range prior to the final aging. Cold rolling plus final aging improves strength and ductility, while cold-rolling plus multi-step aging is very effective from a transformation time viewpoint, reducing the aging time needed to obtain the optimum strength levels by factors of 10–100 over single aging.

3,794,529

METHOD OF MAKING A METAL LAMINATE

Donald R. Thompson, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Dec. 15, 1971, Ser. No. 208,479

Int. Cl. C23f *7/08*

U.S. Cl. 148—6.15 R **5 Claims**

A method of preparing a metal polyurethane laminate by phosphetizing the metal, drying the metal to a water free surface and applying a coating of a soybean alkyd paint or a modified linseed alkyd paint, baking at 225–375° F. until tack-free and applying a polyurethane reaction mixture, and solidifying the said mixture to give a laminate.

3,794,530

HIGH-PERMEABILITY Ni-Fe-Ta ALLOY FOR MAGNETIC RECORDING-REPRODUCING HEADS

Hakaru Masumoto, Sendai, Yuetsu Murakami, Izumi-machi, and Masakatsu Hinai, Natori, Japan, assignors to The Foundation: The Research Institute of Electric and Magnetic Alloys, Sendai, Japan

Filed Sept. 19, 1972, Ser. No. 290,424

Claims priority, application Japan, Oct. 13, 1971, 46/80,207

Int. Cl. C04b *35/00;* **H01f** *1/00*

U.S. Cl. 148—31.55 **1 Claim**

A magnetic recording and reproducing heads having a high permeability and high hardness, consisting of 60.2 to 85.0 wt. percent of nickel, 6.0 to 30.0 wt. percent of iron and 3.1 to 23.0 wt. percent of tantalum as the main ingredient, and a total amount of 0.01 to 10.0 wt. percent of at least one element selected from the group consisting of 0 to 7.0 wt. percent of molybdenum, 0 to 5.0 wt. percent of chromium, 0 to 10.0 wt. percent of tungsten, 0 to 7.0 wt. percent of vanadium, 0 to 3.1 wt. percent of niobium, 0 to 10.0 wt. percent of manganese, 0 to 7.0 wt. percent of germanium, 0 to 5.0 wt. percent of titanium, 0 to 5.0 wt. percent of zirconium, 0 to 5.0 wt. percent of aluminum, 0 to 5.0 wt. percent of silicon, 0 to 5.0 wt. percent of tin, 0 to 5.0 wt. percent of antimony, 0 to 10.0 wt. percent of cobalt and 0 to 10.0 wt. percent of copper as the subingredient, and an inevitable amount of impurities, characterized in that the alloy has the degree of order of 0.1 to 0.6, the Vickers hardness of more than 150, the initial permeability of more than 3,000 and maximum permeability of more than 5,000, and a method of manufacturing a magnetic recording and reproducing head having a high permeability, by heating said alloy articles at a temperature above 800° C. but lower than the melting point in a non-oxidizing atmosphere or in vacuo for at least more than 1 minute but not longer than 100 hours depending upon the composition, and cooling from a temperature of more than order-disorder transformation point to a room temperature at a suitable speed depending upon the composition so as to provide the degree of order of 0.1 to 0.6 and the Vickers hardness of more than 150.

3,794,531

METHOD OF USING A HIGHLY STABLE ALUMINUM ALLOY IN THE PRODUCTION OF RECRYSTALLIZATION HARDENED PRODUCTS

Manfred Markworth and Friedrich Wilhelm Lynker, Meinerzhagen, and Wilhelm Rosenkranz, deceased, late of Meinerzhagen, Germany, by Barbara Rosenkranz, legal representative, Meinerzhagen, Germany, assignors to Firma Otto Fuchs, Meinerzhagen, Postfach, West Germany

No Drawing. Filed Oct. 21, 1971, Ser. No. 191,517

Claims priority, application Germany, Oct. 23, 1970, P 20 52 000.7

Int. Cl. C22f *1/04*

U.S. Cl. 148—159 **6 Claims**

A method of using a highly stable aluminum alloy of the AlZnMgCu type consisting essentially of 1.1 to 1.3% copper, 2.3 to 2.7% magnesium, 5.7 to 7.1% zinc, 0.2 to 0.5% silver, 0 to 0.09% manganese, 0.02 to 0.05% titanium, 0.002 to 0.006% boron, and 0.04 to 0.08% chromium in combination with 0.10 to 0.16% zirconium, as material for producing recrystallization-hardened semi-finished corrosion resistant products by subjecting the alloy to a solution treatment, and thereafter to low-rate cooling.

3,794,532

SPHERODIZATION OF GRAIN BOUNDARY PRECIPITATES

Russell H. Jones, Pittsburgh, Pa., and Earl R. Parker, Oakland, and Victor F. Zackay, Berkeley, Calif., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Mar. 14, 1972, Ser. No. 234,483

Int. Cl. C22c *39/14, 41/02*

U.S. Cl. 148—142 **8 Claims**

A method for spheroidizing grain boundary precipitates by cycling through the alpha gamma phase transformation, wherein both the ductility and strength of the material are increased. The inventive spheroidization process is applicable to the binary system, such as Fe-Ta. In addition, it has been discovered that the addition of selected amounts of chromium on the Fe-Ta binary system (Fe-Ta-Cr alloy) enhanced spheroidization as well as improved oxidation resistance, while lowering the heat treatment temperature.

3,794,533

METHOD FOR DIFFUSING Zn INTO A III–V COMPOUND SEMICONDUCTOR CRYSTAL THROUGH ALUMINA MASKING

Eiichi Adachi, Tokyo, and Kazutoshi Saito, Hachioji, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 19, 1972, Ser. No. 255,084

Claims priority, application Japan, May 19, 1971, 46/33,248; June 1, 1971, 46/37,484

Int. Cl. H01l *7/36, 7/44*

U.S. Cl. 148—175 **14 Claims**

An Al_2O_3 film is formed on a surface of a substrate of a III–V compound semiconductor, and Zn is diffused through said Al_2O_3 film into said semiconductor as an impurity, whereby a higher impurity concentration is obtained than is obtained by diffusing Zn through an SiO_2 film under the same conditions. In the diffusion at the same temperature and for the same period of time, the diffusion depth of Zn depends on the thickness of the Al_2O_3 film. At a temperature at which the diffusion of Zn occurs through the Al_2O_3 film, Zn does not diffuse through an Si_3N_4 film. Isolation and p-n junctions may accordingly be simultaneously provided in such way that an n-type layer is grown on a p-type substrate; thin Al_2O_3 films are provided where p-type diffusion layers, to form the pn junctions conjointly with the n-type layer, are disposed, without providing the film at portions at which the isolations are disposed; while a diffusion mask of silicon nitride is provided at the latter parts, and Zn diffusion is carried out.

3,794,534

NITROMETHANE EXPLOSIVE WITH A FOAM AND MICROSPHERES OF AIR

O. Wayne Chandler, Terre Haute, Ind., assignor to Commercial Solvents Corporation

No Drawing. Filed Feb. 20, 1973, Ser. No. 333,845

Int. Cl. C09b *7/00*

U.S. Cl. 149—2 **2 Claims**

A primer adapted to initiating detonation of nitromethane by strong shock comprising an open-celled polymeric foam containing about 15–85% by weight of glass bubbles.

3,794,535

PYROTECHNIC LACQUER

Yves H Bertrand, Robert E. Grebert, and Jean P. Paquet, Saint Medard en Jalles, France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed July 14, 1972, Ser. No. 271,803

Claims priority, application France, July 19, 1971, 7126285

Int. Cl. C06b *19/02*

U.S. Cl. 149—3 **7 Claims**

Lacquers comprising a dispersion of a pyrotechnic composition in a collodion, which are useful in forming ignition coatings on blocks of propellant and gas generators. The pyrotechnic compositions may be alumino-thermal powders, thermites, black powders or zirconium/barium chromate/ammonium perchlorate/ammonium bichromate, and the collodion may be a nitrocellulose or nitroglycerine powders (or mixtures of the two), or a plastics material, in solution in solvent.

3,794,536

DIELECTRIC CIRCUIT FORMING PROCESS

Willis Martin Muska, Sea Bright, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed Jan. 31, 1972, Ser. No. 222,010

Int. Cl. B29c *17/08;* **H01l** *7/50*

U.S. Cl. 156—11 **1 Claim**

There is disclosed a process for forming integrated optical circuit components on a substrate wafer in the form of dielectric thin films in patterns of high resolution and edge smoothness. For high resolution, the use of electron-resist and electron-beam exposure techniques is described. Particularly disclosed is the use of a manganese mask formed over the circuit layer, the exposed portions of which are sputter etched away.

3,794,537

METHOD OF MAKING ABSORBENT PADS

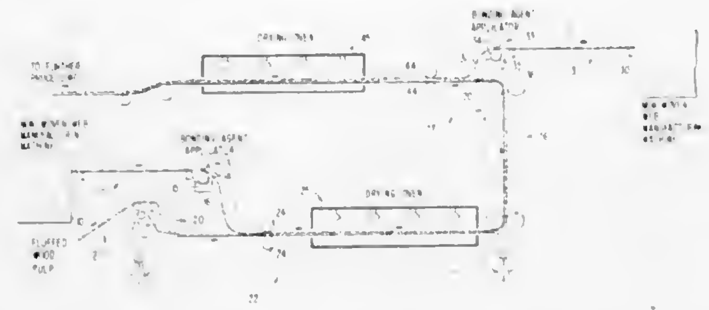
Donald Wilber Rahmes, Stamford, Conn., assignor to Georgia-Pacific Corporation, Portland, Oreg.

Continuation of abandoned application Ser. No. 31,509, Apr. 24, 1970. This application Mar. 21, 1972, Ser. No. 236,795

Int. Cl. B32b *3/26*

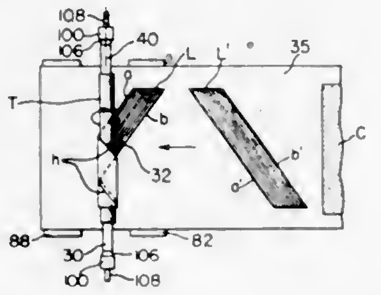
U.S. Cl. 156—62.8 **12 Claims**

A method of making an absorbent pad comprising the steps of applying a bonding agent to a non-woven fiber web, depositing the non-woven web on one side of a layer of absorbent material, and curing the bonding agent to bond the non-woven web to the absorbent material. A three-ply pad can be made by similarly bonding a second non-woven fiber web to the other side of the absorbent material layer.



3,794,538
METHOD OF MAKING A ROLLING LOBE DIAPHRAGM

Christopher E. Christie, James R. Fedor, and Ishmael S. Harwell, Akron, and Robert S. Riggs, Stow, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Original application July 13, 1970, Ser. No. 54,420, now Patent No. 3,666,598. Divided and this application Mar. 3, 1972, Ser. No. 231,707
Int. Cl. B65c *3/12;* **B65h** *11/02*
U.S. Cl. 156—187 **7 Claims**

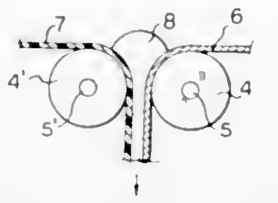


A method of fabricating a cord reinforced sleeve comprising mounting a tube of uncured curable rubbery material on a rigid cylindrical mandrel, placing a band of precut cord material upon a carrier in the form of an endless movable belt so that the cords of such band are oriented parallel to a line which makes an acute angle with the longitudinal axis of the mandrel so that relative movement between the band on the carrier and the tube on the mandrel in a direction circumferentially of the mandrel wind the band helically about the mandrel a plurality of times and place the respective edges of the band in mutually adhesive contact along a helix coaxial with the tube on the mandrel.

3,794,539
MANUFACTURE OF ELECTROPHOTOGRAPHIC PLATES

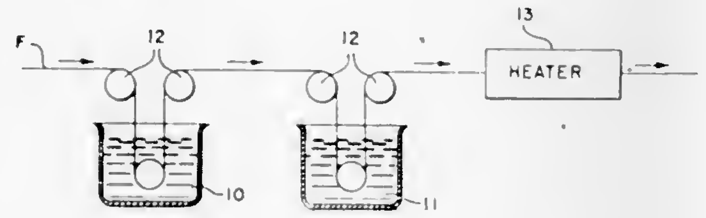
Takao Komiya and Umi Tosaka, Tokyo, Takashi Ihara, Kawasaki, Takehiko Matsuo, Tokyo, and Katsunobu Ohara, Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Original application Sept. 12, 1967, Ser. No. 667,257, now Patent No. 3,687,659. Divided and this application Dec. 16, 1971, Ser. No. 208,809
Claims priority, application Japan, Sept. 22, 1966, 41/62,655; Nov. 21, 1966, 41/76,477
Int. Cl. C09j *5/00;* **G03g** *5/04*
U.S. Cl. 156—309 **5 Claims**

Photosensitive plates are produced by depositing a solvent-free mixture of photoconductive material dispersed in a liquid polymerizable resin between a conductive layer and a translucent insulative layer and thereafter polymerizing the liquid resin to form a solid photoconductive layer integrally bonded to the conductive and translucent insulative layers.



3,794,540
METHOD OF MAKING FILAMENT STRAND WOUND PRODUCT

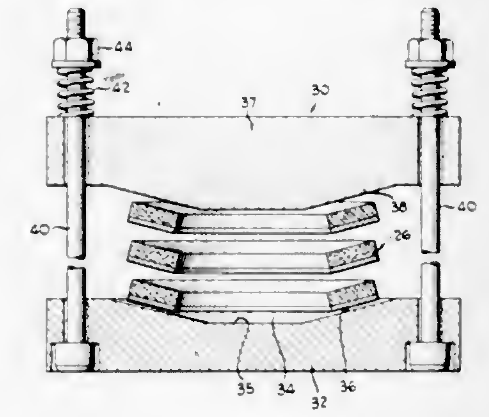
James R. Griffith, Riverdale Heights, Md., assignor to the United States of America as represented by the Secretary of the Navy
Original application Sept. 9, 1970, Ser. No. 70,808, now Patent No. 3,711,351, which is a division of application Ser. No. 643,321, May 31, 1967, now Patent No. 3,544,421. Divided and this application Nov. 3, 1972, Ser. No. 305,752
Int. Cl. B65h *81/02*
U.S. Cl. 156—169 **1 Claim**



Glass filaments are continuously drawn through a solution of bifunctional acyl chloride in organic solvent and then directly through a solution of alkylene diamine and an acid acceptor in water. The filaments are dried, coated with epoxy resin and wound to form a structural laminate.

3,794,541
METHOD OF MAKING FLAT CLUTCH PLATES

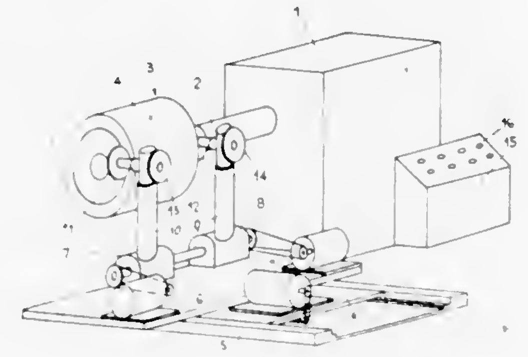
Walter J. Schissler, Oak Forest, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Nov. 26, 1971, Ser. No. 202,284
Int. Cl. B32b *31/02*
U.S. Cl. 156—228 **7 Claims**



Disclosed is a method of producing composite type, flat clutch discs which consists of deforming the clutch disc assembly during heat treating in such a way that the internal stresses developed during said heat treatment will be countered by the stresses induced by the deformation such that the finished product attains the desired flat condition.

3,794,542
STITCHING APPARATUS FOR TIRE DRUM BUILDING MACHINES

Bruno Colombani and Antonio Pacciarini, Milan, Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy
Filed Sept. 15, 1971, Ser. No. 180,819
Claims priority, application Italy, Sept. 18, 1970, 29,899/70
Int. Cl. B29h *17/08, 17/18*
U.S. Cl. 156—358 **4 Claims**

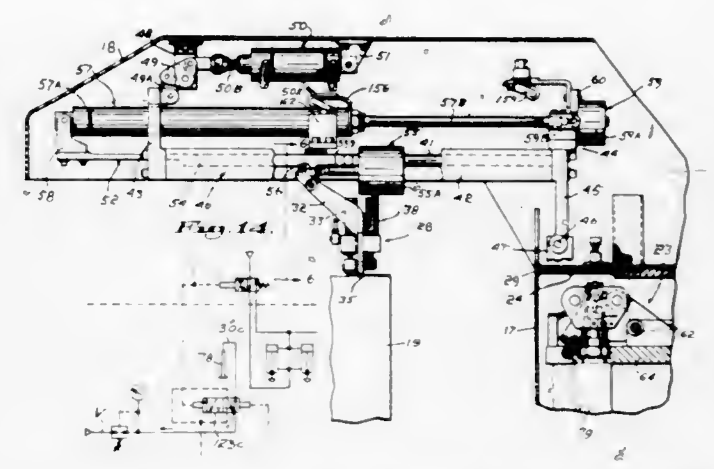


The invention comprises stitching apparatus for tire building machines provided with a building drum which apparatus comprises a horizontal base; two carriages which can be moved along said base in a direction parallel to the longitudinal axis of the building drum by a first actuator means having reversible working sense and in the direction perpendicular to said axis by a second actuator means having reversible direction; two vertical columns each of which is integral at one end with one of said carriages and is connected at the other end to at least one stitching disc, the axis of rotation of the stitching disc lying in a plane containing the axis of rotation of the building drum; means for driving the axis of rotation of each stitching disc toward one of two angularly spaced extreme positions; and elastic means for elastically rotating in said plane the axis of rotation of each stitching disc; said apparatus additionally comprising means for changing the speed and direction of movement of said carriages, including an embodiment wherein their movements are mutually dependent; and embodiments wherein the extreme positions of the axis of rotation of each stitching disc are spaced apart at angles greater than about 180° and smaller than about 360°; embodiments wherein the elastic means are able to selectively rotate the axis of rotation of each stitching disc; and embodiments including programmer control means for controlling the actuators and elastic means so that their operations take place in a pre-established sequence.

3,794,543
APPARATUS FOR TRANSFERRING AND AFFIXING ARTICLES TO EITHER ONE OF TWO ANGULARLY DISPOSED SURFACES

Jaime A. Bonomi, Waltham, Mass., assignor to Tapeler Corporation, Newton, Mass.
Filed Dec. 3, 1971, Ser. No. 204,542
Int. Cl. B65c *9/08*
U.S. Cl. 156—566 **25 Claims**

Apparatus is disclosed for use in conjunction with dispensers providing, at a station, an article having adhesive on its undersurface in condition to anchor the article to the selected one of two angularly disposed surfaces. The apparatus has a head, adjustable for article applications to either surface and provided with means operable to pick up the article at the station and release it when positioned against the selected surface. The apparatus has means, disclosed as pneumatically operated, to move the head to and from the station into a position proximate to the selected surface, operate the pick-up means at the station, press the article against the selected surface and release it and return the head to pick up another article. In practice, the starting point of the cycle, triggered by the presentation of the selected surface in a predetermined position, is characterized by the head, with an article held thereby, being proximate to the selected surface.



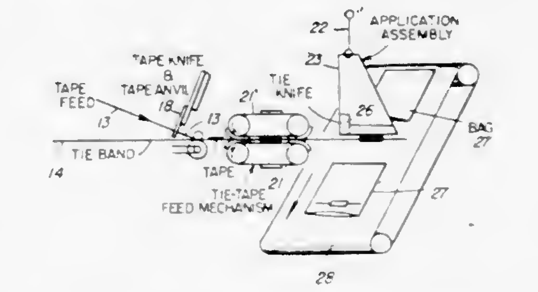
3,794,544
PROCESS FOR PRINTING LEATHER

Peter Eckert, Magden, Willi Egli, Reinach, Basel-Land, and Hans Georg Osolin, Oberwil, Basel-Land, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
No Drawing. Filed Feb. 10, 1971, Ser. No. 114,399
Claims priority, application Switzerland, Feb. 18, 1970, 2,329/70
Int. Cl. B44c *1/24*
U.S. Cl. 156—230 **14 Claims**

The invention relates to a process for printing natural or synthetic leather, wherein the surface to be printed is brought into contact with a temporary carrier of paper, aluminum or regenerated cellulose, comprising a transferable film of vinyl resin and one or more pigments, and an underlying layer of ethyl cellulose, or of a mixture of nitrocellulose and an aminoplast, and that the temporary carrier is separated from the ultimate carrier.

3,794,545
TIE-BAND APPLICATOR APPARATUS

Paul Adrian Lucas, Webster, N.Y., assignor to Mobil Oil Corporation
Filed Feb. 10, 1972, Ser. No. 225,131
Int. Cl. B32b *31/00*
U.S. Cl. 156—519 **1 Claim**



An apparatus for applying a closure device to the exterior surface of a bag-like object, the closure being capable of ready detachment from the bag so that the closure may be employed to effect sealing of an open mouth bag structure. The apparatus includes a device for feeding a closure element, the element may be either coated with a pressure sensitive adhesive or have affixed thereto a length of adhesive tape, into the proximity of a bag structure which is advancing on a conveyor device. The closure, with the adhesive strip thereon, is subsequently applied to the exterior wall of the bag surface by means of a reciprocating applicator assembly.

3,794,546

PROCESS AND APPARATUS FOR DELAMINATING AN ADHERENT RECEPTOR SHEET ON A SENSITIZED ELEMENT

Abraham B. Cohen, Springfield, and Herbert A. Tobias, East Brunswick, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 23, 1971, Ser. No. 201,414

Int. Cl. B32b *3/12*

U.S. Cl. 136—344 **7 Claims**

A process and apparatus for image reproduction using a discrete laminated sensitized element comprising a substrate, a resist layer and a receptor sheet, in which a continuous web is adhered to the receptor sheet and then taken up to delaminate the receptor sheet from the sensitized element leaving the hardened or unhardened portion of the resist layer adhering to the substrate as a positive or negative reproduction of the image and the complementary unhardened or hardened image adhering to the receptor sheet.

ERRATUM

For Class 156—189 see:
Patent No. 3,794,708

3,794,547

POLYAMIDE FILMS

Mutsuo Kuga, Kyoto, Takeshi Mashimo, Uji, and Motohiro Tsuruta, Kyoto, Japan, assignors to Unitika Kabushiki Kaisha, Amagasaki, Japan

Continuation-in-part of abandoned application Ser. No. 878,076, Nov. 19, 1969, which is a continuation-in-part of application Ser. No. 734,212, June 4, 1968, now Patent No. 3,502,766, which in turn is a continuation-in-part of abandoned application Ser. No. 536,481, Jan. 24, 1966. This application Dec. 6, 1971, Ser. No. 205,161

Claims priority, application Japan, Jan. 28, 1965, 40/4,857; Feb. 25, 1965, 40/10,484; Dec. 29, 1967, 43/85,026

Int. Cl. B32b *27/16*

U.S. Cl. 161—1 **4 Claims**

This invention relates to very thin polyamide films having high purity and transparency, high tensile strength, and other improved properties.

3,794,548

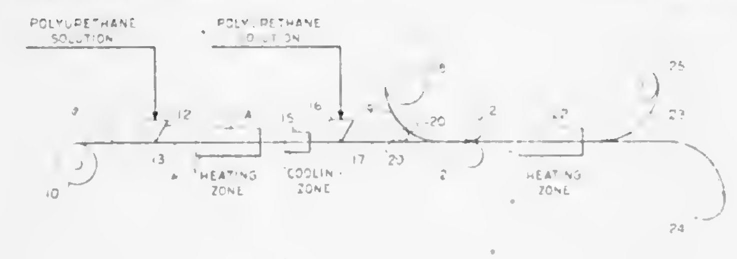
METHOD OF INTRODUCING BREATHABILITY TO A NON-POROUS CONTINUOUS PLASTIC FILM

Christian Wirth, Mount Holly, N.J., and George J. Albi, Far Rockaway, N.Y.; said Christian Wirth assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of abandoned application Ser. No. 25,122, Apr. 2, 1970. This application Dec. 27, 1971, Ser. No. 212,041

Int. Cl. B32b *3/00*

U.S. Cl. 161—89 **17 Claims**



A porous, breathable, polymer film is produced by forming a substantially non-porous continuous polymer film on a support member, applying a layer of film-forming polymer composition to said non-porous film; and heating the resulting structure above the softening point of the non porous film to form a unitary, porous breathable article comprised of both polymer layers. The first polymer film can be formed by applying to the support member a layer of a first film-forming flexible polyurethane solution comprising a polyurethane composition and diluent therefor. The support member can be stripped from the first polymer film. Coated fabrics can also be produced by applying a fabric material to the second layer before heating the resulting structure to form the unitary porous, breathable article.

3,794,549

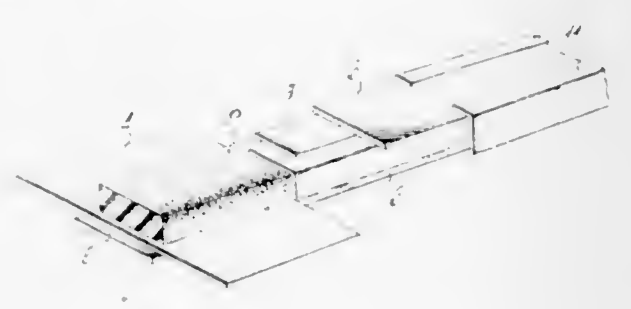
FOAM SEALING MATERIAL WITH REMOVABLE WRAPPING

Georg Schroteler, Dusseldorf-Benrath, Germany, assignor to Firma Chemiefac GmbH, Dusseldorf-Reisholz, Germany

Filed Aug. 9, 1972, Ser. No. 279,226

Int. Cl. B32b *3/26, 5/18, 7/06*

U.S. Cl. 161—43 **10 Claims**



A foam strip sealing material impregnated with an adhesive having long lasting plastic properties capable of retention of the foam strip material in a compressed state prior to its use in combination with a wrapping means removably surrounding the compressed foam strip material and which has a first layer of silicon paper having a silicon coating on both of its sides, a rigid outer cover of non-sticking synthetic material into which the foam strip with the silicon paper thereon is slidably and removably inserted.

3,794,550

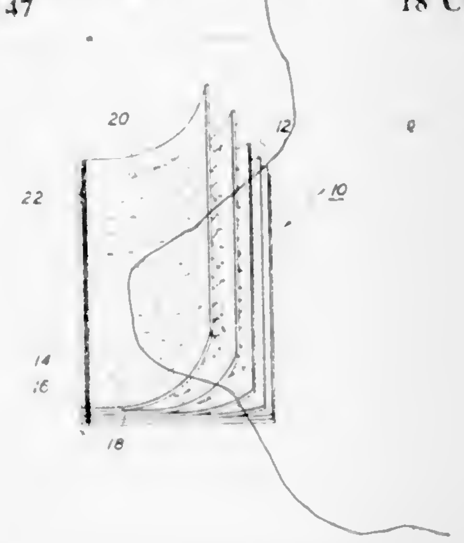
SHEET BINDING

Gordon P. Taillie, Rochester, N.Y., assignor to Standard Oil Company, Chicago, Ill.

Filed Aug. 25, 1972, Ser. No. 283,676

Int. Cl. B32b *3/00, 7/14*

U.S. Cl. 161—147 **18 Claims**



Sheet binding where the printing medium itself is the sheet binder. In a xerographic process, high density areas

of the toner are provided at desired binding areas. These toner binding areas may then be subsequently refused between adjacent overlaying sheets to provide bound stacks without requiring any separate or additional binding materials.

3,794,551

PRECOMPRESSED CERAMIC FOR LIGHT ARMOR

Richard L. Landingham, Livermore, and Carl F. Cline, Walnut Creek, Calif., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Feb. 7, 1972, Ser. No. 224,243

Int. Cl. B32b *5/12*

U.S. Cl. 161—58 **4 Claims**

A precompressed ceramic sheet material suitable for use in light personal armor applications, and processes for the formation thereof. A fine wire metallic network is embedded in a matrix of ceramic material and heated to an elevated temperature. Upon cooling, the thermal contraction differences between the fine wire and the ceramic matrix compressively stresses the ceramic matrix to greatly increase the fracture resistance and strength of the ceramic sheet material.

3,794,552

LAMINATING MATERIALS FOR LOW PRESSURE LAMINATES, METHOD OF MAKING SAME, AND LAMINATES THEREOF

Robert L. Schmidt, St. Charles, Ill., assignor to Riverside Laboratories, Inc., Geneva, Ill.

No Drawing. Filed July 12, 1971, Ser. No. 161,896

Int. Cl. B32b *27/10*

U.S. Cl. 161—232 **25 Claims**

This invention relates to improved laminating materials, especially saturating paper, containing diacetone acrylamide, or an analogue or methylolated derivative thereof (DAA), which are especially useful in the production of low-pressure laminated structures as exemplified by low-pressure polyester laminates. The improved laminating materials, e.g., saturating paper, are characterized by a high degree of water-resistance imparted to low-pressure laminates embodying the same, as well as by ease and uniformity of saturation with the laminating resin and by uniformity of color of the ultimate laminate as well as the laminating material, e.g., the saturating paper itself. The disclosure also relates to corresponding resin-saturated laminating materials ("prepregs"), a method of making such improved laminating materials, and laminates thereof having such superior water-resistance.

3,794,553

VARICOLORED ORNAMENTALLY DESIGNED NEEDLED NON-WOVEN FABRICS

Herbert Loebner, Kempen, Germany, assignor to Cikalon-Vliesstoffwerk G.m.b.H., Kempen-Niederrhine, Germany

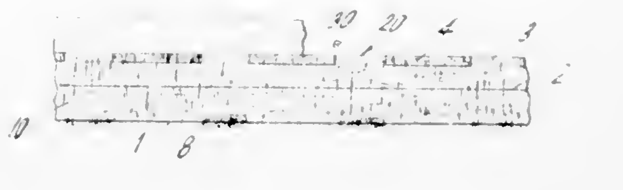
Continuation-in-part of application Ser. No. 3,976, Jan. 14, 1970, now Patent No. 3,705,064. This application Feb. 29, 1972, Ser. No. 230,368

Claims priority, application Germany, Jan. 15, 1969, P 19 01 753.9

Int. Cl. B32b *7/08, 7/14*

U.S. Cl. 161—148 **4 Claims**

A needled, ornamentally patterned non-woven pile fabric is disclosed. The fabric comprises a first needled non-woven web having a face side and a rear side, said first needled web being of a single color or of blended color and a second needled non-woven web situated on the rear side of said first web and having a color contrasting from the color of said first web, said second web having glued areas and unglued areas with the contours of the glued areas corresponding to a desired pattern. The first and second non-woven webs are needled together with fibers of the unglued areas of said second web penetrating through said first web to form a pile on the face side of said first web while fibers of the glued areas of said second web are intermingled with fibers of said first web without substantial pile formation, whereby a pattern is formed on the face side of said first web.



3,794,554

SEWING TAPE

Alfred B. Caring, Oceanside, N.Y., assignor to Belding Heminway Company, Inc., New York, N.Y.

Filed June 19, 1972, Ser. No. 263,799

Int. Cl. B32b *3/10*

U.S. Cl. 161—109 **3 Claims**

The sewing tape consists of a strip of thin flexible material having adhesive material on one surface thereof and a plurality of longitudinally extending lines of perforations. The lines are spaced $^1/_{16}$" apart and the perforations in each of the lines are spaced $^1/_{16}$" apart and in registration with the perforations in the other lines so that the perforations form both longitudinal and transverse lines spaced $^1/_{16}$" apart on the tape. Certain of the longitudinal lines of perforations are marked with longitudinal guide lines spaced given distances greater than $^1/_{16}$" apart, and certain of the transverse lines of perforations are marked with transverse guide lines spaced given distances greater than $^1/_{16}$" apart and extending in alternate fashion from opposite edges of the tape for distances less than the width of the tape. Each repeat length of the tape is composed of two sections having body portions similarly marked as aforesaid, and having end portions provided with guide lines forming continuations of said longitudinal guide lines, but of varying lengths and terminating in transverse guide lines extending to a longitudinal edge of the tape; such transverse lines in one end portion extending to one longitudinal tape edge and the transverse lines in the other end portion extending to the other longitudinal tape edge.

3,794,555

temperature above the gelatinizing temperature of the

as an additive for medicated wines and other edible prod-

municipal wastes, wherein the materials are heated directly

3,794,555
GLASS-EPOXY LAMINATES FOR HIGH TEMPERATURE USE

Zal N. Sanjana, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 16, 1971, Ser. No. 199,167
Int. Cl. B32b *27/38;* **C09j** *3/14*
U.S. Cl. 161—185 9 Claims

A laminate is made comprising a plurality of bonded layers of sheet material impregnated with a cured resinous composition, comprising a cured admixture of a liquid low viscosity epoxy resin, NADIC methyl anhydride and benzophenone-tetracarboxylic dianhydride.

3,794,556
PRIMER COMPOSITION FOR ADHERING SILICONE ELASTOMER TO SUBSTRATES

Donald G. Young, Glendale, Ky.; assignor to Dow Corning Corporation, Midland, Mich.
No Drawing. Application Dec. 30, 1970, Ser. No. 103,004, now Patent No. 3,671,483, which is a continuation-in-part of abandoned application Ser. No. 30,346, Apr. 20, 1970. Divided and this application Jan. 31, 1972, Ser. No. 222,401
Int. Cl. B32b *25/20*
U.S. Cl. 161—206 2 Claims

A mixture of tetraalkoxysilane or partial hydrolyzate thereof, a tetraalkyltitanate, a compound of the formula $CF_3CH_2CH_2Si[OSi(CH_3)_2X]_3$ where X is a hydrogen atom or $—CH_2CH_2Si(OOCCH_3)_3$ and at least one X is a $—CH_2CH_2Si(OOCCH_3)_3$ and an organic solvent is useful as a primer in adhering silicone elastomer to substrates such as epoxy resins and polyurethane. An example of the primer is one part each of ethylpolysilicate, tetrabutyltitanate and

$$CF_3CH_2CH_2Si[OSi(CH_3)_2CH_2CH_2Si(OOCCH_3)_3]_3$$

and ten parts of acetone.

3,794,557
METHOD OF MAKING ISOTROPIC FIBROUS WEBS CONTAINING TEXTILE LENGTH FIBERS

Carlyle Harmon, Scotch Plains, N.J., assignor to Johnson & Johnson
Filed Mar. 26, 1969, Ser. No. 810,573
Int. Cl. D21h *5/12*
U.S. Cl. 162—157 C 1 Claim

Fibrous webs containing textile length rayon fibers which are substantially straight and unidirectional and have few, if any, portions which sharply reverse in direction, said fibers having a denier of less than about 3 and preferably about 1½ or 1 and a length of at least about ½ inch and preferably at least about ¾ inch or 1 inch, said fibrous webs being made by adding said textile length rayon fibers to aqueous media containing a synthetic, extremely high molecular weight, linear polymeric, water soluble, hydrophilic dispersing agent to form an aqueous fiber slurry, and forming a fibrous web from said aqueous fiber slurry on paper making equipment, said fibrous webs being isotropic and possessing excellent uniformity insofar as density and appearance are concerned, and well suited for further processing into nonwoven fabrics having excellent tear resistance and tensile strength.

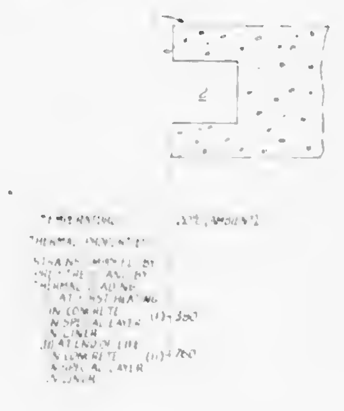
3,794,558
LOADING OF PAPER FURNISHES WITH GELATINIZABLE MATERIAL

Sangho E. Back, Vancouver, Wash., assignor to Crown Zellerbach Corporation, San Francisco, Calif.
Filed June 19, 1969, Ser. No. 834,790
Int. Cl. D21d *3/28*
U.S. Cl. 162—175 14 Claims

A method of preparing a paper pulp is disclosed where an uncooked starch or starch derivative is added to a cellulosic fiber pulp and the pulp is further refined at a temperature above the gelatinizing temperature of the starch additive so that the starch additive is gelatinized in situ in the refiner. A method of making paper products from the treated pulp is also disclosed.

3,794,559
PRESSURE VESSELS

Ivor Llewellyn Davies, High Wycombe, and Reginald Edwin Downton Burrow, London, England, assignors to Taylor Woodrow Construction Limited, Middlesex, England
Filed July 27, 1971, Ser. No. 166,351
Claims priority, application Great Britain, July 29, 1970, 36,797/70
Int. Cl. G21c *13/08*
U.S. Cl. 176—87 6 Claims



A concrete pressure vessel having a lined cavity for hot, chemically aggressive liquid disposed within a cooling jacket with a layer of material of high thermal conductivity between the cavity liner and the cooling jacket, the jacket and high thermally conductive layer serving to maintain the temperature of the cavity liner within closely controlled limits and the maximum temperature of the main body of the vessel at an acceptable level, and the jacket and the conductive layer also serving to prevent leakage of liquid from the cavity.

3,794,560
FUEL SPHERE PILE REACTOR

Franz Rohr, Lange Zeile 64, Erlangen, Germany
Filed Nov. 24, 1971, Ser. No. 201,580
Claims priority, application Germany, Nov. 26, 1970, P 20 58 158.2
Int. Cl. G21c *3/04*
U.S. Cl. 176—81 1 Claim

Fuel sphere pile reactor including a pile of nuclear fuel elements each formed of a spherical first container wherein nuclear fuel is received, each of the fuel elements being received in a second container having at least an outer spherical shape and having an inner volume greater than the volume of the first container, the second container being formed with perforations for admitting coolant to the interior of the second container to be received therein in addition to the first container.

3,794,561
BIOLOGICALLY ACTIVE PEPTIDE AND METHOD OF PREPARING THE SAME

Hidehiko Matsukawa, % Tsukasa Sasaki, 139 Suwamachi; Haruo Ito, 1–4 Misumicho; and Taneko Suzuki, 18–13, 7-chome, Nishi Shinjuku, all of Tokyo, Japan
Filed Apr. 3, 1972, Ser. No. 240,485
Claims priority, application Japan, Sept. 30, 1971, 46/76,596, 46/76,597, 46/76,598, 46/76,599, 46/76,600
Int. Cl. C12d *1/00*
U.S. Cl. 195—29 R 8 Claims

The novel biologically active peptide valuable as an adjuvant for various medicaments and cosmetics as well as an additive for medicated wines and other edible products is prepared from the skeletal muscles or visceral muscles of the animals of the family Cervoidea such as *Rangifer tarandus* by decomposing the raw materials into low molecular weight peptides with a protease and collecting the active water-soluble portions therefrom by means of a molecular sieve or an ion-exchange resin.

3,794,562
PROCESS FOR THE ENRICHMENT OF PROTEINS USING POLYETHYLENE-IMINE

Hans Ulrich Bergmeyer and Gotthilf Naher, Tutzing, Upper Bavaria, Gunter Weimann, Percha, Upper Bavaria, and Waldemar Thum, Tutzing-Unterzeismering, Germany, assignors to Boehringer Mannheim G.m.b.H
No Drawing. Continuation of application Ser. No. 101,158, Dec. 23, 1970. This application Nov. 13, 1972, Ser. No. 306,124
Claims priority, application Germany, Jan. 16, 1970, P 20 01 902.7
Int. Cl. C07g *7/02*
U.S. Cl. 195—66 R 12 Claims

Dissolved proteins are enriched by use of polyethyleneimine, in enrichment processes such as precipitation, purification and fractionation of proteins.

3,794,563
PREPARATION OF IMMOBILIZED ENZYMES

Sidney Alan Barker and John Frederick Kennedy, Birmingham, and John Epton, Stourbridge, England, assignors to Aspro-Nicholas Limited, Slough, Buckinghamshire, England
No Drawing. Filed Aug. 18, 1972, Ser. No. 281,854
Claims priority, application Great Britain, Sept. 1, 1971, 40,859/71; Nov. 17, 1971, 53,320/71
Int. Cl. C07g *7/02*
U.S. Cl. 195—63 9 Claims

Biologically active proteins are supported on polymers having chelating sites defined by pairs of adjacent hydroxy and carboxylic acid groups. Preferred polymers are poly-N-acryloyl-aminosalicylic acids. The protein can be complexed with the polymer by mixing together in aqueous media.

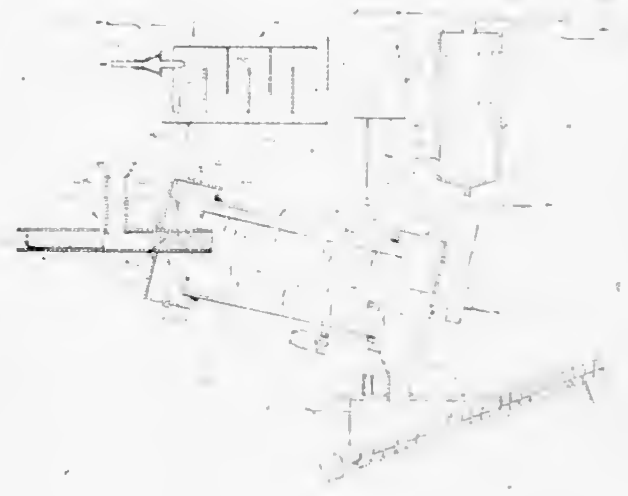
3,794,564
PROCESS FOR THE PRODUCTION OF ANTICAPSIN

David H. Lively, Ramesh M. Shah, and John G. Whitney, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
Continuation-in-part of abandoned application Ser. No. 782,980, Dec. 11, 1968. This application Dec. 29, 1969, Ser. No. 888,878
Int. Cl. C12d *9/00*
U.S. Cl. 195—80 R 3 Claims

Anticapsin is an antibiotic having antibacterial and anticapsular activity, which inhibits the synthesis of hyaluronic acid, and which is useful as a potentiating agent for certain antibiotics. Anticapsin is produced by the fermentation of *Streptomyces griseoplanus.*

3,794,565
APPARATUS FOR PROCESSING HEAT-DECOMPOSABLE NON-GASEOUS MATERIALS

Edward T. Bielski, 9362 Hazelridge, Sappington, Mo. 63126; Daryl L. Lackey, 18 Glen Cove Drive, Chesterfield, Mo. 63017; and Russell V. Theiss, 1071 Ferngate Lane, St. Louis, Mo. 63141
Continuation-in-part of abandoned application Ser. No. 54,495, July 13, 1970. This application Dec. 22, 1971, Ser. No. 210,655
Int. Cl. C10b *21/00, 49/02*
U.S. Cl. 202—100 18 Claims



Method and apparatus for processing heat decomposable liquids or solid materials, such as industrial and municipal wastes, wherein the materials are heated directly by convection and preferably also by radiation from an open flame to effect pyrolysis. Means are disclosed for assisting in the transfer by conduction of additional heat energy to the materials being processed, and to effect combustion of a portion of the decomposition gases produced by pyrolysis as the decomposition gases are formed. A separate chamber is provided for complete oxidation of decomposition gases which are not oxidized as formed. Also disclosed is a system for handling quench, washer, and spray tower liquids to avoid any liquid waste being discharged to the sewer and to avoid the formation of a steam plume from the apparatus.

3,794,566
VAPOR-LIQUID EQUILIBRIUM STILL

Johan D. Raal, Kingston, Ontario, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada
Filed Oct. 28, 1971, Ser. No. 193,531
Int. Cl. B01d *3/42*
U.S. Cl. 202—160 6 Claims

In a vapor-liquid equilibrium still, heated liquid and vapor is conveyed from a heating chamber upwardly, in the manner of a Cottrell pump, around an inner equilibrium chamber to a heated liquid trap above the inner equilibrium chamber. Vapor from the heated liquid trap is bubbled through liquid in the inner equilibrium chamber, whilst liquid from the heated liquid trap is returned to the heating chamber. The heated liquid and vapor conveyed upwardly around the inner equilibrium chamber provides a thermal envelope thereardound and ensures truly adiabatic conditions in the inner equilibrium chamber.

3,794,567
STABILIZATION OF UNSATURATED ACIDS BY DISTILLATION WITH A COMBINED POLYMERIZATION INHIBITOR

Susumu Otsuki, Kyoichi Hori, and Isao Miyanohara, Shin Nanyo, Japan, assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Jan. 6, 1972, Ser. No. 215,902
Int. Cl. C07c *57/04;* **B01d** *3/00*

U.S. Cl. 203—8 **6 Claims**

A process is provided for inhibiting polymerization of a polymerizable unsaturated acid such as acrylic acid, and a process for stabilizing distillation of a polymerizable unsaturated acid such as acrylic acid, using a combination of polymerization inhibitors, i.e., benzoquinone and hydroquinone monomethyl ether and preferably with air (or oxygen) present in specified amounts. The process is also useful with other acids such as methacrylic acid.

3,794,568
SEPARATION OF METHANOL AND METHYLENE BROMIDE BY EXTRACTIVE DISTILLATION WITH ETHYLENE BROMIDE

George A. Daniels and James A. Wingate, Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Aug. 28, 1972, Ser. No. 284,262
Int. Cl. B01d *3/40*

U.S. Cl. 203—67 **2 Claims**

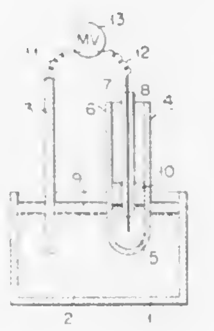
Methylene bromide and methanol form an azeotrope upon distillation. However, they can be separated by extractive distillation in the presence of ethylene dibromide.

3,794,569
METHOD FOR QUICK QUANTITATIVE ANALYSIS OF THE CONTENT OF METALLIC ALUMINIUM IN A BATH OF MOLTEN METALS

Yoshihiko Kawai, Yokohama, and Mutsumi Ihida, Tokyo, Japan, assignors to Nippon-Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 23, 1973, Ser. No. 344,286
Claims priority, application Japan, Apr. 31, 1972, 47/32,473
Int. Cl. G01n *27/46*

U.S. Cl. 204—1 T **5 Claims**



The above-mentioned method which comprises dipping the lower end portion of a nonmeltable electrode rod as one single electrode in a bath of molten metal containing metallic aluminium; dipping in said bath as the other single electrode the lower end portion of a standard electrode device having a solid electrolyte of aluminium used as an operating medium; determining at the known bath temperature the potential difference between both single electrodes constituting a concentration cell having aluminium ions used as an operating medium; and immediately finding the percentage content of metallic aluminium in said bath by reference to a calibration graph prepared by operating the same type of concentration cell as described above containing the different known concentrations of aluminium under the same conditions each time.

3,794,570
ELECTROPLATING CHROMIUM WITH A NON-CONSUMABLE CHROME PLATING ANODE

Howard Manko, Teaneck, and James Langan, Bayonne, N.J., assignors to Alpha Metals, Inc., Hudson County, N.J.

No Drawing. Filed Aug. 11, 1972, Ser. No. 279,947
Int. Cl. C23b *5/06*

U.S. Cl. 204—51 **4 Claims**

A non-consumable chrome plating anode which is an anode shaped lead body, with not less than 20 p.p.m. calcium and up to approximately 3% tin alloyed with the lead.

3,794,571
REGENERATION OF FERRIC CHLORIDE COPPER ETCHING SOLUTIONS

Stanley J. Beyer and Robert M. Lukes, Louisville, Ky., assignors to General Electric Company

No Drawing. Filed May 10, 1971, Ser. No. 142,065
Int. Cl. C22d *1/16;* **C01g** *47/10*

U.S. Cl. 204—94 **3 Claims**

Electrolytic regeneration of ferric chloride copper etch solutions under electrolytic and concentration conditions effecting formation of chlorine atoms at the anode for oxidation of ferrous ions in the solution to ferric ions.

3,794,572
PROCESS FOR COATING STEEL

Hidehisa Yamagishi and Hiroshi Takano, Kawasaki, Japan (both % Nippon Kokan Kabushiki Kaisha Technical Institute, 2730 Minamiwataridachio, Kawasaki-shi, Kanagawa-ken, Japan)

No Drawing. Filed June 1, 1970, Ser. No. 42,505
Claims priority, application Japan, Apr. 28, 1967, 42/27,117
Int. Cl. C23b *11/02*

U.S. Cl. 204—56 R **10 Claims**

Process for depositing chromium hydroxide on steel is provided. A small amount of one or more of a thiosulfate, dithionite, bisulfite, sulfite, thiosulfite, pyrosulfite, sulfide, as an auxiliary agent is added to a main electrolyte solution of chromic acid and a cathode electrolytic reduction thereof is carried out in a conventional cell.

3,794,573
METHOD FOR THE PRODUCTION OF L-ASCORBIC ACID

Hideo Matsumaru, Ashiya, and Nobuyoshi Hayashi, Suita, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed May 27, 1971, Ser. No. 147,659
Claims priority, application Japan, June 16, 1970, 45/52,011
Int. Cl. B01j *1/10;* **C07d** *5/12*

U.S. Cl. 204—159 **10 Claims**

Process for producing L-ascorbic acid (vitamin C) by irradiating electromagnetic waves, particularly γ-ray, to a solution containing L-sorbose and/or L-tagatose.

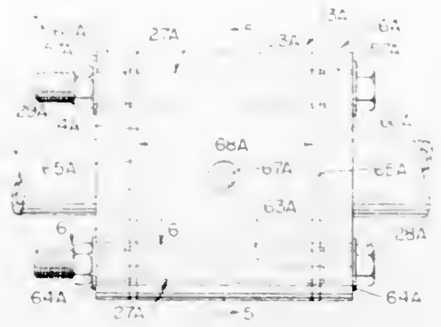
3,794,574
DEVICE FOR CATHODICALLY PROTECTING METAL CONDUIT SYSTEM

Donald A. Fauth, Bon Air, and Ramon T. Lindberg, Richmond, Va., assignors to the United States of America as represented by the Secretary of the Interior

Filed Apr. 27, 1972, Ser. No. 247,988
Int. Cl. C23f *13/00*

U.S. Cl. 204—197 **3 Claims**

A metal conduit system particularly adapted to flow an electrolyte therethrough is provided with a sacrificial anode having an inside tubular surface adapted to receive the electrolyte against substantially its entire area and



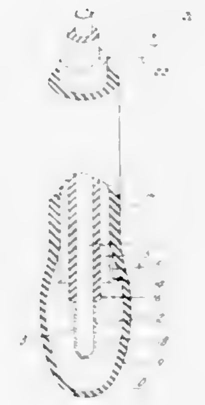
such anode serves as a containment member for the electrolyte.

3,794,575
OXYGEN SENSOR

Leonard W. Niedrach and Willard T. Grubb, Schenectady, N.Y., assignors to General Electric Company

Filed Oct. 30, 1972, Ser. No. 301,987
Int. Cl. G01n *27/46*

U.S. Cl. 204—195 P **9 Claims**



An oxygen sensor has a first electrode of a corrodible metallic base member, a second electrode of a noble metal coupled electrically to the metal of the first electrode, a third electrode surrounding at least a portion of the metal of the first electrode, the third electrode comprising silver with at least a partial layer of silver halide thereon, a first layer of electrical insulation disposed between the first and third electrodes, a second layer of electrical insulation disposed over the third electrode, an aqueous electrolyte contacting at least a portion of the first electrode, the second electrode, and the silver halide layer of the third electrode, and an outer sheath of oxygen permeable ion-impermeable diffusion barrier material encapsulating at least the electrolyte, and the portions of the first electrode, the second electrode, and the silver halide layer of the third electrode in contact with the electrolyte.

3,794,576
EPOXIDE BLEND RADIATION SENSITIVE CATALYST PRECURSOR

William Russell Watt, Princeton Junction, N.J., assignor to American Can Company, Greenwich, Conn.

No Drawing. Filed May 18, 1971, Ser. No. 144,668
Int. Cl. C08g *45/00*

U.S. Cl. 204—159.11 **14 Claims**

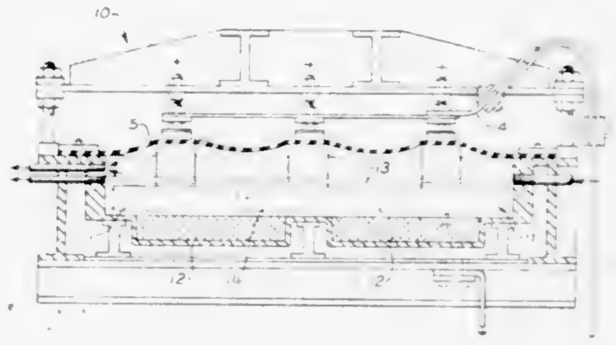
A blend of epoxide materials is provided which, although essentially free of volatile solvents, is liquid and tractable for coating and related applications at or near room temperature. The epoxide materials include an epoxy prepolymer of the type of glycidyl-bisphenol A resins, epoxidized novolaks, polyglycidyl ethers, and alicyclic diepoxides, blended with a bis(epoxycycloalkyl) ester and in many cases also with a low viscosity monoepoxide in limited proportions. The compositions preferably include additionally a cationic polymerization initiator, preferably a radiation-sensitive catalyst precursor, and epoxide polymers are produced by coating such compositions on a substrate, followed by application of energy, through heating or preferably through irradiation, to effect substantial polymerization of the epoxidic materials of the coating.

3,794,577
FLEXIBLE COVER FOR AN ELECTROLYTIC CELL

Brian H. Oliver, Cuyahoga Falls, and Harry S. Custer, Barberton, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 9, 1972, Ser. No. 251,827
Int. Cl. B01k *3/00;* **C22d** *1/04*

U.S. Cl. 204—219 **16 Claims**



A flexible fluid impermeable elastomeric cover particularly for an electrolytic chlorine cell of the mercury type. The cover is comprised of a first vulcanized rubbery polymer contacted by the hot wet chlorine gas atmosphere originating within the cell and a second vulcanized rubbery polymer resistant to the permeation of fluids, heat and high ozone concentrations which is contacted by the oxygen and ozone atmosphere originating outside the cell. The first polymer is preferably polyisoprene and the second polymer is butyl, chlorobutyl, bromobutyl rubber or chlorosulfonated polyethylene. The cover may be at least a single layer of a vulcanized blend of the first and second polymer or a composite laminate comprised of separate layers of blend and/or the first and second polymers.

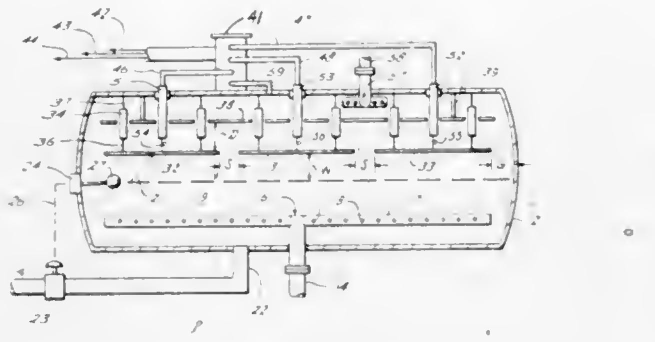
3,794,578
THREE PHASE ENERGIZED ELECTRICAL TREATER

Frederick D. Watson, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Dec. 26, 1972, Ser. No. 317,914
Int. Cl. B03c *5/00, 5/02*

U.S. Cl. 204—305 **13 Claims**

An electrical field treater operating from three phase AC current for resolving a dispersion formed of a continuous oil phase containing a dispersed water phase. The treater comprises a metal vessel which includes a dispersion inlet and outlets to remove the continuous oil phase and coalesced water phase. A transformer arrangement, energized from three phase AC current, provides in three secondary windings elevated voltages for energizing three electrodes mounted in electrical isolation within the vessel. Two of the secondary windings are phased 120° apart and energize the electrodes mounted to each side of the third electrode. The third electrode is energized by a third secondary winding which is phased 60° apart from the other two secondary windings. High tension conductors interconnect the secondary windings with the electrodes. As a



result, the side positioned electrodes are energized to substantially the same potential magnitude relative to the third electrode, and all electrodes are at the same potential relative to the metal sidewalls of the vessel.

ERRATUM

For Class 204—181 see:
Patent No. 3,794,593

3,794,579

PROCESS FOR TREATING BY-PRODUCT OILS PRODUCED IN THE PRODUCTION OF OLEFINS

Satoru Enomoto, Kanagawa, and Masaaki Takahashi, Tokyo, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Chuo-ku, Tokyo, Japan

Filed Dec. 29, 1972, Ser. No. 319,138
Claims priority, application Japan, Dec. 29, 1971, 47/3,584
Int. Cl. C10c *3/00*
U.S. Cl. 208—40 **10 Claims**

Thermally stabilized oil fractions and pitch fractions are obtained from by-product oils in the production of olefins which comprises heating the by-product oils at 400–600° C. for 10–1200 seconds under a pressure of 20–2000 kg./cm.^{2} to form thermally stabilized oil fractions and residue fractions and then treating the residue fractions at 300–480° C., under a pressure of from normal pressure to 50 kg./cm.^{2} for 1–10 hours to provide useful pitch fractions.

3,794,580

HYDROCRACKING PROCESS

Peter Ladeur, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Feb. 26, 1973, Ser. No. 336,154
Claims priority, application Great Britain, Mar. 7, 1972, 10,522/72
Int. Cl. C10g *13/02, 37/10*
U.S. Cl. 208—110 **8 Claims**

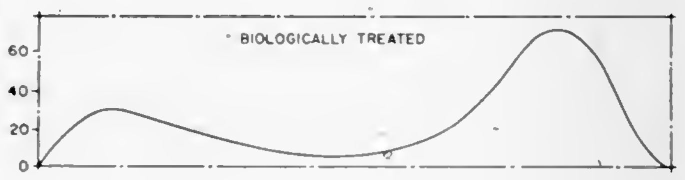
A catalytic hydrocracking process for producing high viscosity index lubricating oils by contacting a mixture of heavy hydrocarbons having a nitrogen content less than 3000 p.p.m.w. with a catalyst in the presence of hydrogen under hydrocracking conditions and adding to said mixture of hydrocarbons up to about 3000 p.p.m.w. of ammonia or a nitrogen compound which yields ammonia under the conditions of the process.

3,794,581

WASTEWATER TREATMENT

Mathew M. Zuckerman, Palo Alto, Calif., and Alan H. Molof, New City, N.Y., assignors to Envirotech Corporation, Salt Lake City, Utah

Continuation-in-part of application Ser. No. 768,378, Oct. 17, 1968, now Patent No. 3,635,817, which is a continuation-in-part of application Ser. No. 824,709, May 14, 1969, now Patent No. 3,676,334. This application Jan. 17, 1972, Ser. No. 218,254
Int. Cl. C02c *5/02*
U.S. Cl. 210—9 **13 Claims**



A treatment sequence for raw wastewater of a type which includes a high proportion of a poorly sorbable material comprising biological treatment, hydrolysis and adsorption of either a physical or biological type. During biological treatment one portion of the poorly sorbable material is respired while another portion is converted into a high molecular weight material. During hydrolysis, the latter material is converted into a low molecular weight material of substantially improved sorbability in comparison to the porly adsorbable material originally in the raw wastewater.

3,794,582

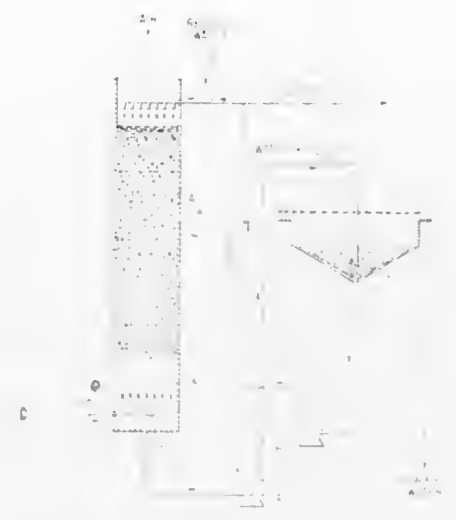
PROCESS FOR AERATING BIOLOGICAL SUSPENSIONS

Claude Lackme, Grenoble, Albert Digonnet, Montfleury, Louis Colas, Lyon, Jean Boutin, Mions, Jean-Pierre Dal Pont, Pont-de-Claix, and Bernard Papillon, La Mulatiere, France, assignors to Rhone-Progil, Paris, France

Filed Apr. 10, 1972, Ser. No. 242,394
Claims priority, application France, Apr. 9, 1971, 7113839
Int. Cl. C02c *1/04*
U.S. Cl. 210—11 **17 Claims**

A process for introducing a gas into a suspension of microorganisms wherein a dense bed of introduced gas and liquid microorganism suspension is created in the upper zone of a treatment receptacle by counter-currently introducing a uniform dispersion of a gas at a constant rate into the base of a treatment receptacle having dispersed therein a liquid suspension containing microorganisms, which suspension is introduced at the top of said receptacle and the upper zone dense bed is separated from a less dense lower zone by an intermediate interface zone. The uppermost layer contains a greater quantity of gas than the lower layer and by continuously regulating the rate of suspension withdrawal from the receptacle there is maintained a stable densely packed bed of gas and microorganism suspension. Homogeneous distribution

of gas and the presence of a gas-rich environment resulting from the upper zone dense bed of gas and microorganisms significantly improves the efficiency of gas utilization in biological aerating systems.

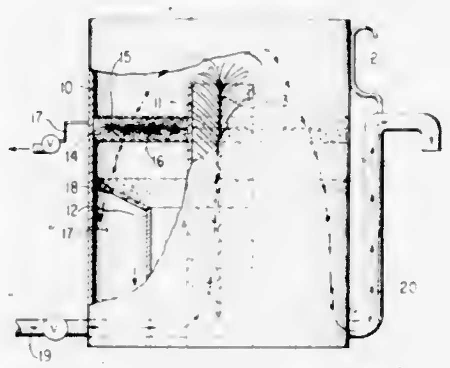


3,794,583

METHOD AND APPARATUS FOR SEPARATING OIL FROM AN OIL WATER MIXTURE

Herbert M. Rhodes, New Orleans, La., assignor to Oil Mop, Inc., New Orleans, La.

Filed Aug. 28, 1972, Ser. No. 284,089
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 **11 Claims**



The present disclosure is directed to a method and apparatus for separating oil from an oil and water mixture by first subjecting the mixture to passage through a chamber containing an oil mop structure made from fibrillated strips of polypropylene secured to a polypropylene line so that the oil will be attracted by the polypropylene strips and the water will pass through the mop structure and will thereafter be subjected to passage through a fabric membrane having a two percent fluorocarbon solution impregnating the fabric which will permit passage of the water through the membrane rejecting the oil and permitting the water to pass on and be drawn off separately from the oil which may likewise be drawn separately from the chamber.

3,794,584

REMOVAL OF POISONS AND DRUGS FROM BLOOD

Robert Kunin, Yardley, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Apr. 9, 1970, Ser. No. 27,177
Int. Cl. B01d *3/00*
U.S. Cl. 210—24 **4 Claims**

A technique is provided for the removal of poisons and/or drugs from the blood of animals. This technique includes the use of a non-ionogenic, macroreticular, cross-linked polymer or resin capable of adsorbing the toxic components from the blood.

3,794,585

LUBRICANTS COMPRISING A DIMER OR A TRIMER OF A C_{18} MONOCARBOXYLIC ACID

Clarence Liddy, Franklinville, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 114,334, Feb. 10, 1971. This application Oct. 24, 1972, Ser. No. 300,023
Int. Cl. C10m *5/26, 5/28*
U.S. Cl. 252—28 **10 Claims**

Lubricants comprising from about 8% to about 95% of a trimer or dimer of a C_{18} aliphatic monocarboxylic acid or mixtures thereof and an oleophilic surface modified clay have improved retention properties as gear lubricants.

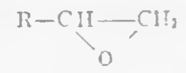
3,794,586

LUBRICATING OIL COMPOSITION

Shoji Kimura, Chigasaki, and Noboru Ishida, Sagamihara, Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

No Drawing. Filed Mar. 13, 1972, Ser. No. 234,400
Claims priority, application Japan, Mar. 18, 1971, 46/14,891
Int. Cl. C10m *1/32, 1/34*
U.S. Cl. 252—51.5 R **9 Claims**

A lubricating oil composition which is characterized by containing hydroxyalkyl-substituted polyamine prepared by reacting a polyolefin epoxide represented by the general formula



$$R-CH \underset{O}{\overset{}{-\!\!-}} CH_2$$

where R designates a branched-chain alkyl group having average molecular weight of 140 to 3000, with a polyamine selected from the group comprising alkylene-diamine, cycloalkylene-diamine, aralkyl-diamine, polyalkylene-polyamine and aromatic diamine at a temperature of 15 to 180° C.

3,794,587

SYNERGISTIC ANTISEPTIC COMPOSITIONS

Eric Jungermann, Chicago, Ill., assignor to Armour-Dial, Inc., Chicago, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 63,340, Aug. 12, 1970. This application Mar. 24, 1972, Ser. No. 237,910
Int. Cl. C11d *3/48, 9/50*
U.S. Cl. 252—107 **5 Claims**

Compositions possessing antibacterial activity through the effects of synergistic combinations of hexachlorophene and 2,4,4′-trichloro-5′-bromo-2′-hydroxydiphenyl ether.

3,794,588

HIGHLY-ACTIVE SUPPORTED CATALYSTS

Alvin B. Stiles, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 834,156, June 17, 1969, which is a continuation-in-part of application Ser. No. 631,884, Apr. 19, 1967, both now abandoned. This application Sept. 23, 1971, Ser. No. 183,282
Int. Cl. B01j *11/06, 11/08, 11/22*
U.S. Cl. 252—462 **11 Claims**

Highly-active supported catalysts are prepared by slurrying a finely divided form of the catalytic material in a solution of the nitrate salt of the metal of the catalytic material, applying the slurry to a support, particularly one having a smooth surface, drying and calcining. In a pre-

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3,794,596

calcining at a temperature below about 600° C., (d) ferred aspect, the supported catalyst also contains interspersants to stabilize the catalyst from crystal growth at high temperatures.

3,794,589
CHEMICAL COMPOSITIONS FOR GENERAL CLEANING

Adolph Fishman, 940 Oak Ave., Saint Lambert, Quebec, Canada

No Drawing. Continuation-in-part of abandoned application Ser. No. 153,101, June 14, 1971. This application Jan. 19, 1973, Ser. No. 325,153

Int. Cl. C11d *1/14, 9/14, 9/46*

U.S. Cl. 252—110 **8 Claims**

Soaped-based cleaning compositions for use in hard or soft water, sea water ,and brine are prepared by incorporation into or blending with soap minor quantities of other materials which render the natural hardness found in water harmless or even beneficial to laundering and dishwashing processes. The ratio of soap to synthetic detergent of the compositions is high to permit the cleaning effectiveness in hard or soft water, biodegradability, health hazard and non-polluting character of these compositions to be substantially that of soap when soap is used in soft water. In one embodiment of the invention the composition contains 90 to 95 percent of soap and about 5 to 10 percent of an alkyl sulfate-free higher alcohol mixture in which the free higher alcohol content of the mixture is from about 5 to 15 percent. Another embodiment provides a composition containing 76–94 parts soap, 5 to 10 parts alkyl sulfate-free higher alcohol mixture, 2 to 4 parts of another synthetic detergent surfactant, 2 to 8 parts of a sodium polyphosphate, and 2 to 12 parts of an inorganic salt.

3,794,590
NOVEL DRY CLEANING MIXTURE

Oliver A. Barton, Florham Park, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed June 29, 1971, Ser. No. 158,129

Int. Cl. C11d *7/52*

U.S. Cl. 252—170 **6 Claims**

Mixtures comprising water, tertiary amyl alcohol and tetrachlorodifluoroethane which, over substantially the entire course of their evaporation or distillation, form azeotropic non-flammable vapors containing tertiary amyl alcohol and tetrachlorodifluoroethane. These mixtures are useful in dry cleaning textile fabrics and fibers with reduced hazard of fire.

3,794,591
SEQUESTERING AGENT SOLUTIONS STABILIZED WITH LITHIUM IONS

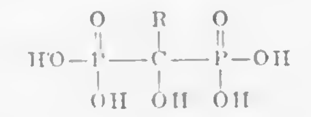
Jesse L. Brown, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Feb. 8, 1972, Ser. No. 224,627

Int. Cl. C02b *1/00, 5/02*

U.S. Cl. 252—178 **11 Claims**

The incorporation of small amounts of lithium ion into a solution of a heavy metal sequestering agent of the formula:



$$\mathrm{HO-P(=O)(OH)-C(R)(OH)-P(=O)(OH)-OH}$$

wherein R is a lower alkyl radical having from 1 to 5 carbon atoms, inhibits the formation of the white precipitate characteristically produced when sequestrants of this type are used to sequester ions of heavy metals such as calcium. Alkali metal, ammonium and ethanolamine salts of compounds of the above formula and mono and dialkyl esters thereof with methanol, ethanol, propanol and butanol also provide useful sequestering agents.

3,794,592
POLYESTER COMPOSITION HAVING A CONTROL PEAK EXOTHERM WITH ISOCYANATE

Terence E. Winters, Mogadore, and Trent A. Sponseller, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Jan. 20, 1972, Ser. No. 219,508

Int. Cl. C08g *22/40, 22/06*

U.S Cl. 252—182 **3 Claims**

A polyester composition having an exotherm peak with 4,4′-diphenyl methane diisocyanate, 1.5 to about 5 minutes, where the polyester was prepared with a metal esterification catalyst and contains about 5 to 150 parts per million of the metal and about 5 to 150 parts per million of phosphoric acid added to said polyester to control its rate of reaction.

3,794,593
METHOD OF ELECTROPHORETICALLY COVERING HELICALLY WOUND HEATING WIRES WITH AN INSULATING LAYER

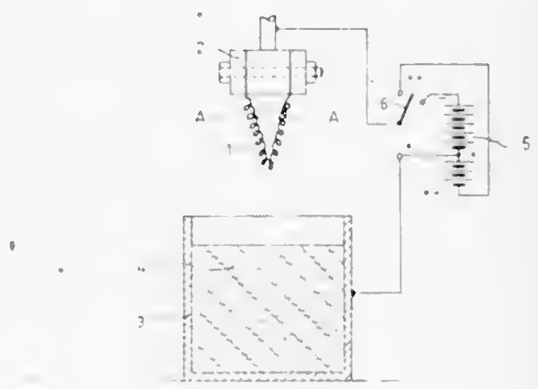
Renier Gertruda Hubertus Coenen, Adrianus Kuiper, and Maria Antonius Alphonsus Andreas Collaris, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 17, 1972, Ser. No. 281,345

Claims priority, application Netherlands, Aug. 18, 1971, 7111360

Int. Cl. B01k *5/02;* **C23b** *13/00*

U.S. Cl. 204—181 **1 Claim**



A helically wound V-shaped bent heating wire or bifilar-wound heating wire for an indirectly heated cathode is previously dipped in a liquid or connected anaphoretically and then covered in an electrophoresis bath with an insulating layer.

3,794,594
ELECTROSTATIC TONER

Shwang Hsia, New City, N.Y., assignor to Sinclair & Valentine Company, Inc., New York, N.Y.

No Drawing. Filed Nov. 26, 1969, Ser. No. 880,375

Int. Cl. G03g *9/02*

U.S. Cl. 252—62.1 **3 Claims**

An electrostatic toner comprising a multiplicity of pigmented resinous particles wherein the resin contains a polymerically plasticized copolymer of styrene and acrylonitrile.

3,794,595
WORKING OF NON-FERROUS METALS

Edwin J. Latos, Chicago, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed May 8, 1972, Ser. No. 251,308

Int. Cl. C10m *1/20*

U.S. Cl. 252—42.1 **10 Claims**

Utilizing a phenolic compound in which the hydroxyl is attached directly to the phenol nucleus as a lubricant in the working of non-ferrous metal.

3,794,596
METHOD OF AND COMPOSITION FOR THE PREVENTION OF SCALE

Jack Franklin Tate, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 831,219, June 6, 1969. This application Mar. 8, 1971, Ser. No. 122,127

Int. Cl. C10m *3/26*

U.S. Cl. 252—180 **13 Claims**

Method of and composition for the prevention of scale, particularly calcium sulfate scale, using a water soluble 1,2′-hydroxyethyl-2-hydrocarbyl - 2 - imidazoline wherein the hydrocarbyl group contains from about 12 to about 20 carbon atoms and salts thereof.

3,794,597
METHOD OF INCREASING BRIGHTNESS OF Y_2O_2S:Eu LUMINESCENT MATERIAL

Emil J. Mehalchick, Towanda, and James E. Mathers, Ulster, Pa., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

No Drawing. Filed June 7, 1972, Ser. No. 260,515

Int. Cl. C09k *1/14*

U.S. Cl. 252—301.4 S **1 Claim**

Brightness of Y_2O_2S:Eu can be increased, color purity improved and lesser amounts of Eu activator can be used, if the raw materials contain about 200 p.p.m. Hg^{+2} during the fabrication process.

3,794,598
CATALYST PREPARATION METHOD

Walter G. Schlaffer, San Francisco, Calif., assignor to Shell Oil Company, Houston, Tex.

No Drawing. Filed June 21, 1972, Ser. No. 265,048

Int. Cl. B01j *11/40*

U.S. Cl. 252—455 Z **9 Claims**

A hydroconversion catalyst including a hydrogenating metal component having an atomic number between 20 and 32 incorporated into a crystalline alumino-silicate zeolite at least partially in hydrogen (acid) form in excess of the ion-exchange capacity of the zeolite is prepared in a single reaction step by removing sufficient hydrogen ions as generated during the ion-exchange reaction to incorporate the desired amount of hydrogenating component.

3,794,599
METHOD OF PREPARING A CATALYST OF A GROUP VIII NOBLE METAL AND TIN

Frits M. Dautzenberg, Amsterdam, Netherlands, and Herman W. Kouwenhoven, Houston, Tex., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed May 15, 1972, Ser. No. 253,215

Claims priority, application Great Britain, May 21, 1971, 5,186/71

Int. Cl. B01j *11/08*

U.S. Cl. 252—466 PT **8 Claims**

Catalysts containing Group VIII noble metals and tin on a carrier are prepared by depositing tin on the carrier with an aqueous inorganic salt solution having tin present in the anion.

3,794,600
ZEOLITE-L CATALYST PREPARATION METHOD

Hans U. Schutt, Lafayette, Calif., assignor to Shell Oil Company, Houston, Tex.

No Drawing. Filed Jan. 7, 1972, Ser. No. 216,265

Int. Cl. B01j *11/40*

U.S. Cl. 252—455 Z **9 Claims**

A low alkali content crystalline alumino-silicate L-zeolite catalyst is prepared by (a) selecting a high silica-alumina content L-zeolite (Si/Al >3); (b) contacting the zeolite with an aqueous solution of an ammonium salt, (c) calcining at a temperature below about 600° C., (d) contacting the calcined zeolite with an aqueous ammonium salt solution containing chromate ions, (e) repeating steps (c) and (d) or (b) until the alkali metal content is reduced below about 0.35% wt. and the crystallinity loss is not greater than 20%, and (f) compositing the zeolite with hydrogenating-dehydrogenating metals of Group VI-B and/or Group VIII. The composite is an effective isomerization or hydrocracking catalyst.

3,794,601
ANIONIC SURFACTANT SLURRY CONTAINING DIHEXYL ETHER AS VISCOSITY REDUCER AND METHOD OF PROVIDING SAID SLURRY

Eugene F. Kennedy, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed Feb. 28, 1972, Ser. No. 230,132

Int. Cl. B01f *17/00, 17/02, 17/12*

U.S. Cl. 252—355 **8 Claims**

The viscosity of anionic surfactant slurries is reduced by admixing with such slurries an effective amount of dihexyl ether.

3,794,602
METHOD FOR IN SITU RECONDITIONING OF IRON CATALYST BED

Donald B. Bivens, Leo W. Patton, and John B. Wiggill, Orange, Tex., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 3, 1972, Ser. No. 249,761

Int. Cl. B01j *11/30;* **C07c** *85/12*

U.S. Cl. 252—412 **3 Claims**

A method for in situ reconditioning of a particulate iron catalyst in a fixed bed to remove accumulated chloride containing contaminant and fine catalyst particles deposited in the bed which comprises passing vertically upward through the catalyst bed at a superficial velocity in the range of 0.01 to 0.9 feet per second a dilute ammonium hydroxide solution.

3,794,603
ZN^{++}-BENZOTRIAZOLE-H_2SO_4 CORROSION-INHIBITOR

Cleveland O'Neal, Jr., and Joseph A. Goetz, Toledo, Ohio, assignors to The Sherwin-Williams Company, Cleveland, Ohio

No Drawing. Filed Jan. 17, 1972, Ser. No. 218,565

Int. Cl. C23f *11/10, 11/18*

U.S. Cl. 252—389 R **7 Claims**

Corrosion-inhibiting compositions of Zn^{++} cations, benzotriazole and H_2SO_4, alone or in combination with other corrosion-inhibitors are disclosed. Addition of diethylenetriaminepentaacetic acid allows formulation of a corrosion-inhibiting composition having a neutral pH.

3,794,604
DIOLEFIN POLYMERIZATION CATALYST COMPOSITION

Morford C. Throckmorton, Akron, and Robert E. Mournighan, Clinton, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 811,261, Mar. 27, 1969. This application Sept. 24, 1971, Ser. No. 183,661

Int. Cl. C08d *1/14*

U.S. Cl. 252—431 C **5 Claims**

There is disclosed a process which comprises the polymerization of at least one conjugated diolefin by contacting said conjugated diolefin, under solution polymerization conditions, with a catalyst system comprising (1) a compound selected from the groups consisting of organoaluminum compounds containing at least one carbon to

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aluminum bond, (2) an organometallic compound, the

"lower" dissociation degree of above 6 pKb, and at least

3,794,611

3,794,615

aluminum bond, (2) an organometallic compound, the metal of which is selected from the class comprising metals of Group III–B of the Periodic Table having atomic numbers of 21, 39 and 57 through 71 inclusive and (3) at least one compound containing one or more halide ions, the improvement comprising preforming and aging the catalyst system with at least one conjugated diolefin in an amount which gives a mole ratio of diolefin to Group III–B metal compound ranging from 0.2/1 to about 3000/1.

3,794,605

BUILT DETERGENT COMPOSITION CONTAINING WHITENESS MAINTENANCE ADDITIVE

Francis L. Diehl, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed July 19, 1971, Ser. No. 164,067

Int. Cl. C11d *3/34*

U.S. Cl. 252—89 10 Claims

A built detergent composition is formulated having excellent whiteness maintenance properties. The built detergent composition has included therewithin from 0.1% to 20% of a mixture of the water-soluble salts of a cellulose sulfate ester and a copolymer of a vinyl compound and maleic anhydride. The mixture of the sulfate ester and copolymer when added to a built detergent composition improves the whiteness maintenance of fabrics washed therewith over a built detergent composition containing either component alone.

3,794,606

COMPOSITION OF A POLYPHENYLENE ETHER AND AN ACRYLIC RESIN MODIFIED POLYISOPRENE

James G. Bennett, Menands, N.Y., and Robert M. Summers, Arlington, Mass., assignors to General Electric Company

No Drawing. Filed Nov. 1, 1971, Ser. No. 194,520

Int. Cl. C08c *9/14;* **C08d** *9/08*

U.S. Cl. 260—4 R 13 Claims

There are provided compositions comprising (a) a polyphenylene ether in combination with a styrene resin and (b) an interpolymerization product of an acrylic ester with a polyisoprene. The addition of the interpolymerized acrylic ester-polyisoprene to compositions of polyphenylene ethers and polystyrenes provides unexpected improvements in toughness in parts molded from the compositions, and in their resistance to gasoline. Such properties are improved with substantial enhancement in gloss and surface appearance.

3,794,607

AQUEOUS ACRYLIC RESIN ELECTRODEPOSITION COATING COMPOSITION CONTAINING A MIXTURE OF ORGANIC AMINES

Seiichi Torimitsu and Masao Takahashi, Ohtsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

No Drawing. Continuation of abandoned application Ser. No. 812,437, Apr. 1, 1969. This application Apr. 12, 1971, Ser. No. 133,330

Claims priority, application Japan, Apr. 1, 1968, 43/20,971

Int. Cl. C08f *15/40, 45/60*

U.S. Cl. 260—29.6 TA 4 Claims

Composition containing an acrylic resin having carboxylic groups, at least one organic amine having a "lower" dissociation degree of above 6 pKb, and at least one organic amine having a "higher" dissociation degree, i.e. its pKb is less than that of the above-described organic amine by two or more, is suitable for electrodeposition coating to yield an excellent coating film.

3,794,608

AQUEOUS COATING COMPOSITIONS THICKENED BY A TERPOLYMER OF AN ALKENYL AROMATIC COMPOUND, AN UNSATURATED DICARBOXYLIC ACID, AND AN ETHER OF VINYL BENZYL ALCOHOL AND AN OXYALKYLATED COMPOUND

Syamalarao Evani, Robert H. Lalk, and Terry H. Fiero, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 267,569, June 29, 1972. This application May 11, 1973, Ser. No. 359,371

Int. Cl. C08f *41/02, 47/18*

U.S. Cl. 260—29.6 RW 33 Claims

Water soluble and alkali soluble interpolymers such as styrene/maleic anhydride/nonylphenoxy (ethyleneoxy)$_{40}$ vinyl benzyl ether provide improved stability and flow and leveling properties to aqueous coating compositions containing an emulsified water insoluble vinyl addition polymer as the essential film forming component.

3,794,609

CHEMICAL RESISTANT EPOXY COMPOSITIONS CAPABLE OF ROOM TEMPERATURE CURING

Ignatius Metil, Buffalo, N.Y., assignor to Ameron, Inc., Brea, Calif.

No Drawing. Continuation of application Ser. No. 4,462, Jan. 19, 1970, which is a continuation of application Ser. No. 688,332, Dec. 6, 1967, both now abandoned. This application Sept. 22, 1972, Ser. No. 291,337

Int. Cl. C08g *51/34, 51/28, 51/26*

U.S. Cl. 260—30.4 EP 25 Claims

A room temperature cured reaction product of a resinous epoxide, a polyfunctional organic solid amine effective alone only as a high temperature curing agent for the resinous epoxide, and a solvent for the curing agent in sufficient amount to modify the action of the curing agent and allow room temperature curing to a cross-linked product possessing adequate physical properties and having chemical resistance properties comparable to that degree of chemical resistance normally associated only with resinous epoxide-amine reaction products, cured at elevated temperatures.

3,794,610

PLASTICIZED ANAEROBIC COMPOSITION

Andrew G. Bachmann, Weatogue, Conn., assignor to Loctite Corporation, Newington, Conn.

No Drawing. Filed Aug. 9, 1971, Ser. No. 170,377

Int. Cl. C08f *29/46, 29/50*

U.S. Cl. 260—31.6 10 Claims

Anaerobic compositions possessing improved properties in numerous respects are disclosed, comprising a polymerizable acrylate ester monomer, a peroxy polymerization initiator, and a polymeric plasticizer, specifically a polyester plasticizer having a molecular weight between about 2,000 and about 15,000 and which is substantially aliphatic in character.

3,794,611

PROCESS FOR OIL-EXTENDING RUBBER

George H. Brice, Augusta, N.J., assignor to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed Oct. 7, 1971, Ser. No. 192,719

Int. Cl. C08f *45/28*

U.S. Cl. 260—33.6 AQ 15 Claims

An improved process for oil-extending rubber involving (A) dissolving a small amount of the rubber (in solid, non-aqueous form) in the extender oil and (B) mixing the resulting rubber/oil premix with additional rubber in an internal mixer. The presence of rubber in the extender oil eliminates the lubricating effect of the oil and sharply reduces the time of mixing.

3,794,612

SILICONE ELASTOMERS WITH UNPRIMED ADHESION

Edwin P. Plueddemann, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Jan. 2, 1973, Ser. No. 320,375

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 SB 7 Claims

The addition of small amounts of diallylphthalate to curable silicone rubber compositions improves adhesion of the elastomer to substrates, such as wood, metal and plastics.

3,794,613

CHLORINATED POLYETHYLENE-ORGANIC POLYISOCYANATE ADHESIVE FOR LAMINATING CHLORINATED POLYOLEFIN FILM OR SHEET MATERIALS TO FABRIC

Joseph Drasner, Rockaway, NJ., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application July 20, 1970, Ser. No. 56,738, now Patent No. 3,674,597. Divided and this application Dec. 15, 1971, Ser. No. 208,435

Int. Cl. C08f *45/28, 45/30*

U.S. Cl. 260—33.6 UA 2 Claims

An improved adhesive for laminating preformed, chlorinated polyolefin film or sheet material to a fabric substrate, wherein such adhesive consists essentially of an admixture of (1) a substantially amorphous chlorinated polyethylene and (2) from about 25 to 50 parts by weight per 100 parts of (1) of an organic polyisocyanate.

3,794,614

FLAME RETARDANT PROPYLENE POLYMERS

John Versnel, Plainsboro, N.J., assignor to Cities Service Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 175,781, Aug. 20, 1971. This application Nov. 29, 1972, Ser. No. 310,516

Int. Cl. C08f *45/58, 45/62*

U.S. Cl. 260—45.75 B 10 Claims

A phosphite synergist is used to enhance the flame retardency of a polypropylene composition containing a flame retardant which has the structure of a brominated 1:1 Diels-Alder adduct of a polyhalocyclopentadiene and a polyunsaturated compound. The synergist is an organic phosphite containing not more than one aromatic radical per phosphorus atom, e.g., distearyl pentaerythritol diphosphite. When desired for further enhancement of flame retardancy, a metal oxide or other metal compound may also be incorporated.

3,794,615

MELT STABILIZED AROMATIC POLYSULPHONES WITH PHOSPHORUS COMPOUNDS

Gordon Maxwell Beverly, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Feb. 22, 1972, Ser. No. 228,260

Claims priority, application Great Britain, Mar. 10, 1971, 6,450/71, 6,452/71, 6,453/71, 6,455/71, 6,456/71, 6,457/71

Int. Cl. C08g *23/00*

U.S. Cl. 260—45.7 P 6 Claims

A thermoplastic composition comprising (a) 96 to 99.9% by weight of at least one aromatic polysulphone and (b) 4 to 0.01% by weight of at least one salt of at least one oxy-acid of phosphorus containing an alkali metal and/or alkaline earth.

3,794,616

HEAT STABILIZED COMPOSITIONS

Kent S. Dennis and Willard E. Alexander, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 29, 1971, Ser. No. 129,116

Int. Cl. C08f *45/56, 45/58*

U.S. Cl. 260—45.7 P 7 Claims

Anhydride-containing interpolymers such as a copolymer of styrene and maleic anhydride may be stabilized against thermal degradation by mixing the polymer with about 0.01 to 10 weight percent of an acid of P, S, B or Si.

3,794,617

COPOLYESTER FIBER COMPOSITIONS HAVING IMPROVED FLAME RETARDANT PROPERTIES

Harold Eugene Mains, William Leo O'Brien, H. Fred Oehlschlaeger, Hubert Joseph Sharkey, and Robert Elwood Vail, Jr., Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

No Drawing. Filed Mar. 15, 1972, Ser. No. 235,041

Int. Cl. C08g *17/08*

U.S. Cl. 260—47 C 14 Claims

Fiber-forming copolyesters having improved color and heat stability in addition to excellent flame retardant properties are obtained when brominated diols, such as 2,2-bis[3,5 - dibromo-4-(2-hydroxyethoxy)phenyl] propane, are incorporated therein.

3,794,618

NITROGEN-CONTAINING POLYCONDENSATES, A PROCESS FOR THEIR PRODUCTION AND THEIR APPLICATION

Wilhelm Rating, Wuppertal-Barmen, Arnold Dobbelstein, Wuppertal-Elberfeld, and Horst Holfort, Wuppertal-Langerfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

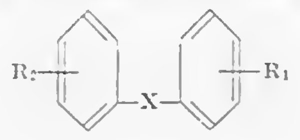
No Drawing. Continuation of abandoned application Ser. No. 884,310, Dec. 11, 1969. This application Mar. 29, 1972, Ser. No. 239,324

Int. Cl. C08g *33/02*

U.S. Cl. 260—47 C 11 Claims

Thermosetting nitrogen-containing polycondensates useful as insulating coating agents for electrical conductors comprising in condensed form

(D) n_D mol of a compound of the formula



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acetyl compound with nitrosyl chloride in an inert sol-

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and/or carbon-carbon double bond containing perfluoro-

wherein R_1=straight chain alkyl (C_{10-20}), one of R_2 and wherein X is a direct carbon to carbon bond, a bivalent C_1 to C_4 hydrocarbon radical, —S—, —SO_2—, or —O—, at least one of R_1 and R_2 is

$$—NH—CHR_3—COOH$$

wherein R_3 is hydrogen or a C_1 to C_4 monovalent hydrocarbon radical, a C_1 to C_4 monovalent hydrocarbon radical substituted by a carboxyl group and any remaining R_1 and R_2 radical is hydrogen or n_D mol of a C_1 to C_5 alkanol ester of said compound of said formula, n_D being 0.1 to 1 mol;

(C) $1-n_D$ mol of a carboxylic acid having a functionality F_C of from 2 to 4 selected from the group consisting of terephthalic acid, isophthalic acid, trimellitic acid, trimesic acid, pyromellitic acid, p-aminobenzoic acid, 3.3′.4,4′-benzophenone tetracarboxylic acid and the esters and anhydrides of said acids;

(B) n_B mol of an organic polyisocyanate or polyisothiocyanate, n_B being equal to

$$\frac{(0 \text{ to } 1.7)n_D}{F_B}$$

wherein F_B is the functionality of (B) and has a value of from 2 to 6 and

(A) (0.7 to 3.5) $(F_C-1)-n_B$ mol of a member selected from the group consisting of ethane diol, propane diol, butane diol, neopentyl glycol, di- and polyethylene glycols, di- and polypropylene glycols, 4,4′-dihydroxy-diphenyl-2-propane, 4,4′-dihydroxydicyclohexyl-2-propane, 4,4′-dihydroxyethoxy-diphenyl-2-propane, glycerol, trimethylol propane, trimethylol ethane, trishydroxyethyl isocyanurate, pentaerythritol, sorbitol, mannitol, diglycerol, dipentaerythritol, 4.4′-diaminodiphenylmethane: 4.4′-diaminodiphenylether, m- and p-phenylene diamine, bis-4-aminophenyl-1, 1-cyclohexane, 4,4′-diaminodiphenyl sulphone: 2.4-, 2.5-, and 2,6-tolylene diamine, hexamethylene diamine, m- and p-aminobenzoic acid, monoethanolamine and mixtures thereof

and process of producing same.

3,794,619

PROCESS FOR THE PREPARATION OF BIS(2,3-EPOXY - 2 - METHYLPROPYL) ETHER TYPE EPOXY RESIN

Koichi Hasegawa and Hisashi Sekiguchi, Chiba, and Hiroshi Zaitsu, Ichihara, Japan, assignors to Dainippon Ink and Chemicals, Incorporated, Tokyo, Japan

No Drawing. Filed Dec. 15, 1971, Ser. No. 208,385
Claims priority, application Japan, Dec. 17, 1970, 45/112,498
Int. Cl. C08g *30/04*
U.S. Cl. 260—47 EP **6 Claims**

A process for the preparation of bis(2,3-epoxy-2-methylpropyl)ether type epoxy resin of dehydric phenol, characterized by the concurrent usage, as the starting dihydric phenol, of less than 10 mol percent of nucleus halogen-substituted, or -unsubstituted, symmetric dihydric phenol and at least 10 mol percent of specific asymmetric dihydric phenol. The epoxy resin of this invention exhibits excellent melt-flowability when thermally melted and during processing, as well as excellent solubility, and also has very good flowability and homogeneity in the solution state.

3,794,620

PREPARATION OF AROMATIC CARBONYL HYDROXAMOYL CHLORIDES

John H. Bateman, Haverstraw, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Apr. 30, 1971, Ser. No. 139,136
Int. Cl. C07c *131/00*
U.S. Cl. 260—566 A **6 Claims**

Aromatic carbonyl hydroxamoyl chlorides are prepared by a process comprising reacting an aromatic acetyl compound with nitrosyl chloride in an inert solvent, at a temperature of from −5 to 25° C. It is of critical importance that the nitrosyl chloride be free of contaminants which interfere with said reaction. These compounds are useful as crosslinking, chain extending and/or capping agents for unsaturated polymers or polymers containing mercaptan groups.

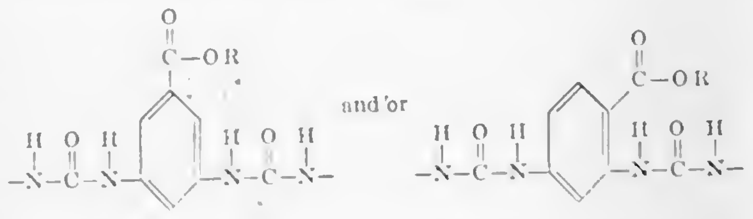
3,794,621

POLYURETHANE ELASTOMERS PREPARED FROM DIAMINO-BENZOIC ACID ESTERS

Walter Meckel, New Martinsville, W. Va., and Erwin Müller, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 20, 1971, Ser. No. 145,480
Claims priority, application Germany, May 27, 1970, P 20 25 900.1
The portion of the term of the patent subsequent to Aug. 1, 1989, has been disclaimed
Int. Cl. C08g *22/16*
U.S. Cl. 260—75 NH **4 Claims**

Polyurethane elastomers and a method for preparing them are provided wherein the polyurethane elastomers have structural units of the formula:



in which R is an alkyl radical containing from about 1 to about 20 carbon atoms which may be branched and which may contain hetero atoms if desired. The polyurethane elastomers of this invention are especially useful in the preparation of moldings which will be subjected to severe mechanical stresses such as, for example, rollers or cone belts.

3,794,622

DIVINYL ETHER-MALEIC ANHYDRIDE COPOLYMER

David S. Breslow, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Dec. 22, 1971, Ser. No. 211,045
Int. Cl. C08f *15/02*
U.S. Cl. 260—78.5 BB **1 Claim**

Uniform solid cyclic copolymers of divinyl ether and maleic anhydride, water-soluble on hydrolysis, have been found which are active in treating tumors and viruses but lack the undesirable side effects of the nonuniform prior art copolymers. These copolymers are characterized by containing divinyl ether and maleic anhydride in a mole ratio of about 1:2, having a number average molecular weight of from about 5000 to about 30,000 and a M_w/M_n ratio of about 1.0 to about 3.0.

3,794,623

PERFLUOROALKYL GROUP CONTAINING α,β-UNSATURATED DI- AND TRIESTERS AND POLYMERS THEREOF

Eduard Karl Kleiner, New York, and Martin Knell, Ossining, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 720,370, Apr. 10, 1968. This application Nov. 17, 1971, Ser. No. 199,794
Int. Cl. C08f *3/70, 15/16*
U.S. Cl. 260—78.4 E **26 Claims**

Perfluoroalkyl group containing esters of α,β-unsaturated di- and triesters and polymers thereof are disclosed. The polymers have soil repellent properties particularly if applied to substrates such as textile paper, leather and the like. The esters are derived from ether and/or carbon-carbon double bond containing perfluoroalcohols or mercaptans and α,β-unsaturated di- or triacids.

3,794,624

HIGHLY TRANSPARENT LINEAR POLYAMIDES FROM CAPROLACTAM AND A MIXTURE OF DIAMINO BICYCLOHEXYLS AND A DIBASIC ORGANIC ACID

Raymond Paul Anderson, Overland Park, Kans., assignor to Custom Resins, Inc., Henderson, Ky.

No Drawing. Filed Oct. 12, 1971, Ser. No. 188,526
Int. Cl. C08g *20/12*
U.S. Cl. 260—78 L **11 Claims**

High molecular weight linear polyamides having the property of being transparent in compression molded specimens at least 1″ thick are prepared by polymerization of a monomer mixture consisting of 60 to 80 weight percent of caprolactam and, correspondingly, 40 to 20 weight percent of an equimolar mixture of a diamine and a dibasic organic acid in which the diamine consists of two or more of the isomers of diaminobicyclohexyl and the dibasic organic acid consists of one or more aromatic dicarboxylic acid or an alpha, omega-aliphatic dicarboxylic acid. Typically, the transparent linear polyamides are prepared from a monomer mixture consisting of 67 weight percent of caprolactam and 33 weight percent of an equimolar mixture of azelaic acid and a mixture of 2,4′-diaminobicyclohexyls and 4,4′-diaminobicyclohexyls.

3,794,625

TRANSPARENT POLYAMIDES FROM CAPROLACTAM AND A MIXTURE OF A METHYLDIAMINO CYCLOHEXANE AND A DIBASIC ORGANIC ACID

Raymond P. Anderson, Overland Park, and Robert W. Hill, Leawood, Kans., assignors to Custom Resins, Inc., Henderson, Ky.

No Drawing. Filed Oct. 26, 1971, Ser. No. 192,635
Int. Cl. C08g *20/12*
U.S. Cl. 260—78 L **13 Claims**

High molecular weight linear polyamides having the property of being transparent in sections of more than 1″ thickness are prepared by polymerization of a monomer mixture consisting of 60 to 80 weight percent of caprolactam and, correspondingly, 40 to 20 weight percent of an equimolar mixture of a diamine and a dibasic organic acid in which the diamine is a methyldiaminocyclohexane and the dibasic organic acid consists of one or more aromatic dicarboxylic acid or an alpha, omega-aliphatic dicarboxylic acid. Typically, the transparent linear polyamides are prepared from a monomer mixture consisting of 67 weight percent of caprolactam and 33 weight percent of an equimolar mixture of azelaic acid and 1-methyl-2,4-diaminocyclohexane.

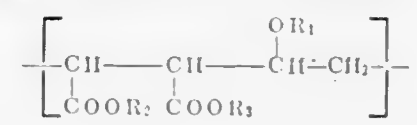
3,794,626

RADIATION SENSITIVE POLYMERS

Henri Ulrich, Northford, Fred A. Stuber, North Haven, and Allen J. Broggi, Branford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

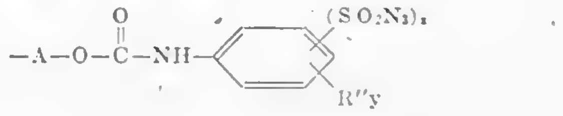
No Drawing. Filed Dec. 15, 1972, Ser. No. 315,302
Int. Cl. C08f *27/08;* C08g *33/00*
U.S. Cl. 260—78.5 T **6 Claims**

Hydrophobic radiation-sensitive polymers are provided which are characterized by the recurring unit:



$$\left[-\underset{COOR_2}{CH}-\underset{COOR_3}{CH}-\overset{OR_1}{CH}-CH_2-\right]$$

wherein R_1=straight chain alkyl (C_{10-20}), one of R_2 and R_3 is hydrogen and the other is



wherein A=alkylene (C_{2-20}), R″=lower alkyl or halogen, x=1 or 2, y=0, 1 or 2, $x+y\leq3$. Salts of the above compounds are disclosed as well as modifications of the above polymers in which some recurring units contain tertiary amino groups.

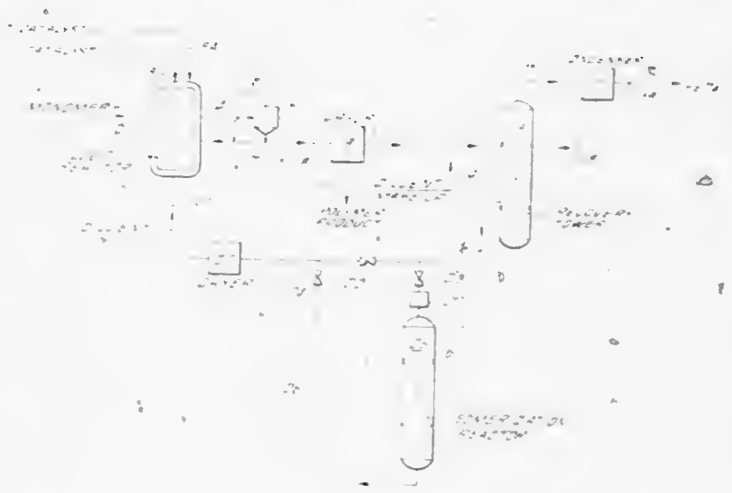
The polymers are useful in the preparation of photoresists having high resistance to attack by acid etchants. The polymers are also useful in production of lithographic plates and the like which are to be used with oleophilic inks.

3,794,627

PROCESS FOR THE PRODUCTION OF ETHYLENE/BUTENE-1 COPOLYMERS AND ETHYLENE HOMOPOLYMERS

John J. Giachetto, Riverside, Conn., assignor to National Petro-Chemicals Corporation, New York, N.Y.

Filed July 27, 1971, Ser. No. 166,382
Int. Cl. C08f *15/40*
U.S. Cl. 260—88.2 R **12 Claims**



A process for consecutively forming copolymers of ethylene with butene-1 having successively lower butene-1 fractions, or for consecutively forming ethylene/butene-1 copolymers and ethylene homopolymers, in which the butene-1 in the recycle stream is isomerized to non-reactive butene-2- when it is desired to decrease or eliminate the butene-1 in the polymer formed.

3,794,628

TRIS(BICYCLOHEPTYL) CHROMIUM COMPOUNDS AND USE AS POLYMERIZATION CATALYSTS

Barton K. Bower, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Original application Feb. 2, 1971, Ser. No. 112,015, now Patent No. 3,704,259. Divided and this application June 21, 1972, Ser. No. 265,022
Int. Cl. C08f *1/74, 3/06*
U.S. Cl. 260—94.9 B **10 Claims**

Organo trivalent chromium compounds are described wherein the chromium is linked to the bridgehead carbons of three bicyclic radicals, namely a 1-bicyclo-[2·2·1]-heptyl radical that contains two methyl groups attached to carbons adjacent to the bridgehead carbon, i.e., in the 2 and/or 6 position. A typical compound is tris(4-camphyl) chromium. These compounds are useful as catalysts for

3,794,636

3,794,640

the polymerization of 1-olefins and can be used alone or in combination with organometallic activators such as alkylaluminum compounds.

3,794,629
STABILIZED AROMATIC POLYCARBONATES

Erich Eimers, Dieter Margotte, Rolf Dhein, and Helmut Schmid, Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Aug. 9, 1972, Ser. No. 278,909
Claims priority, application Germany, Aug. 11, 1971, P 21 40 207.3
Int. Cl. C08g *51/58*
U.S. Cl. 260—45.8 A **8 Claims**

Aromatic polycarbonates having added a neutral ester of phosphorous acid with at least one oxetane group, the latter functions as a stabilizer for the polycarbonate to lessen discoloration after exposure to heat. Thus, the polycarbonates of the invention are particularly useful in the lighting field.

3,794,630
PROTEIN ALLERGENIC EXTRACTS REACTED WITH DIALDEHYDES

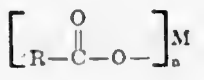
Noel A. Mullan and Brian G. Overell, Dorking, England, assignors to Beecham Group Limited, Brentford, England
No Drawing. Filed July 30, 1970, Ser. No. 59,745
Claims priority, application Great Britain, Aug. 6, 1969, 39,289/69
Int. Cl. C07g *7/00*
U.S. Cl. 260—112 R **22 Claims**

Desensitizing or immunizing agents are provided for treating hypersensitive or allergic conditions. Modified allergenic material is prepared comprising an allergenic protein or glycoprotein crosslinked intermolecularly or intramolecularly with a polyaldehyde, a polyketone, a carbodiimide, an epihalohydrin, or an inorganic cyanate. The modified material has reduced allergenicity relative to the uncrosslinked allergen and has the ability to produce antibodies having cross-specificity for the uncrosslinked allergenic protein or glycoprotein. A method for their production is disclosed.

3,794,631
ANTISTATIC POLYAMIDE FIBER

Rodney Lee Wells and Lamberto Crescentini, Chester, Va., assignors to Allied Chemical Corporation, Morristown, N.J.
No Drawing. Filed Dec. 4, 1972, Ser. No. 312,152
Int. Cl. C08g *41/04*
U.S. Cl. 260—18 N **3 Claims**

An improved antistatic polyamide fiber is prepared by incorporating in the fiber about 1 to 12 percent by weight of a high molecular weight propylene oxide-ethylene oxide copolymer based on ethylene diamine and about 0.5 to 8 percent by weight of a fatty acid salt having the formula:



$$\left[R-\overset{\overset{O}{\|}}{C}-O-\right]_{n}^{M}$$

where R is an aliphatic radical containing at least 6 carbon atoms, and M is an alkali metal or alkaline earth metal, and *n* is a whole number corresponding to the valence of the metal.

3,794,632
ACTH-ACTION PEPTIDES

Werner Rittel, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Filed May 19, 1971, Ser. No. 145,032
Claims priority, application Switzerland, May 27, 1970, 7,836/70
Int. Cl. C07c *103/52*
U.S. Cl. 260—112.5 **5 Claims**

Peptides or peptide amides which possess 18–24 aminoacids from the N-terminal of the natural corticotropines, but in which the first aminoacid is replaced by β-alanine and the aminoacids in the 17-position and 18-position are replaced by L-lysine or L-ornithine or analogues of these compounds in which one or more aminoacids in the positions 3–5 11, 15 and 16 are replaced by other α-aminoacids and acid addition salts and complexes of these compounds.

3,794,633
PROCESS FOR THE MANUFACTURE OF PEPTIDES CONTAINING CYSTINE

Bruno Kamber and Werner Rittel, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, NY.
No Drawing. Filed Dec. 9, 1970, Ser. No. 96,556
Claims priority, application Switzerland, Dec. 16, 1969, 18,668/69
Int. Cl. C07c *103/52;* **C07g** *7/00;* **C08h** *1/00*
U.S. Cl. 260—112.5 **12 Claims**

The invention concerns an improved process for the manufacture of cystine-containing peptides from cysteine-containing aminoacid sequences whose mercapto groups are protected by a group of the formula

$$-CH_2-NH-CO-R,$$

in which CO—R represents the acyl radical of a carboxylic acid, wherein the S-protected cysteine-containing sequences are directly oxidized with iodine to yield the cystine disulfide bond.

3,794,634
ALIPHATIC LIQUID-PEPTIZABLE CHLORINATED BUTADIENE POLYMER BLENDS

Robert William Keown, Wilmington, and Jack Leland Nyce, Newark, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Mar. 16, 1972, Ser. No. 235,440
Int. Cl. C08f *45/28, 45/34*
U.S. Cl. 260—33.6 A **3 Claims**

The invention provides a blend of chlorinated butadiene polymers which is readily peptizable in aliphatic liquids to form sprayable dispersions useful as adhesives.

The blend comprises (a) a graft copolymer of (1) a chlorinated butadiene selected from chloroprene and 2,3-dichlorobutadiene-1,3, (2) an alkyl acrylate or methacrylate, as the graft portion, and (3) up to 2% by weight of sulfur and (b) a copolymer of sulfur and a chlorinated butadiene selected from chloroprene and 2,3-dichlorobutadiene-1,3. The proportion by weight of alkyl acrylate or methacrylate is 40 to 80% in (a) and 15 to 60% in the total composition; and the proportion of sulfur in (b) is 0.2 to 2%. The number average molecular weight between sulfur atoms in (b) is not over 110,000, and the alkyl group of the alkyl acrylate or methacrylate in (a) contains 1 to 18 carbon atoms.

A preferred method for making the sprayable dispersions from the blends comprises mixing the blend with an organic liquid which is a non-solvent for component (b) but is a solvent for the alkyl acrylate or methacrylate graft of component (a), mixing with the resulting product a thiophilic peptizing agent, and stirring until the desired dispersion is obtained.

3,794,635
N-HETEROARYLIDENE ERYTHROMYCYLAMINES

Delme Evans, Chalfont St. Peter, England, assignor to Lilly Industries Limited, London, England
No Drawing. Filed Sept. 27, 1971, Ser. No. 184,220
Claims priority, application United Kingdom, Sept. 30, 1970, 46,403/70
Int. Cl. C07c *129/18*
U.S. Cl. 260—210 E **14 Claims**

Derivatives of erythromycyl A amine, erythromycyl B amine and epi isomers thereof formed by reaction of the amine with heteroaryl aldehydes are useful as antibiotics and amoebicidal agents.

3,794,636
PROCESS FOR PREPARATION OF THIAZOLE HYDROHALIDES

Mikhail M. Girgis, Guelph, Ontario, Canada, assignor to Uniroyal Ltd., Montreal, Quebec, Canada
No Drawing. Filed Sept. 3, 1971, Ser. No. 177,822
Int. Cl. C07d *91/32*
U.S. Cl. 260—247.1 **11 Claims**

Thiazole hydrohalides are synthesized by reacting an alpha-haloacetoacetamide having the formula

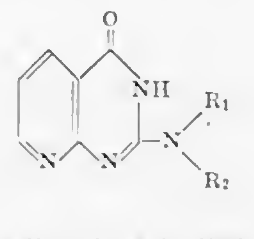
$$CH_3COCHXCONHR_1$$

with a thionamide having the formula R_2CSNH_2 in acetonitrile as a general solvent or in a nitrile having the formula R_2CN where R_2 is as in the formula for the thionamide. The thiazole hydrohalide which is precipitated upon cooling the reaction mixture is separated as the product. If desired, the thiazole hydrohalide can be neutralized with a base to form the free thiazole. The products are useful as plant growth regulants and fungicides.

3,794,637
PYRIDO[2,3-d]PYRIMIDIN-4(3H)-ONES

Fritz Wiedemann and Max Thiel, Mannheim, Kurt Stach, Mannheim-Waldhof, Egon Roesch, Lampertheim, and Klaus Hardebeck, Ludwigshafen (Rhine), Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany
No Drawing. Filed July 22, 1971, Ser. No. 165,391
Claims priority, application Germany, July 31, 1970, P 20 38 035.2
Int. Cl. C07d *51/46*
U.S. Cl. 260—256.4 F **5 Claims**

Pyrido-[2,3-d]pyrimidin-4(3H)-ones of the general formula



(I)

wherein

R_1 is a lower alkyl, alkenyl, cycloalkyl, aralkyl, furylalkyl, thienylalkyl or tetrahydrofurylalkyl radical, optionally substituted by hydroxy, alkoxy or alkylmercapto radicals, and

R_2 is R_1 or hydrogen,

and the salts thereof with physiologically compatible acids. These compounds exhibt longlasting diuretic action.

3,794,638
THERMOSETTING COMPOSITIONS COMPRISING HIGH VINYL BUTADIENE POLYMER AND A FREE RADICAL INITIATOR

Peter Henry Westermann, Dorking, England, assignor to BP Chemicals Limited, London, England
No Drawing. Filed July 20, 1971, Ser. No. 164,422
Claims priority, application Great Britain, July 27, 1970, 36,294/70
Int. Cl. C08d *5/02*
U.S. Cl. 260—94.7 A **3 Claims**

Thermosetting moulding compositions comprising high vinyl butadiene polymer and, as free radical initiator, 1,3- or 1,4-bis (tertiarybutyl) peroxyisopropyl benzene are described which have improved dimensional stability.

3,794,639
BENZOXAZEPINES AND BENZOTHIAZEPINES

John Krapcho, Somerset, and Jack Bernstein, New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.
No Drawing. Filed Mar. 10, 1966, Ser. No. 533,264
Int. Cl. C07d *93/40, 87/54*
U.S. Cl. 260—239.3 B **7 Claims**

Disclosed herein are benzothiazepin-5-one compounds and derivatives thereof which are useful as tranquilizers.

3,794,640
HEXACHLOROCYCLOPENTADIENE ADDUCTS OF UNSATURATED AMIDES

Robert R. Mcd, Frank C. Magne, and Evald L. Skau, New Orleans, La., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Original application Nov. 21, 1969, Ser. No. 878,922, now Patent No. 3,663,582. Divided and this application Dec. 16, 1971, Ser. No. 208,946
Int. Cl. C07d *87/34*
U.S. Cl. 260—247.7 H **1 Claim**

This invention relates to certain new nitrogen-containing compounds, more particularly to N-substituted and N,N-disubstituted amides, the acyl moieties of which are the acyl moieties of the hexachlorocyclopentadiene adducts of either 9-octadecenoic or 10-undecenoic acids.

The compounds which are the subject of this invention are characterized by the fact that as growth inhibitors they are effective against a variety of bacteria, yeasts, and molds, some of which are pathogenic. They are also useful as plasticizers.

3,794,641
SUBSTITUTED PHTHALIMIDO-1,3,5-TRIAZINES

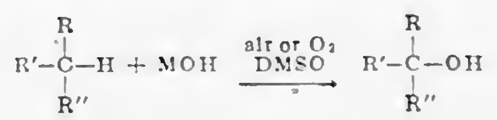
Katalin Görög, nee Privitzer and Györgyi Bruckner, Budapest, Béla Ráskay, Veszprem, and Kálmán Farkas, Erzsébet Grega, nee Toth, Sándor Marosvölgyi, Zoltan Pintér, and Gyula Szilágyi, Miskole, Hungary, assignors to Nehezvegyipari Kutato Intezet, Veszprem, and Eszakmagyarorszagi, Vegyimuvek, Sajobabony, Hungary
No Drawing. Filed Dec. 14, 1970, Ser. No. 98,026
Int. Cl. C07d *55/20*
U.S. Cl. 260—249.8 **2 Claims**

This invention relates to new, substituted phthalimido-1,3,5-triazines, as well as to a process for the preparation thereof. The new compounds according to the invention correspond to 2-phthalimido-4X,6Y-1,3,5-triazines, wherein X and Y each represent chlorine, lower alkoxy, lower alkylthio, lower alkylamino or phthalimido groups. The new compounds have herbicide activity.

3,794,642
OXIDATION OF SUBSTITUTED METHANES TO THE CORRESPONDING SUBSTITUTED METHANOLS

Thomas J. Kress, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
No Drawing. Continuation-in-part of abandoned application Ser. No. 168,343, Aug. 2, 1971. This application Jan. 15, 1973, Ser. No. 323,498
Int. Cl. C07d *31/28*
U.S. Cl. 260—251 R **9 Claims**

The present invention is directed to the following process:



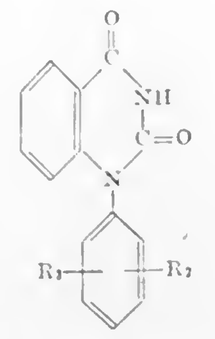
$$R'-\overset{R}{\underset{R''}{C}}-H + MOH \xrightarrow{\substack{\text{air or } O_2\\ \text{DMSO}}} R'-\overset{R}{\underset{R''}{C}}-OH$$

wherein M is an alkali metal; and R, R′ and R″ are phenyl or substituted-phenyl; alternately, R and R″ can be aromatic heterocyclic; and alternately, R′ can be loweralkyl, cycloalkyl, benzyl or naphthylmethyl.

3,794,643
QUINAZOLINEDIONE DERIVATIVES

Takahiro Yabuuchi, Takarazuka, and Hajime Fujimura, Akira Nakagawa, and Ryuichi Kimura, Kyoto, Japan, assignors to Hisamitsu Pharmaceutical Co., Inc., Tosu, Saga Prefecture, Japan
No Drawing. Filed Apr. 20, 1971, Ser. No. 135,693
Int. Cl. C07d *51/48*
U.S. Cl. 260—260 **8 Claims**

The present invention relates to novel quinazolinedione derivatives possessing excellent anti-inflammatory action and analgesic action, and process for the production thereof by reacting the compounds having the following general formula,



(wherein R_2 and/or R_3 represent hydrogen atom, CF_3, one or more of halogen atoms selected from the group consisting of Cl, Br and F, methyl-, methoxy- or ethoxy-radical), with the general formula, R_1X or R_2SO_4 (wherein R_1 represents alkyl radical, substituted alkyl radical or acyl radical, X represents halogen atom, and R represents lower alkyl radical).

3,794,644
PYRROLO-BENZODIAZEPINONE COMPOUNDS

Kazuo Kariyone, Kyoto, and Hisatoyo Kazawa, Toyonaka, Japan, assignors to Fujisawa Pharmaceutical Co, Ltd., Osaka, Japan

No Drawing. Filed June 25, 1970, Ser. No. 49,974
Claims priority, application Japan, June 26, 1969, 49/50,780
Int. Cl. C07d *53/06*
U.S. Cl. 260—239.3 T **3 Claims**

The pyrrolo-benzodiazepinone compounds of the formula:

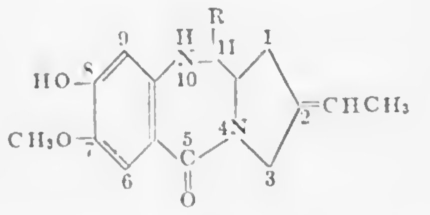


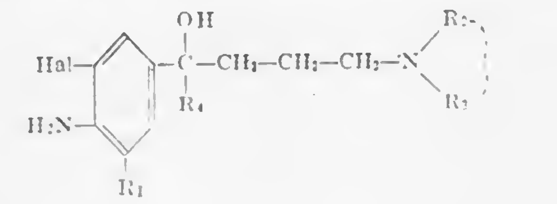
exhibit activity against a number of micro-organisms including bacteria, fungi and bacteriophage and also have antiviral or antitumor activities, and therefore are useful as therapeutic agents in the treatment of diseases caused by certain pathogenic microorganisms.

3,794,645
1 - (m-HALO-p-AMINO-PHENYL) - 4 - AMINO-TERT.BUTANOLS-(1) AND SALTS THEREOF

Helmut Pieper and Gerd Kruger, Biberach an der Riss, Klaus-Reinhold Noll, Warthausen-Obernhofen, and Johannes Keck and Joachim Kahling, Biberach an der Riss, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

No Drawing. Filed Oct. 12, 1970, Ser. No. 80,226
Claims priority, application Germany, Oct. 13, 1969, P 19 51 614.4; Aug. 8, 1970, P 20 42 749.0; Aug. 28, 1970, P 20 42 750.3
Int. Cl. C07c *91/40;* **C07d** *29/28, 41/04*
U.S. Cl. 260—239 B **9 Claims**

Compounds of the formula



wherein

Hal is chlorine or bromine,
R_1 is hydrogen, chlorine or bromine,
R_2 is hydrogen, alkyl, alkenyl, dialkylamino-alkyl, cycloalkyl, phenyl, aralkyl or adamantyl,
R_3 is alkyl, alkenyl, dialkylamino-alkyl, cycloalkyl, phenyl, arakyl or adamantyl,
R_2 and R_3, together with each other and the nitrogen atom to which they are attached, are pyrrolidino, piperidino, piperazino, morpholino, hexamethyleneimino or camphidino, where each of these may optionally have one or more hydroxy, alkoxy, phenyl or lower alkyl substituents attached thereto, and
R_4 is alkyl, cycloalkyl, cycloalkenyl, norbornyl, phenyl, aralkyl, naphthyl, pyridyl or thienyl, where said cycloalkyl may optionaly have one or more hydroxyl, alkyl, alkoxy, alkylthio, trifluoromethyl, phenyl or phenoxy substituents attached thereto, and said phenyl may optionally have one or more fluoro, chloro or bromo substituents attached thereto,

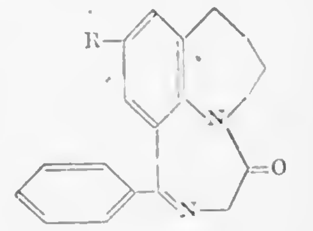
and their non-toxic, pharmocologically acceptable acid addition salts; the compounds as well as the salts are useful as sedatives, anti-emetics, stomach ulcler-inhibitors and CNS-stimulants in warm-blooded animals.

3,794,646
5,7-DISUBSTITUTED-1,9-TETRAMETHYLENE-1,4-BENZODIAZEPIN-2-ONES

William John Welstead, Jr., and Ying-Ho Chen, Richmond, Va., assignors to A. H. Robins Company Incorporated, Richmond, Va.

No Drawing. Continuation-in-part of abandoned application Ser. No. 28,561, Apr. 14, 1970. This application Jan. 18, 1972, Ser. No. 218,834
Int. Cl. C07d *53/06*
US. Cl. 260—239.3 T **3 Claims**

The preparation of compounds of the formula



wherein R is hydrogen and chlorine is described. The compounds were shown to protest mice against convulsions induced by electroshock or chemical means.

3,794,647
PROCESS FOR PURIFYING LACTAMS

Ruthild Henn, Domat-Ems, and Hans-Joachim Schultze and Clau Berther, Chur, Grisons, Switzerland, assignors to Inventa AG fur Forschung und Patentverwertung, Zurich, Switzerland

No Drawing. Filed Sept. 22, 1971, Ser. No. 182,830
Claims priority, application Switzerland, Oct. 1, 1970, 14,550/70
Int. Cl. C07d *41/06*
U.S. Cl. 260—239.3 A **18 Claims**

A process for the purification of lactams by extraction wherein the lactam is treated in the crystalline state with a solvent capable of dissolving the impurities selectively.

3,794,648
PROCESS FOR MAKING CATALYTIC NOBLE METAL COMPLEXES

Philip D. Hammond and Frederick E. Manemeit, North Haven, and William E. Litz, Jr., Branford, Conn., assignors to Olin Corporation, New Haven, Conn.

No Drawing. Filed June 14, 1971, Ser. No. 153,018
Int. Cl. C07d *35/18*
U.S. Cl. 260—270 R **7 Claims**

An improvement is disclosed in the reaction of a heteroaromatic nitrogen compound with an alkali metal-halogenous noble metal derivative to form a complex. The improvement resides in controlling the pH of the reaction mixture within the range of about 2.0–5.0 in order to minimize noble metal losses and maximize complex yield. The product complex is of utility in catalyzing the reaction of carbon monoxide with aromatic nitro compounds to form aromatic isocyanates.

3,794,649
PROCESS FOR PREPARING NOBLE METAL COMPLEXES

Philip D. Hammond, North Haven, William E. Litz, Jr., Branford, and Frederick E. Manemeit, North Haven, Conn., assignors to Olin Corporation, New Haven, Conn.

No Drawing. Filed Aug. 9, 1971, Ser. No. 170,286
Int. Cl. C07d *35/18*
U.S. Cl. 260—270 R **9 Claims**

Noble metal complexes are prepared by reacting, in a halogenated aromatic solvent medium, a powdered noble metal with a hydrohalide derivative of a heteroaromatic nitrogen compound. The resulting complexes are useful catalysts in the reaction of carbon monoxide with aromatic nitro compounds to form aromatic isocyanates.

3,794,650
α-AMINOMETHYL - 2 - QUINOLINEETHANOLS, α - AMINOMETHYL - 1 - ISOQUINOLINE-ETHANOLS, α-AMINOMETHYL - 6 - PHENANTHRIDINEETHANOLS AND THEIR KETONIC ANALOGUES

Robert F. Meyer and Charlotte D. Stratton, Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.

No Drawing. Filed Aug. 14, 1972, Ser. No. 280,514
Int. Cl. C07d *39/02*
U.S. Cl. 260—286 A **7 Claims**

α-Aminomethyl-2-quinolineethanols, α-aminomethyl-1-isoquinolineethanols, α-aminomethyl - 6 - phenanthridine-ethanols and their ketonic analogues; and acid-addition salts. The amino group is substituted by tert-butyl, isopropyl, or 3,4-dimethoxyphenethyl. The 2-quinolyl group is optionally substituted by methyl or phenyl. The compounds are pharmacological agents, especially beta-adrenergic blocking agents. The aminoalkanols can be produced by reduction of the corresponding aminoketones or by catalytic hydrogenation of an N-benzyl derivative. The aminoketones can be produced by the acidic hydrolysis of a corresponding eneamine derivative or by catalytic hydrogenation of an N-benzyl derivative. Starting materials for use in those processes are obtained by detailed procedures generally starting from a methyl-substituted heterocyclic nucleus.

3,794,651
1-[OMEGA-(4-PHENYLPIPERAZINYL)ALKYL]-2-METHYLBENZIMIDAZOLES

Grover Cleveland Helsley, Pottersville, N.J., and William John Welstead, Jr., Richmond, Va., assignors to A. H. Robins Company, Incorporated, Richmond, Va.

No Drawing. Original application Apr. 11, 1969, Ser. No. 815,492, now Patent No. 3,634,441, dated Jan. 11, 1972. Divided and this application July 19, 1971, Ser. No. 164,001
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 BC **6 Claims**

1 - [omega-(4-phenylpiperazinyl)alkyl]-2-methylbenzimidazoles useful as bronchodilators are disclosed. The compounds are prepared from 1-(omega-haloalkyl)-2-methylbenzimidazoles by reacting them with 4-phenylpiperazines.

3,794,652
AMINOETHANESULFONYL DERIVATIVES

Shun-Ichi Naito, 35 Murasakino Kamitoridacho, Kita-ku, Kyoto, Japan

No Drawing. Original application Mar. 9, 1970, Ser. No. 17,969, now Patent No. 3,709,889. Divided and this application Aug. 25, 1971, Ser. No. 174,928
Claims priority, application Japan, May 8, 1969, 44/35,435, 44/35,436, 44/35,437
Int. Cl. C07d *31/48*
U.S. Cl. 260—293.69 **11 Claims**

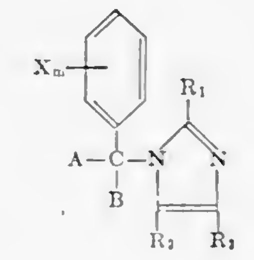
Stable, water-soluble aminoethanesulfonyl derivatives having analgesic activity or antilipemic action are described. They are prepared by ammonolysis of the corresponding halides, preferably under high pressure in the presence of a catalyst, or by deacylation of the corresponding acylamino or acylimino compound, or by nicotinoylation of an amino compound.

3,794,653
SUBSTITUTED N-BENZYLIMIDAZOLES

Wilfried Draber, Wuppertal-Elberfeld, Erik Regel, Wuppertal-Cronenberg, and Karl-Heinz Büchel and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

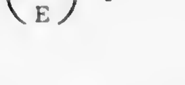
No Drawing. Original application Mar. 4, 1970, Ser. No. 16,219, now Patent No. 3,709,901. Divided and this application Jan. 5, 1972, Ser. No. 215,676
Claims priority, application Germany, Mar. 7, 1969, P 19 11 646.2
Int. Cl. C07d *31/46, 31/50*
U.S. Cl. 260—296 R **18 Claims**

Substituted N-benzylimidazoles of the formula:



wherein

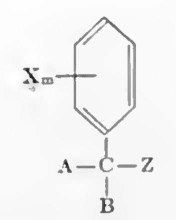
R_1, R_2 and R_3 are each hydrogen, straight or branched chain lower alkyl or straight or branched chain lower alkenyl,
X is hydrogen, lower alkyl, lower alkoxy, lower alkylmercapto, lower alkenylmercapto, trifluoromethyl, halogen, nitro, cyano, amino or amino substituted by 1 or 2 aliphatic moieties,
m is 1 or 2,
A is phenyl; substituted phenyl, pyridyl, lower alkyl or cycloalkyl,
B is a 5-membered heteroaromatic ring of the formula:



wherein

D is CH or N,
E is oxygen, sulphur, N-lower alkyl or N-aryl,
Y is hydrogen, 1 or 2 lower alkyls, 1 or 2 halogens, aryl or substituted aryl, and
n is 1 or 2,

are produced by reacting a compound of the formula:



wherein A, B, X and *m* are as above defined and Z is chlorine or bromine, with at least the theoretically necessary amount of imidazole, optionally in the presence of an acid acceptor, in a polar organic solvent, at a temperature of from 20° C. to 150° C. These substituted N-benzylimidazoles are useful as antimycotics and are effective against both yeasts and dermatophytes. These compounds are effective against a wide range of fungi pathogenic to humans and animals.

3,794,654
TETRANICOTINOYL-TRIS(HYDROXYMETHYL)-AMINOMETHANE

Bernt Jabes Lindberg and Sven Gunnar Kronberg, Uppsala, Sweden, assignors to Pharmacia Aktiebolag, Uppsala, Sweden

No Drawing. Continuation of abandoned application Ser. No. 841,965, July 15, 1969. This application Apr. 25, 1972, Ser. No. 247,465

Int. Cl. C07d *31/44*

U.S. Cl. 260—295.5 A **1 Claim**

The present invention relates to a new chemical substance consisting of tris(hydroxymethyl)-aminomethane and nicotinoyl esters thereof wherein the number of ester bound nicotinoyl groups ranges from 0–4 or mixtures thereof. The substances are prepared by reacting one equivalent of tris(hydroxymethyl)-aminomethane with 1–4 equivalents of nicotinoylchloride.HCl in the presence of an acid binding agent such as dry pyridine. The properties of these substances when taken internally are cholesterol lower agents and circulation promotion agents. When applied topically these substances improve circulation.

3,794,655
OPTICAL ANTIPODES D- AND L-N-BENZOYL-3,4-DIHYDROXYPHENYLALANINE AND A PROCESS FOR THEIR PREPARATION

Hans Schubel, Siegburg-Seligenthal, Paul Janssen, Bensberg-Refrath, and Heinz-Ratz, Troisdorf, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

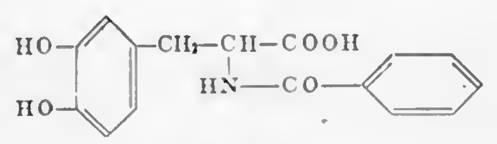
No Drawing. Filed Dec. 18, 1970, Ser. No. 99,527

Claims priority, application Germany, Dec. 20, 1969, P 19 63 992.0

Int. Cl. C07c *103/30, 101/30;* **C07d** *43/24*

U.S. Cl. 260—284 **6 Claims**

Optical antipodes D- and L-N-benzoyl-3,4-dihydroxyphenylalanine of the formula:



and the cinchonine salts thereof. These compounds are made by reacting chinchonine with D- and/or L-N-benzoyl-3,4-dihydroxyphenylalanine and then crystallizing the salt from mixtures of water with lower ketones, lower alkanols, lower ethers or mixtures thereof in order to separate and resolve the optical isomers. These salts are cleaved to the optically pure D- or L-N-benzoyl-3,4-dihydroxyphenylalanine which is itself cleaved to 3,4-dihydroxyphenylalanine.

3,794,656
SUBSTITUTED 3-PYRIDINEMETHANOLS AND METHANES

Earle M. Van Heyningen, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Continuation of application Ser. No. 814,850, Apr. 9, 1969, which is a continuation-in-part of application Ser. No. 553,815, Mar. 14, 1966. This application Nov. 30, 1971, Ser. No. 203,480

Int. Cl. C07d *31/24, 31/28*

U.S. Cl. 260—290 R **6 Claims**

Novel substituted 3-pyridinemethanols and methanes and nonphytotoxic acid addition salts thereof useful in controlling fungi which attack turf, food crops, and ornamental plants.

3,794,657
2 - (3′ - TRIFLUOROMETHYLTHIO-ANILINO)-NICOTINIC ACID, ESTERS THEREOF AND PHARMACEUTICALLY ACCEPTABLE INORGANIC OR BASIC SALTS THEREOF

Henry Najer and Jean-Francois Giudicelli, Paris, France, assignors to Synthelabo, Paris, France

No Drawing. Continuation-in-part of application Ser. No. 272,140, July 17, 1972. This application Sept. 29, 1972, Ser. No. 293,547

Claims priority, application France, July 15, 1971, 7125859; Sept. 30, 1971 7135155, 7135156

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 G **5 Claims**

2-(3′-trifluoromethylthio-anilino)nicotinic acid and its salts and esters have useful anti-inflammatory analgesic and antipyretic properties.

3,794,658
SUBSTITUTED NITROIMIDAZOLYLTHIADIAZOLINONES AND METHOD OF USING THE SAME

Spencer Douglas Carter, Trenton, and Gerald Berkelhammer, Princeton, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Mar. 20, 1972, Ser. No. 236,232

Int. Cl. C07d *99/10*

U.S. Cl. 260—302 H **5 Claims**

Preparation of nitroimidazolylthiadiazolinones and a method for controlling coccidiosis in warm-blooded animals by orally administering to said animals an edible carrier containing an effective amount of a nitroimidazolylthiadiazolinone, is described.

3,794,659
ASYMMETRICALLY DISUBSTITUTED ISOINDOLINES

Heinrich Leister, Cologne-Stammheim, and Heinrich Vollmann, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

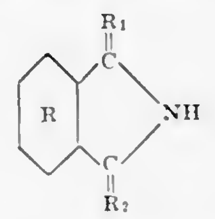
No Drawing Original application Sept. 8, 1967, Ser. No. 666,458, now Patent No. 3,646,033. Divided and this application Sept. 8, 1971, Ser. No. 178,826

Claims priority, application Germany, Sept. 9, 1966, F 50,163

Int. Cl. C07d *99/02, 99/10*

U.S. Cl. 260—305 **1 Claim**

Isoindoline derivatives asymmetrically disubstituted in the 1- and 3-positions corresponding to the formula



in which the cyclic radical R is an aromatic ring, a substituted aromatic ring, a tetrahydrogenated aromatic ring, a nitrogen containing heterocyclic ring, or a sulphur containing heterocyclic ring, and R_1 and R_2 which are different, are bivalent radicals of a compound which contains two active hydrogen atoms attached to a nitrogen atom; and a two-stage process for making the same. The isoindoline derivatives are excellent dyestuffs for dyeing and printing synthetic fiber materials.

3,794,660
2-PHENYL, HALOPHENYL AND ALKYLPHENYL-3a,4,5,6,7,7a - HEXAHYDRO-3a-HYDROXYBENZOTHIAZOLE - 4 - CARBOXYLIC ACID, ALKYL ESTERS

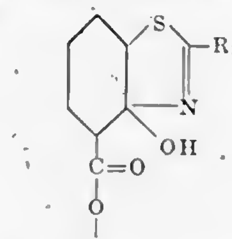
Peter H. L. Wei, Springfield, Pa., assignor to American Home Products Corporation, New York, N.Y.

No Drawing. Original application Mar. 17, 1971, Ser. No. 125,413, now Patent No. 3,694,450, dated Sept. 26, 1972. Divided and this application May 30, 1972, Ser. No. 257,608

Int. Cl. C07d *91/24*

U.S. Cl. 260—306.7 **3 Claims**

Novel pharmacologically active compounds have been prepared which have the general formulae:



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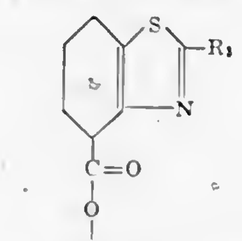


II

wherein R_1 is selected from the group consisting of hydrogen and (lower) alkyl; R_2 is selected from the group consisting of phenyl, halophenyl and (lower) alkylphenyl; R_3 is selected from the group consisting of phenyl, halophenyl, (lower) alkylphenyl, pyridyl, amino, anilino, hydrazino, benzylidenehydrazino, halobenzylidenehydrazino, nitrobenzylidenehydrazino and (lower) alkylbenzylidenehydrazino; R_4 is (lower) alkyl; and the pharmaceutically acceptable salts thereof.

3,794,661
TRIAZOLYL CARBAMATES

Beat Boehner, Binningen, and Dag Dawes, Pratteln, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

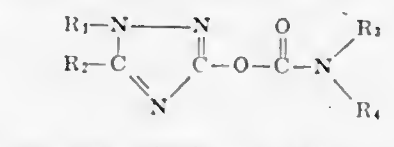
No Drawing. Filed Jan. 26, 1972, Ser. No. 221,052

Claims priority, application Switzerland, Feb. 4, 1971, 1,634/71; Jan. 7, 1972, 274/72

Int. Cl. C07d *55/06*

U.S. Cl. 260—308 R **5 Claims**

Triazolyl carbamates of the formula



wherein R_1 represents hydrogen, alkyl or cycloalkyl, R_2 represents hydrogen, alkyl or the groups $-COOR_1-$ $CO-N(R_3)(R_4)$ or $-CN$, R_3 represents hydrogen, alkyl, alkoxy or alkinyl, R_4 represents alkyl, alkenyl, alkinyl, alkoxy, cycloalkyl or phenyl, and R_3 and R_4 together with the nitrogen atom to which they are bonded, represents a heterocyclic radical, their manufacture and their use in pest control.

3,794,662
METHOD OF MAKING ARALKYL, CHLORO MALEIC AND GLUTARIC ANHYDRIDES

Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Mar. 15, 1971, Ser. No. 124,438

Int. Cl. C07c *57/02, 57/14*

U.S. Cl. 260—345.9 **9 Claims**

Aralkyl-substituted halogenated unsaturated polybasic acid anhydrides are prepared by condensing alkylaromatic compounds with polyhalo-substituted unsaturated polybasic acid anhydrides in the presence of free radical-generating compounds at elevated temperatures to produce the desired products.

3,794,663
N,N′-(9-OXOXANTHENE-2,7-DIYL)BIS[2-DI (LOWER)ALKYL-AMINOACETAMIDES]

Arthur A. Santilli, Havertown, Anthony C. Scotese, King of Prussia, and Stanley C. Bell, Penn Valley, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Oct. 30, 1972, Ser. No. 302,380

Int. Cl. C07d *7/44*

U.S. Cl. 260—335 **2 Claims**

N,N′-(9 - oxoxanthene - 2,7 - diyl)bis[2-di(lower) alkylaminoacetamides] have antiamebic activity.

3,794,664
BICYCLO[3.1.0]HEXANE INTERMEDIATES FOR PRODUCING PROSTAGLANDINS $F_{1\alpha}$ AND $F_{1\beta}$

George E. Just, Westmount, Quebec, Canada, and Chaim Simonovitch, Rishon-le-Zion, Israel; said Simonovitch assignor to said Just

No Drawing. Continuation of application Ser. No. 103,335, Dec. 31, 1970, which is a continuation-in-part of application Ser. No. 657,085, July 31, 1967, both now abandoned. This application Aug. 17, 1972, Ser. No. 281,337

Int. Cl. C07d *1/20, 1/22*

U.S. Cl. 260—348 A **15 Claims**

Prostaglandin $F_{1\alpha}$, prostaglandin $F_{1\beta}$, and analogs of those are produced from bicyclo[3.1.0]hexane intermediates.

3,794,665
2,5-DISUBSTITUTED 1,3,4-THIADIAZOLES

Gerald Berkelhammer, Princeton, and Goro Asato, Titusville, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Application Nov. 25, 1970, Ser. No. 92,908, now Patent No. 3,725,396, which is a continuation-in-part of application Ser. No. 767,004, Oct. 11, 1968, now Patent No. 3,598,830. Divided and this application Oct. 25, 1972, Ser. No. 300,640

Int. Cl. C07d *33/50, 91/62*

U.S. Cl. 260—306.8 D **5 Claims**

This invention relates to novel 5-amino, 5-acetamido and 5-nitro-2-substituted 1,3,4-thiadiazoles and their derivatives. These compounds are useful as antibacterial or anti-fungal agents.

3,794,666
PROCESS FOR PRODUCING 3,3-BIS(p-DIMETHYL-AMINO-PHENYL)-4,5,6 OR 7 DIMETHYLAMINO-PHTHALIDE

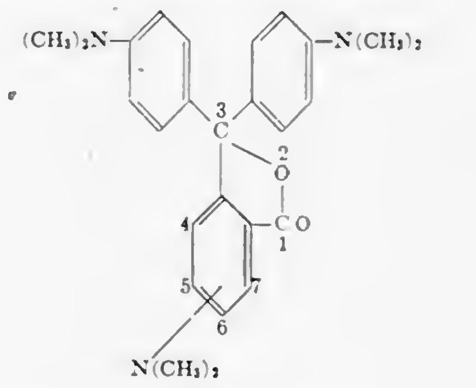
Seiji Hotto, Hirakata, Hideki Yanagihara, Takatsuki, and Takashi Akamatsu, Ashiya, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Apr. 7, 1970, Ser. No. 26,420

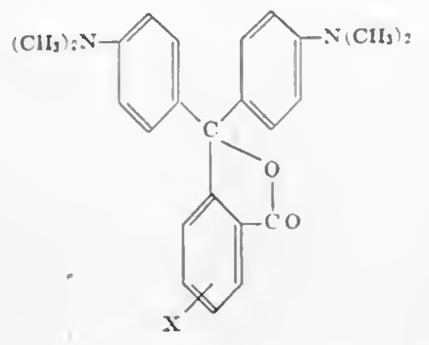
Int. Cl. C07d *5/32*

U.S. Cl. 260—343.3 **8 Claims**

An improved process for the production of so-called crystal violet lactone having the formula,



which comprises reacting a mixture of formaldehyde and a compound having the formula,



wherein X is nitro or amino group, in an inert solvent, with hydrogen in the presence of a catalyst for the catalytic reduction, if desired in the presence of an acid. The crystal violet lactone is useful for the production of pressure-sensitive copy paper.

3,794,667

ISOCYANATO-P-QUINONES

Ulrich von Gizycki, Cologne, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

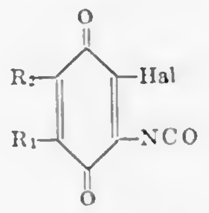
No Drawing. Filed Jan. 28, 1972, Ser. No. 221,794

Claims priority, application Germany, Feb. 5, 1971, P 21 05 489.7

Int. Cl. C07c *119/04*

U.S. Cl. 260—396 R 3 Claims

Isocyanates having the formula



in which Hal is fluorine, chlorine or bromine and R_1 and R_2 are the same or different and are hydrogen, fluorine, chlorine, bromine, a cyano group or one of R_1 and R_2 is an isocyanato group or R_1 and R_2 together form an anelated aromatic ring are provided and a process for preparing them in which the corresponding amino-p-quinone is reacted in an inert organic solvent with at least 1 mol of oxalyl chloride per mol of amino groups while heating under reflux conditions until the evolution of gas ceases. The isocyanates of this invention are useful in the production of polyurethanes, dye-stuffs, plant protection agents and pharmaceuticals.

3,794,668

VAPOR PHASE OXIDATION OF PHENOLS

Thomas H. Larkins, Jr., Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Sept. 25, 1972, Ser. No. 293,299

Int. Cl. C07c *37/00, 49/64*

U.S. Cl. 260—396 R 8 Claims

Process for the vapor phase oxidation of phenols and substituted phenols in aqueous solution by contacting a vaporized aqueous solution of the phenol or substituted phenol with an oxygen-containing gas, preferably air, in the presence of a catalyst comprising a copper salt, thallic salt and an alkali metal bisulfate supported on silicon carbide or silica alumina having a surface area of less than 30 square meters per gram.

3,794,669

PROCESS FOR CONVERTING OXATHIOLANES, DITHIOLANES AND DITHIANES TO ALDEHYDES OR KETONES

Hans Wynberg, Groningen, Netherlands, David W. Emerson, Dearborn, Mich., and Wilhelmus F. J. Huurdeman, Groningen, Netherlands, assignors to E. R. Squibb & Sons, Inc., Lawrenceville, Princeton, N.J.

No Drawing. Filed Aug. 4, 1971, Ser. No. 169,127

Int. Cl. C07c *169/50*

U.S. Cl. 260—397.2 4 Claims

1,3-oxathiolanes, 1,3-dithiolanes and 1,3-dithianes may be readily converted to aldehydes or ketones by treatment with chloramine-T.

3,794,670

PREPARATION OF ORGANOTIN COMPOUNDS

Donald J. Peterson, Springfield Township, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed June 30, 1971, Ser. No. 158,528

Int. Cl. C07f *7/22*

U.S. Cl. 260—429.7 13 Claims

A process for preparing (organosulfonylmethyl)triorganotin compounds by reacting a triorganotin amine and an organosulfonylmethyl compound. The resulting products are useful as pesticides and seed protecting agents.

3,794,671

CATALYSTS AND COMPOSITIONS THEREFOR

Geoffrey Wilkinson, London, England, assignor to Johnson, Matthey & Co., Limited, London, England

No Drawing. Filed July 20, 1971, Ser. No. 164,495

Claims priority, application Great Britain, July 22, 1970, 35,437/70

Int. Cl. C07f *15/00*

U.S. Cl. 260—429 R 3 Claims

Nonhalogen or pseudo-halogen coordination complexes of Rh(I) containing a stabilizing donor ligand. The complexes are made by adding a compound which acts as a stabilizing donor ligand to a solution of a rhodium (II) carboxylate protonated by an acid. The complexes are useful catalysts.

3,794,672

PERFLUOROALKYL SILICON COMPOUNDS CONTAINING SULFUR

Yung K. Kim, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed July 5, 1973, Ser. No. 376,509

Int. Cl. C07f *7/08, 7/18*

U.S. Cl. 260—448.2 N 4 Claims

Perfluoroalkyl silyl sulfides are prepared by reacting $R_fCH{=}CH_2$ with $HSRSI{-}{=}$ in the presence of a free radical generator such as organic peroxides. The products are useful for treating fabrics to render them oleophobic and water repellent. For example, trifluoropropene is added to mercaptopropyltrimethoxysilane to give

$$CF_3CH_2CH_2S(CH_2)_3Si(OCH_3)_3$$

This can be hydrolyzed to the siloxane

$$CF_3CH_2CH_2S(CH_2)_3SiO_{1.5}$$

3,794,673

NOVEL ORGANOSILICON ADDUCTS

Robert P. Boersma and Vincent T. Chuang, Marietta, Ohio, assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Mar. 30, 1971, Ser. No. 129,561

Int. Cl. C07f *7/08*

U.S. Cl. 260—448.2 B 9 Claims

This invention relates to a novel process for producing organosilicon hydroxy compounds by reacting a hydrosilicon compound with the reaction product of an enol ether and an olefinically unsaturated compound containing a hydroxyl group to produce an organosilicon adduct and then hydrolyzing the organosilicon adduct. The invention also relates to the organosilicon adducts (e.g., organosilicon acetals and esters) as novel compositions of matter. The novel process circumvents various side reactions that occur in other methods for producing organosilicon hydroxy compounds from hydrosilicon compounds.

3,794,674

PRODUCTION OF ISONITRILES

Peter Hoffmann, Cologne, and Dieter Marquarding, Leverkusen, Germany, Var Ugi, Los Angeles, Calif., and Dieter Arlt and Hermann Hagemann, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Dec. 1, 1970, Ser. No. 94,178

Claims priority, application Germany, Dec. 16, 1969, P 19 62 898.9

Int. Cl. C07c *121/12*

U.S. Cl. 260—465 B 9 Claims

In the production of an isonitrile by the reaction of a formamide with phosgene in the presence of an aqueous base, the improvement which comprises effecting said reaction in the presence of a catalytic amount of a tertiary amine.

3,794,675

EXTRACTION OF PROSTAGLANDINS

Ramon D. Hamilton, Portage, and William P. Schneider, Kalamazoo Township, Kalamazoo County, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 71,432, Sept. 11, 1970. This application July 2, 1971, Ser. No. 159,479

Int. Cl. C07c *51/48, 67/06*

U.S. Cl. 260—468 D 14 Claims

An improvement in a process for isolating prostanoic acid derivatives, including PGA_2, PGA_2 methyl ester, PGA_2 acetate methyl ester, and their 15β-epimers from marine invertebrates. The products are useful for pharmacological purposes and as intermediates for the preparation of other prostanoic acid derivatives with pharmacological uses.

3,794,676

PROCESS FOR N-MONOMETHYLATING CERTAIN ACYL OR CARBALKOXY NITRO-P-PHENYLENEDIAMINES

Alexander Halasz, Norwalk, Conn., assignor to Clairol Incorporated, New York, N.Y.

No Drawing. Original application May 13, 1968, Ser. No. 728,786, now Patent No. 3,591,638. Divided and this application Jan. 12, 1971, Ser. No. 105,953

Int. Cl. C07c *125/06*

U.S. Cl. 260—471 C 7 Claims

N-monomethylates certain acyl or carbalkoxy nitro-p-phenylenediamine compounds by reacting said nitro-p-phenylenediamine compounds with a mixture containing formaldehyde or paraformaldehyde and sulfuric acids.

3,794,677

DI(LOWER)ALKYLAMINO- AND HETEROAMINO-(LOWER)ALKYL-ALPHA,ALPHA,ALPHA-TRIFLUORO-M-TOLUIC ACID ESTERS AND DERIVATIVES

William F. Bruce, Havertown, Pa., assignor to American Home Products Corporation, New York, N.Y.

No Drawing. Filed July 1, 1971, Ser. No. 159,057

Int. Cl. C07c *93/20*

U.S. Cl. 260—477 5 Claims

This invention discloses new and novel di(lower)-alkylamino- and heteroamino(lower)alkyl-α,α,α-trifluoro-m-toluic acid esters and derivatives thereof including acid addition salts and quaternary ammonium compounds. The compounds have utility as central nervous system depressants useful in the calming of animals.

3,794,678

(1,4-CYCLOHEXADIEN-1-YL)ACETIC ACID

William Dvonch, Radnor, and Harvey E. Alburn, West Chester, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed July 22, 1969, Ser. No. 843,802

Int. Cl. C07c *61/16*

U.S. Cl. 260—514 L 1 Claim

This invention concerns (1,4-cyclohexadien-1-yl) alkanoic acids which are useful as anti-inflammatory agents. Further, these compounds are also useful intermediates in the preparation of synthetic 6-(1,4-cyclohexadien-1-ylamido)penicillanic acids and 7-(1,4-cyclohexadien-1-ylamido)-cephalosporanic acids which have potent activity against penicillin resistant staphylococci.

3,794,679

PREPARATION OF MONOHALOACETYL HALIDES

Virgil W. Gash and Donald E. Bissing, Ballwin, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of abandoned application Ser. No. 185,396, Sept. 30, 1971. This application July 31, 1972, Ser. No. 276,282

The portion of the term of the patent subsequent to Sept. 11, 1990, has been disclaimed

Int. Cl. C07c *51/58, 53/20*

U.S. Cl. 260—544 Y 2 Claims

A process for the preparation of monohaloacyl halides by halogenating ketenes in the presence of a glycol ester.

3,794,680

PREPARATION OF PURE (±)-TRANS-CHRYSANTHEMIC ACID

Masano Matsui, Tokyo, and Kenzo Ueda, Nishinomiya, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Mar. 16, 1970, Ser. No. 20,088

Claims priority, application Japan, Mar. 22, 1969, 44/21,903

Int. Cl. C07c *61/16*

U.S. Cl. 260—514 H 3 Claims

A process for obtaining (±)-trans-chrysanthemic acid from a mixture of (±)-trans- and (±)-cis-chrysanthemic acids which comprises treating said mixture in the presence of an acid catalyst under non-aqueous condition. The acid catalyst is Lewis acid such as boron trifluoride, stannic chloride, ferric chloride and zinc chloride, an inorganic acid such as sulfuric acid and phosphoric acid, organic strong acid such as p-toluenesulfonic acid and trifluoroacetic acid, and the like.

3,794,681

PROCESS FOR THE PREPARATION OF L-α-HYDRAZINO-β-PHENYLPROPIONIC ACIDS

Meyer Sletzinger, North Plainfield, Sandor Karady, Elizabeth, Manuel G. Ly, New Brunswick, and Seemon H. Pines, Murray Hill, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Original application Feb. 24, 1970, Ser. No. 13,770, now Patent No. 3,676,480. Divided and this application June 24, 1971, Ser. No. 156,556

Int. Cl. C07c *101/72*

U.S. Cl. 260—519 **1 Claim**

Process for preparing L-α-hydrazino-β-phenylpropionic acids by aminating L-α-acylamino-β-phenylpropionitrile with chloramine or methoxyamine followed by acid hydrolysis to form the L-α-hydrazino-β-phenylpropionic acid compounds.

3,794,682

HYDRATION OF NITRILES

William Austin Barber, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Dec. 1, 1970, Ser. No. 94,197

Int. Cl. C07c *103/08*

U.S. Cl. 260—561 N **6 Claims**

Heterogeneous catalysts for amide synthesis by hydration of a nitrile with water comprise oxide of cobalt and mixed metal oxides of cobalt and another metal selected from iron, aluminum, zinc, calcium, manganese and mercury. A preferred method of making the catalyst is to coprecipitate the mixed metals as oxalates then decompose with heat. A 50% cobalt 50% manganese mixed oxide is a preferred catalyst for hydration of acrylonitrile to make acrylamide.

3,794,683

HALOCARBOXYLIC ACID ANILIDES

Gustav Gassner, Kelkheim, Taunus, Gerhard Horlein, Frankfurt am Main, and Hans Rochling, Altenhain, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

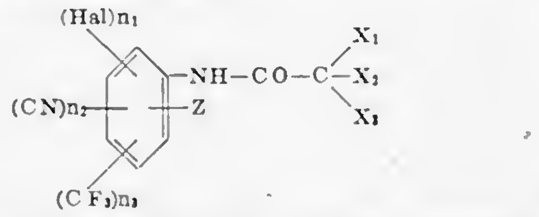
No Drawing. Filed Aug. 24, 1971, Ser. No. 174,564

Claims priority, application Germany, Aug. 26, 1970, P 20 42 300.1

Int. Cl. C07c *103/32*

U.S. Cl. 260—562 B **4 Claims**

The invention provides substituted halocarboxylic acid anilides of the general formula A



A

in which X_1 and X_2 stand for chlorine, fluorine or bromine, X_3 represents hydrogen, chlorine, fluorine, bromine or $CHCl_2$, Z means NO_2 or CF_3, Hal represents identical or different halogen atoms, preferably chlorine, bromine or fluorine, n_1 being zero or 1 or 2 or 3, n_2 being zero or 1 or 2, n_3 being zero or 1 or 2, and the sum of $n_1+n_2+n_3$ is an integer in the range of from 1 to 4. The novel compounds have a good herbicidal effect against a series of mono- and dicotyledons.

3,794,684

ACYLATION OF 2,6-DIOXIMINOCYCLOHEXANONE AND THE MONOSODIUM SALT THEREOF

Tucker T. Yee, Wilmington, Del., assignor to Atlantic Richfield Company, New York, N.Y.

No Drawing. Original application July 3, 1969, Ser. No. 839,061, now abandoned. Divided and this application Nov. 19, 1971, Ser. No. 200,513

Int. Cl. C07c *119/00*

U.S. Cl. 260—566 AE **2 Claims**

Method for the acylation of 2,6 - dioximinocyclohexanone and the monosodium salt thereof by the use of either a ketene or a carboxylic acid anhydride in the absence of catalyst.

3,794,685

1-SUBSTITUTED BIGUANIDES

Julius Diamond, Lafayette Hill, George H. Douglas, Paoli, and Bernard J. Burns, Philadelphia, Pa., assignors to William H. Rorer Inc., Fort Washington, Pa.

No Drawing. Original application Nov. 12, 1970, Ser. No. 89,005. Divided and this application Apr. 27, 1972, Ser. No. 248,004

Int. Cl. C07c *129/08*

U.S. Cl. 260—565 **7 Claims**

Novel 1-aryl and aralkyl biguanide compounds have been prepared. The compounds of this invention possess useful gastric antisecretory and spasmolytic properties. Compounds of this type which also display antihypertensive and CNS depressant properties are also disclosed.

3,794,686

PROCESS FOR CONTINUOUSLY PRODUCING ACETYLACETONE

Hellmuth Spes and Gerhard Kunstle, Burghausen-Obb, and Herbert Siegl, Halming-Obb, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Bavaria, Germany

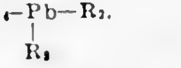
Filed Sept. 27, 1971, Ser. No. 183,855

Claims priority, application Germany, Sept. 25, 1970, P 20 47 320.5

Int. Cl. C07c *49/20*

U.S. Cl. 260—595 **5 Claims**

A process for continuously producing acetylacetone which comprises thermally rearranging vaporous isopropenyl acetate at a temperature of 300–600° C. in the presence of at least one lead tetraalkyl of the formula



$$\begin{array}{c} R_1 \\ | \\ R_4-Pb-R_2, \\ | \\ R_3 \end{array}$$

where the alkyl groups R_1, R_2, R_3 and R_4 are equal or different and denote methyl or ethyl, and then cooling, condensing and distilling the reaction vapors.

3,794,687

SUBSTITUTED BIS(FLUOROALKYLSULFONYL) HALOMETHANES

Robert J. Koshar, Lincoln Township, Washington County, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Jan. 20, 1972, Ser. No. 219,534

Int. Cl. C07c *147/02*

U.S. Cl. 260—607 A **3 Claims**

Non-acidic substituted bis(fluoroalkylsulfonyl)-halomethanes of the formula WY generate acid on heating or

exposure to ultraviolet light and are useful as oxidizing agents, halogenating agents and as latent catalysts for the polymerization of epoxides, vinyl ethers and N-vinyl compounds.

In these compounds, W is halo-bis(fluoroalkylsulfonyl) methyl and Y is a hydrocarbon radical which when substituted by a halogen or a lower alkoxy substituent may be of up to about 25 carbon atoms and when unsubstituted or omega alkenyl may be of up to 18 carbon atoms or Y may be halogen of atomic weight 35 to 80 inclusive as a hydrocarbon group Y may be straight, branched or cyclic.

3,794,688

1-CHLORO-1-HYDRO-PERFLUOROBUTYL DIFLUOROMETHYL ETHER

Ross C. Terrell, Plainfield, N.J., assignor to Airco, Inc., New York, N.Y.

No Drawing. Original application Oct. 7, 1971, Ser. No. 187,572, now Patent No. 3,749,798. Divided and this application Oct. 6, 1972, Ser. No. 295,631

Int. Cl. C07c *43/00*

U.S. Cl. 260—614 F **1 Claim**

1-chloro-1-hydroperfluorobutyl difluoromethyl ether of the formula

$$CF_3—CF_2—CF_2—CHCl—O—CHF_2$$

is useful as an inhalation anaesthetic.

3,794,689

NOVEL DIETHYNYLCARBINOLS AND ETHERS

Robert D. Dillard, Zionsville, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Continuation-in-part of application Ser. No. 19,078, Mar. 12, 1970, which is a continuation-in-part of application Ser. No. 827,899, May 26, 1969, now abandoned. This application May 17, 1972, Ser. No. 254,261

Int. Cl. C07c *33/06*

U.S. Cl. 260—618 E **8 Claims**

Diethynylbenzyl alcohols and ethers useful as soil fungicides and seed-treatment agents.

3,794,690

METHOD FOR THE RECOVERY OF ISOBUTYLENE

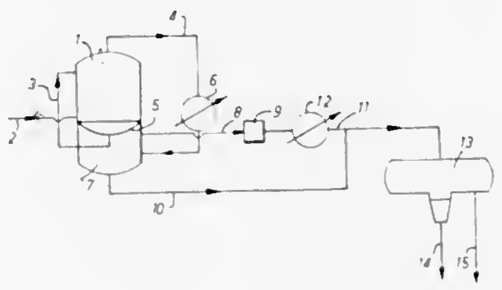
Willem A. Steggerda, Leiderdorp, Netherlands, assignor to Compagnie Francaise de Raffinage, Paris, France

Filed June 14, 1972, Ser. No. 262,791

Claims priority, application France, June 18, 1971, 7122304

Int. Cl. C07c *11/00*

U.S. Cl. 260—677 A **2 Claims**



A method for total recovery of isobutylene, particularly useful in the "weak" (50%) H_2SO_4 extraction process, from a mixed C_4 stream of cracked petroleum gases where the efflux from the acid regenerator comprises isobutylene, tertiary butyl alcohol, lower isobutylene polymers, water and H_2SO_4 comprising treating the efflux in a caustic soda scrubbing tower to remove H_2SO_4, liquefying the vapors (preferably by first partially condensing the vapors with flash distillation to give residual vapors containing about 99% of the total isobutylene and then compressing and condensing the residual vapors), settling the resulting liquid, separating the resulting aqueous phase and the organic phase (which latter contains all the isobutylene) and concentrating the isobutylene by known means.

3,794,691

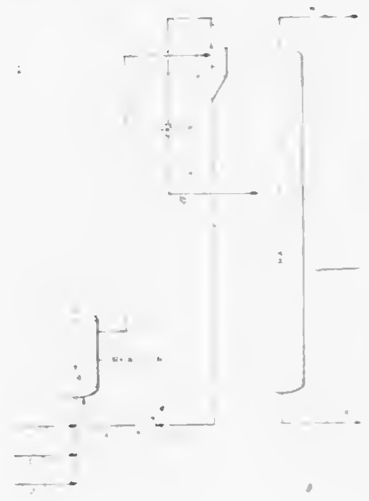
METHOD FOR RECYCLE OF ALKYLATION CATALYSTS

Rolland E. Dixon and John H. Randall, Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Sept. 2, 1971, Ser. No. 177,358

Int. Cl. C07c *3/52*

U.S. Cl. 260—683.43 **4 Claims**



Reaction product catalyst mixture is discharged from an alkylation reaction at a pressure sufficient to effect the separation of the catalyst and the alkylation product in a separator located at a height above the reactor sufficient to produce a liquid head pressure of separated catalyst that is adequate to return the catalyst to the reaction zone without the use of a pumping means in the catalyst return line. In a preferred embodiment the difference in elevation of the reaction zone and the separating zone coupled with the difference in the density of the reaction effluent mixture and the separated catalyst is sufficient to allow the catalyst to be separated in a cyclone separator and returned from the separator through a cooling zone to the reaction zone without use of a pump in the return line.

3,794,692

PROCESS FOR THE PRODUCTION OF SQUALENE-TYPE-HYDROCARBONS

Akira Komatsu, Susumu Akutagawa, Toshiaki Sakaguchi, and Taichi Someya, Tokyo, Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan

No Drawing. Filed May 24, 1973, Ser. No. 363,700

Int. Cl. C07c *11/00, 11/14*

U.S. Cl. 260—677 R **14 Claims**

Production of squalene-type-hydrocarbons by dimerizing conjugated diene compounds in a aliphatic alcohol in the presence of a catalyst consisting of bis-cyclooctadiene-nickel and a tri-alkyl phosphine.

3,794,693
MODIFIED POLYARYLENE POLYETHER RESIN COMPOSITIONS
Robert L. Lauchlan, Granger, Ind., and Hugh E. Snodgrass, Arcadia, Calif., assignors to Uniroyal, Inc., New York, N.Y.
No Drawing. Filed Mar. 16, 1972, Ser. No. 235,409
Int. Cl. C08g *43/02*
U.S. Cl. 260—823 **11 Claims**

Blends of a polyarylene polyether resin with a poly(epihalohydrin) provide thermoplastic compositions characterized by unique properties, particularly, an unusually useful combination of high impact strength, high tensile strength and high flexural moduli, and excellent flame resistance.

3,794,694
ROOM TEMPERATURE VULCANIZABLE GRAFT COPOLYMERS ON SILICONE CONTAINING BACKBONE
Rajendra Nath Chadha, Farmingdale, N.Y., and James Edwin Crawford, Adrian, and John Charles Getson and Richard Newton Lewis, Tecumseh, Mich.; said Chadha, said Lewis and said Getson assignors to Stauffer Chemical Company
No Drawing. Continuation-in-part of application Ser. No. 849,541, July 14, 1969, which is a continuation of application Ser. No. 554,683, June 2, 1966, now abandoned. This application Nov. 9, 1970, Ser. No. 88,145
Int. Cl. C08f *35/02;* **C08g** *47/10*
U.S. Cl. 260—827 **11 Claims**

A liquid composition comprising an organopolysiloxane having grafted thereto through an alkylene group a polymeric organic side chain constituted of recurring units derived from unsaturated monomers of vinyl aromatic compounds and/or unsaturated esters or combinations of these monomers with other unsaturated monomers and its use as a room-temperature-vulcanizing composition.

3,794,695
USE OF β-DICARBONYL COMPOUNDS DERIVED FROM CYCLOPENTANONE AS ADDITIONAL ACCELERATORS FOR POLYESTER MOULDING AND COATING MASSES
Claus Burkhardt, Krefeld, Karl Raichle, Krefeld-Bockum, and Hermann Schnell, Krefeld-Uerdingen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Continuation-in-part of application Ser. No. 30,335, Apr. 20, 1970. This application Nov. 26, 1971, Ser. No. 202,622
Claims priority, application Germany, May 29, 1969, P 19 27 320.2
Int. Cl. C08f *21/02*
U.S. Cl. 260—863 **6 Claims**

According to the invention hardening of polyester moulding and coating masses of unsaturated polyesters and copolymerizable ethylen compounds containing hydroperoxide catalysts and soluble cobalt accelerators is further accelerated by the addition of small amounts of β-dicarbonyl compounds derived from cyclopentanone.

3,794,696
BLENDS OF ETHYLENE-PROPYLENE RUBBERS AND C_5–C_{10}-ALPHA-OLEFIN POLYMERS
Joginder Lal, Akron, and Paul H. Sandstrom, Tallmadge, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed July 1, 1971, Ser. No. 158,716
Int. Cl. C08f *29/12*
U.S. Cl. 260—897 A **11 Claims**

Blends of ethylene-propylene rubber (EPM) or ethylene-propylene-diene rubber (EPDM) with polymers of C_5–C_{10} α-olefin or polymers of (a) at least 80% of a C_5–C_{10} α-olefin and (b) up to 20% of a C_5–C_{30} nonconjugated diene or polyene (when employing a sulfur cure) result in rubber compounds possessing tack, extrudability, and/or processibility superior to that of either component. The weight ratio of EPM or EPDM to such polymer is between 95:5 and 5:95.

3,794,697
MODIFIED STYRENE POLYMERS PROVIDING IMPACT-RESISTANT MOLDED ARTICLES
Klaus Bronstert, Carlsberg, and Ernst-Guenther Kastning, deceased, by Marie-Louise Hermine Kastning, heir, Assenheim, Joachim Kurze, Dossenheim, Volker Ladenberger, Schwetzingen, and Dieter Stein, Limburgerhof, Germany; said Bronstert, said Joachim, said Volker and said Stein assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Germany
No Drawing. Continuation-in-part of abandoned application Ser. No. 22,703, Mar. 25, 1970. This application Jan. 26, 1972, Ser. No. 221,022
Claims priority, application Germany, Mar. 26, 1969, P 19 15 369.6
Int. Cl. C08f *41/12*
U.S. Cl. 260—876 R **5 Claims**

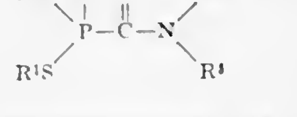
Thermoplastic molding compositions comprising a mixture of two rubber-modified styrene polymers A and B. Component A consists of conventional impact-resistant polystyrene made by polymerizing styrene in the presence of a rubber component B consists of a graft polymer made by polymerizing styrene in the presence of a metallized diene polymer. The compositions have particularly high impact resistance and are therefore preferred for the manufacture of utility articles where this property is desirable.

3,794,698
POLYETHYLENE CONTAINING EXTRUSION COATING COMPOSITIONS
Juan C. Diaz and Robert A. Mears, Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 74,928, Sept. 23, 1970. This application Mar. 9, 1972, Ser. No. 233,290
The portion of the term of the patent subsequent to Oct. 24, 1989, has been disclaimed and dedicated to the Public
Int. Cl. C08f *29/12*
U.S. Cl. 260—897 R **27 Claims**

Polyethylene containing extrusion coating compositions having an improved balance of properties are obtained from a blend of polyethylene and DAC-B resin. These extrusion coating compositions provide compositions that can be applied to various substrates at reduced melt temperatures with good adhesion between the coating and the substrate and have substantially no imperfections in the coating.

3,794,699
N-(S,S-DIALKYLDITHIOPHOSPHO) UREAS
Francis J. Freenor III, Richmond, Calif., assignor to Chevron Research Company, San Francisco, [redacted]
No Drawing. Filed Apr. 10, 1972, Ser. No
Int. Cl. C07f *9/24;* **A01n**
U.S. Cl. 260—938 **10 Claims**

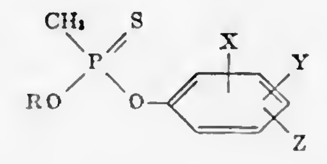
Compounds of the formula



wherein R^1 and R^2 independently are alkyl of 3 to 10 carbon atoms; R^3 and R^4 independently are alkyl of 1 to 6 carbon atoms or monocyclic aryl of 6 to 10 carbon atoms and substituted with up to 4 fluoro or chloro groups and up to 2 nitro groups and R^5 is hydrogen or alkyl of 1 to 6 carbon atoms, with the proviso that at least one R^3 or R^4 group has at least 3 carbon atoms, and with the further proviso that R^1 and R^2 together can form a divalent alkylene group of 2 to 3 carbon atoms.

3,794,700
PROCESS FOR THE PREPARATION OF METHYL-THIONOPHOSPHONATES
Richard Sehring and Wolfgang Buck, Ingelheim (Rhine), Germany, assignors to C. H. Boehringer Sohn, Ingelheim am Rhein, Germany
No Drawing. Filed Apr. 18, 1972, Ser. No. 245,179
Claims priority, application Germany, Apr. 19, 1971, P 21 18 861.4; Feb. 2, 1972, P 21 04 777.4, Feb. 7, 1972, P 22 05 564.7
Int. Cl. C07f *9/40, 9/41*
U.S. Cl. 260—986 **4 Claims**

A process for the preparation of methyl-thionophosphonates of the formula

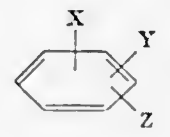


wherein

X and Y are each hydrogen, halogen or alkyl,

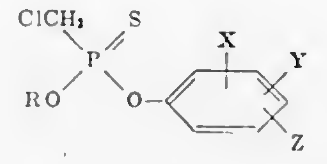
Z is hydrogen, halogen, alkyl, cyano, alkylthio, alkylsulfinyl, alkylsulfonyl, carboalkoxy, carbamoyl, sulfamoyl, alkylaminocarboxy, N-(mono- or di-) alkyl sulfamoyl or N-(mono- or di-)alkyl carbamoyl, and

R is alkyl or



where X, Y and Z have the same meaning as defined above;

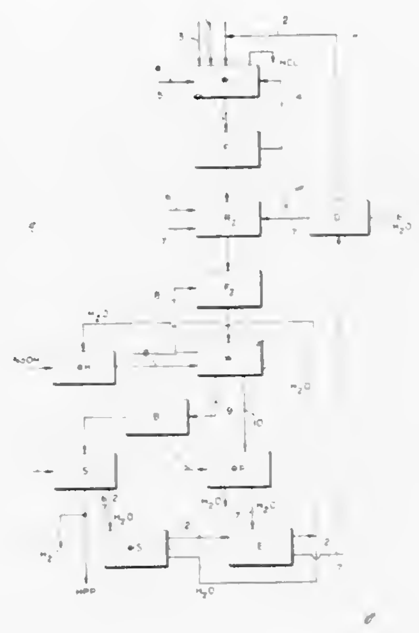
in general, the alkyl moieties are lower to medium alkyl, preferably methyl, ethyl or propyl; consisting essentially of the steps of reducing a compound of the formula



wherein X, Y, Z and R have the same meaning as above, with zinc and an organic acid at an elevated temperature.

3,794,701
PROCESS FOR THE PREPARATION OF HEXA-ALKOXYPHOSPHAZENE
Joannes Dominicus Bik, De Steeg, Netherlands, assignor to Akzo N.V., Arnhem, Netherlands
Filed May 15, 1972, Ser. No. 253,608
Claims priority, application Netherlands, May 17, 1971, 6,772/71
Int. Cl. C07f *9/22, 9/24, 9/26*
U.S. Cl. 260—973 **5 Claims**

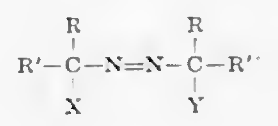
An improved process for the preparation of hexa-alkoxyphosphazene is disclosed. Hexachlorophosphazene is initially formed by reacting phosphorus chloride and ammonium chloride in the presence of chlorobenzene as a solvent. The resulting solid components are isolated, ordinarily by filtration. The remaining mixture is then reacted with a monovalent alkanol (propanol is preferred) and pyridine. The pyridine hydrochloride which



is formed is treated with an alkali hydroxide to give a pyridine-water fraction employed in pyridine regeneration. This fraction is also isolated. Hexa-alkoxyphosphazene is recovered from the remaining organic fraction while the resulting solvent-rich liquid phase is distilled to allow pyridine recovery.

3,794,702
PROCESS FOR THE PRODUCTION OF O,O-DIMETHYL-O-1,2 - DIBROMO - 2,2-DICHLOROETHYLPHOSPHATE
Kennosuke Imamura, Tokyo, Shukichi Nabekawa, Funabashi, Itaru Otsubo, Tokyo, and Hisashi Kasuya, Ohmiya, Japan, assignors to Nippon Chemical Industrial Co., Ltd., Tokyo, Japan
No Drawing. Continuation of application Ser. No. 833,157, June 13, 1969. This application Jan. 24, 1972, Ser. No. 220,360
Claims priority, application Japan, July 15, 1968, 43/49,046
Int. Cl. C07f *9/08*
U.S. Cl. 260—986 **19 Claims**

A process for the preparation of O,O-dimethyl-O-1,2-dibromo-2,2-dichloroethyl phosphate which comprises brominating O,O-dimethyl-O-dichlorovinyl phosphate in in the presence of an azo catalyst represented by the formula:



$$R'-\underset{X}{\overset{R}{C}}-N=N-\underset{Y}{\overset{R}{C}}-R'$$

wherein R and R′ each represents a member selected from the group consisting of an alkyl group of from 1 to 10 carbon atoms, a substituted alkyl group of from 1 to 10 carbon atoms, a monocyclic aryl group, a substituted monocyclic aryl group, an aralkyl group having from 7 to 12 carbon atoms, a substituted aralkyl group having from 7 to 12 carbon atoms, and a cycloalkyl group having from 3 to 8 carbon atoms in the ring; R and R′ taken together with the carbon atom to which they are attached representing a cycloalkyl group having from 3 to 7 carbon atoms in the ring; and X and Y representing a member selected from the group consisting of an alkoxycarbonyl and a cyano group, said substituents of said substituted alkyl, monocyclic aryl, and aralkyl group being members selected from the group consisting of a halogen atom, a nitro group, an amino group, a lower alkyl amino group, a lower alkoxy group, a monocyclic aryloxy group, and a carboxy group, said process being carried out at a temperature of from 20°–150° C.

3,794,703

PROCESS FOR THE PURIFICATION OF DIALKYL PHOSPHOROCHLORIDOTHIONATES

Thomas M. Beck, Hastings-on-Hudson, Richard J. Eletto, White Plains, and Donald J. Martin, Irvington, N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Dec. 22, 1969, Ser. No. 887,407

Int. Cl. C07f *9/14*

U.S. Cl. 260—990 **8 Claims**

The present invention provides a process for the purification of dialkyl phosphorochloridothionates. The process comprises adding a dialkyl phosphorodithioic acid to a dialkyl phosphorochloridothionate solution containing impurities in a sufficient amount to react with at least one of the impurities to form the dialkyl phosphorochloridothionate, and separating the phosphorochloridothionate in a substantially pure state from the remaining impurities in solution.

3,794,704

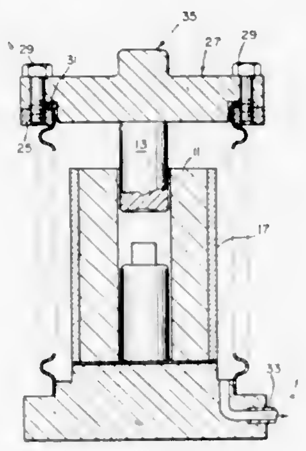
METHOD OF FORMING REFRACTIVE OPTICAL ELEMENTS FOR INFRARED RADIATION

John D. Strong, 136 Gray St., Amherst, Mass. 01002

Filed Nov. 17, 1971, Ser. No. 199,510

Int. Cl. B29d *11/00*

U.S. Cl. 264—1 **8 Claims**



In the method disclosed herein, infrared optical elements are formed by hot forging a boule grown from a molten alkali halide. The *boule* is heated to a temperature at which naturally occurring surface fissures in the particular alkali halide will not propagate and is then worked between a pair of die components to conform the boule to the desired shape.

3,794,705

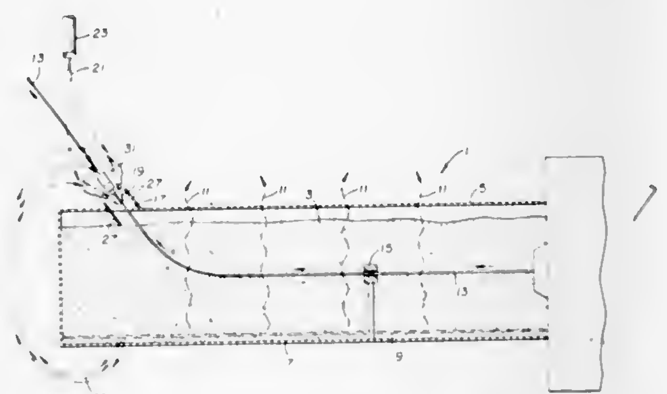
METHOD FOR REMOVAL OF FLUIDIZED BED PARTICLES FROM EXTRUDED POLYMERIC PRODUCTS PROCESSED THEREIN

Robert E. Harley, Tallmadge, Ohio, assignor to The General Tire & Rubber Company

Original application Nov. 9, 1970, Ser. No. 87,669, now abandoned. Divided and this application Sept. 13, 1972, Ser. No. 288,865

Int. Cl. B29c *25/00, 29/00;* **B29b** *19/00*

U.S. Cl. 264—37 **4 Claims**



In processing, i.e., heating, cooling, or vulcanizing, extruded polymeric products in fluidized beds, particles from the bed stick to the surface of the product. These particles cause problems in subsequent handling and finishing. Present methods of removing these adhered particles include air blasting, rubbing, and brushing the surface; rubbing and brushing damage the product's surface whereas air is rather inefficient and causes contamination of the bed. This invention provides an efficient process for removing the particles and that does not damage the surface of the product by directing at an angle of about 25° to 30° a stream of an elastic fluid such as air and fluidized bed particles against the surface of the oncoming extruded product.

3,794,706

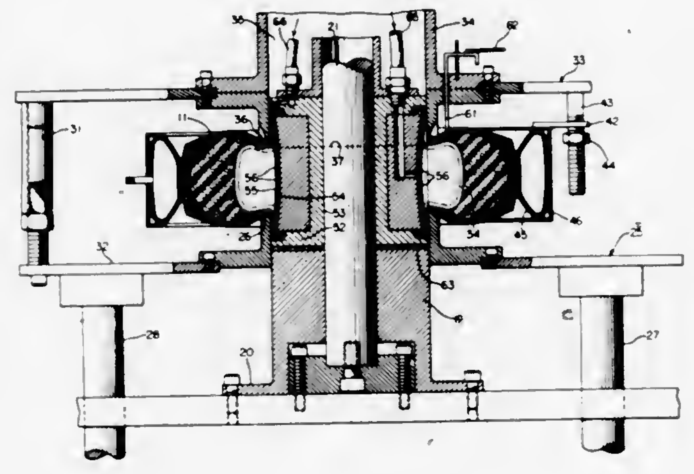
METHOD FOR BUILDING A FOAM-INFLATED TIRE

Christopher E. Christie, Akron, and Eugene Earl Martin, Hudson, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Original application Feb. 16, 1971, Ser. No. 115,264. Divided and this application Feb. 15, 1972, Ser. No. 226,412

Int. Cl. B29d *27/00;* **B29h** *13/00*

U.S. Cl. 264—45 **4 Claims**



An apparatus for at least partially filling a molded and vulcanized tire with foamable, elastomeric material. The apparatus has a pair of parallel, upper and lower bead seats on which a vulcanized tire is mounted. An inflatable ring is moved into position for annularly engaging and constricting the tire to maintain the beads of the tire in firm seated relation against the bead seats. An externally, accessible chamber is movable into communicating relation with the annular cavity of the tire mounted on the bead seats. Unfoamed, elastomeric material is then placed in the chamber and a ram is used to force the material from the chamber into the tire cavtiy. The ram carries a bladder which is centered in the space between the bead seats and inflated to compress the material within the tire cavity against the inner crown of the tire. The various components are then moved out of interfering relation with removal of the filled tire from the machine. The filled tire is then mounted on a wheel rim and heated to foam and cure the elastomeric material in the tire cavity.

3,794,707

PRODUCTION OF REFRACTORY ARTEFACTS

John Sidney O'Neill, Abingdon, and Calvin Eric Silverstone, Reading, England, assignors to United Kingdom Atomic Energy Authority, London, England

No Drawing. Continuation of abandoned application Ser. No. 812,396, Apr. 1, 1969. This application Aug. 23, 1971, Ser. No. 174,143

Claims priority, application Great Britain, Apr. 3, 1968, 16,047/68; June 19, 1968, 29,296/68; Oct. 25, 1968, 50,888/68

Int. Cl. C04b *33/32*

U.S. Cl. 264—56 **4 Claims**

A refractory artefact is made by taking a mix of a refractory powder with a binder or binder mixture having plastic and setting properties; forming a green artefact from the mix, e.g. by making and laying up sheets; curing the setting binder, e.g. by heat, to form a hard cured artefact; machining if necessary and then heating to sinter the artefact. The sintering step may include nitriding.

3,794,708

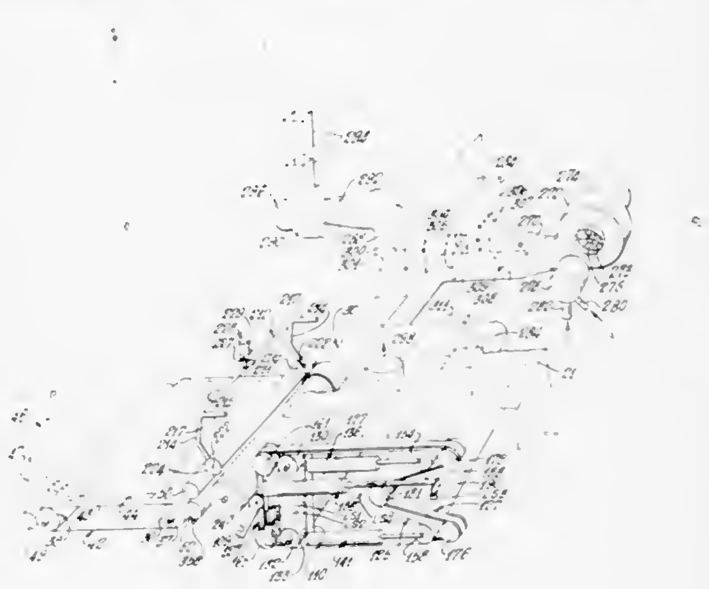
METHOD FOR FORMING A TUBULAR FIBROUS BODY

David O. Richards, Newark, Robert J. Beeson, Mount Gilead, and Ronald E. Kissell, Alexandria, Ohio, assignors to Owens-Corning Fiberglas Corporation

Continuation-in-part of application Ser. No. 125,833, Mar. 18, 1971, which is a continuation of application Ser. No. 781,732, Dec. 6, 1968, both now abandoned. This application Aug. 25, 1972, Ser. No. 283,876

Int. Cl. B65h *81/00*

U.S. Cl. 156—189 **11 Claims**



A method for making a tubular fibrous body or duct section fashioned with shiplap end formations wherein the end regions of the body or section are of increased density. A mass or mat of binder-impregnated fibers, preferably mineral fibers, is wound into tubular formation on a foraminous mandrel. The fibers are compressed during the winding and a reduced pressure is established within the mandrel as an assist in collecting the fibrous mass or mat into tubular formation. A thermal treatment is then administered to the tubular body or duct section while rotating the same on the mandrel to cure the binder. Narrow end regions of the tubular body or duct section are compressed to a higher density than the main body or sections during the winding.

3,794,709

METHOD FOR REDUCING SURFACE CRACKING IN EXTRUDED PLASTIC MATERIAL

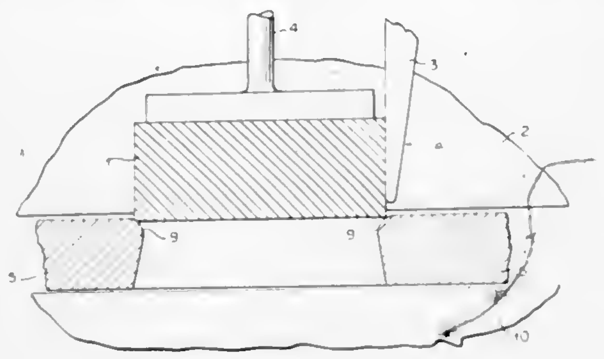
Eric G. Bengtson, Closter, and Lynn H. Lander, Ridgefield, N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed Feb. 12, 1971, Ser. No. 114,945

Int. Cl. C11d *13/14, 13/28*

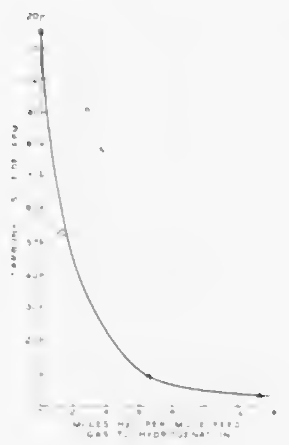
U.S. Cl. 264—323 **1 Claim**

Method for end-shaping blanks of soap cut from extruded logs preliminary to die box pressing by subjecting the cut end surfaces of the blanks to transverse shear in order to bend and compress the flow lines at the cut ends exposed and opened by segmenting the extruded log, the transverse shear being provided by forcing the soap blank through an opening defined by spaced apart die surfaces separated by less than the longitudinal length of the soap blank, the die surfaces being rounded at the soap blank receiving edge and tapering divergently from the soap blank receiving edge.



3,794,710
GAS DESULFURIZATION

John J. Merrill, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Sept. 17, 1971, Ser. No. 181,395
Int. Cl. C01b *17/04, 17/16*
U.S. Cl. 423—220 **6 Claims**



A process for removing sulfur compounds from sulfur plant tail gases comprising SO_2, COS, CS_2, entrained and vaporized S, and H_2S which comprises:

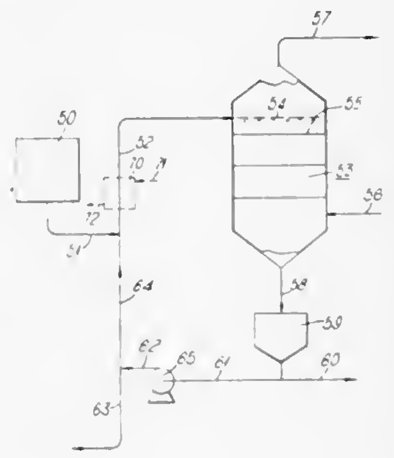
(a) oxidizing the tail gas stream to convert COS, CS_2 and entrained and vaporized S to SO_2 and CO_2, and thereby obtain an oxidized gas stream comprising SO_2 and CO_2.
(b) feeding the oxidized gas stream to a hydrogenating zone and therein hydrogenating the oxidized gas stream by a process which comprises contacting the oxidized gas stream with a hydrogenation catalyst at a temperature between 400° and 900° F., and in the presence of hydrogen gas to obtain a hydrogenated gas stream comprising H_2S and CO_2.
(c) scrubbing H_2S from the hydrogenated gas stream to obtain a purified stream.

It is particularly preferred to maintain at least 0.4 mole H_2O in the oxidized gas stream fed to the hydrogenation zone per mole of said oxidized gas stream in order to maintain the COS concentration in the effluent from the hydrogenation zone at a very low part per million level.

3,794,711
USE OF PHENOLIC COMPOUNDS FOR THE SIMULTANEOUS ABSORPTION AND OXIDATION OF OBJECTIONABLY ODORIFEROUS SULPHUR COMPOUNDS FROM A GASEOUS STREAM

Staya P. Bhatia, Pointe Claire, Steven Prahacs, Beaconsfield, Thomas L. de Souza, Lachine, and Herbert G. Jones, Beaconsfield, Quebec, Canada, assignors to Pulp and Paper Research Institute of Canada, Pointe Claire, Quebec, Canada
Filed Apr. 27, 1971, Ser. No. 137,783
Claims priority, application Canada, Jan. 20, 1971, 103,183
Int. Cl. B01d *53/34*
U.S. Cl. 423—224 **34 Claims**

Objectionably odoriferous sulfur compounds are removed from gaseous emissions, e.g., methyl mercaptan and dimethyl sulfide or mixtures thereof, either alone or together with hydrogen sulfide, e.g., kraft-recovery furnace stack gases, in industrial operations. The removal is achieved by the use of alkaline or near neutral scrubbing solutions containing defined minimum amounts of certain phenolic compounds, e.g., phenol, dihydroxy phenols, trihydroxy phenols, substituted phenols and derivatives thereof as additional scrubbing agents, in the presence of gaseous oxygen. By this procedure, the absorption efficiency of the alkaline aqueous solution is increased and the hydrosulfide ions are substantially instantaneously converted to soluble sulfate and thiosulfate ions.



3,794,712
PREPARATION OF SILICA GELS

Henri A. Aboutboul, Brussels, Belgium, Jerome H. Krekeler, Cincinnati, Ohio, and William Kirch, Clinton, Iowa, assignors to National Petro Chemicals Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 750,733, Aug. 6, 1968. This application Oct. 26, 1971, Ser. No. 191,977
The portion of the term of the patent subsequent to Mar. 28, 1989, has been disclaimed
Int. Cl. C01b *33/16*
U.S. Cl. 423—338 **27 Claims**

Silica gels having narrow pore diameter distribution in the range of 300–600 A., surface areas in the range from 200–500 m.^{2}/g., pore volumes of from about 2.0 to about 3.5 cm.^{3}/g. and the process of preparing such silica gels directly from water, comprising critically controlled steps of precipitation of the silica gel, aging the precipitated silica hydrogel slurry, reducing the alkaline impurity level in the hydrogel by washing the aged product and freeze drying the hydrogel so as to remove substantially all of the water, i.e. vacuum subliming the water from the gel after freezing said hydrogel particles at a temperature sufficient to maintain the water in the pores in the frozen state.

3,794,713
PREPARATION OF SILICA GELS

Henri A. Aboutboul, Brussels, Belgium; Jerome H. Krekeler, Cincinnati, Ohio, and William Kirch, Clinton, Iowa, assignors to National Petro Chemicals Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 750,734, Aug. 6, 1968, Pat. No. 3,652,215. This application Oct. 26, 1971, Ser. No. 191,978. The portion of the term of this patent subsequent to Mar. 27, 1989, has been disclaimed.
Int. Cl. C01b *33/16*
U.S. Cl. 423—338 30 Claims

Silica xerogels having narrow pore diameter distribution in the range of 300 – 600 A, surface areas in the range of from 200 – 500 m^2/g, and pore volumes in the range of 2.0 – 3.5 cm^3/g and process for preparing such silica xerogels comprising critically controlled steps of precipitation of the silica gel, aging the precipitated silica hydrogel slurry, washing the aged product, displacing the water with an organic liquid substantially completely miscible with water and drying the gel.

3,794,714
PROCESS FOR WASHING SULFUR OXIDE-CONTAINING GASES WITH A SLURRY OF LIME

Masumi Atsukawa; Kazumi Kamei; Toshihiko Furumoto, and Nikushi Tsuneyoshi, all of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 16, 1971, Ser. No. 199,213
Claims priority, application Japan, Dec. 29, 1970, 45/128031
Int. Cl. C01b *17/60*
U.S. Cl. 423—242 2 Claims

A process for washing a sulfur oxide-containing gas with a slurry of lime; comprising passing the gas from a first absorbing unit to a second absorbing unit while passing a sulfur oxide absorbing liquid from the second absorbing unit to the first absorbing unit, and occasionally reversing the flow directions of the gas and the absorbing liquid, whereby attachment of a scale to the inner surfaces of said absorbing units is prevented.

3,794,715
SOLVENT EXTRACTION PROCESS FOR PRODUCING LOW- NITRATE AND LARGE-CRYSTAL-SIZE PUO SOLS

Milton H. Lloyd, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed Aug. 30, 1972, Ser. No. 284,809
Int. Cl. C01g *43/00*
U.S. Cl. 423—251 4 Claims

Low-nitrate plutonia sols having a NO_3/Pu mole ratio in the range 0.1 to 0.4 with an average crystallite diameter of 30 to 80 A can be produced when a sol is prepared by solvent extraction of a plutonium nitrate seeded with a plutonia sol. When the seeded sol is taken to dryness and heated for 10 to 120 minutes at a temperature in the range 180°–230° C. in a dry sweep gas, nitrate removal occurs and the baked solid can easily be dispersed to form a stable sol.

3,794,716
SEPARATION OF URANIUM ISOTOPES BY CHEMICAL EXCHANGE

Pearl R. Ogle, Jr., Westerville, Ohio, assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed Sept. 13, 1972, Ser. No. 288,860
Int. Cl. C01g *43/00*
U.S. Cl. 423—253 12 Claims

A chemical exchange method is provided for separating uranium-235 from uranium-238 comprising contacting a first phase containing UF_6 with a second phase containing a compound selected from the group consisting of $NOUF_6$, $NOUF_7$, and NO_2UF_7 until the UF_6 in the first phase becomes enriched in the U-235 isotope.

3,794,717
METHOD OF PREPARING COMPOUND OXIDES OF TITANIUM AND ZINC

Hajime Miyatuka, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Mar. 22, 1972, Ser. No. 236,966
Claims priority, application Japan, Mar. 26, 1971, 46-18121
Int. Cl. C01g *23/00*
U.S. Cl. 423—598 8 Claims

A method of preparing compound oxides of titanium and zinc is improved. It comprises subjecting a mixed fine powder of zinc oxide and oxides of titanium obtained from a titanic acid ester to heat treatment at temperatures not lower than 600°C.

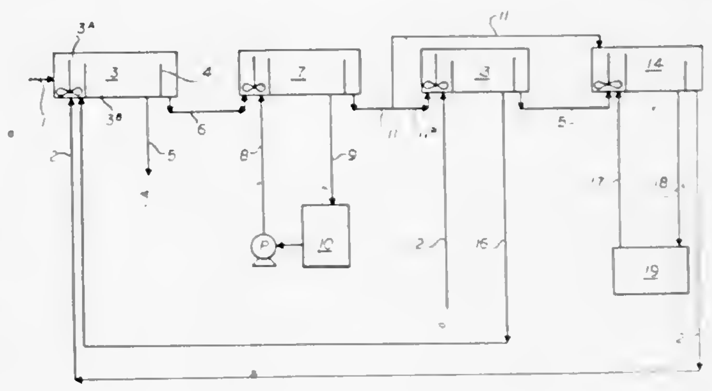
3,794,718
PROCESS FOR REDUCING THE AMOUNT OF CALCIUM CONTAINED IN MAGNESIUM-BASE WASTE SULFITE LIQUOR BY THE USE OF AN AMMONIUM COMPOUND AND ADDITIONAL CALCIUM

Toivo Lahtvee, Scarborough, Ontario; Bal Krishan Sethi, Toronto, Ontario, both of Canada, and William Hubbard Stark, Cincinnati, Ohio, assignors to Spring Chemicals Limited, Toronto, Ontario, Canada
Filed Sept. 22, 1971, Ser. No. 182,832
Int. Cl. C01b *17/45, 17/46, 17/62, 17/98*
U.S. Cl. 423—512 12 Claims

The amount of calcium contained in magnesium-base waste sulfite liquor is reduced by precipitating the calcium as calcium sulfite and separating the precipitate from the remaining waste sulfite liquor solution. The precipitation is caused by dissolving in the waste sulfite liquor (1) additional calcium, i.e., beyond the amount of calcium initially contained in the waste sulfite liquor; (2) an ammonium compound selected from the group consisting of anhydrous ammonia, ammonium sulfite, aqueous ammonia, ammonium carbonate, ammonium magnesium carbonate and ammonium hydroxide; and (3) a source of sulfite ions.

3,794,719
REDUCTION OF NICKEL CONTAMINATION BY ZINC IN α-HYDROXY OXIME EXTRACT

Edward Harris Lowenhaupt, III; Edward Edmunds, Jr., and Richard Dean Eliasen, all of El Paso, Tex., assignors to S.E.C. Corporation, El Paso, Tex.
Filed Feb. 25, 1972, Ser. No. 229,328
Int. Cl. B01d *11/04*; **C01g** *53/00, 9/00*
U.S. Cl. 423—139 3 Claims



The amount of zinc coextracted with nickel by α-hydroxy oxime extractants is reduced by contacting said extractants with an excess of nickel ions to selectively displace zinc.

preparations against grampositive and gramnegative bacteria

3,794,729

3,794,720

PROCESS FOR PRODUCING HARD FERRITES

John David Nye, Prescott, Ontario, Canada, assignor to Ferrox Iron Ltd., Prescott, Ontario, Canada

Filed Mar. 31, 1972, Ser. No. 239,958

Int. Cl. C01g *49/00*

U.S. Cl. 423—594 **8 Claims**

Barium, strontium or lead ferrite is produced in the usual manner by mixing together barium, strontium or lead carbonate and ferric oxide, calcining this to form the barium, strontium or lead ferrite and grinding the ferrite in slurry form in a mill to a particle size of about 1 micron average diameter. According to the invention, the barium, strontium or lead ferrite slurry before, during or after grinding in the mill has added thereto a reagent, which converts any barium, strontium or lead hydroxide present into a CO_2-inactive form. This prevents the hydroxide from cementing the ferrite particles together into an irreversible cement-like mass during drying and storage in the dry form.

ERRATUM

For Class 423—515 see:
Patent No. 3,794,721

3,794,721

ANTIBIOTIC STEFFIMYCIN B AND PROCESS FOR THE PREPARATION THEREOF

Thomas F. Brodasky, Kalamazoo, and Fritz Reusser, Portage, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Aug. 28, 1972, Ser. No. 283,908

Int. Cl. A61k *21/00*

U.S. Cl. 424—120 **4 Claims**

New antibiotic, steffimycin B produced by the controlled fermentation of the new microorganism *Streptomyces elgreteus* Dietz sp. n. in an aqueous nutrient medium. Steffimycin B is active against Gram-positive bacteria and can be used in various environments to eradicate or control such bacteria.

3,794,722

IRON COMPOSITION FOR TREATING ANEMIA

Miguel Margarit Taya, Manuel Girona 56, Barcelona, Spain

Continuation-in-part of Ser. No. 855,762, Sept. 5, 1969, abandoned. This application May 6, 1971, Ser. No. 140,995

Claims priority, application Spain, Nov. 20, 1968, 360433

Int. Cl. A61k *27/00*

U.S. Cl. 424—147 **14 Claims**

A method for treating hypoferric anemia in sucking mammals, said method comprising administering orally to a sucking mammal afflicted with hypoferric anemia a trivalent iron compound prepared by forming ferric oxide from soluble ferric iron salts by reaction with a member selected from the group consisting of Na_2CO_3, $_{K2}CO_3$, $(NH_4)_2CO_3$, NaOH, KOH and NH_4OH, preparing a mixture of this ferric oxide with at least one saccharide and a hexitol, neutralizing said mixture to a pH of between 6 and 9 by the addition of a hydroxycarboxylic acid, and concentrating the solution thus obtained to an iron concentration of about 80–150 mg/cc, and composition for achieving same.

3,794,723

COMPLEXES OF PHOSPHANILIC ACID AND 9-AMINO-3-NITROACRIDINE USEFUL AS ANTIFUNGAL OR ANTIBACTERIAL AGENTS

Joseph F. Pagano, Paoli, Pa., assignor to Smithkline Corporation, Philadelphia, Pa.

Division of Ser. No. 18,312, March 10, 1970, Pat. No. 3,694,447. This application Aug. 9, 1972, Ser. No. 278,917

Int. Cl. A01n *9/36*

U.S. Cl. 424—200 **9 Claims**

Complexes of phosphanilic acid and an aminoacridine possess broad-spectrum antibacterial and antifungal activity when used topically. The preferred complex is a 1:1 complex of phosphanilic acid and 9-amino-3-nitroacridine.

3,794,724

USE OF SUBSTITUTED (TRIFLUOROMETHYL)PYRIDYL PHOSPHATES AND PHOSPHOROTHIOATES AS NEMATICIDES

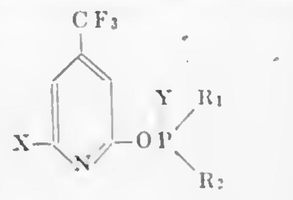
Frances C. O'Melia, Pleasant Hill, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 99,666, Dec. 18, 1970, abandoned. This application Dec. 1, 1971, Ser. No. 203,906

Int. Cl. A01n *9/36*

U.S. Cl. 424—200 **13 Claims**

Soil nematodes are controlled by applying to infected soil effective amounts of substituted (trifluoromethyl)pyridyl phosphates and phosphorothioates of the formula



wherein

X is bromo, chloro, fluoro or iodo;

Y is oxygen or sulfur, and

R_1 and R_2 each independently represent a member selected from the group consisting of loweralkoxy, lower-alkylthio, amino, and loweralkylamino.

3,794,725

PHARMACEUTICAL COMPOSITIONS CONTAINING CERTAIN 3-NITRO-FURYL-4-AZOLIDINYLIDENE-AZOLONES-5 AND METHOD OF USE

Roland Maier, Biberach/Riss, and Robert Sauter, Laupheim, both of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim/Rhine, Germany

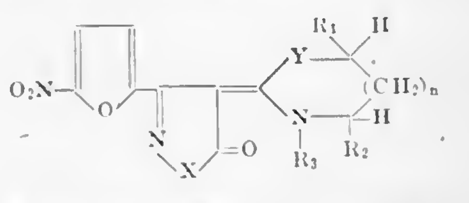
Division of Ser. No. 177,435, Sept. 2, 1971, Pat. No. 3,717,629. This application Dec. 29, 1972, Ser. No. 319,481

Claims priority, application Germany, Sept. 11, 1970, 2045049; June 4, 1971, 2127735

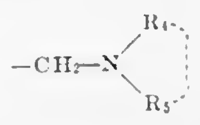
Int. Cl. A61k *27/00*

U.S. Cl. 424—270 **11 Claims**

Pharmaceutical compositions containing as active ingredients compounds of the formula



wherein R_1 is hydrogen, straight or branched alkyl of 1 to 6 carbon atoms, monohydroxy-(alkyl of 1 to 6 carbon atoms), or



where R_4 and R_5 are each straight or branched alkyl of 1 to 4 carbon atoms, or, together with each other and the nitrogen atom to which they are attached, morpholino, pyrrolidino, piperidino or N'-methyl-piperazino,

R_2 is hydrogen or alkyl of 1 to 3 carbon atoms,

R_3 is hydrogen, straight or branched alkyl of 1 to 5 carbon atoms, or monohydroxy-(alkyl of 1 to 5 carbon atoms),

X is oxygen, imino(—NH—) or methylimino(—NCH_3),

Y is oxygen, sulfur or imino, and

n is 0 or 1,

or, to the extent that the compounds contain one or more basic nitrogen atoms, non-toxic acid addition salts thereof; and methods of using the compositions as bactericidal preparations against grampositive and gramnegative bacteria and against trichomonas.

3,794,726

INHIBITING AGGRESSIVE BEHAVIOR WITH 1,2,3-BENZOTRIAZIN-(3H)-ONE

Zaven S. Ariyan, Woodbury, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Aug. 21, 1972, Ser. No. 282,311

Int. Cl. A61k *27/00*

U.S. Cl. 424—249 **11 Claims**

1,2,3-benzotriazin-4(3H)-one is useful as an anti-aggression agent.

3,794,727

METHOD OF CONTROLLING COCCIDIOSIS BY THE USE OF A NITROIMIDAZOLYLTHIADIAZOLINONE

Spencer Douglas Carter, Trenton, and Gerald Berkelhammer, Princeton, both of N.J., assignors to American Cyamamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 236,232, March 20, 1972. This application May 3, 1973, Ser. No. 356,978

Int. Cl. A61k *27/00*

U.S. Cl. 424—270 **7 Claims**

A method for controlling coccidiosis in warm-blooded animals by orally administering to said animals an edible carrier containing an effective amount of a nitroimidazolylthiadiazolinone, is described.

3,794,728

N-(ω-CYANO-ALKYL)-CARBAMYL-BENZIMIDAZOLES USED AS FUNGICIDES AND ANTI-BACTERIAL AGENTS

Werner Daum, Krefeld-Bockum; Hans Scheinpflug; Paul-Ernst Frohberger, both of Leverkusen, and Ferdinand Grewe, Burscheid, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

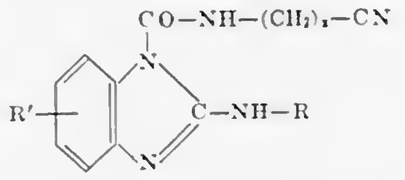
Division of Ser. No. 880,399, Nov. 26, 1969, Pat. No. 3,673,210. This application Dec. 8, 1971, Ser. No. 206,180

Claims priority, application Germany, Nov. 30, 1968, 1812005

Int. Cl. A01n *9/22*

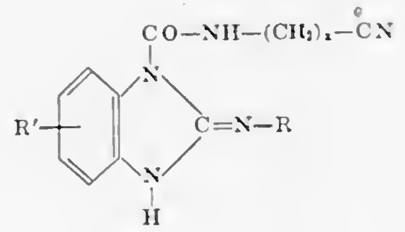
U.S. Cl. 424—273 **13 Claims**

Fungicidal, anti-bacterial, insecticidal, acaricidal and ovicidal compositions containing as active ingredients N-(ω-cyano-alkyl)-carbamyl-benzimidazoles of the tautomeric formulae (I):



(I')

and



(I'')

in which

R is hydrogen, alkoxycarbonyl having 2–5 carbon atoms or alkylcarbonyl having 1–5 carbon atoms,

R' is hydrogen or alkyl of 1–4 carbon atoms, and

x is a whole number from 1 to 11.

3,794,729

INHIBITING BLOOD PLATELET AGGREGATION

Arnold J. Wohl, North Caldwell; Peter J. Daniels, Cedar Grove, and John G. Topliss, West Caldwell, all of N.J., assignors to Schering Corporation, Bloomfield, N.J.

Continuation-in-part of Ser. No. 811,200, March 27, 1969, abandoned. This application July 16, 1971, Ser. No. 163,460

Int. Cl. A61k *27/00*

U.S. Cl. 424—337 **22 Claims**

The inhibition of undesirable blood-platelet aggregation by administration of novel pharmaceutical preparations comprising certain polyiodo- or bromo- oxydiphenyl sulfones.

3,794,730

CONTROL OF INSECTS WITH CERTAIN PHOSPHORUS-CONTAINING THIOMORPHOLINONES

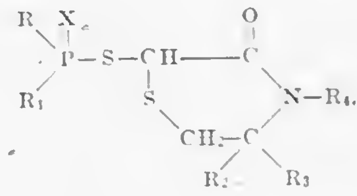
Karoly Szabo, Syracuse, N.Y., assignor to Esso Research and Engineering Company, Linden, N.J.

Division of Ser. No. 60,774, Aug. 3, 1970, Pat. No. 3,691,163. This application July 25, 1972, Ser. No. 275,113

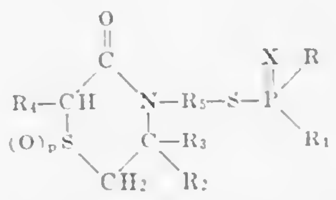
Int. Cl. A01n *9/36*

U.S. Cl. 424—200 **18 Claims**

Organophosphorus compounds containing the thiomorpholinone moiety have been found to be highly active both as contact and systemic insecticides and miticides. These compounds also possess excellent acaricidal activity. These compounds are represented by one of the following structural formulae:



or



wherein R and R_1 may be the same or different and are selected from the group consisting of C_1 to C_6 alkoxy, C_1 to C_6 alkyl, C_2 to C_6 alkoxymethyl, and C_1 to C_6 alkylthio; provided that at least one of them is alkoxy; R_2 and R_3 may be the same or different and are selected from the group consisting of hydrogen and C_1 to C_6 alkyl; R_4 is one selected from the group consisting of hydrogen, C_1–C_6 alkyl, C_1–C_6 alkylthio, C_1–C_6 alkoxyl and C_1–C_6 alkyl optionally substituted with hydroxyl, amino, cyano, C_1–C_6 N alkyl carbamoyl, C_1–C_6 alkoxycarbamido, substituted and unsubstituted phenyl, C_1–C_6 carboalkoxyalkyl and acetoxyl; R_5 is one selected from the group consisting of $(CH_2)_n$ and CH_2–CHR_6, wherein R_6 is one selected from the group consisting of hydrogen, C_1 to C_6 alkyl, C_1 to C_6 alkylthio; X is O or S, *n* is an integer ranging from 1 to 6 and *p* is 0-2.

3,794,731

PROTEIN FIBER FABRICATION PROCESS

Robert D. Dannert, Wayzata, and Michael E. Manwaring, Minneapolis, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Apr. 21, 1972, Ser. No. 246,292

Int. Cl. A23j *3/00*

U.S. Cl. 426—276 **12 Claims**

Protein fibers are prepared by forcing an alkaline protein solution through an orifice and simultaneously intimately contacting the protein stream with a fast acting acid gas traveling at a velocity greater than the protein stream. The fibers find particular use in meat analog preparations.

3,794,732

RUMINANT FEED UTILIZATION IMPROVEMENT

Arthur P. Raun, New Palestine, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jan. 24, 1972, Ser. No. 220,304

Int. Cl. A61k *21/00*

U.S. Cl. 424—283 **7 Claims**

Ruminant animals having a developed rumen function convert their feed more efficiently to energy when orally treated with an antibiotic chosen from among A204, X537A, dianemycin, monensin, nigericin, and X206 and their physiologically acceptable salts and esters.

3,794,733

N-SUBSTITUTED ARYLCARBAMOYL SULFIDES USED AS INSECTICIDES

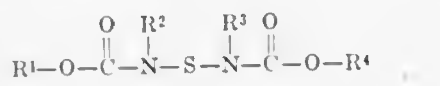
Melancthon S. Brown, deceased, late of Berkeley, Calif., and Gustave K. Kohn, administrator, Berkeley, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 88,105, Nov. 9, 1970, Pat. No. 3,679,733. This application May 15, 1972, Ser. No. 253,511

Int. Cl. A01n *9/12*

U.S. Cl. 424—300 **16 Claims**

Compounds of the formula



$$R^1-O-\overset{\overset{O}{\|}}{C}-\overset{\overset{R^2}{|}}{N}-S-\overset{\overset{R^3}{|}}{N}-\overset{\overset{O}{\|}}{C}-O-R^4$$

wherein R^1 and R^4 are individually aryl of six to 14 carbon atoms optionally substituted with alkyl groups, halogen atoms, nitro groups, alkoxy groups, alkylthio groups or dialkylamino groups; R^2 and R^3 are individually hydrogen or alkyl of one to four carbon atoms are used as insecticides.

3,794,734

METHODS OF TREATING EDEMA AND HYPERTENSION USING CERTAIN 2-AMINOETHYLPHENOLS

Edward J. Cragoe, Jr., Lansdale, and Everett M. Schultz, Ambler, both of Pa., assignors to Merck & Co. Inc., Rahway, N.J.

Filed Mar. 3, 1971, Ser. No. 120,730

Int. Cl. A61k *27/00*

U.S. Cl. 424—330 **9 Claims**

2-Aminomethylphenol products and their non-toxic, pharmaceutically acceptable salts, compositions containing 2-aminomethylphenols as their active ingredient and methods useful in the treatment of edema and/or hypertension are disclosed.

3,794,735

EXTRACTION OF PROTEIN FROM SEED

Brian George Newsom, Pertenhall, and Michael Peter Tombs, Pavenham, both of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Sept. 16, 1971, Ser. No. 181,263

Claims priority, application Great Britain, Oct. 9, 1970, 48,072/70

Int. Cl. A23j *3/00;* **A23l** *1/20*

U.S. Cl. 426—364 **6 Claims**

A process of making foodstuffs (e.g., simulated meats) by the steps of mixing a coprecipitate of protein and lipid in the presence of water with an edible water-soluble salt, then heat-setting this mixture and, during or subsequent to setting, contacting the mixture with a lipid solvent.

3,794,736

METHOD OF INHIBITING THE GROWTH OF BACTERIA AND FUNGI USING ORGANOSILICON AMINES

Eugene A. Abbott, Freeland, and Alan J. Isquith, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Sept. 19, 1971, Ser. No. 184,918

Int. Cl. A01n *9/20, 9/24*

U.S. Cl. 424—78 **8 Claims**

The growth of bacteria and fungi are inhibited by contacting the organisms with certain organosilicon amines and their corresponding amine salts. Specifically the compound $[(CH_3)_3SiO]_3Si(CH_2)_3NHCH_2CH_2NH_2$ kills S. aureus, E. coli, A. niger and P. aeruginosa at an M.I.C. of 100 ug/ml or less.

3,794,737

P-(ACETOACETAMIDOALKYL)BENZENESULFONAMIDE DERIVATIVES AS HYPOGLYCERMICAGENTS

Henri Dietrich, Arlesheim/Basel, and Claude Lehmann, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 68,797, Sept. 1, 1970, Pat. No. 3,708,493. This application Sept. 18, 1972, Ser. No. 290,032

Claims priority, application Switzerland, Sept. 4, 1969, 13396/69

Int. Cl. A61k *27/00*

U.S. Cl. 424—273 **4 Claims**

Compounds of the class of 1-[p-(acetoacetamidoalkyl)-phenylsulfonyl]-2-imino-imidazolidines and the pharmaceutically acceptable acid addition salts thereof, have hypoglycemic activity; the compounds are active ingredients of pharmaceutical compositions and can be used for the treatment of diabetes mellitus; a typical embodiment is 1-[p-(2-acetoacetamidoethyl)-phenylsulfonyl]-2-imino-3-methyl-imidazolidine.

3,794,738

SODIUM DITHIONITE STABILIZATION AGAINST SELF-IGNITION

Leonard C. Ellis, Chesapeake, and Mearl A. Kise, Portsmouth, both of Va., assignors to Virginia Chemicals Inc., Portsmouth, Va.

Filed July 26, 1972, Ser. No. 275,448

Int. Cl. C01b *17/98*

U.S. Cl. 423—515 **14 Claims**

To retard self-ignition of commercial grades of sodium dithionite when contacted with moisture and/or water, small but effective amounts of low concentration alkali metal and ammonium salts of diglycolic acid are added, said additive salts being beneficial to bleaching processes in which sodium dithionite may be used, while at the same time avoiding eutrophication of lakes and streams into which the bleaching effluent may ultimately flow.

ERRATA

For Classes 426—260 and 426—511 see:
Patents Nos. 3,794,499 and 3,794,500

3,794,739

CONTROLLED FERMENTATION AND PREVENTION OF UNDESIRABLE BACTERIAL GROWTH IN FOOD

Wei Hwa Lee; Hans P. Reimann, and Abdul J. Al-Mashat, all of Davis, Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jan. 26, 1971, Ser. No. 109,960

Int. Cl. A22c *18/00;* **A23b** *1/00*

U.S. Cl. 426—8 **3 Claims**

Food is inoculated with lactic acid producing bacterial cells which, though previously rendered non-viable, still have the capacity to produce acid. If controlled fermentation of the food is desired, the inoculated food is incubated under suitable conditions. If safeguarding against food poisoning bacteria is desired, the inoculated food is refrigerated to inhibit lactic acid production. If, in the latter case, the food is subsequently exposed to higher temperatures, acid production occurs and inhibits production of food poisoning bacteria.

3,794,740

RUMINANT DIRECT FEEDING SUSPENSION SUPPLEMENT

Frank P. Achorn, and J. Frank Anderson, Jr., both of Florence, Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation of Ser. No. 191,853, Oct. 22, 1971. This application Mar. 31, 1972, Ser. No. 240,290

Int. Cl. A23k *1/02, 1/22*

U.S. Cl. 426—69 **7 Claims**

A direct feeding supplement designed to cure or prevent in ruminants low blood serum magnesium and/or calcium levels, which low levels lead to the ailment, grass tetany. In order to incorporate sufficient magnesium to do the job, the solubility limit is exceeded in the aqueous system resulting in a suspension supplement. Previously, such suspensions would gel in short order and become useless. It has now been discovered that gelling can be prevented for substantial periods of time if the ammonium polyphosphate solution component of the suspension contains greater than about 70 percent polyphosphate species therein including substantial amounts of tripoly.

3,794,741

FLAVOR BITS FOR INCORPORATION IN CULINARY MIXES AND PROCESS FOR MAKING SAME

Dwight C. Weigle, Cincinnati, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Dec. 15, 1971, Ser. No. 208,391

Int. Cl. A23l *1/26;* **A21d** *2/00*

U.S. Cl. 426—156 **10 Claims**

Flavor bits for incorporation in culinary mixes are produced by mixing, by weight of the total flavor bit, 30% to 40% sugar, 20% to 30% water, 20% to 30% corn syrup, and cooking the mixture at 230°F to 320°F for 20 minutes to 1.5 hours; blending 2% to 6% of an edible cooking fat, and at least 2.5% of a suspending agent into the above mixture; cooling the blend to a temperature between 140°F and 200°F; adding a flavor material; cooling the above mixture until it becomes hard; and grinding the hardened mixture into small particles. The flavor bits exhibit excellent flavor retention and will not settle out of the culinary mixes during their preparation.

3,794,742

COATING COMPOSITION FOR FOODS AND METHOD OF IMPROVING TEXTURE OF COOKED FOODS

Norman E. Harris, Waltham, and Frances H. Lee, Natick, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 21, 1972, Ser. No. 236,588

Int. Cl. A23b *1/10*

U.S. Cl. 426—302 **4 Claims**

A method of improving the texture of meat or other solid foods by reducing the loss of moisture from the foods during cooking thereof and a coating composition for such foods to be applied thereto prior to cooking, said coating composition comprising a mixture of a hydroxypropylmethylcellulose, dextrose, hydrolyzed cereal solids, and a pregelatinized tapioca starch.

3,794,743

METHOD OF REMOVING MELTED FATS FROM THE SURFACE OF AN EDIBLE AQUEOUS SOLUTION

Marcella C. Stubits, St. Louis, Mo., assignor to Anheuser-Busch, Incorporated, St. Louis, Mo.

Filed Jan. 24, 1972, Ser. No. 220,392

Int. Cl. A22c *18/00*

U.S. Cl. 426—417 **3 Claims**

This disclosure covers a method of removing a preselected portion of the fat or oil from the surface of a vessel of aqueous fluid. An edible carbohydrate fatty acid ester in powdered form (preferably cellulose laurate) is added to the fat and absorbs several times its own weight in fat. The fat laden cellulose laurate is removed from the fluid in the vessel, and, if the fat is extracted from the cellulose laurate; it can be reused.

3,794,744

PURIFICATION OF HOP EXTRACTS

David Stanley John Gardner, Reigate, England, assignor to White Tomkins Limited,, Reigate, Surrey, England

Filed May 10, 1972, Ser. No. 252,342

Int. Cl. A23l ; C12h */100*

U.S. Cl. 426—424 **7 Claims**

Xanthohumol is removed from a hop extract solution by treatment with a polyamide, for example by passing the solution down a chromatographic column of polyamide or by slurrying together and separating the insoluble polyamide. Polyvinyl pyrrolidone is preferred. The treated extract can be used in brewing with or without further treatment.

3,794,745

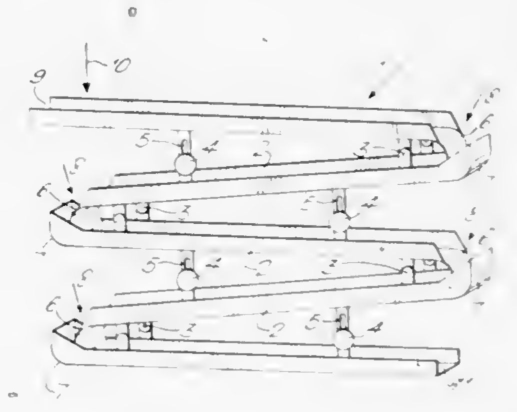
PROCESS FOR FRYING BUOYANT FOOD PIECES

Arie Leendert Boertje, Hoogeveen, Netherlands, and Peter John Philpott, Felmersham, England, assignors to Lever Brothers Company, New York, N.Y.

Filed Nov. 17, 1971, Ser. No. 199,735

Int. Cl. A23l *1/12, 1/00*

U.S. Cl. 99—100 P **1 Claim**



A buoyant foodstuff is fried in heated oil during its downward flow therewith through a plurality of successively sloping channels.

ERRATUM

For Class 426—276 see:
Patent No. 3,794,731

3,794,746

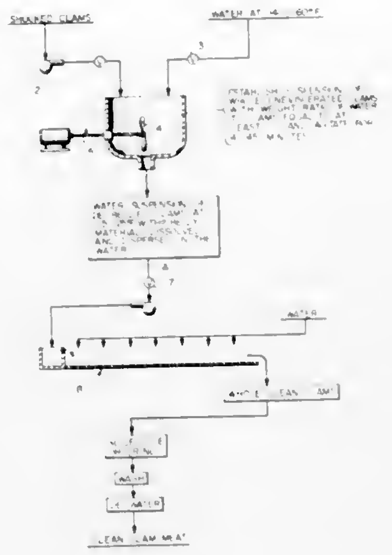
METHOD FOR OBTAINING CLEAN MEAT OF NATURAL COLOR FROM WHOLE CLAMS

Ronald K. Finley, Towson; Donald J. Langlois, Pasadena, both of Md.; Robert H. Nicholson, and Herschel F. Porter, both of Lewes, Del., assignors to Doxsee Food Corporation, Baltimore, Md.

Filed Aug. 21, 1972, Ser. No. 282,017
Int. Cl. A22c *25/00*

U.S. Cl. 426—479 **6 Claims**

Clean clam meat in subdivided form and having its natural color is obtained by physically working shucked whole uneviscerated clams, in the presence of at least enough aqueous liquid to render the clams pumpable, in order to rupture the belly membrane, maintaining the clams suspended in an aqueous liquid at at least 100° F. for 4–45 minutes to cause the entire belly material to be dissolved and dispersed in the liquid, and recovering, promptly washing and subdividing the debellied clams.



ERRATUM

For Class 426—364 see:
Patent No. 3,794,735

3,794,747

ELECTRONIC MUSICAL INSTRUMENT

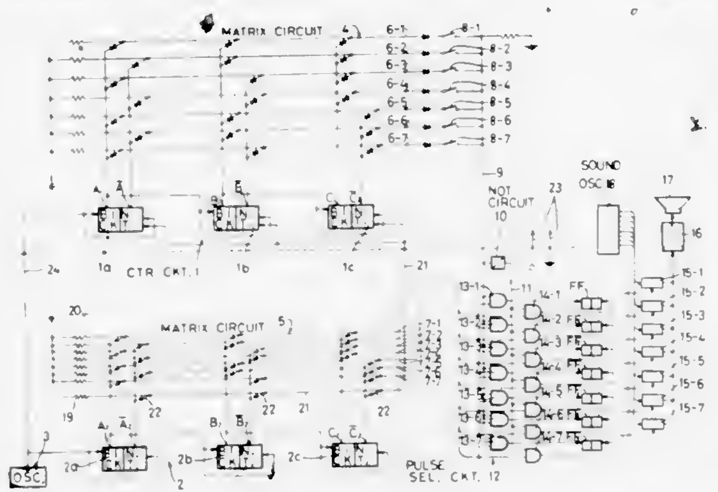
Nobuharu Obayashi, Shizuoku-ken, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamatsu-shi, Shizuoka-ken, Japan

Filed May 9, 1972, Ser. No. 251,796

Claims priority, application Japan, May 11, 1971, 46-30858. The portion of the term of this patent subsequent to Oct. 24, 1989, has been disclaimed.

Int. Cl. G10h *1/00*

U.S. Cl. 84—1.01 **9 Claims**



An electronic musical instrument comprising an oscillator, first and second multiplex counter circuits synchronously driven in common by said oscillator, first and second matrix circuits coupled respectively to said counter circuits for producing respective sequences of pulses, a common conductor, said matrix circuits including a plurality of output terminals, switches connecting the output terminals of said first matrix circuit to said conductor, a pulse selective circuit coupled to said conductor and to the output terminals of said second matrix circuit, sound means, and gating means controlled by said pulse selective circuit to control the output of said sound means.

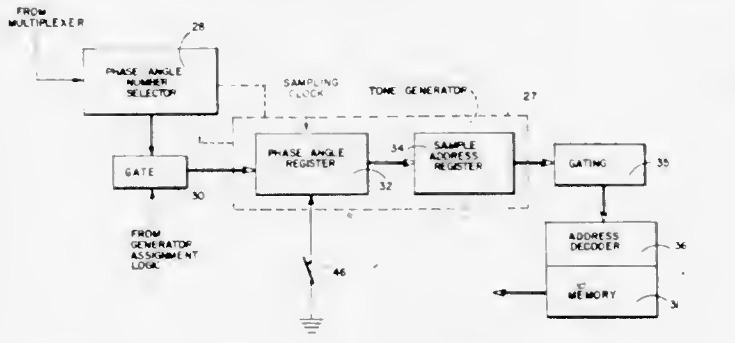
3,794,748

APPARATUS AND METHOD FOR FREQUENCY MODULATION FOR SAMPLED AMPLITUDE SIGNAL GENERATING SYSTEM

Ralph Deutsch, Sherman Oaks, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Dec. 6, 1971, Ser. No. 205,092
Int. Cl. G10h *1/02*

U.S. Cl. 84—1.24 **13 Claims**



A memory contains data in a plurality of discrete locations and is addressed at a rate that depends upon desired spacing between data from various locations as it is sequentially read from the memory. In a specific embodiment the data constitutes amplitude values of a complex wave form of a type produced by a musical instrument at equally spaced points in time along an axis of the wave form. The memory is addressed at any one of a plurality of rates selected in accordance with a musical note to be played. Selection of a particular note results in a repetitive read out from the memory of groups of amplitude samples that collectively represent a wave shape. The group repetition rate represents the frequency of the desired musical tone and is determined by a control number that is unique for each output frequency. The control number periodically increases a number stored in the memory address register by the value of the control number so as to identify appropriate data addresses in the memory. Having selected a unique control number and therefore a unique output signal frequency, the latter is modulated by changing the control number during the repetitive generation of groups of amplitude samples. The same magnitude of small change in the control number for a plurality of frequencies to be generated will achieve an ensemble effect for octave decoupling. A relatively small magnitude repetitive variation of the control number, as groups of amplitude samples are repetitively read from the memory, will provide a tremulant effect. Other types of variation of the control number will achieve other types of frequency modulation.

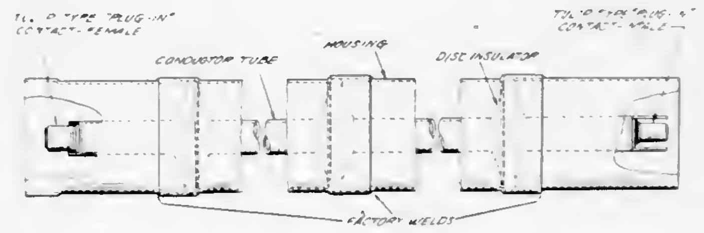
3,794,749

METHOD FOR CONTROLLING CONTAMINATION IN GAS INSULATED TRANSMISSION SYSTEMS

Lennard Wharton, Newtown Square, Pa., assignor to I-T-E Imperial Corporation, Spring House, Pa.

Filed May 9, 1973, Ser. No. 358,631
Int. Cl. H01b *9/04*

U.S. Cl. 174—28 **15 Claims**



The deleterious affect of aluminum and other conductive particles within a compressed gas insulated transmission system is minimized by treating the system with an oxidixing agent.

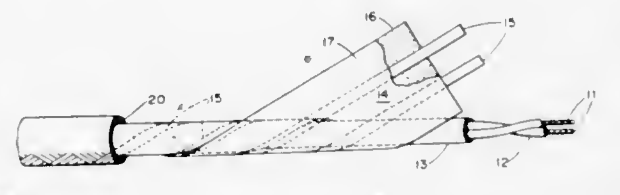
3,794,750

SHIELDED CABLE

Alfred Garshick, Raynham, Mass., assignor to Boston Insulated Wire & Cable Co., Boston, Mass.

Filed July 27, 1973, Ser. No. 383,185
Int. Cl. H01b *11/06*

U.S. Cl. 174—36 **6 Claims**



A shielded electric cable is described in which drain wires are incorporated into a shielding tape consisting of a metallic

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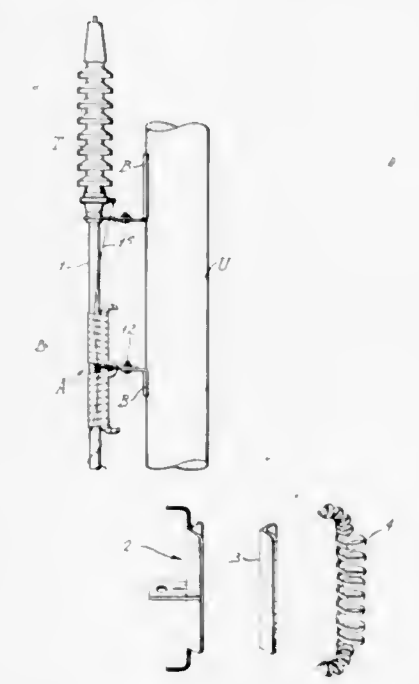
demodulator, selects that portion of the R-Y demodulator out-

frames on photosensitive media, such as color motion picture foil bonded to a non-conductive base strip. In one form, the drain wires are held in contact with the foil surface by fixing them between the foil and the base strip. The shielding tape is helically or longitudinally wound around the insulated conductors to provide a continuous conductive shielding surface. At the terminal point, the exposure of one or more drain wires provides a convenient connection from the foil to a grounding terminal.

3,794,751
CABLE SUPPORT BRACKET

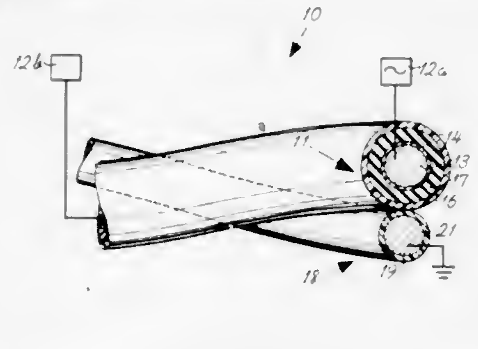
Marion R. Farmer, and Michael Heinrich, both of Memphis, Tenn., assignors to Aluma-Form, Inc., Memphis, Tenn.
Filed Sept. 28, 1972, Ser. No. 292,987
Int. Cl. H02g *7/00;* **F16l** *3/08*
U.S. Cl. 174—40 R **15 Claims**



This invention comprises a cable support bracket incorporating an elongated member designed for having a channeled surface for embracing a length of electrical conducting line and supporting its weight, with a tie means being wrapped around both of the elongated member and the line to secure the two together. An extension may project from one or both of the proximate ends of the elongated member to provide for fastening of said tie means, and at least one flange projects from the elongated member to provide for attachment of the bracket to a utility pole or other mounting device.

3,794,752
HIGH VOLTAGE CABLE SYSTEM FREE FROM METALLIC SHIELDING

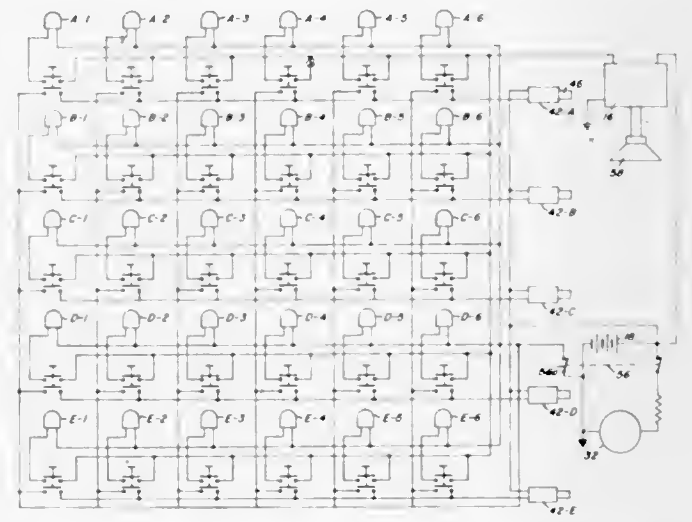
Steve Bunish, and Carl C. Landinger, both of New York, N.Y., assignors to The Anaconda Company, New York, N.Y.
Filed May 30, 1973, Ser. No. 365,345
Int. Cl. H01b *9/02*
U.S. Cl. 174—115 **5 Claims**



An electric cable for service above 2000 volts does not include metallic members in its electrostatic shielding system but depends entirely on a semiconducting polymeric jacket for the electrostatic shield. A parallel neutral grounding conductor, held in lengthwise electrical contact with the jacket, drains any electrostatic current and provides ample path for the return current in the event of a fault.

3,794,753
SYNTHESIS OF SPEECH FROM A MAGNETIC TAPE MATRIX STORAGE OF PHONETIC SEGMENTS

John M. Hansen, Irondequoit, N.Y., assignor to David K. Weston and Kenneth C. Ferries, both of Rochester, N.Y., part interest to each
Filed Sept. 16, 1971, Ser. No. 181,083
Int. Cl. G10l *1/00*
U.S. Cl. 179—1 SA **17 Claims**



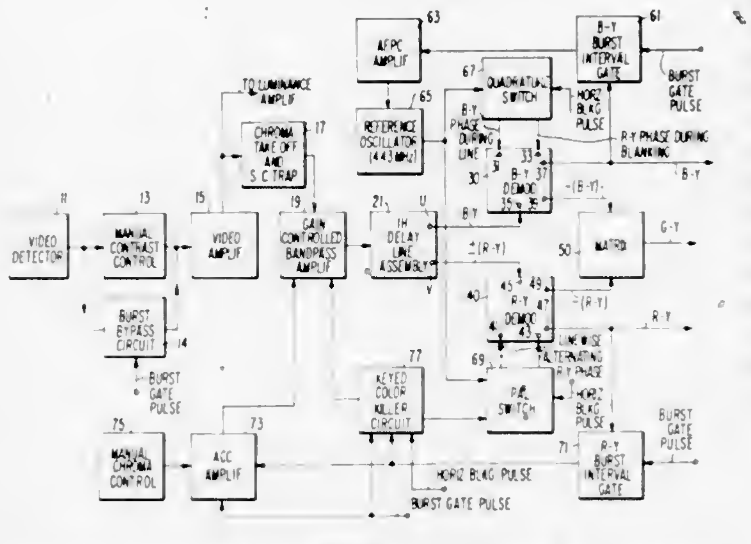
Phonetic sounds are recorded on several magnetic tapes, each tape storing a number of different phonetic sounds. A matrix of magnetic heads reads the tapes. Multiplexing of the signals from the heads is obtained and the phonetic sounds thereby combine to produce speech by a key board adapted to be worn by the user. When a key is depressed, the tape, on which is recorded phonetic sounds corresponding to the key, is driven. One of the heads reads the segment of the driven tape on which the selected sound is recorded. The outputs of the heads are combined in a play-back amplifier and fed to an external speaker which may be worn, as on the neck of the user. The user may be a person whose larynx has been removed.

3,794,754
PAL-TYPE COLOR SIGNAL PROCESSING APPARATUS

Peter Eduard Haferl, Adliswil, Switzerland, assignor to RCA Corporation, New York, N.Y.
Filed May 8, 1972, Ser. No. 251,390
Claims priority, application Great Britain, May 7, 1971, 13857/71
Int. Cl. H04n *9/44*
U.S. Cl. 178—5.4 P **7 Claims**

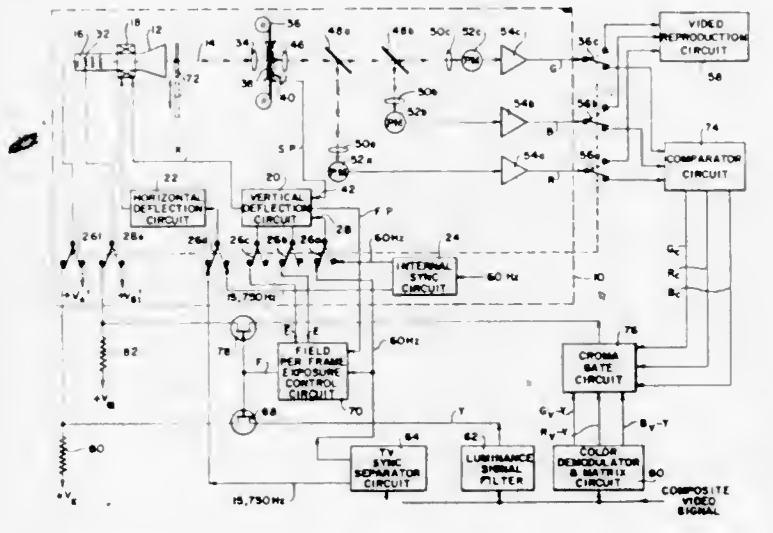
Burst components of PAL-type encoded signal are retained with modulated subcarrier components as they are processed in 1H delay line assembly and delivered to respective demodulators. Reference oscillation phase to which R-Y demodulator responds is effectively reversed every other line, in response to PAL switch apparatus, in order to provide desired R-Y output in successive lines. Reference oscillation phase to which B-Y demodulator responds is alternated by quadrature switch apparatus between B-Y phase (applied throughout each line interval) and R-Y phase (applied during each inter-line blanking interval). A first gating circuit, coupled to the output of the B-Y demodulator, selects that portion of the B-Y demodulator output developed during the burst interval for passage to integrating and amplifying means in order to develop an AFPC voltage for phase control of the local reference oscillator. A second gating circuit, coupled to the output of the R-Y

demodulator, selects that portion of the R-Y demodulator output developed during the burst interval for passage to ACC and color killer circuitry. During color operation (enabled state of bandpass chrominance amplifier) the ACC circuiry develops a control current from the second gating circuit output that adjusts the chrominance amplifier gain in a direction appropriate to maintaining burst amplitude substantially constant at a level set by a manual chroma control. The color killer enables the chrominance amplifier for color operation only when the gated R-Y output indicates by its amplitude the presence of a burst in the received signal and by its polarity the correct switching mode for the PAL switch. Unless such circumstances are present, the color killer disables the chrominance amplifier during each line interval; the killer is keyed, however, to enable the chrominance amplifier during each burst interval so that recovery from the disable state may be effected when appropriate. The color killer circuitry also passes a reset pulse to the PAL switch in the absence of a correct mode indication in the gated R-Y output. The color killer circuitry further serves to control the effectiveness of a subcarrier trap for the receiver's luminance channel, removing the trap during line intervals of monochrome operation.



3,794,755
BLANKING METHOD AND APPARATUS FOR VIDEO FILM RECORDER

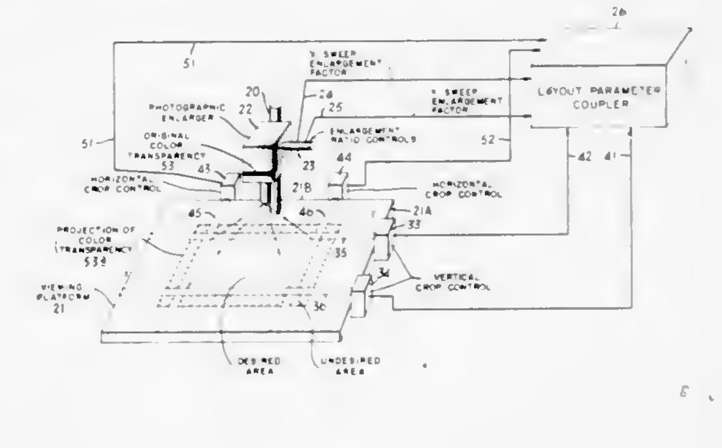
Lenard M. Metzger, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed July 3, 1972, Ser. No. 268,320
Int. Cl. H04n *9/02*
U.S. Cl. 178—5.4 CD **10 Claims**


VIDEO REPRODUCTION CIRCUIT
COMPARATOR CIRCUIT
HORIZONTAL DEFLECTION CIRCUIT
VERTICAL DEFLECTION CIRCUIT
INTERNAL SYNC CIRCUIT
EXPOSURE CONTROL CIRCUIT
CHROMA GATE CIRCUIT
TV SYNC SEPARATOR CIRCUIT
LUMINANCE SIGNAL FILTER
COLOR DEMODULATOR & MATRIX CIRCUIT
COMPOSITE VIDEO SIGNAL
15,750 Hz

Method and apparatus for recording video information derived from composite video field signals including horizontal and vertical synchronizing signals, chrominance signals and luminance signals as color pictorial information in media frames on photosensitive media, such as color motion picture film. The film is continuously advanced through a scanning zone at a predetermined frame rate that is detected to produce a frame rate signal having a frequency equal to the frame rate of the continuously moving film. A flying spot scanner generates a beam of light modulated in intensity by the chrominance and luminance signals in said video information, and the beam is directed along a predetermined path to expose the film frames advanced through the film scanning zone. The modulated beam of radiation as deflected in a video field pattern recurring at a field rate equal to the frequency of the vertical synchronizing signal, and a vertical deflection circuit is responsive to the frame rate signal and the vertical synchronizing signal to superimpose the video fields on the film frames continuously advanced through the film scanning zone. An exposure control circuit including a counter is responsive to the vertical synchronizing signal and the frame rate signal to count the number of vertical synchronizing signals occurring in the period of the frame rate signal to produce an inhibit signal when the counted number exceeds a predetermined number. The inhibit signal inhibits the application of the luminance and chrominance signals to the flying spot scanner to prevent the exposure of the film frame to one or more video fields, the inhibit signal terminating at the instant that a vertical synchronizing signal follows, in time, a frame rate signal.

3,794,756
APPARATUS FOR COUPLING PHOTOGRAPHIC PARAMETERS INTO A MECHANISM FOR THE PRODUCTION OF PHOTOGRAPHIC COLOR SEPARATIONS

Alan S. Hahn, Bethel, and Harold O. W. Jordan, Stamford, both of Conn., assignors to Printing Developments, Inc., New York, N.Y.
Filed Sept. 14, 1971, Ser. No. 180,269
Int. Cl. G03b *27/76;* **H04n** *1/38, 1/46*
U.S. Cl. 178—5.4 CD **7 Claims**



An electro-mechanical photographic color separation system having manually adjustable enlargement ratio controls and cropping controls, whereby color separations of an original can be formed having a different size and shape with respect to the original. Enlargement or reduction is accomplished by varying the scanning speed of the X-sweep and Y-sweep of a cathode ray beam scanner relative to an output film drum. Cropping is achieved by blanking the cathode ray beam scanner when the beam scanner attempts to scan outside a predetermined area defined by manually adjustable cropping controls.

3,794,757

FM PULSE DISCRIMINATOR FOR DUPLEX FM SYSTEM

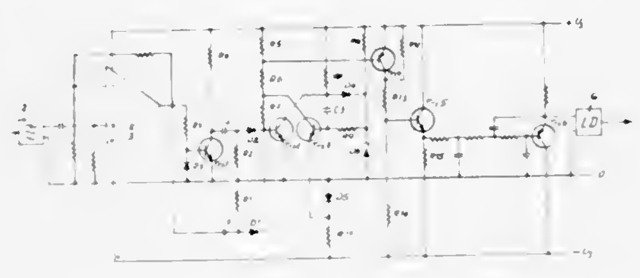
Frank-Torsten Knabe, Leonberg, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed June 7, 1972, Ser. No. 260,553

Claims priority, application Germany, July 13, 1971, P 21 34 956.4

Int. Cl. H04l *27/14*

U.S. Cl. 178—58 **9 Claims**



There is disclosed an FM discriminator for pulse signals transmitted by means of FM in the voice range where the carrier frequency and the modulating frequency are very close in frequency to each other. The discriminator includes a monostable multivibrator triggered by sine waves which are frequency modulated by a pulse signal. The modulating signal is recovered from the output pulses of the multivibrator by integration. The carrier frequency and modulating frequency are separated from each other by frequency doubling. This is accomplished by triggering the multivibrator by control signals derived from both half-cycles of each oscillation of the frequency modulated sine waves.

3,794,758

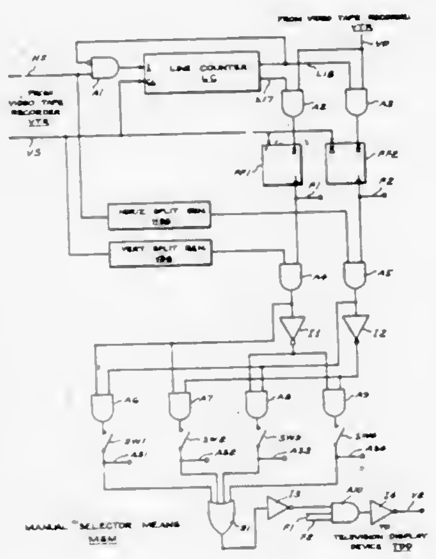
SELECTABLE DISPLAY SYSTEM

Don J. Dudley, Brightwaters, N.Y., assignor to Data-Plex Systems, Inc., Greenwich, Conn.

Filed July 25, 1972, Ser. No. 275,081

Int. Cl. H04n *7/18*

U.S. Cl. 178—6.8 **10 Claims**



There is disclosed a selectable display system wherein fields and/or frames of television signals are dividable into quadrants and stored in a video tape recorder. As the recorder transmits the signals to a television display device, video signals in particular lines of the fields assist in the selection by a viewer through the agency of selector switches which quadrant is to be displayed.

3,794,759

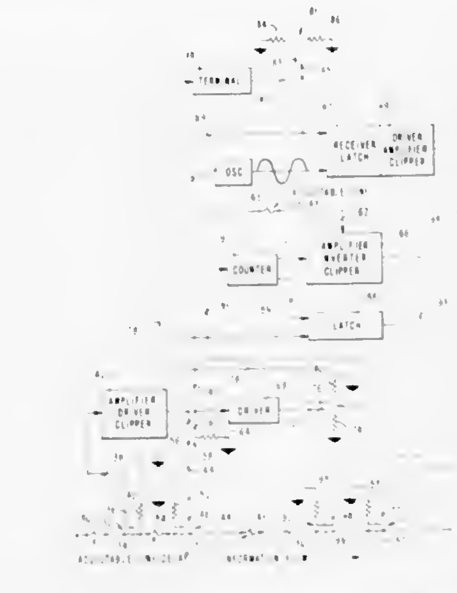
MULTI-TERMINAL COMMUNICATION APPARATUS CONTROLLER

Howard H. Nick, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1972, Ser. No. 317,903

Int. Cl. H04l *11/15;* **H03r** *5/13*

U.S. Cl. 178—68 **11 Claims**



A multi-terminal communication apparatus controller is provided which allows information signals on a transmission medium to be replaced with new information signals at each terminal. Branch information signals are obtained from the main transmission medium by coupling without destroying or interrupting the propagation of the information signals on the transmission medium. These branch information signals are converted into terminal signals compatible with the terminal. New information signals are coupled from the terminal to a send branch line where they are converted into send information signals which are coupled onto the transmission medium. The branch information signals are phase inverted when the new information signals are provided. These phase inverted signals are applied to the transmission line so as to cancel the corresponding information signals on the transmission medium. The send information signals are coupled onto the transmission medium in the space left by the cancelled information signals.

3,794,760

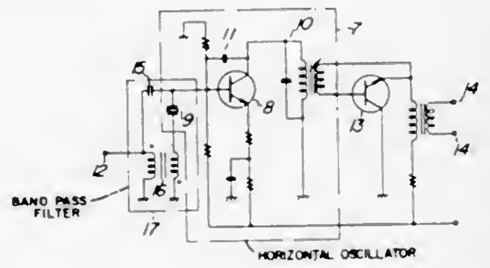
HORIZONTAL SYNCHRONIZING DEVICE FOR TELEVISION RECEIVERS

Juichi Moriki, Nishinomiya, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 7, 1971, Ser. No. 177,967

Int. Cl. H04n *5/04*

U.S. Cl. 178—69.5 N **12 Claims**



A horizontal synchronizing device for television receivers, wherein a horizontal synchronizing signal is imparted to an oscillator which is frequency-controlled by means of a mechanical resonator, and the oscillation frequency and phase of the oscillator are synchronized with those of said horizontal synchronizing signal by utilizing the drawing effect of said oscillator.

3,794,761

PATTERN PROCESSING APPARATUS

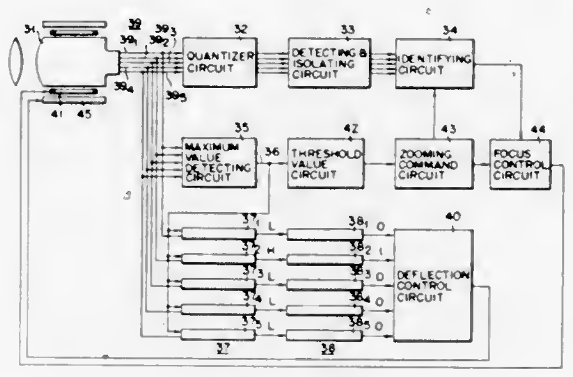
Hiroshi Genchi, Tokyo, and Tsuneo Yoneyama, Yokosuka, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed July 11, 1972, Ser. No. 270,732

Claims priority, application Japan, July 15, 1971, 46/52071; July 15, 1971, 46/52072

Int. Cl. H04n *5/30*

U.S. Cl. 178—7.2 **14 Claims**



Information regarding a pattern being identified is obtained by means of a photoelectric connector comprising a photoelectric surface on which a photoinput image of the pattern is to be projected, focusing means for focusing photoelectrons emitted by the photoelectric surface in response to the photoinput image to form a photoelectron image on a focal plane, means to enlarge or reduce the photo-electron image, deflecting means for moving the position of the photoelectron image in the focal plane, an array of a plurality of electron beam detecting elements which are arranged in a plane near the focal plane, each electron beam detecting element generating a current proportional to the quantity of the electron beam impinging thereupon, and a plurality of parallel output conductors respectively connected to the electron beam detecting elements. The outputs on the output conductors are processed to identify the pattern.

3,794,762

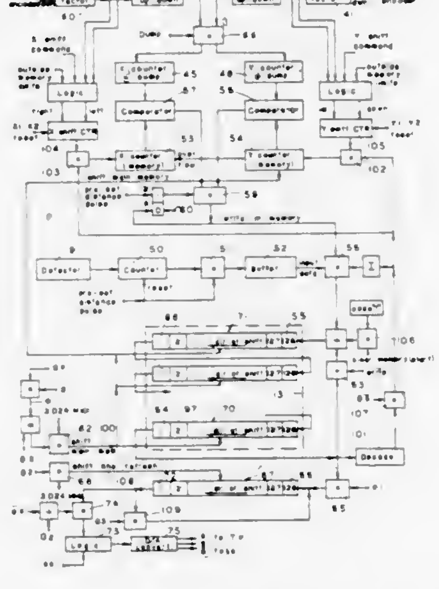
VIDEO-DISPLAY-PROCESSOR

Yoram Zukerman; Moshe Ben-Porath, and Benjamin Sabbah, all of Haifa, Israel, assignors to Elscint Ltd., Haifa, Israel

Filed June 26, 1972, Ser. No. 266,128

Int. Cl. H04n *3/04, 5/76*

U.S. Cl. 178—6.8 **17 Claims**



A video-display processor produces an on-line display of the distribution density of radiation stimuli emitted by a radiation field utilizing a probe for detecting the stimuli and a counter for accumulating the number of stimuli detected; and motorized means to cause the probe to traverse the field and sequentially scan a preselected number of elemental areas, each having a preselected size, for causing the probe counter to accumulate the number of stimuli that occurred during the scan of each elemental area. The number of stimuli accumulated during the scan of each elemental area, upon the completion of the scan thereof is transferred into a memory whose contents modulate the picture elements of a raster generated by a CRT of a TV display thus displaying the density of each elemental area immediately after scanning thereof is complete.

3,794,763

SPEECH-CONTROLLED SWITCHING ARRANGEMENT

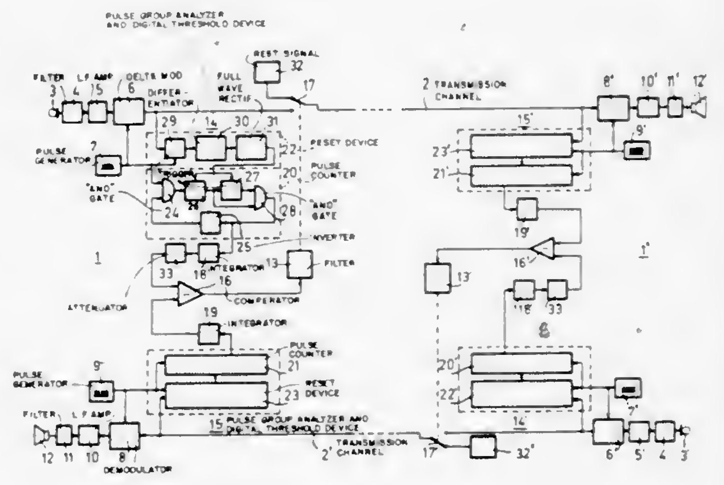
Henricus Petrus Johannes Boudewijns, and Johannes Anton Greefkes, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed July 10, 1972, Ser. No. 270,151

Claims priority, application Netherlands, July 15, 1971, 7109806

Int. Cl. H04m *1/00*

U.S. Cl. 179—1 VC **9 Claims**



A speech-controlled switching arrangement for communication systems in which the speech signals are transmitted in the form of digital signals obtained by code modulation, comprising a plurality of pulse group analyzers coupled to respective transmission channels from which analyzers the output pulses are applied to a comparator circuit after integration for the purpose of generating a switching control signal, while each pulse group analyzer is provided with a digitally defined threshold characterizing a given fixed modulation index.

3,794,764

TELEPHONE LINE SEIZURE SWITCHES

Leonard M. Todd, 424 W. 119th St., New York, N.Y. 10027

Continuation-in-part of Ser. No. 88,909, Nov. 12, 1970. This application July 5, 1972, Ser. No. 269,270

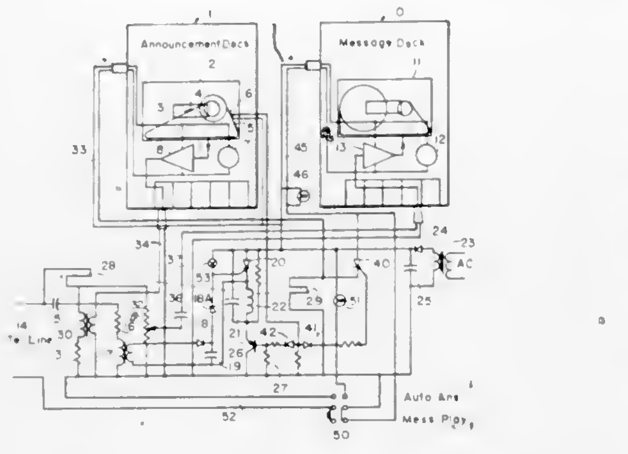
Int. Cl. H04m *11/00*

U.S. Cl. 179—2 A **32 Claims**

A telephone line seizure switch employs a dc blocking capacitor and a resistor or transformer or both in series across the telephone line to apply a fraction of ringing voltage to the control element of a transistor or thyristor which then

3,794,768

or other devices has a pair of spaced cam followers which are operates a line seizure circuit and operates associated apparatus from a power source. Time delay is shown and bistable switches are taught including a thyristor circuit without a relay.



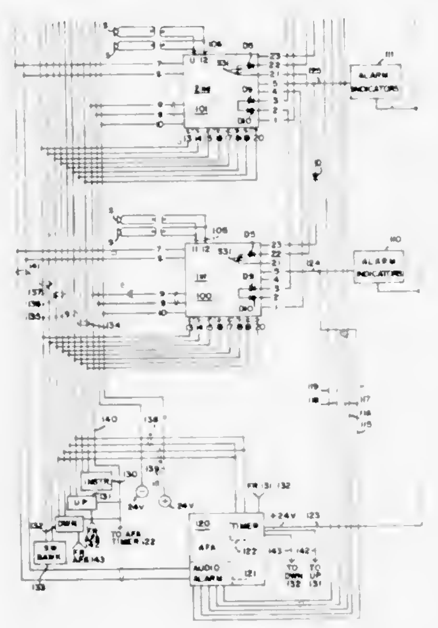
3,794,765
ZONE SPEAKER RELAY SYSTEM

Harry C. Goodwater, San Francisco, Calif., assignor to Audio Alert Corporation, San Francisco, Calif.

Continuation-in-part of Ser. No. 93,768, Nov. 30, 1970, Pat. No. 3,656,158. This application Feb. 24, 1972, Ser. No. 229,075

Int. Cl. H04q *3/00*

U.S. Cl. 179—1 SW **24 Claims**



A zone speaker relay system is provided for selectively transmitting over loud speakers audio warning signals and audio evacuation instructions to personnel on selcted floors or in selected zones of a floor in a building in the event of an emergency. A separate zone speaker relay assembly is provided for each such floor and zone. When, for example, there is one speaker zone per floor, the zone speaker relay assemblies effect automatic switching of the loud speakers associated with the floor on which the emergency occurs, called the involved floor, and the floors immediately above and below the involved floor. The switching assemblies ensure that the speakers associated therewith receive a proper alarm signal and taped message when an alarm station is activated on the involved floor for directing personnel on those floors away from the location of the emergency. Personnel on the involved floor and the floor immediately below the involved floor are warned and directed to evacuate via lower floors. Personnel on the floor immediately above the involved floor are warned and directed to evacuate via upper floors. Provision is also made for permitting activation of alarm stations on other floors and in that event for the giving of proper evacuation instruction to personnel on those floors to prevent directing these personnel into previously involed areas.

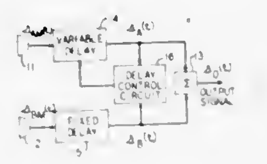
3,794,766
DELAY EQUALIZING CIRCUIT FOR AN AUDIO SYSTEM USING MULTIPLE MICROPHONES

Donald Clyde Cox, New Shrewsbury, and Douglas Otto John Reudink, Colts Neck, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed Feb. 8, 1973, Ser. No. 330,701

Int. Cl. H04b *15/00*

U.S. Cl. 179—1 P **3 Claims**



For an audio system such as a telephone station set of the so-called "hands free" variety, the well-known echo effect known as the "rain barrel" effect is reduced and the average signal to echo power ratio is improved by employing a multiplicity of microphones and equalizing the total delays in the signal paths including the microphones at which the strongest audio signals are received. The needed variation of delay is determined by time domain correlation techniques in which one branch circuit includes a relatively fast local peak detector for a product signal and another branch circuit includes a relatively slow absolute peak detector for such a product signal. Other microphones may be similarly paired for delay equalization. The signals are then summed to produce the output signal.

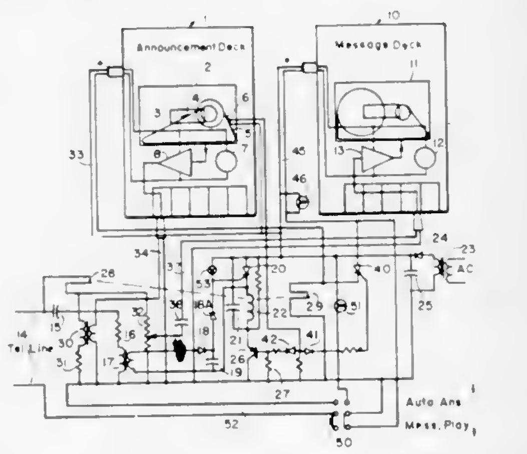
3,794,767
CONTROL CIRCUIT FOR TELEPHONE ANSWERING SET WITH A RECORDER USING A CONVENTIONAL RECORD-PLAY SWITCH

Leonard M. Todd, 424 W. 119th St., New York, N.Y. 10027

Continuation-in-part of Ser. No. 88,909, Nov. 12, 1970. This application May 3, 1972, Ser. No. 250,068

Int. Cl. H04m *1/64*

U.S. Cl. 179—6 R **24 Claims**



The record-play switch of a message tape deck (preferably of usual design) is coupled to a two position switch to enable a telephone answering set in automatic answer and message playback conditions. This switch may be a single pole, single throw switch. Fast forward, rewind and play controls are used, as may be the record control. A circuit enables the automatic recording of telephone conversations.

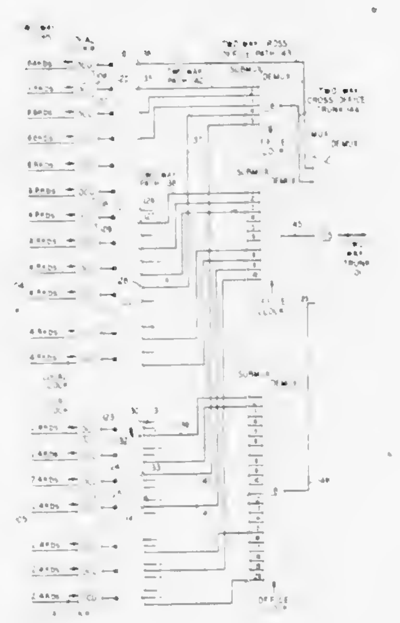
3,794,768
CROSS-OFFICE CONNECTING SCHEME FOR INTERCONNECTING MULTIPLEXERS AND CENTRAL OFFICE TERMINALS

Adam Carroll Carney, Middletown, N.J.; Michael Peter Cichetti, Jr., Staten Island, N.Y.; Joseph George Kneuer, Fair Haven, N.J., and Donald W. Rice, Monmouth, N.J., assignors to Bell Telephone Laboratories Incorporated, Berkeley Heights, N.J.

Filed May 25, 1972, Ser. No. 256,827

Int. Cl. H04j *3/12*

U.S. Cl. 179—15 BA **20 Claims**



Interchange of data between two way loops and a data trunk is provided by way of channel units, submultiplexer/demultiplexers and a common multiplexer/demultiplexer. Submultiplexers have five, 10 or 20 ports, creating time frames with corresponding numbers of time slots, all of equal duration. The channel units, which terminate 9.6, 4.8 or 2.4 Kbs data subscribers, assemble the incoming data into bytes, repeat each byte five, 10 or 20 times, respectively, and align each successive one of the repeated bytes with successive time slots. Any port of a five port submultiplexer can be connected to any 9.6, 4.8 or 2.4 channel unit. Similarly, any port of a ten port submultiplexer can be connected to any 4.8 or 2.4 channel unit and any port of a twenty port submultiplexer can be connected to any 2.4 channel unit. The outputs of all submultiplexers are interleaved by the common multiplexer and applied to the trunk. Incoming data from the trunk is distributed to the several submultiplexers/demultiplexers which, in turn, distribute the data to the channel units.

3,794,769
AZIMUTH ADJUSTMENT PARTICULARLY FOR MAGNETIC HEADS

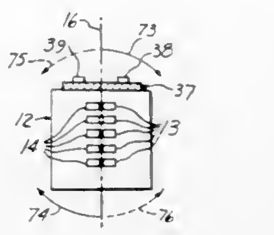
Joseph J. Neff, Pasadena, Calif., assignor to Bell & Howell Company, Chicago, Ill.

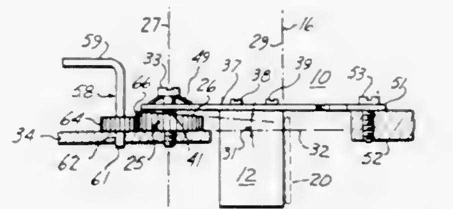
Filed Jan. 19, 1972, Ser. No. 218,978

Int. Cl. G11b *5/56*

U.S. Cl. 360—109 **20 Claims**

An azimuth adjustment for magnetic recording heads and other devices has a rotatable member with an inclined surface relative to an axis of rotation. A mount for the recording heads or other devices has a pair of spaced cam followers which are yieldably pressed against the inclined surface of the rotatable member. To effect azimuth adjustments, the rotatable member is rotated whereby the mount is selectively twisted.





3,794,770
COIN TELEPHONE SETS

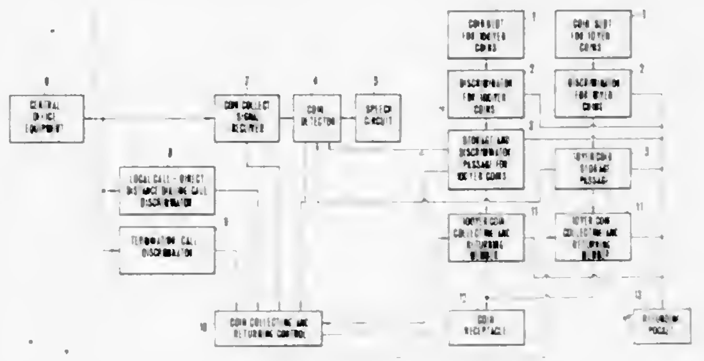
Yukio Tabiichi; Yuichi Yamazaki, both of Tokyo; Yoshiharu Sato, Yokohama, and Tsunehiko Suzuki, Isehara, all of Japan, assignors to Nippon Telegraph and Telephon Public Corporation and Anritsy Electric Company Ltd., both of Tokyo, Japan

Filed Oct. 18, 1971, Ser. No. 189,919

Claims priority, application Japan, Oct. 26, 1970, 45-93520

Int. Cl. H04m *17/02*

U.S. Cl. 179—6.3 R **9 Claims**


COIN SLOT FOR 10 YEN COINS
COIN RECEPTACLE
COIN COLLECTING AND RETURNING CONTROL

This coin telephone set uses polarity reversal of both a speech current from the central office equipment and a source of rectified alternating current to enable a local call, direct distance dialed call, operator-handled toll call, a delay call or an emergency call by simultaneous use of coins of low value and coins of high value.

3,794,771
TIME-SHARED FREQUENCY TRACKING LOOP

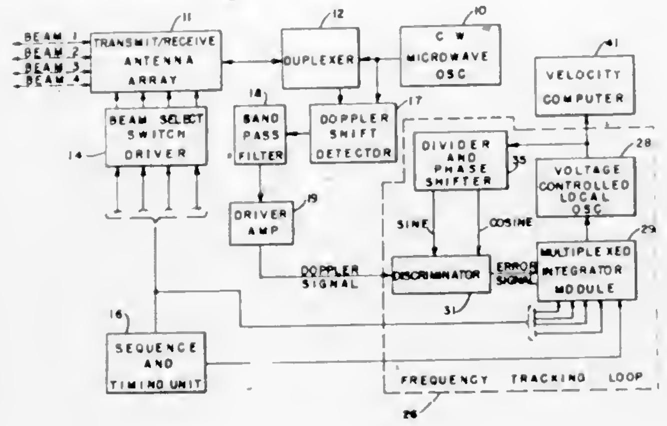
Ernest F. Darboven, Katonah, and Leon R. Solomon, Ossining, both of N.Y., assignors to The Singer Company, New York, N.Y.

Division of Ser. No. 159,861, July 6, 1971, Pat. No. 3,710,386. This application Sept. 7, 1972, Ser. No. 287,111

Int. Cl. H04j *3/00*

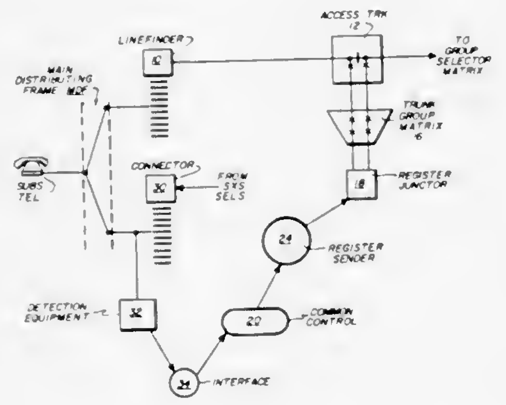
U.S. Cl. 179—15 BL **5 Claims**

In a frequency tracking loop, a single voltage-controlled local oscillator produces a sequence of output signals representing the respective peak power frequencies in a recycling sequence of input signals. The oscillator output is compared to the input signals to produce a DC error signal passed to a single operational amplifier. Integrating capacitors are alternately coupled between the amplifier's input and output in a synchronized sequence corresponding to the input signals. The amplifier output, which controls the oscillator frequency, is thus repeatedly switched from one value to the next representing the last corresponding voltage in the previous cycle.



3,794,772
ARRANGEMENT FOR INTEGRATING SWITCHING SYSTEMS OF DIFFERENT TYPES

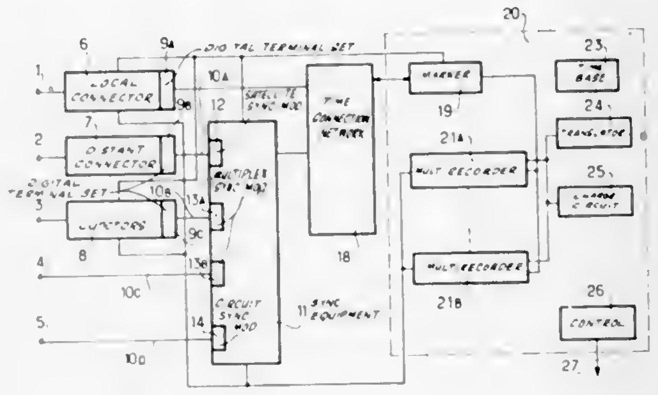
Donald P. Kroes, Lisle, and Matthew S. Lassen, Chicago, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Oct. 2, 1972, Ser. No. 293,987
Int. Cl. H04q *3/48*
U.S. Cl. 179—16 EC **6 Claims**



An arrangement for integrating a switching system of the direct controlled type with a switching system of the marker controlled type having common control equipment wherein the existing linefinder groups of the direct control system are equipped with access trunks to connect concentrated traffic from lines to the central switching matrix of the marker controlled system, in the same manner as the line concentrating matrices and originating junctors function for the lines in a marker controlled system. One or several ranks of selectors and connectors also distribute traffic from central switching matrix to the lines in the same manner as the line concentrating matrices and terminating junctors function for the lines in a marker controlled system. In order that the common control features can be applied to the lines of the direct control system, the marker controlled system further is arranged to obtain the line number identity by means of detection equipment associated with the linefinders.

3,794,773
SYNCHRONIZING UNIT

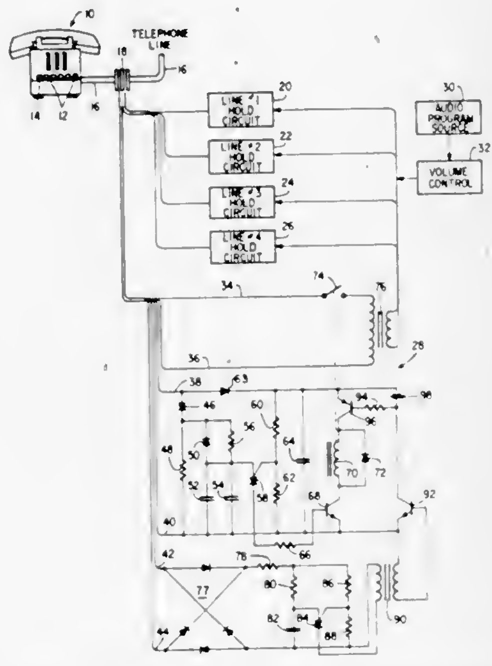
Jean-Baptiste Jacob, Quay-Perrous-Guirec; Roger Renoulin, and Jean Guezou, both of Lannion, all of France, assignors to Societe Lannionnaise D'Electronique, Lannion, France and Compagnie Industrielle Des Telecommunications, Paris, France
Filed June 30, 1972, Ser. No. 268,090
Claims priority, application France, June 30, 1971, 7124027
Int. Cl. H04j *3/06*
U.S. Cl. 179—15 BS **15 Claims**



A synchronizing unit for a time switching apparatus employs respective synchronizing elements for synchronizing communication time channels of multiplexed data signals. Both frame and multi-frame sync recognition detection is effected on the basis of predetermined synchronizing time channels allotted within a frame. Speech channel and data signaling channel synchronization are also carried out on the basis of channel coding, so as to totally synchronize the data signals with the local clock of the time switching apparatus.

3,794,774
TELEPHONE AUDIO PROGRAM SYSTEM

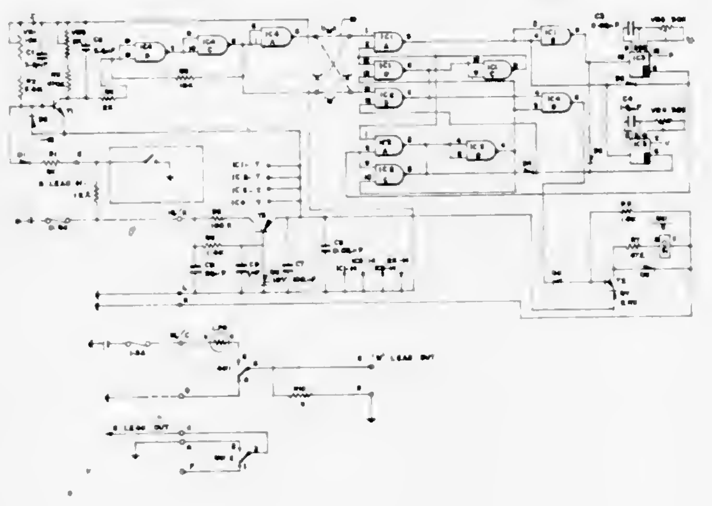
Richard C. Kemmerly; Gary M. Kaner, and Gary C. Merritt, all of Dallas, Tex., assignors to Courtesy Communications Corporation, Dallas, Tex.
Filed Jan. 19, 1973, Ser. No. 325,082
Int. Cl. H04m *1/21*
U.S. Cl. 179—81 R **19 Claims**



The specification discloses a system for selectively applying an audio program to incoming telephone lines placed in hold conditions. The system is connected to the exterior cord of a conventional telephone set having a hold switch and a plurality of line switches operable between two positions to open and close the telephone lines. The line switches also have a plurality of illumination modes representative of different operational modes. The system includes a first electronic switch operable to be energized in response to the illumination mode of one of the lines which is representative of a line in use or which is representative of a line placed in the hold condition. A second electronic switch is operable to be energized in response to the placing of the line switch in the up position indicative that the incoming telephone line is open. A relay is operable only when the first and second electronic switches are energized in order to apply an audio program to the incoming telephone line associated with the line switch. The person making the incoming telephone call is thus provided with an audio program such as music or the like during the time the incoming line is placed on hold.

3,794,775
DIGITAL IMPULSE CORRECTOR FOR TELECOMMUNICATION CIRCUITRY

Percy W. Hicks, and Michael R. Gale, both of Winnipeg, Manitoba, Canada, assignors to A.E.I. Telecommunications (Canada) Limited, Manitoba, Canada
Filed July 29, 1971, Ser. No. 167,111
Claims priority, application Great Britain, Aug. 3, 1970, 37316/70
Int. Cl. H04q *1/36*
U.S. Cl. 179—16 EA **5 Claims**

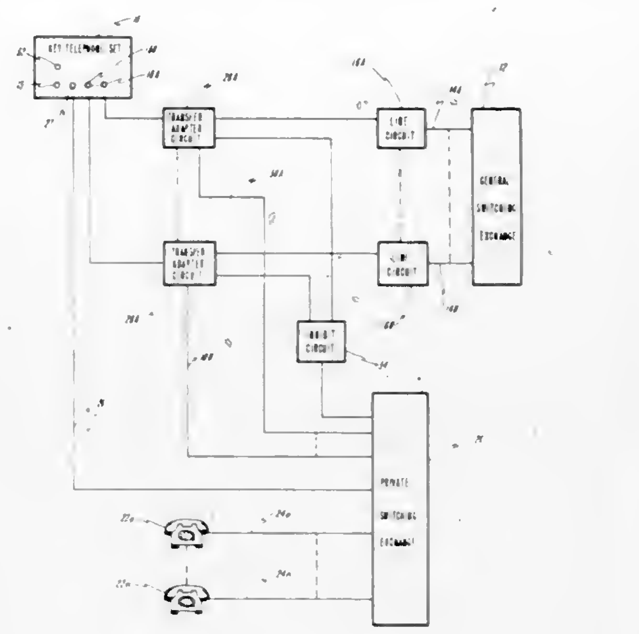


An add-on circuit automatically adjusts or maintains the make and break ratios of telecommunication dial pulsing within limits, thus helping to eliminate many network and trunk line signalling problems.

3,794,776
KEY TELEPHONE SYSTEM TRANSFER ADAPTER CIRCUIT

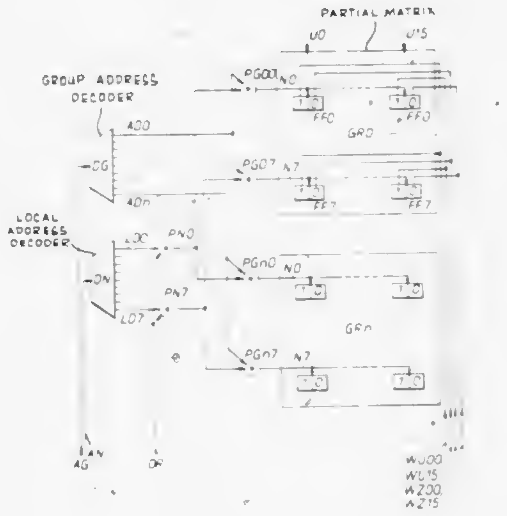
William R. Goodman, and Kal W. Howard, both of Charlottesville, Va., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.
Filed July 10, 1972, Ser. No. 270,412
Int. Cl. H04m *3/00*
U.S. Cl. 179—99 **13 Claims**

Transfer adapter circuits are combined with a key telephone system for extending telephone lines to a private intercom system without the need for individual pickup button positions on the key telephone set.



3,794,777
DISTRIBUTOR FOR A CENTRALLY CONTROLLED TELEPHONE SWITCHING SYSTEM

Claude Bouchet, La Varenne-St-Hilaire, and Vladimir Francois Jean Tomasovitch, Meudon-la-Forest, both of France, assignors to International Standard Electric Corporation, New York, N.Y.
Filed June 29, 1972, Ser. No. 267,433
Int. Cl. H04q *3/50*
U.S. Cl. 179—18 GF **3 Claims**



A distributor is disclosed for a centrally controlled telephone exchange enabling the control of bistables distributed in groups. The distributor receives from the central unit for a group of bistables to be controlled a control data item indicating the bistables to be set in position 1 and 0, and an inhibition data item indicating the bistables whose position must remain unchanged and serving to mask the elements of the control data corresponding to these bistables. The central unit function is thus limited to the elaboration and to the transmission only of the control data elements intended to certain components of an addressed group.

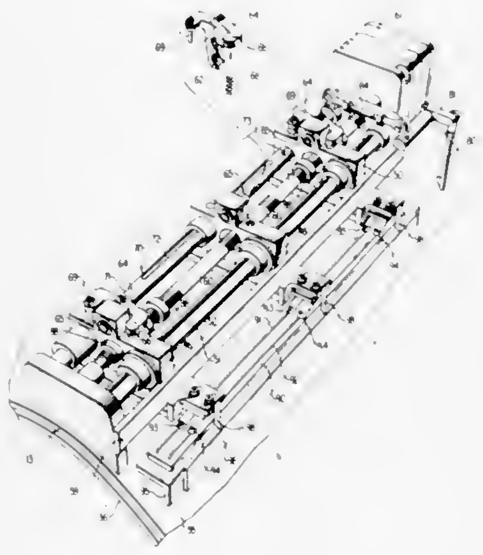
3,794,778
ANNOUNCEMENT APPARATUS HAVING INDEPENDENTLY VARIABLE MESSAGE SEGMENTS

Leary W. Smith, and Ellis H. Bryant, Jr., both of Atlanta, Ga., assignors to The Audichron Company, Atlanta, Ga.

Division of Ser. No. 10,386, Feb. 11, 1970, Pat. No. 3,668,326. This application Dec. 8, 1971, Ser. No. 206,067

Int. Cl. G11b *21/08;* **H04m** *1/64*

U.S. Cl. 179—100.1 C **10 Claims**



An announcing system for providing a family of recorded announcements through telephone central office equipment to one or more telephone subscriber lines. The weather segment of the announcement is determined by different three digit weather codes and by changing the positions of a plurality of weather announcing heads along a weather announcing drum in response to a plurality of resistances corresponding to the three digit weather codes. The weather announcing apparatus includes a plurality of message reading heads which are independently positionable along message segment locations on a recording cylinder, and the message reading heads can be simultaneously moved into engagement with the recording cylinder for sequential delivery of selected message segments.

3,794,779
HEADPHONES FOR REPRODUCING FOUR-CHANNEL SOUND

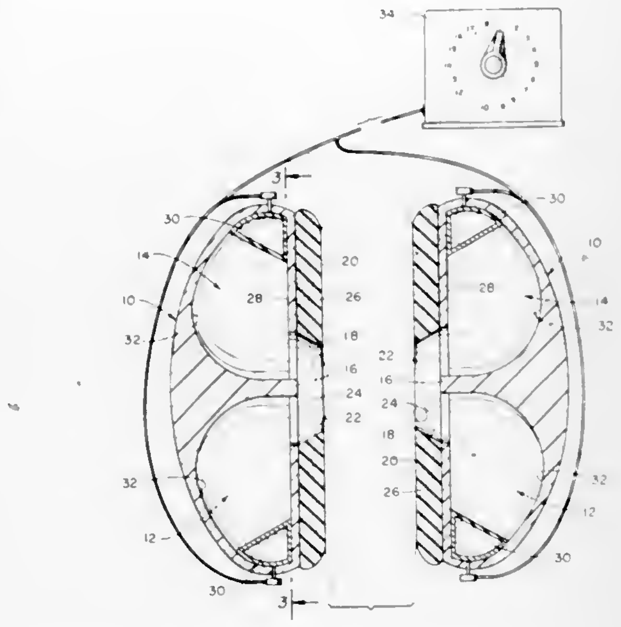
Charles E. Greuzerd, Garden Grove, and Louis Lawrence Henkin, Huntington Park, both of Calif., assignors to Victor B. Morgan, Los Alamitos; Thomas P. Mahoney and George E. Schick, both of Santa Monica, all of, Calif., part interest to each

Filed Aug. 23, 1971, Ser. No. 173,809

Int. Cl. H04m *1/05*

U.S. Cl. 179—156 R **15 Claims**

Each headphone casing encloses forwardly and rearwardly extending, segregated, acoustic mixing chambers segregated by a generally vertical partition and opening inwardly through a common, generally central opening to an ear of the person wearing the headphones. The headphone segregated mixing chambers preferably have specifically contoured walls with a sound emitting device in each mixing chamber directed at least partially against said walls for a proper sound mixing in each mixing chamber and the headphones central openings are of appropriate various sizes and depth for at least fully receiving the persons ear with acoustic integrating chambers of various sizes formed by the central openings adjacent the ears and simultaneously communicating with each of the segregated mixing chambers. Thus, with one channel of four-channel sound directed into each of the mixing chambers of a set of the earphones, the full effect of four-channel sound is received, and by similar connection of stereophonic sound, many of the four-channel sound effects are reproduced from the stereophonic sound.



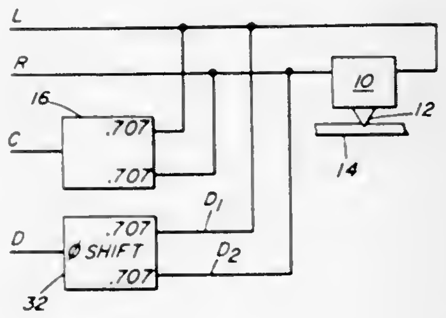
3,794,780
QUADRAPHONIC RECORDING SYSTEM

Benjamin B. Bauer, Stamford, and Daniel W. Gravereaux, Wilton, both of Conn., assignors to Columbia Broadcasting Systems, Inc., New York, N.Y.

Division of Ser. No. 44,196, June 8, 1970, Pat. No. 3,708,631. This application July 13, 1972, Ser. No. 271,470

Int. Cl. G11b *3/74*

U.S. Cl. 179—100.4 ST **2 Claims**



Apparatus for recording four separate channels of sound information on the two tracks of a stereophonic disc record for subsequent reproduction on four loudspeakers to give the listener the illusion of sound coming from four separate sources. Two of the four signals are applied to respective ones of the two tracks, as in stereophonic recording, with the third and fourth channels superimposed thereon by applying equal in-phase portions of the third signal to both of the tracks and by applying equal portions of the fourth signal to both of the tracks with a differential phase angle between the two portions which remains substantially constant throughout the audio frequency range of interest. The fourth signal applied in this way causes the stylus of a stereophonic cutter to describe an ellipse having major vertical and horizonal axes disposed normal and parallel, respectively, to the surface of the record.

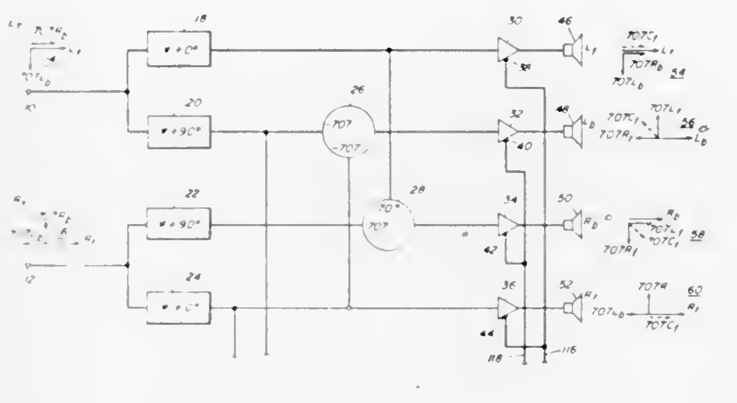
3,794,781
FOUR CHANNEL DECODER WITH IMPROVED GAIN CONTROL

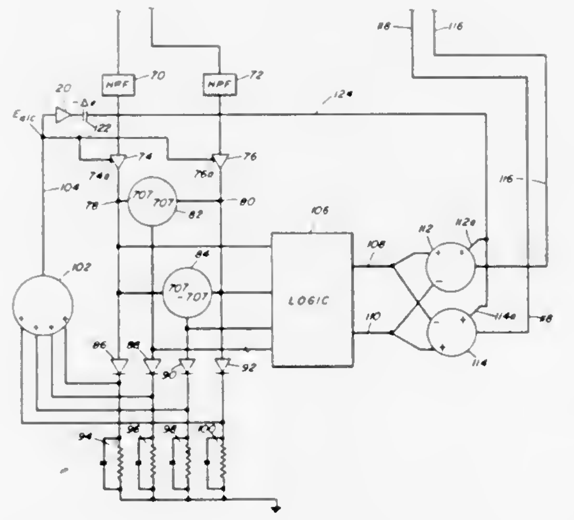
Benjamin B. Bauer, Stamford, Conn., assignor to Columbia Broadcasting Systems, Inc., New York, N.Y.

Filed Sept. 1, 1971, Ser. No. 177,002

Int. Cl. H04r *5/00*

U.S. Cl. 179—1 GQ **5 Claims**





Apparatus including a matrix for decoding four separate channels of information transduced from a medium having only two separate tracks and presenting it on four loudspeakers to give the listener the illusion of sound coming from a corresponding number of separate sources. Side-effect or transferred signals between channels tend to diminish the realism of four-channel reproduction. The realism is enhanced by a decoding system which accepts the two outputs from the medium, which, for example, may be a stereophonic disc record, separates them into four independent channels each carrying predominantly the information contained in one of the four original recorded sound signals, and, utilizing logic circuit techniques derives control signals for controlling the gains of amplifiers associated with the four loudspeakers. The control circuitry improves the separation of the four independent channels, particularly the generally "front" from the generally "back" signals. To prevent the transferred back signals corresponding to a "center front" signal from being heard instantaneously in the back channels (and vice versa) a selective gating voltage is applied to the control circuitry which reduces the quiescent gain of the amplifiers during silence or very low level passages by a pre-selected amount, whereby upon sudden application of a signal to the decoder the gain of the amplifier carrying the desired signal is raised rapidly to a normal operating level only in those channels intended to carry the signal and thus the undesired side-effect signals are essentially eliminated.

3,794,782
PABX TRANSMISSION AND IMPULSING CIRCUIT

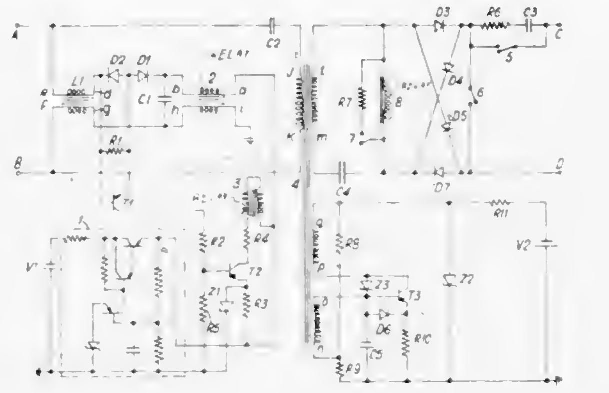
John Sidney Velik, Cremorne, Australia, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 20, 1972, Ser. No. 219,241

Claims priority, application Australia, Jan. 20, 1971, PA 3759

Int. Cl. H04b *3/36*

U.S. Cl. 179—170 R **5 Claims**



A circuit arrangement is provided for two-way speech transmission and one-way impulse transmission in telecommunication exchanges. Transmission is across a transformer having first and second windings series connected to, but D.C. isolated from, first and second two-way speech paths respectively. Amplifier means is coupled through additional windings of the transformer to compensate for the attenuation of signals between the two speech paths due to natural transformer losses. A source of regulated D.C. power provides energy to the first two-way speech path and to an impulse repeater circuit coupled thereto. The repeater circuit provides substantially identical impulses to the second two-way speech path.

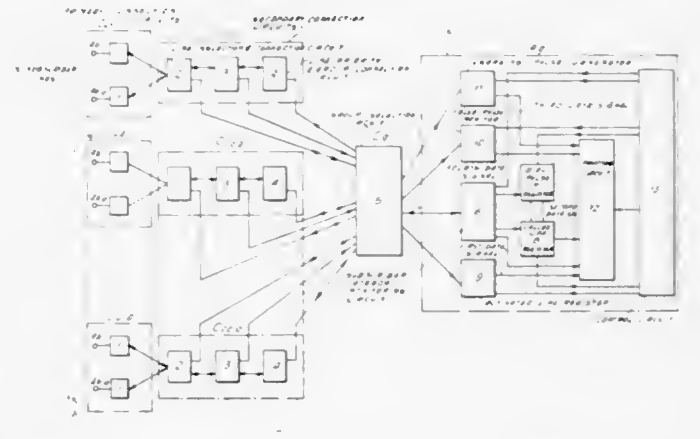
3,794,783
TELEPHONE-SYSTEM MONITORING AND RECORDAL APPARATUS USING ORDINARY PAPER

Stan G. Radu, Bucharest, Rumania, assignor to Directia De Telecomunicatii a Municipiu Bucuresti, Bucharest, Rumania

Filed Nov. 5, 1971, Ser. No. 196,042

Int. Cl. H04m *3/22*

U.S. Cl. 179—175.2 C **6 Claims**



Telephone service equipment adapted to genuine conception, construction and way of working, since it can record graphically on a common paper sheet for the monitored telephone line the time of the connection, call number of the called subscriber in form of ciphers from 1 to 0 calling number and category of the line requiring the connection and, tariff rate charging impulses with the possibility of recording in a different color any false impulses or special observations.

3,794,784

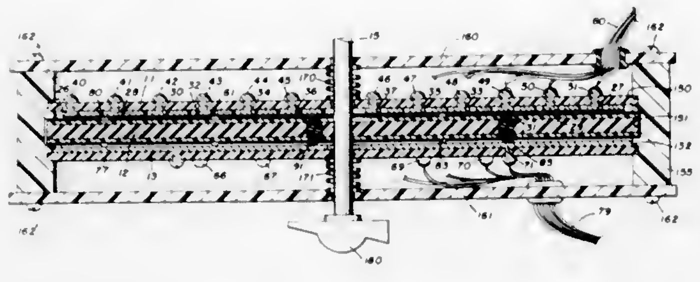
ROTARY WAFER SWITCH HAVING ROTOR MOUNTED, SPIRAL ARRANGED AXIAL BRIDGING CONTACTS

Richard J. Snider, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 7, 1973, Ser. No. 357,831

Int. Cl. H01h *19/58*

U.S. Cl. 200—11 A **10 Claims**



A switch for stepping in rotation a plurality of inputs to a corresponding plurality of outputs includes first, second, and third wafers of electrical insulating material. The first wafer presents a number of coaxial rings of an electrically conducting material printed onto the first wafer. The third wafer presents a plurality of electrical conductors radially extending from a central axis point. Intermediate the first and third wafers is a second wafer which carries a plurality of electrically conducting contacting members each contacting a respective one of the plurality of rings of the first wafer and one of the plurality of radially extending electrical conductors on the third wafer. As the second wafer is rotated, each of the contacting members of the second wafer remains in electrical contact with its respective ring, but is switched to a different radially extending member.

3,794,785

SWITCH ACTUATING MECHANISM FOR TURN INDICATOR TYPE SWITCHES

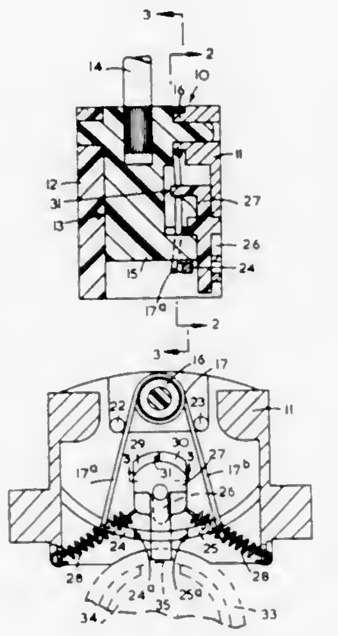
Neil Tomlinson, Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed June 5, 1972, Ser. No. 259,950

Claims priority, application Great Britain, Aug. 6, 1971, 37,033/71

Int. Cl. H01h *3/16*

U.S. Cl. 200—61.27 **3 Claims**



A switch actuating mechanism for a self-cancelling direction indicator switch, in which mechanism a switch control lever is biased by a torsion spring from its two indicating positions to a central non-indicating position. Arms of the torsion spring slide along ramp surface and into detents to retain the control lever in a selected operating position. A release member having a portion which is engageable by a striker on a vehicle steering column is pivotable thereby and cam surfaces on the release member can engage and release respective arms from the detents so that the torsion spring can urge the lever into its central position.

3,794,786

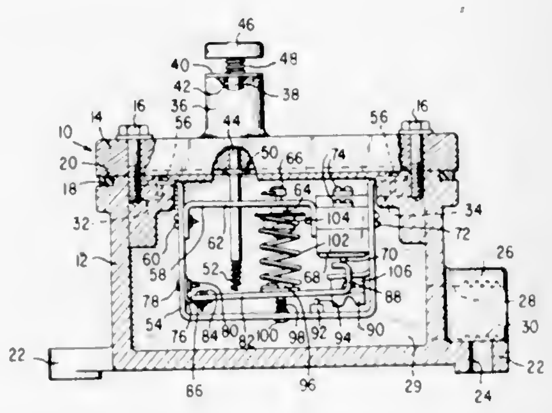
VIBRATION ACTUATED SWITCH WITH MAGNETIC HOLDING MEANS AND ARMATURE RESET POSITIONING MEANS

Donald A. Doyle, Fountain Valley, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 10, 1972, Ser. No. 305,403

Int. Cl. H01h *35/14*

U.S. Cl. 200—61.45 R **14 Claims**



A vibration actuated switch is disclosed which includes a switch mounted on a support and having a switch actuator located proximate a movable armature and controlled thereby. The armature is retained in position away from the switch actuator by magnetic force from a magnet mounted thereon which is attracted to a portion of the support, and upon the occurrence of vibration of a predetermined extent to overcome the magnetic force, the armature moves toward another magnet and operates the switch actuator.

3,794,787

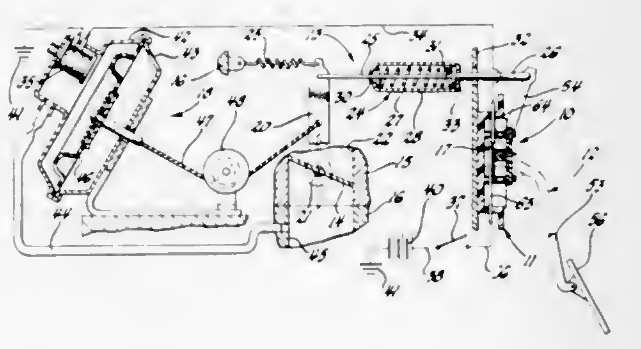
SUPPORT ASSEMBLY FOR A THROTTLE PEDAL AND SWITCH ACTUATABLE THEREBY

Gale F. Berninger, Rochester, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 11, 1972, Ser. No. 313,786

Int. Cl. H01h *3/14*

U.S. Cl. 200—61.89 **3 Claims**



A pedal lever and switch support assembly adapted to be mounted on the firewall of a vehicle wherein the pivot section of the pedal lever is pivotably and slidably supported by a support bracket that carries a switch actuatable by the pivot section when slidably moved in the support bracket.

3,794,788

ELECTRICAL SWITCH

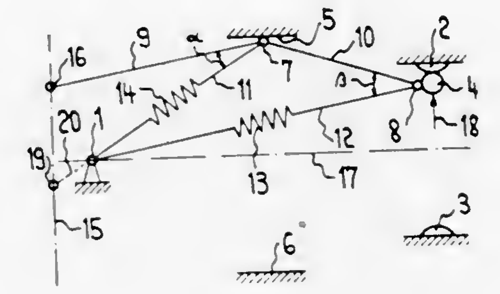
Hans Ulrich Leibundgut, Gasel, Switzerland, assignor to Saia AG, Murten Fribourg Canton, Switzerland

Filed Oct. 17, 1972, Ser. No. 298,232

Claims priority, application Switzerland, Nov. 8, 1971, 16188/71

Int. Cl. H01h *13/36*

U.S. Cl. 200—67 D **5 Claims**



An electrical switch, preferably a small or miniature switch, with a double toggle, with at least one stationary pivot, two fixed contacts, one movable contact and a movable actuating member, wherein a plurality of single toggles are nested one inside the other, so that each member is simultaneously a component of at least two individual toggles, means for providing that the condition "contact pressure zero" is not possible as a permanent condition at the fixed contacts.

3,794,789

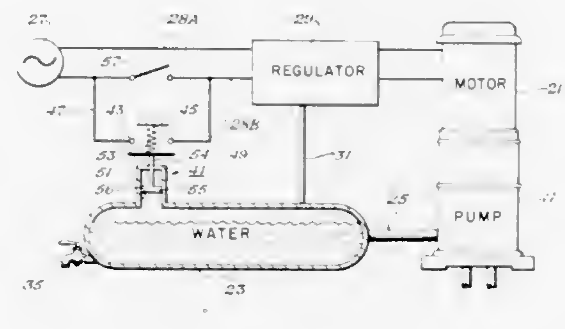
PRESSURE SENSITIVE CONTROL FOR PUMP REGULATOR

Johnnie J. Bynum, Star Rt., Box 98, Mineral Wells, Tex. 76067

Filed Nov. 2, 1972, Ser. No. 303,117

Int. Cl. H01h *35/34, 35/38*

U.S. Cl. 200—83 Z **11 Claims**



The specification discloses a water pumping system including an electric motor driven pump coupled to an underground water reservoir by way of conduits and to an uphold storage tank for storing water and having a pressure regulator for completing an electrical circuit to the pump motor from an electrical energy source when the water pressure falls below a preset low pressure level and for disconnecting the electrical circuit when the water pressure rises above a preset upper pressure level. Coupled between the source and the pump motor is a pressure switch sensitive to the water pressure of the system for disconnecting the electrical circuit in the event that the water pressure falls to a given lower pressure level below the preset low pressure level of the pressure regulator.

3,794,790

ELECTRICAL SWITCHES

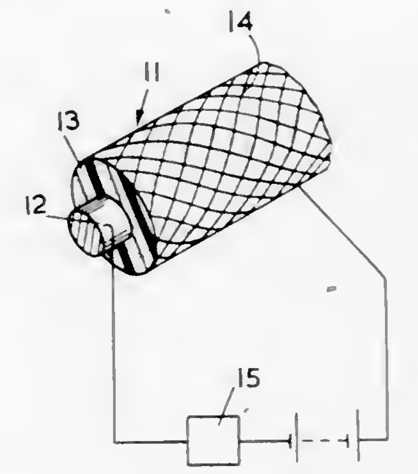
Kenneth Leyland, Newcastle-under-Lyme, England, assignor to Rists, Wires and Cables Limited, Newcastle-under-Lyme, England

Filed Jan. 24, 1973, Ser. No. 326,339

Claims priority, application Great Britain, Apr. 2, 1972, 5,276/72

Int. Cl. H01h *13/16*

U.S. Cl. 200—86 R **2 Claims**



An electrical switch including a first flexible elongated conductor and a second flexible elongated conductor coaxial with the first conductor. An insulating element which is both resilient and deformable spaces the first conductor from the second conductor along the whole length of the first conductor, and the insulating element is loaded with conductive particles. The nature of the insulating element containing the conductive particles is such that compression of the element in a direction to decrease the spacing between the first and second conductors establishes a conductive path within the element between the first and second conductors.

3,794,791

PERSONAL DEFENCE DEVICE

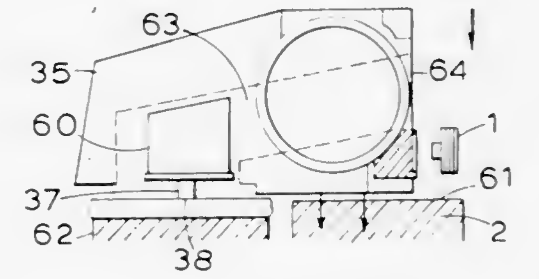
Peter Thomson, 45A, Blossom St., York, England

Filed June 29, 1972, Ser. No. 267,362

Claims priority, application Great Britain, June 29, 1971, 30,426/71

Int. Cl. H01h *9/06*

U.S. Cl. 200—61.93 **8 Claims**



The invention relates to a switching device adapted for use in instruments of personal defence to actuate two or more electrically or mechanically operated components of which at least one is electrically operated and at least one is mechanically operated. The device may be adapted for use in conjunction with the push button system of a torch, the push button system being operable both partially so as to actuate only the circuit for a bulb, and fully so as to actuate also a noise alarm device and mechanically actuate means capable of emitting a spray jet.

3,794,794

3,794,796

3,794,798

3,794,792

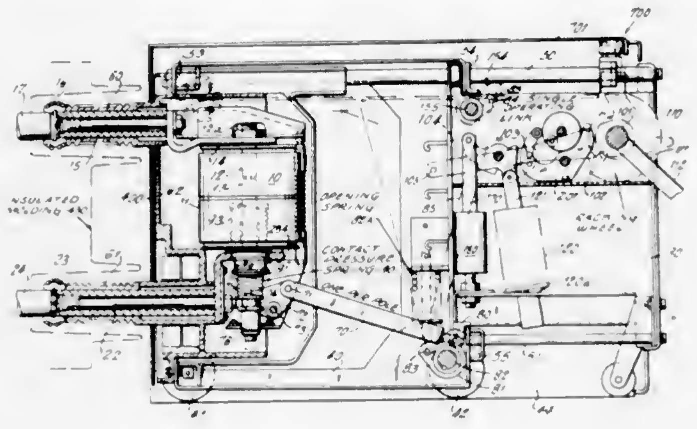
SWITCHGEAR WITH SINGLE DRIVE TO BOTH CHARGE CLOSING SPRING AND RACK CONTACT CARRIER

George A. Wilson, Pineville, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Aug. 21, 1972, Ser. No. 282,597

Int. Cl. H01h *3/30*

U.S. Cl. 200—153 SC **7 Claims**



Truck mounted miniaturized switchgear adapted to be removably placed in a switchboard for connection to busses located in the switchboard comprising a truck frame and circuit interrupter elements mounted on a second frame telescopingly movable with respect to the truck frame. The circuit interrupter elements are opened by a spring on the occurrence of predetermined circuit condition and the removal of a retaining latch structure. The spring is recharged after opening and may be automatically recharged while the contacts are closed in preparation for the next opening. A rotatable lever or crank is used to charge the spring and motor means may be provided for operating said rotatable lever. The contacts are trip free in that the spring may be moved toward discharge position while it is in the process of being charged. The same motor with other connections is utilized to drive the racking member which moves the telescoping frame carrying the circuit interrupter elements with respect to the truck frame.

3,794,793

PACKAGE FOR FLEXIBLE ARTICLES

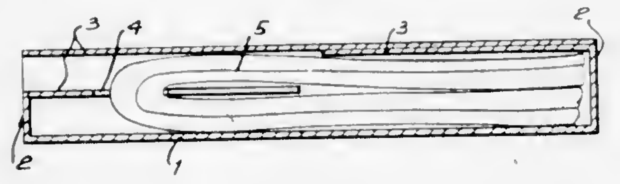
Manuel Valls Rius, Avenida Balmes, 16, Igualada, Barcelona, Spain

Filed Aug. 4, 1971, Ser. No. 168,949

Claims priority, application Spain, Jan. 22, 1971, 165814

Int. Cl. B65d *5/50*

U.S. Cl. 206—45.19 **10 Claims**



A packing for a garment has a rectangular central panel which may carry informative printing, four side-pieces foldable to form the sides of a box-shape and four flaps extending one from each side-piece foldable to lie parallel to the central panel to form the top of a box-shape. One side-piece is narrower than the others and the flap associated with it has an elongate aperture through which a folded garment is hung. This side piece is folded first so that the garment lies inside the box for transportation and storage. For display, the flap with the garment may be hung outside the box, or the other flaps may be opened to expose the garment.

3,794,794

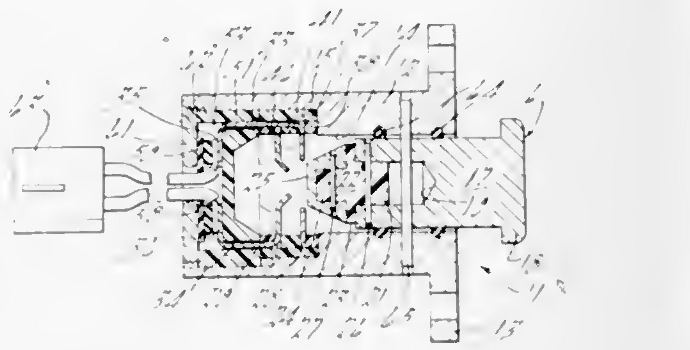
IMPACT RESPONSIVE SWITCH WITH FRANGIBLE ELEMENT HOLDING CONTACT PLUNGER IN UNACTIVATED POSITION

Ronald W. Provancher, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 10, 1972, Ser. No. 305,620

Int. Cl. H01h *35/14, 9/00*

U.S. Cl. 200—61.53 **6 Claims**



The impact switch is responsive to the movement of a vehicle member subjected to an impact force as the result of a vehicle collision with a fixed object or another vehicle. The switch comprises a plunger device movable longitudinally within the cylindrical housing containing axially spaced electrically conductive contact rings. The plunger device carries an electrically conductive contact means engagable with the contact rings in sequence as the plunger device is driven into the housing. A shear pin normally holds the plunger device against displacement such as could be caused by vibration or longitudinally exerted inertial forces. Upon a predetermined impact force being applied to the plunger device, the shear pin is adapted to shear and permit displacement of the plunger means. Engagement of the plunger contact means with the contact rings closes an electrical circuit through the switch. The closed electrical circuit may be used to trigger an airbag system or other vehicle passenger restraint device.

3,794,795

IGNITION DISTRIBUTOR HOUSING AND RESILIENTLY ATTACHED DISTRIBUTOR BASE PLATE

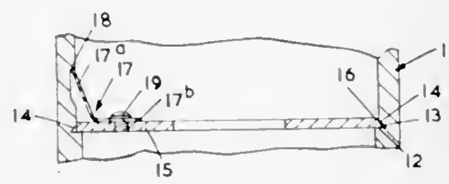
Keith Tromans, Warley, England, assignor to Joseph Lucas (Electrical) Limited, Birmingham, England

Filed Jan. 15, 1973, Ser. No. 323,383

Claims priority, application Great Britain, Jan. 15, 1972, 2,026/72

Int. Cl. H01h *9/02*

U.S. Cl. 200—293 **8 Claims**



An ignition distributor for use in an internal combustion engine spark ignition system including a hollow casing formed internally with a support surface and a groove. The groove extends radially into the wall of the casing from the support surface. The distributor further includes a contact breaker assembly mounting plate which is supported on the support surface, and which includes a peripheral region capable of being engaged in a region of the groove in the casing wall. A spring member is provided which urges the mounting plate both downwardly onto the support surface and transversely so that the region of the plate engages in the corresponding region of the groove.

3,794,796

ALCOHOL SECURITY INTERLOCK SWITCH DEVICE

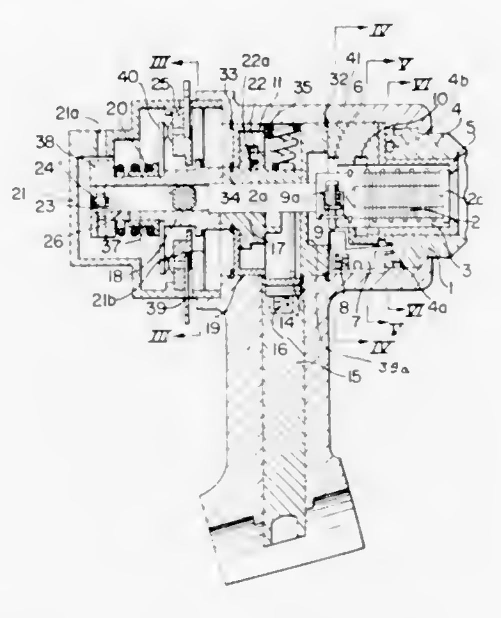
Arthur Stanley Dwan, 23 Grenaby Rd., Croydon, England

Filed Apr. 10, 1972, Ser. No. 242,499

Claims priority, application Great Britain, Apr. 26, 1971, 11372/71; May 7, 1971, 13733/71

Int. Cl. H01h *27/00*

U.S. Cl. 200—44 **10 Claims**



This invention is an alcohol security interlock switch for a motor vehicle comprising a locking mechanism disposed in a housing and operable by a key which, if inserted carefully and within a prescribed period by a driver with a steady hand, will start the motor of the motor driven vehicle, but, if the action is attempted by a driver under the influence of drink or drugs immobilisation of the motor will inevitably follow.

The locking mechanism includes a lock barrel assembly which is rotatable by the key and movable axially by relatively light pressure to operate an electro/mechanical immobilising mechanism.

3,794,797

LEAKAGE PREVENTING MICROWAVE OVEN

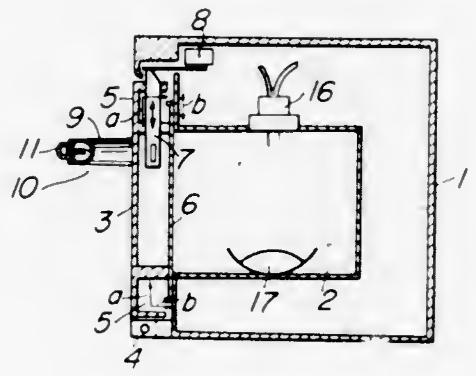
Michiyo Nakano, Nara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 14, 1972, Ser. No. 244,057

Claims priority, application Japan, Apr. 19, 1971, 46-25495

Int. Cl. H05b *9/06*

U.S. Cl. 219—10.55 **6 Claims**



A microwave oven comprising a door lock key operatively associated with a door handle of a door hermetically sealed to block off the escape of microwave energy, and a door lock switch operated by said door lock key, whereby instantaneous leakage of microwave energy is prevented when said door is opened in the course of heating.

3,794,798

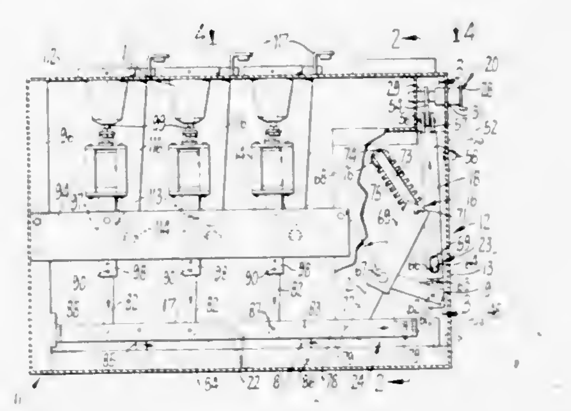
SUBMERSIBLE SWITCH AND DOUBLE TOGGLE, POWER TRANSMISSION MEMBER OPERATING MECHANISM THEREFORE

Frank C. Trayer, 25690 LaLanne Ct., Los Altos Hills, Calif. 94022

Continuation of Ser. No. 214,330, Dec. 30, 1971, abandoned. This application Apr. 27, 1973, Ser. No. 354,942

Int. Cl. H01h *3/46, 3/48*

U.S. Cl. 200—153 G **14 Claims**



A medium-voltage submersible switch having a pair of overcenter toggle mechanisms in series in the power train operating the switch elements, the first of the toggle mechanisms being operable from outside the tank housing the switch. Lost Motion connections are placed between the first toggle mechanism and the operator, and between the first and second toggle mechanisms. Three parallel switches are shown, actuated by a single driving bar, which is equipped with a stop to limit its motion just beyond the over-center point of the second toggle mechanism in one direction, and a latch mechanism is shown for remote triggering of the switch after the mechanism has been cocked. A motor operator is shown pivotally attachable to the outside of the enclosure and engageable with the operating member of the first toggle. The motor operator may be disengaged from the operating member for manual switch operation by being pivoted about the pivoted attachment. An alternate form is shown having a single switch element and a fuse in series with the switch element, for testing circuits suspected of high fault currents.

3,794,799

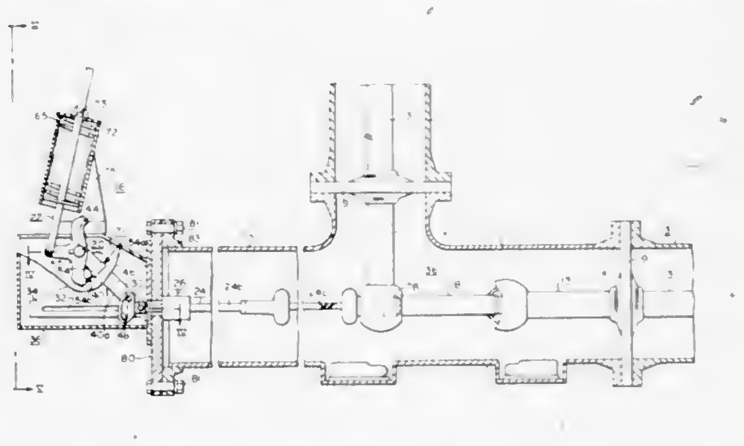
GAS INSULATED SWITCH WITH ADJUSTABLE OVERCENTER TOGGLE ACTUATOR THEREFORE

Harvey E. Spindle; Jeffry R. Meyer, both of Pittsburgh, and Robert L. Hess, North Versailles, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 27, 1972, Ser. No. 238,381

Int. Cl. H01h *3/46, 3/26, 33/36*

U.S. Cl. 200—153 G **16 Claims**



An improved switch construction is provided having associated therewith an improved overcenter spring mechanism, which has a lost-motion connection with the lever assembly for actuating the contact shaft of the switch. The construction is such that a driving motor is used to move the overcenter spring assembly to an overcenter position, at which time it moves over-toggle, and quickly effects opening or closing movements of the lever assembly, the latter driving the contact-operating shaft at its free end.

An auxiliary feature of the invention provides an in-toggle arrangement at the end of the opening and closing operations of the movable contact shaft by the use of a cam-coupling, interconnecting the end of the contact-operating shaft with the end of the free end of the operating lever.

As a further auxiliary feature of the invention, the switch construction and its associated mechanism are particularly adaptable for use in gas-insulated substations, of the type in which transmission of power occurs through an enclosed gas-insulated bus, capable, for example, of voltages of 46 KV through 500 KV, with a highly-insulating gas, such as sulfurhexafluoride (SF_6) gas at a suitable pressure, such as 45 p.s.i.g. The switch, however, is capable of application in other environments.

ERRATUM

For Class 206—45.1 G see:
Patent No. 3,794,793

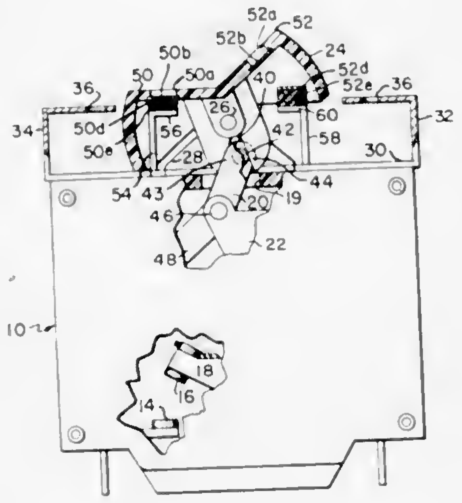
3,794,800

ROCKER ACTUATED CIRCUIT BREAKER HAVING IMPROVED MEANS FOR FUNCTION INDICATION

Clifford A. Bodge, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 2, 1970, Ser. No. 123
Int. Cl. H01h *9/16*

U.S. Cl. 200—167 R **6 Claims**



Indication of the state of energization of a rocker actuated electrical switch is provided by locating transparent indicia on two opaque panels mounted on opposite face portions of the rocker, and highly light reflective material underneath the rocker in alignment with the indicia on each panel so that pivotal movement of the rocker brings a panel and reflective surface together at the same time that the second panel and reflective surface are separated. When a panel and reflective surface are together, light is reflected from the reflective surface through the indicia thereby giving the effect of a light being turned on in the switch and when the reflective surface is separated from the panel, reflected light from the surface is effectively precluded from passing through the indicia thereby giving the effect of the light being turned off in the switch. Each reflective surface is resiliently mounted to ensure optimum alignment and a close contiguous relationship of the reflective surface with the panel when they are in the engaged position.

ERRATUM

For Class 219—10.55 see:
Patent No. 3,794,797

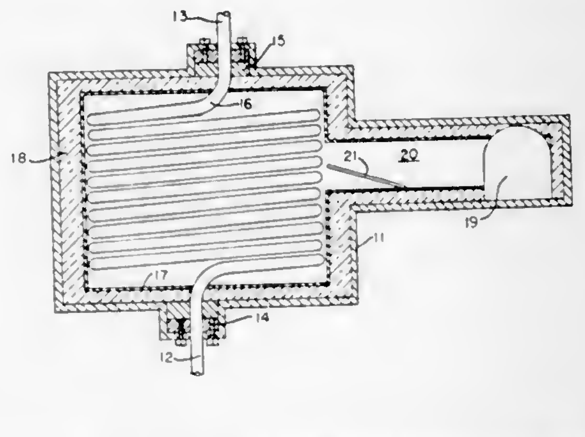
3,794,801

SUPER HEATED VAPOR DRIVEN VEHICLE

Raymond E. Long, 26323 Ridge Rd., Damascus, Md. 20750, and Ralph C. Boles, Jr., 12005 Claridge Rd., Wheaton, Md. 20902

Division of Ser. No. 197,422, Nov. 11, 1972. This application Dec. 1, 1972, Ser. No. 311,189
Int. Cl. H05b *9/06;* **H04m** *5/10*

U.S. Cl. 219—10.55 **4 Claims**



The disclosure relates to an apparatus for producing super heated fluids by converting electromagnetic energy into thermal energy within the fluid. A coil of dielectric tubing is placed in a microwave resonant chamber and extends from a fluid inlet to a vapor outlet. The fluid to be super heated passes through the coil and is vaporized directly by microwave energy. The invention is particularly applicable to a vapor powered vehicle that produces no environmental pollution.

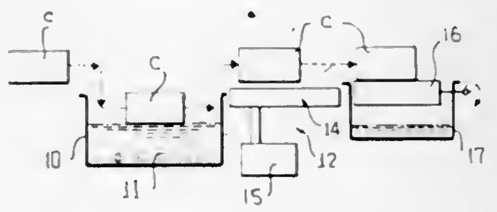
3,794,802

INDUCTION HEATING COIL

Glenn R. Mohr, Linthicum, Md., assignor to Continental Can Company Inc., New York, N.Y.

Filed May 31, 1973, Ser. No. 365,602
Int. Cl. H05b *5/08*

U.S. Cl. 219—10.79 **10 Claims**



This disclosure relates to a heating coil for the induction heating of stripe-like areas of can bodies under controlled conditions utilizing electrical energy on the order of 10kHz and lower. The coil is of a unitary construction and is capable of substantially equally heating both the extreme end portions and the central portion of such stripe-like areas of can bodies.

3,794,803

APPARATUS AND METHOD FOR MAKING NEEDLE TUBING

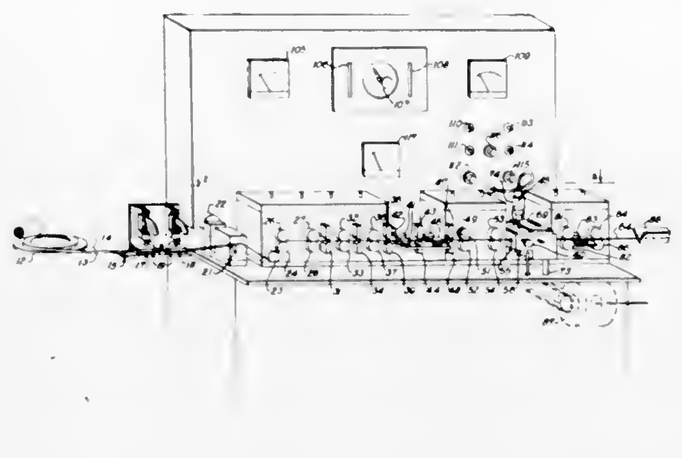
James Valdeck, P.O. Box E, Steamboat Springs, Colo. 80477

Filed Apr. 21, 1971, Ser. No. 135,871
Int. Cl. B23k *31/06*

U.S. Cl. 219—61 **18 Claims**

This invention is directed to tube making apparatus and method including (1) a tube forming and welding unit, (2) a

vertical-drum drawing and/or sinking unit, (3) a derodding and cold blooming unit, (4) a horizontal-drum sinking unit,



(5) a cleaner and straightener unit and (6) a swager to be used with all the earlier mentioned units.

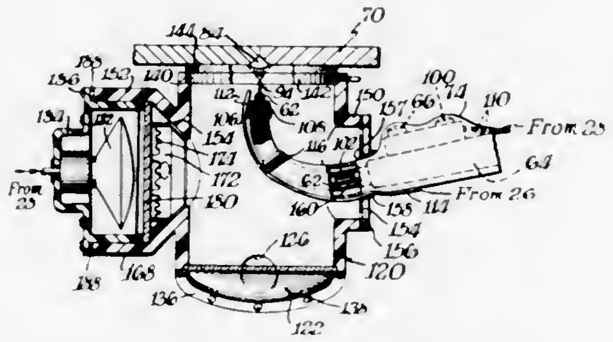
3,794,804

METHOD FOR UNDERWATER ARC WELDING

Ernest H. Berghof, Orlando, Fla., assignor to Anna Welding Corporation, Orlando, Fla.

Division of Ser. No. 175,220, Aug. 26, 1971, which is a division of Ser. No. 886,245, Nov. 13, 1969, Pat. No. 3,632,950, which is a continuation-in-part of Ser. No. 701,700, Jan. 30, 1968, abandoned. This application Aug. 7, 1972, Ser. No. 278,425
Int. Cl. B23h *9/00*

U.S. Cl. 219—137 **10 Claims**



According to the method of this invention water is kept away from the arc in underwater arc welding by means of a gas under a pressure greater than that of the water and, preferably, the wire feeding unit, welding gun, and electrode wire of the gas shielded, metal arc welding apparatus to be used underwater are enclosed in air-tight and water-tight containers. The containers and conduits are then internally pressurized with a shield gas to prevent the entry of water. The welding gun or at least its nozzle is inserted through a flexible sealed orifice in a small local housing chamber having a second opening. This second opening is placed against the work-piece to be welded. Shielding gas is supplied to the housing chamber at a pressure greater than the surrounding water to force water from the chamber and permit welding to take place in a region free of water.

3,794,805

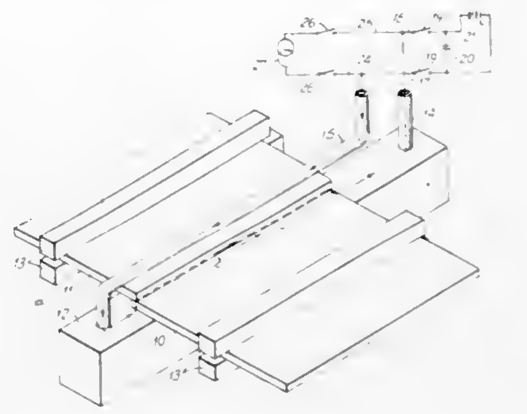
MAGNETIC PULSE WELDING USING SPACED PROXIMITY CONDUCTOR

Wallace C. Rudd, 8 Hidden Green Ln., Larchmont, N.Y. 10538

Filed July 2, 1971, Ser. No. 159,277
Int. Cl. B23k *19/00*

U.S. Cl. 219—152 **21 Claims**

Method and apparatus for performing a work function such as forming, welding, forging, or cutting on one or more electrically conductive workpieces. Work force is a pulse of magnetic pressure produced about a proximity conductor which is



positioned closely adjacent the portion of the workpiece to be worked on and which is in conductive electrical connection with said portion of the workpiece.

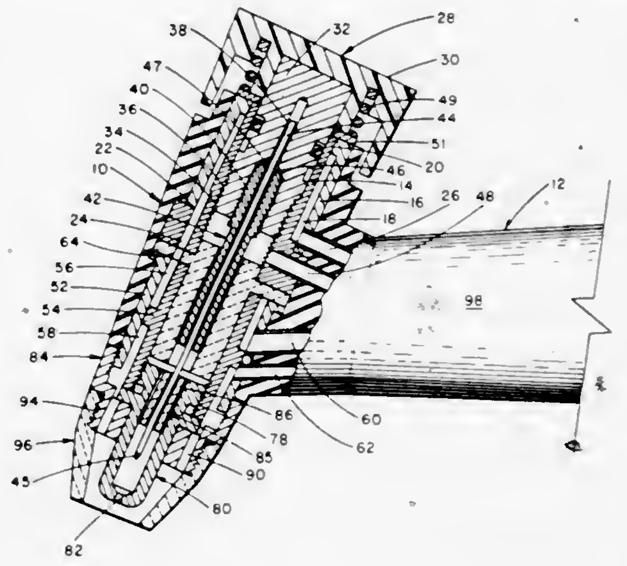
3,794,806

PLASMA ARC WELDING TORCH

George A. Klasson, Port Washington, N.Y., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 831,320, June 9, 1969, Pat. No. 3,632,951. This application June 24, 1971, Ser. No. 156,456
Int. Cl. B23k *9/00*

U.S. Cl. 219—121 P **4 Claims**



Disclosed is a plasma arc welding torch suitable for welding materials of construction. The torch is characterized in that the head is divided into two sections, each section carrying a different electrical potential, the sections separated by a combination electrical insulator and sealing member. There is further provided a collar for electrically insulating the torch tip from the nozzle and at the same time serving to aid in dissipating heat generated at the tip.

3,794,807

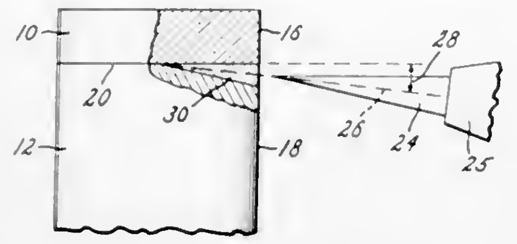
METHOD OF BEAM WELDING DISSIMILAR METAL PARTS

Cecil Bailey, Woodlyn; Oscar C. Frederick, Springfield, and Ramamurat R. Maurya, Philadelphia, all of Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed Apr. 10, 1972, Ser. No. 242,609
Int. Cl. B23k *15/00*

U.S. Cl. 219—121 EM **8 Claims**

An electron-beam welding method is used for joining dissimilar metal parts, one of which contains a refractory metal component. An electron beam directed at the other of said parts at an acute angle to the seam between the two parts forms a conical fusion zone in said other part. The beam center line intersects said other part at a point spaced from the seam by an amount that locates the perimeter of the conical fusion zone tangential to the seam along the fusion-zone length bordering the seam. The weld is formed by moving the beam relative to the seam along a path parallel to the seam while the central axis of the beam is maintained at said acute angle relative to the seam.



3,794,808
POWER SUPPLY CIRCUIT FOR A HEATING ELEMENT

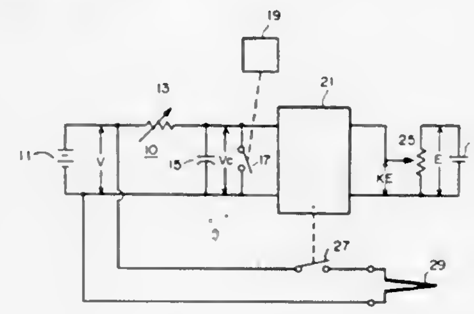
Susumu Takagi, Tokyo, Japan, assignor to Yokogawa-Hewlett-Packard Ltd., Tokyo, Japan

Filed Aug. 2, 1972, Ser. No. 277,203

Claims priority, application Japan, Aug. 5, 1971, 46-59261

Int. Cl. H05b *1/02*

U.S. Cl. 219—497 **3 Claims**



An improved high-efficiency power supply for a heating element includes charge, discharge, and comparator circuits. The comparator circuit provides the proper duty cycle and controls the power to the heater for keeping its temperature nearly constant over a wide range of input voltages. Changing the value of the components of the charge and discharge circuits alters the power supplied to the heating element.

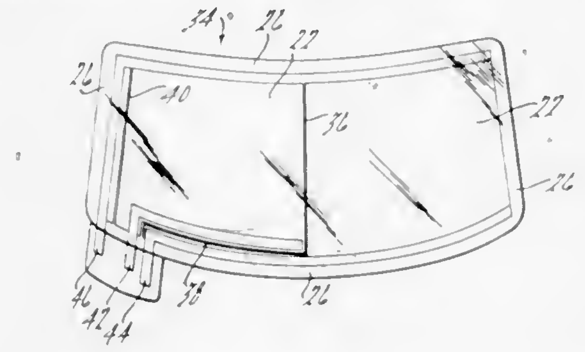
3,794,809
VEHICLE WINDSHIELD

Jerry G. Beck, Southfield; Richard T. Dickason, Birmingham, and Donald J. Ray, Southgate, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 29, 1972, Ser. No. 316,322

Int. Cl. B60l *1/02*

U.S. Cl. 219—203 **8 Claims**



A vehicle windshield is disclosed which is constructed of an inner and an outer glass lite. These lites have first and second laminating interlayers therebetween. A transparent, electrically conductive material is disposed between the first and the second laminating interlayers. The conductive coating on the electrically conductive material is spaced inwardly from the edges of the first and the second glass lites around the entire perimeter of the windshield an amount sufficient to permit the windshield to be hermetically sealed during its manufacture.

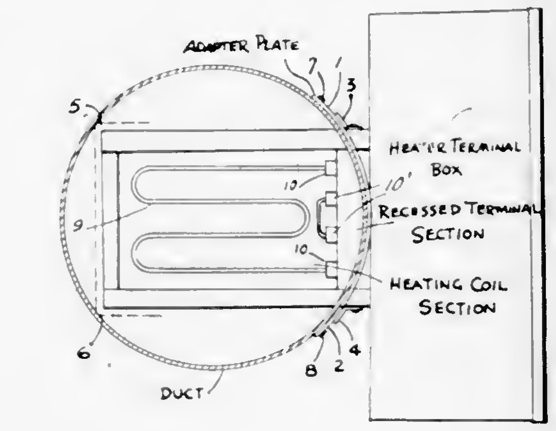
3,794,810
ELECTRICAL HEATING APPARATUS FOR CIRCULAR DUCTS

Jerome F. Brasch, and Rolf G. Albers, both of Saint Louis, Mo., assignors to Brasch Manufacturing Company, St. Louis, Mo.

Filed Oct. 16, 1972, Ser. No. 297,929

Int. Cl. H05b *1/00;* **F24h** *3/04*

U.S. Cl. 219—366 **2 Claims**



An electrical resistance heating apparatus of the type conventionally employed in a rectangular duct is adapted for use in a curved duct by means of an adapter plate attached to the heating apparatus. The adapter plate is curved in shape and complementary to the curvature of the duct. The plate has an opening therethrough in coinciding relation to an opening in the duct and the recessed terminal section and heating coil section of the heating apparatus extend through the plate opening and the duct opening for positioning within the duct with the heater terminal box section of the heating apparatus being positioned outside the duct. The adapter plate is firmly secured to the duct by suitable fasteners when the heating apparatus is inserted into the duct through the duct opening.

3,794,811
AUTOMATIC SAFETY SWITCH MEMBER

Karl Hehl, Siedlung 183, D-7291 Lossburg, Germany

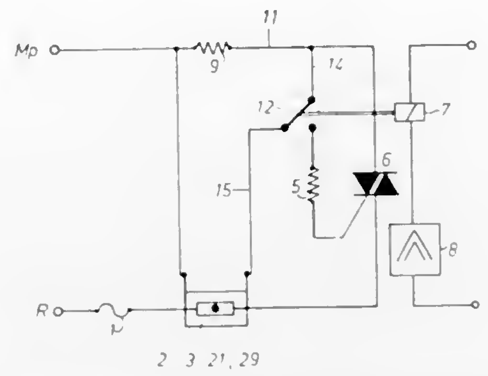
Continuation-in-part of Ser. No. 132,508, April 8, 1971, Pat. No. 3,697,812. This application July 19, 1972, Ser. No. 273,032

Claims priority, application Germany, July 26, 1971, 2137285. The portion of the term of this patent subsequent to Oct. 1, 1989, has been disclaimed.

Int. Cl. H05b *1/02*

U.S. Cl. 219—501 **8 Claims**

An automatic safety circuit for monitoring the power switching means controlling the main current circuit to an electric power load to automatically cut off the current in the event of a malfunction of the power switching means which causes it to continue to remain in its closed condition. The auxiliary switching circuit includes a switching arrangement for selectively disrupting the main current circuit, the switching arrangement being composed of a heatable switching element, an electrical resistance heating element formed as a coil which concentrically encloses the heatable switching element and an electrically insulating supporting sleeve which supports the coil and is disposed coaxial to the heatable switching element.



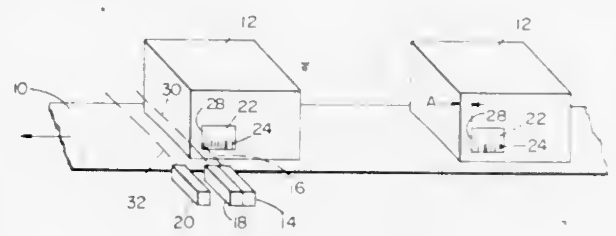
3,794,812
SENSING APPARATUS

Jack A. Bryant, Boston, Mass., assignor to Electronics Corporation of America, Cambridge, Mass.

Filed Apr. 17, 1972, Ser. No. 244,757

Int. Cl. G06k *7/10;* **G11c** *11/02;* **G06k** *19/06;* **G01n** *21/30*

U.S. Cl. 235—61.11 E **14 Claims**



Sensing apparatus includes scanning means for producing electrical signals corresponding to code marks in a code on an article as the code is scanned along a path corresponding to the disposition of the code marks. The code defines a series of digit spaces and each digit space defines a plurality of digit value positions. The apparatus further includes means for generating a corresponding plurality of code-sampling gate signals in each digit space, a code-sampling gate signal being generated corresponding to each digit value position in each digit space, and means for producing an output in response to an electrical signal corresponding to a code mark produced by the scanning means coincident with a code-sampling gate.

3,794,813
VERIFICATION SYSTEM

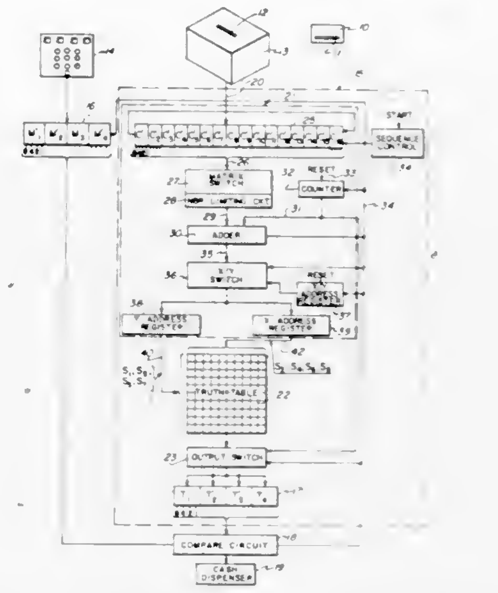
William L. Spetz, Cincinnati, Ohio, assignor to The Mosler Safe Company, Hamilton, Ohio

Filed July 28, 1972, Ser. No. 276,028

Int. Cl. G04q *9/00;* **G06r** *7/00*

U.S. Cl. 235—61.7 B **10 Claims**

A system for ascertaining if the user of a card, such as an identification or credit card, is the owner or is otherwise in rightful possession. The system includes a card bearing an encoded multi-digit number which is correlated in a non-mathematical fashion to another and different multi-digit number memorized and known only by the card owner, this latter number being provided the owner at the time the card is issued to him. Also included in this system is an algorithm circuit for transforming the card number to a transformed number, and a comparator for comparing the transformed number with the memorized number. The card number is entered into the system via a reader, while the memorized number is introduced via a keyboard or the like. The number transformation means includes a truth table or storage means containing a plurality of addressable locations containing random digits which bear no mathematical relatiohship to their addresses. The truth table is addressed to access random digits as many times as there are digits in the memorized number. The random digits from the truth table form the transformed number which is compared on a digit-by-digit basis with the digits of the memorized number. Only if a favorable comparison results, is the holder deemed the rightful possessor of the card.



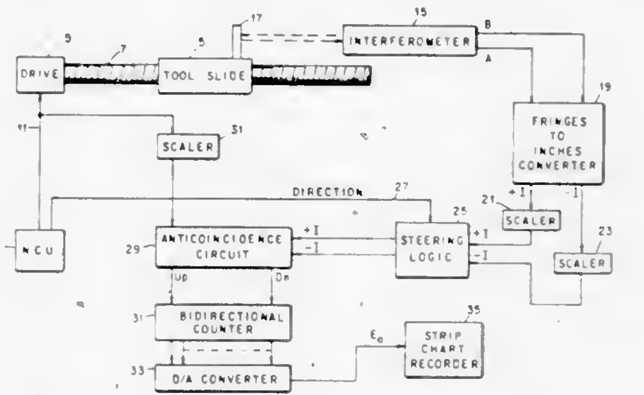
3,794,814
CONTINUOUS DYNAMIC ERROR MONITORING DEVICE FOR NUMERICALLY CONTROLLED MACHINES

Clark M. Lay, Clinton; James H. Burkhardt, Jr., Knoxville, and Thomas W. Davidson, Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Feb. 15, 1973, Ser. No. 332,944

Int. Cl. G01b *11/04;* **G06g** *7/00;* **H03k** *13/00*

U.S. Cl. 235—92 MP **7 Claims**



A dynamic error monitoring system has been provided which measures the instantaneous value of a positionable machine member by direct, instantaneous and continuous comparison between movement command pulses of a discrete value with pulses of the same discrete value from an independent distance measuring device such as command pulses from a numerical control unit and pulses from an interferometer indicative of the positionable member movement from a reference position. Command pulses from the numerical control unit are compared with the laser-interferometer-derived pulses in a bidirectional counter following suitable scaling, steering, and anticoincidence testing. The net count output of the counter representing the dynamic error is converted to an analog signal that is displayed on a recorder. The system gives a continuous record of the dynamic machine tool position over the entire length of the positionable member travel as well as the static positioning error.

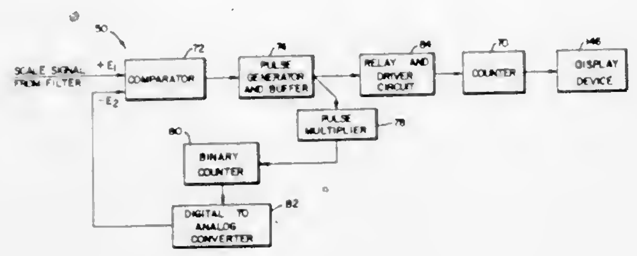
3,794,815
TOTALIZER FOR WEIGHING SYSTEMS

Gilbert A. Godwin, Oakland, and Armando A. Aiguesvives, Maplewood, both of N.J., assignors to Howe Richardson Scale Company, Clifton, N.J.

Filed Oct. 14, 1971, Ser. No. 189,127

Int. Cl. H03k *21/30*

U.S. Cl. 235—92 WT **11 Claims**



A weighing system totalizer wherein a pulse generator produces pulses at a constant repetition frequency to be counted in by a counting device, wherein a digital-to-analog converter cumulatively converts the generator-produced pulses into a feedback d.c. signal, and wherein a signal comparing circuit is responsive to the feedback d.c. signal and to a weight-representing d.c. signal to start and stop operation of the pulse generator for providing a generator-produced pulse train in which the number of pulses is representive of the magnitude of the weight-representing d.c. signal.

3,794,816
DIGITAL FILTERS WITH IMPULSE RESPONSE MODIFIED BY DATA CIRCULATIONS OCCURRING BETWEEN SUCCESSIVE DATA INPUTS

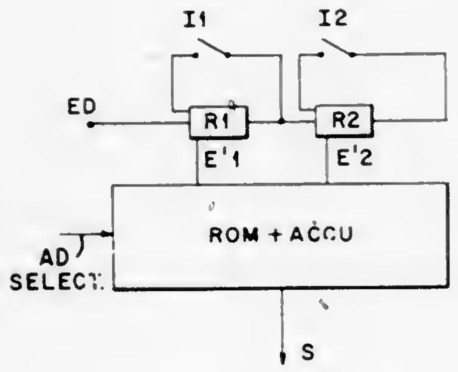
Daniel Jacques Esteban, La Gaude, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 17, 1972, Ser. No. 235,690

Claims priority, application France, Mar. 17, 1971, 71.10484

Int. Cl. G06f *1/02*

U.S. Cl. 235—152 **4 Claims**



In a digital filter to which is applied a succession of binary coded input signals $X(NT)$, $X(NT-T)$, $-X(NT-iT)$ $-x[NT(N-1)]$ at a frequency $F=1/T$, the filter output in the time domain at time NT being related to the input by the approximation

$$y(NT)=\frac{1}{T}\sum_{i=0}^{r} h(iT)X(NT-iT)$$

where r being the number of input digits that can be simultaneously weighted, $h(iT)$ being the filter impulse response or coefficient at frequency F. Usually, such filters exhibit a comb type impulse response spectrum of the form

$$Y(jw)=1-e^{-jwt}=2/\sin \text{weight}/\ 2.$$

It has been found that if during the interval T between application of successive input pulses, the present input is repeatedly weighted and combined at a rate (n/T) of which m out of n results are retained, then the filter impulse response spectrum becomes modified to one having the form

$$Y(jw)=[\sin(mwT/2n)]/[\sin(wT/2n)]$$

The secondary lobes of the spectral response being controlled by the judicious choice of the ratio m out of n. In the preferred embodiment the coefficient weighting and combining of two consecutive input samples are repeated m times at the rate n/T.

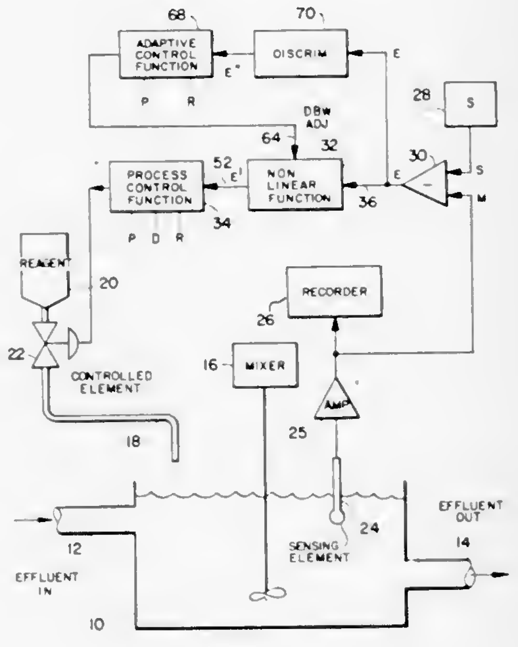
3,794,817
ADAPTIVE NON-LINEAR CONTROL SYSTEM

Francis G. Shinskey, Foxboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Filed Oct. 31, 1972, Ser. No. 302,632

Int. Cl. G05b *11/01*

U.S. Cl. 235—150.1 **15 Claims**



An adaptive control system for use with non-linear processes, utilizing a non-linear controller with remotely adjustable deadband width, and an adaptive controller to perform said adjustment. The adaptive controller operates on the same deviation signal as the non-linear controller, but has a discriminator circuit in its input that reacts in opposite directions to high and low-frequency components in the deviation signal. Oscillations of the process at the natural period of the control loop are made to cause the non-linear deadband width to expand, while drift or offset causes it to contract. A 50 to 1 change in process gain can be accommodated with this system. The system is especially successful on non-linear processes such as the pH control of a chemical waste of randomly variable composition. By avoiding continuous cycling, the system can result in reduction in reagent usage of 50 percent, while still meeting effluent specifications.

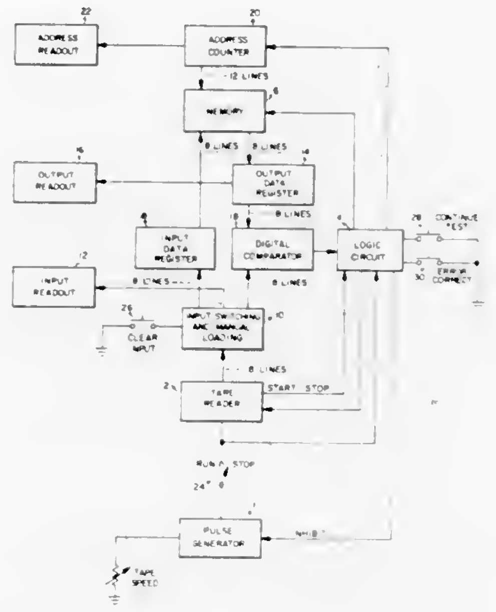
3,794,818
AUTOMATIC MEMORY TEST AND CORRECTION SYSTEM

Peter D. Kennedy, Casselberry, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 3, 1972, Ser. No. 268,429

Int. Cl. G06f *11/00*

U.S. Cl. 235—153 AM **5 Claims**



A simplified automatic electronic correction system for continually comparing the data on a tape being read into a memory with the data stored in the memory. When a discrepancy between the tape data and the memory data occurs the tape is automatically stopped and the erroneous item is read out of both the memory and the tape together with the item location onto suitable displays. Correction may be made automatically or manually.

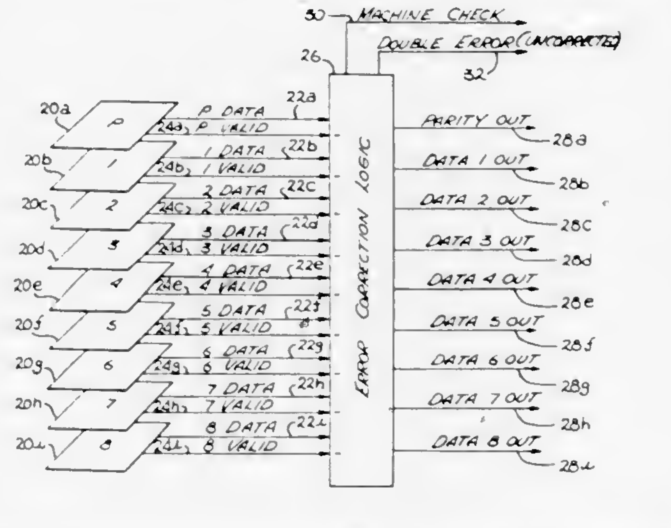
3,794,819
ERROR CORRECTION METHOD AND APPARATUS

Andrew R. Berding, San Jose, Calif., assignor to Advanced Memory Systems, Inc., Sunnyvale, Calif.

Filed July 3, 1972, Ser. No. 268,491

Int. Cl. G11c *29/00*

U.S. Cl. 235—153 AM **4 Claims**



An improved error correction method and apparatus which is capable of correcting single digital errors and capable of detecting multiple errors. In accordance with the invention as used in a memory system, a plurality of storage cards are used, each organized so as to provide a single data output and a data valid output, the data valid output being determined as a result of a parity check of a multiple bit memory signal from which the data cutput is selected as a result of further addressing. Similarly, one further storage card is used to provide a single parity check signal for the data signals from the other storage cards and to provide a parity valid signal in the same manner as the data valid signals. By applying these various signals to a gating system, an error in any one of the signals may be detected, and if in a data signal, may be corrected. Multiple errors may similarly be detected and noted by the provision of a signal indicating such multiple errors.

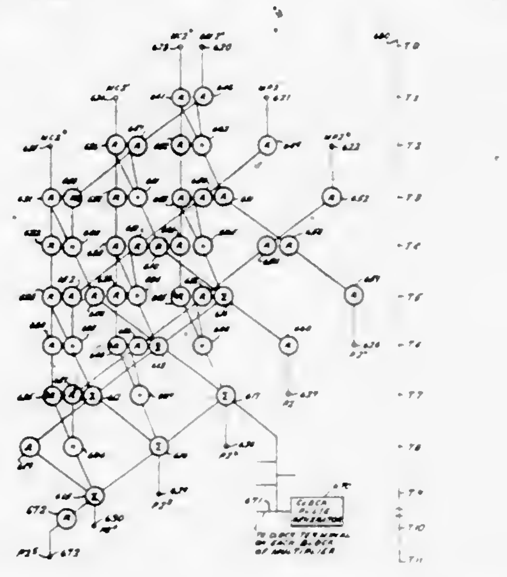
3,794,820
BINARY MULTIPLIER CIRCUIT

John L. Robinson, Wenonah, N.J., assignor to Philco-Ford Corporation, Blue Bell, Pa.

Filed Oct. 16, 1972, Ser. No. 297,955

Int. Cl. G06f *7/54*

U.S. Cl. 235—164 **9 Claims**



A fast binary multiplier in the form of a matrix of partial product generators and addition circuits wherein the number of columns of the matrix corresponds to the largest number of digits in the multiplicand and the number of rows in the matrix corresponds to the largest number of digits of the multiplier for which the multiplier is designed. The multiplier is constructed much like a parallel multiplier but operates like a serial multiplier.

3,794,821
MEMORY PROTECTION ARRANGEMENTS FOR DATA PROCESSING SYSTEMS

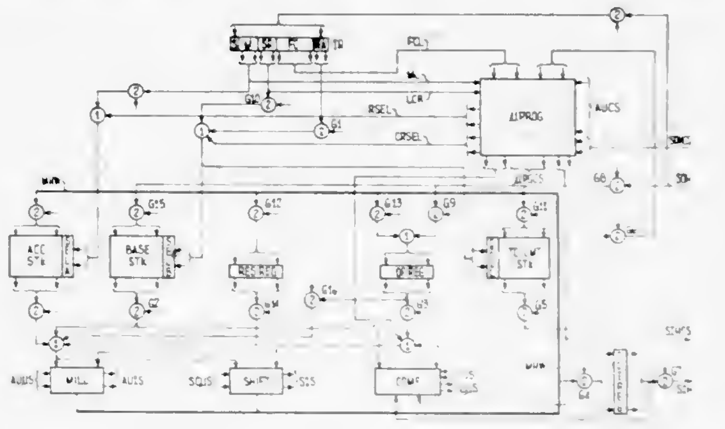
Kenneth James Hamer Hodges, Blandford Forum, and Peter Charles Venton, Colehill, both of England, assignors to Plessey Handel und Investments AG, Zug, Switzerland

Filed Nov. 15, 1972, Ser. No. 306,644

Claims priority, application Great Britain, Nov. 17, 1971, 53310/71

Int. Cl. G06f *11/12*

U.S. Cl. 235—153 AM **1 Claim**



A data processing device including memory segmentation and protection arrangement of the type provided by so-called

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segment descriptors employing a check- code in which the

3,794,824

3,794,826

velocity or "weathered" layer below the geophones, to difsegment descriptors employing a check- code in which the check-code, after formation, is rotated by a predetermined number of bits.

3,794,822
ELECTRONIC FLASH UNIT

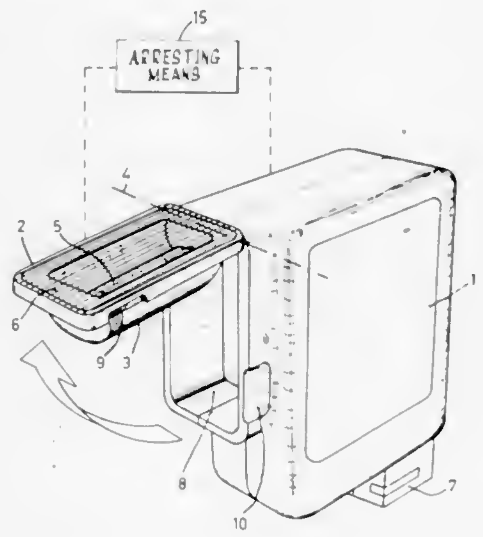
Jozef Hubert Michel Bergmans, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 24, 1971, Ser. No. 183,437

Claims priority, application Netherlands, Sept. 29, 1970, 7014266

Int. Cl. G03b *15/02*

U.S. Cl. 240—1.3 **1 Claim**



In an electronic flash unit, a simple solution is effected for rotating a reflector associated with the unit so that a scene to be photographed can be lighted by direct flash illumination or by indirect flash illumination. According to the invention, the axis of rotation of the reflector coincides with a horizontal rib of the box-like flash unit. The longitudinal axis of an elongated electronic flash lamp provided in said reflector is at right angles to the axis of rotation of the reflector.

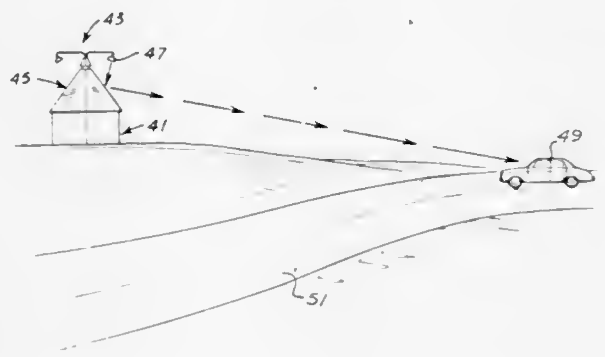
3,794,823
LIGHTING DISPLAY WITH COMPLEX IMAGE MOTION

Joe W. Fowler, 5034 Franklin Rd., Nashville, Tenn. 37220

Filed July 26, 1971, Ser. No. 166,200

Int. Cl. G09f *19/00*

U.S. Cl. 240—10.1 **5 Claims**



A rotatable light source is centrally mounted on a sloping roof having reflective properties and at least two surfaces. The horizontal positioning and angle of reflection of the light source may be variable. Reflections from the roof produce complex light image motion to a remote viewer.

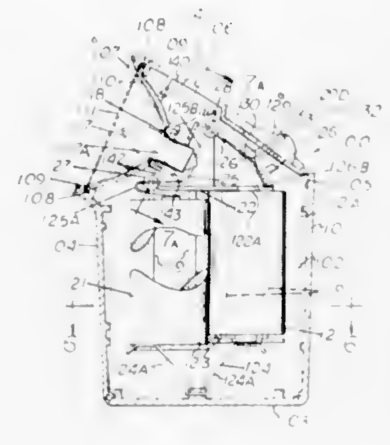
3,794,824
FLASHLIGHT CONSTRUCTION

Joseph G. Bacevius, Shelton, Conn., assignor to Paul G. Garrity, Stamford, Conn.

Filed Sept. 25, 1972, Ser. No. 291,593

Int. Cl. F21l *7/00*

U.S. Cl. 240—10.6 R **16 Claims**



This disclosure is directed to a flashlight construction of a disposable type having a housing configuration defining a lens opening for receiving a reflector and bulb sub-assembly. A bulb socket forming a portion of the reflector includes retaining means whereby the bulb can be readily snapped or threaded with the aid of an adaptor into position and retained within the bulb socket to define the sub-assembly. A pair of spring contact members connect the bulb into electrical circuit with a battery source of electrical energy. The arrangement of the spring contact members and the configuration of the housing is such so as to render optional the type and/or size of the battery which can be used within the housing without requiring any change in the physical arrangement of the housing and/or rearrangement of any of the component parts of the flashlight construction.

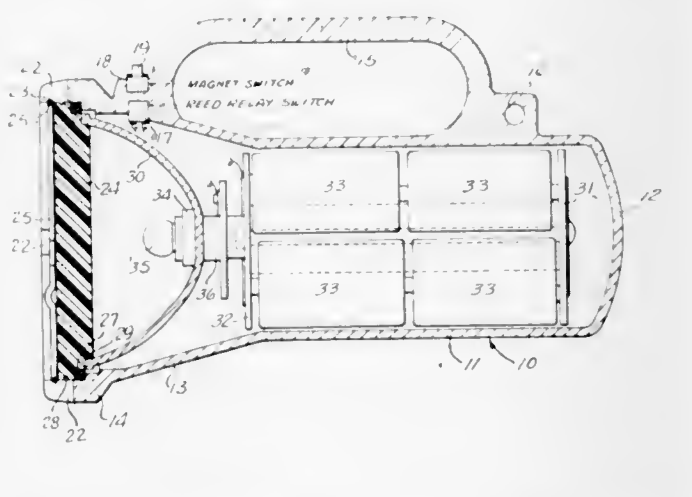
3,794,825
WATERPROOF FLASHLIGHT

Carl S. Krupansky, 5823 Arapaho Dr., San Jose, Calif. 95123

Filed May 5, 1972, Ser. No. 250,678

Int. Cl. F21v *31/02;* **F21l** *7/00*

U.S. Cl. 240—10.63 **2 Claims**



A waterproof flashlight which includes a cast aluminum housing having as its only opening the lens support. The lens is sealed to the flashlight by compression against an O-ring with the lens being secured in place by a snap ring. A magnetic device actuates a reed switch to turn the light on and off without requiring openings through the housing.

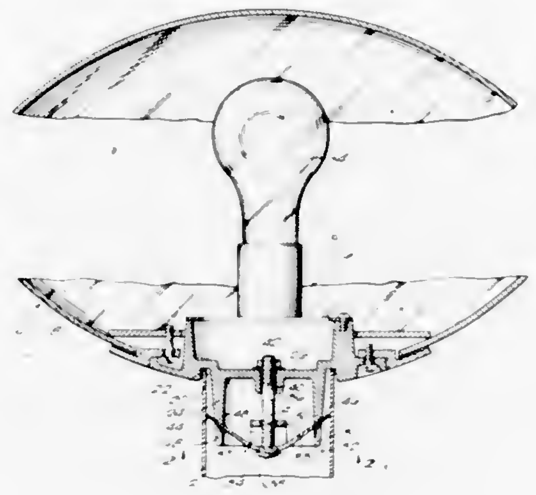
3,794,826
ARRANGEMENT FOR ACHIEVING HOLDING ENGAGEMENT WITH THE INSIDE OF A PIPE OR STEM

Edward R. Jablonski, South Milwaukee, Wis., assignor to McGraw-Edison Company, Milwaukee, Wis.

Filed July 27, 1972, Ser. No. 275,888

Int. Cl. F21s *1/10*

U.S. Cl. 240—84 **15 Claims**



A pole-top light is connected to the open end of the hollow support hole. A support structure is connected to the light assembly and carries a spring which is positioned within the pole. A threaded rod connects the spring member to the support structure and itself has a threaded connection so that rotation of the rod displaces the spring in an axial direction against its inherent bias causing the spring member to expand laterally into binding engagement with the interior walls of the pole. The threaded rod is accessible from the exterior of the pole to permit selective engagement of the spring member with the interior pole walls or disengagement therefrom. Several alternative spring forms are disclosed (a bowed spring, resilient discs, etc.) as well as various arrangements of the threaded member to achieve displacement of the spring.

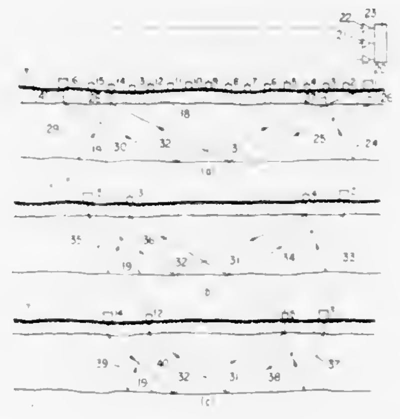
3,794,827
INVEL SYSTEM OF VELOCITY DETERMINATION

Moses B. Widess, Houston, Tex., assignor to Amoco Production Company, Tulsa, Okla.

Filed Jan. 8, 1973, Ser. No. 322,056

Int. Cl. G01v *1/36*

U.S. Cl. 340—15.5 TC **5 Claims**



This is a new way of compositing multifold common-depth-point data from seismic prospecting operations to improve the making of static corrections, particularly when determining velocity. Such static corrections eliminate time differences in arrival of reflected seismic events on the various traces of a seismic spread due to differences in thickness of the low velocity or "weathered" layer below the geophones, to differences in surface elevation, and the like. Seismic waves are generated successively at generating points, each near the earth's surface. Seismic waves are received and reproducibly recorded at geophones at least one of which in each case is close to the generating point and another is near the location of another generating point. These spatial relationships are symmetrical. Reproduced reflected waves from each generating point received at the respective near geophone locations are composited at approximately equal peak amplitudes. This procedure is then repeated for new generating and receiving points which maintain approximately constant the mean location of reflection points on the seismic reflecting beds. Visual traces equivalent to the composited "short" traces are reproduced after elimination of the normal moveout correction. The reflections from a common reflecting bed are aligned by introducing a static correction into each composited trace to produce substantial time alignment at a mean reflection time. The identical seismic static correction is then applied to any further record processing of the seismic data from the "far" geophones, similarly composited, before producing visual traces of such data. The procedure is valuable both for making velocity panels for determination of velocity vs. depth in seismic prospects, and in determining depth and/or dip of reflecting subsurface discontinuities.

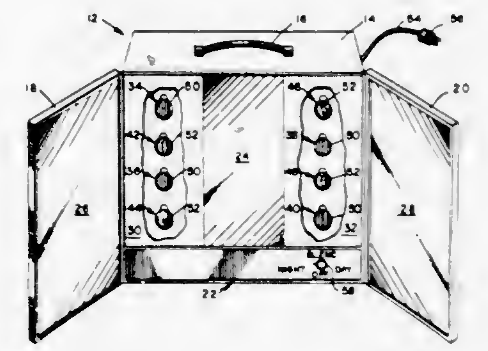
3,794,828
ILLUMINATING LIGHT BLENDING MAKEUP MIRRORS AND ELECTRICAL CONTROL CIRCUIT

Ronald G. Arpino, Branford, Conn., assignor to Sperry Rand Corporation, New York, N.Y.

Division of Ser. No. 69,046, Sept. 3, 1970, abandoned. This application Mar. 15, 1972, Ser. No. 235,048

Int. Cl. F21v *33/00*

U.S. Cl. 240—4.2 **4 Claims**



A plurality of incandescent lamps and one or more makeup mirrors are incorporated in a portable case. Some of the lamps are unfiltered, the others are provided with red filters. The red filtered lamps are all connected in parallel. The white lamps are also connected in parallel, and the two sets of parallel lamps are connected in series across a source of 110 volts alternating current. The high and common terminals of a bidirectional gate control thyristor are connected in parallel across the set of red lamps. A variable resistor and a capacitor are connected in series, and the RC circuit thus formed is connected in parallel across the set of red lamps. A triggering diode is connected between the gate terminal of the thyristor and the common terminal between the variable resistor and capacitor. The triggering diode is preferably incorporated into the same integrated circuit as the bidirectional gate control thyristor. The white incandescent lamps may be provided with light absorbing filters in order to balance the intensities of the two sets of lamps.

3,794,831

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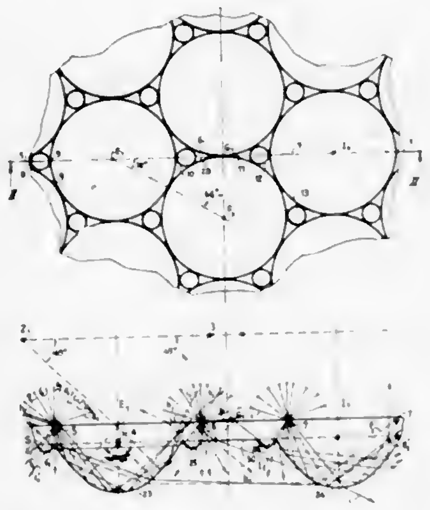
ing track relay. Each repeater relay has a selected slow release

3,794,834

3,794,829
NON-LUMINANCE LIGHTING PANEL

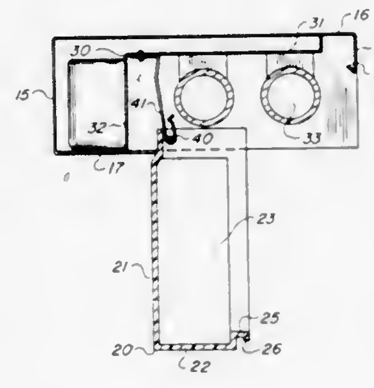
Ignacio Goytisolo Taltavull, 83 Madrazo, Barcelona, Spain
Filed Apr. 20, 1972, Ser. No. 245,904
Int. Cl. F21v *5/00*
U.S. Cl. 240—106 R **11 Claims**



A transparent prismatic low luminescent lighting panel of a type having a plurality of refracting prismatic elements on its outer surface in the form of pyramids or cones, said elements having curved surfaces, wherein said elements in conical form have cross-sectional profiles and are situated on the surface of the exterior face of said panel such that luminous rays which by reason of their angle of incidence relative to the panel, suffer little energy loss on travelling through the thickness of the panel and which because of incidence at certain points of the panel, emerge from said conical elements defining angles of between 60° and 90° with respect to the axis of symmetry of said conical elements strike an adjacent cone and suffer total internal reflection, thus reducing the low luminance of said panel. Said refracting elements of pyramidal form are situated on the exterior face of the panel forming therebetween narrow, flat zones which improve the light efficiency of said panel without having an unfavorable effect on the luminescence of said panel.

3,794,830
LOCKING SPRING AND HINGE FOR COVER OF LIGHTING FIXTURE

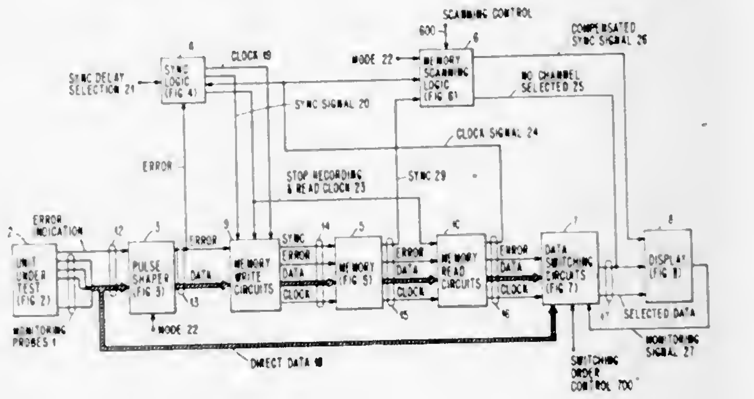
Robert L. Hitzler, Arlington Heights, Ill., assignor to Alkco Manufacturing Co., Chicago, Ill.
Filed Apr. 23, 1973, Ser. No. 353,232
Int. Cl. F21v *17/00*
U.S. Cl. 240—147 **3 Claims**



A combination locking spring and hinge for securing a light-transmitting cover to the housing of a light fixture. A spring band strap serves both as a pivotal hinge for manually opening and closing the cover, and as a locking spring urging a web on the cover into locking engagement with a tab on the housing.

3,794,831
APPARATUS AND METHOD FOR MONITORING THE OPERATION OF TESTED UNITS

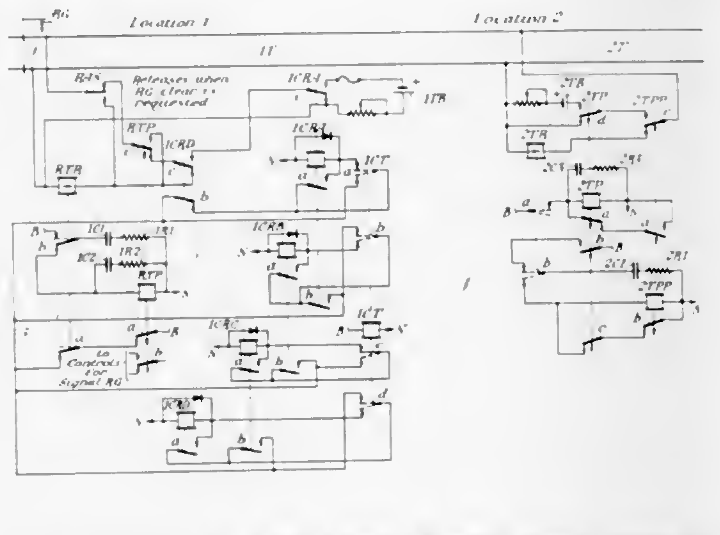
Richard F. Frankeny, Austin, Tex., and Sidney D. Johnson, Longmont, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 1, 1972, Ser. No. 258,757
Int. Cl. G11b *13/00*
U.S. Cl. 340—172.5 **11 Claims**



Signals from a tested electronic unit are continuously stored in sequence on a rotating disc memory while the unit is monitored for errors. When an error occurs, substantially all the recorded signal sequences are displayed as an image on a CRO screen. A manual control selects portions of the stored sequences for display, scanning the image in accordance with manual speed and direction instructions. The manual instructions control stepping of a first counter which is compared for equality with a second counter tracking currently accessible disc locations. Equal comparison triggers the CRO horizontal scan to cause display of a desired and manually variable portion of the recorded signal sequences. Circuits provide pulse stretching and peak detection necessary to efficiently utilize the tester with a variety of tested units and displays.

3,794,832
BI-DIRECTIONAL CODED TRACK CIRCUITS WITHOUT INSULATED JOINTS

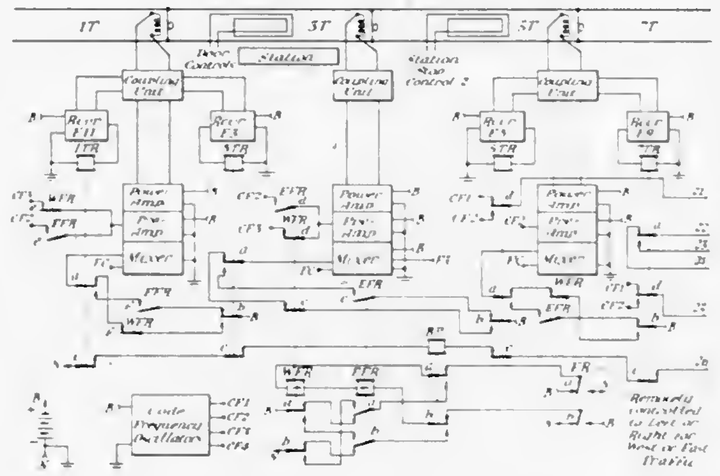
Donald D. Huffman, Penn Hills Township, Allegheny County, and Andrew J. Carey, West Mifflin, both of Pa., assignors to Westinghouse Air Brake Company, Swissvale, Pa.
Filed Nov. 21, 1972, Ser. No. 308,495
Int. Cl. B61l *23/30*
U.S. Cl. 246—33 R **13 Claims**



At each end of a track stretch, a relay chain driven by a code transmitter at times connects across the rails in repeated sequences a polar, code following track relay, a track battery, and a rail shunt path. A similar sequence of rail connections at each intermediate repeater location is produced by a front contact repeater and a decoding repeater of the corresponding track relay. Each repeater relay has a selected slow release to produce the sequence following each response by the track relay to a received energy pulse. The pulse following operation of each end location track relay is decoded by a repeater relay which connects the track relay continuously across the rails and inhibits relay chain operation. A shorter relay chain at one end prevents scrambled code and provides a dominant pulse transmitter with no train occupancy and no entering signal cleared. Each repeater location transmits in either direction and requires no insulated joints to separate adjoining sections since track battery connections are of alternately opposite polarity from location to location. The track rail shunt applied following pulse transmission at each location prevents response by the associated track relay to the subsequent pulse transmitted from the adjacent advance location and thus maintains pulse direction. To prevent false operation, each track relay is rail connected with polarity opposite to the same location track battery. Clearing an entering signal sets up pulse transmission from the other end.

3,794,833
TRAIN SPEED CONTROL SYSTEM

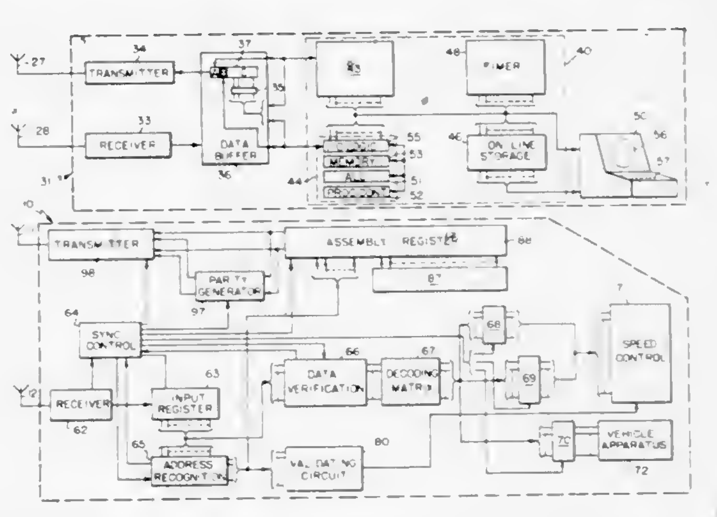
Frank V. Blazek, Monroeville; William B. Dufer, Penn Hills Township, Allegheny County; Raymond C. Franke, Glenshaw, all of Pa., and Philip R. Schatzel, Danville, Calif., assignors to Westinghouse Air Brake Company, Swissvale, Pa.
Filed May 25, 1972, Ser. No. 256,888
Int. Cl. B61l *3/10*
U.S. Cl. 246—63 C **9 Claims**


1T
3T
5T
Station
Station Stop Control 2
Coupling Unit
Power Amp
Code Frequency Oscillator
CF1
CF2
CF3
CF4
WTR
FTR
FR
Remotely controlled to Left or Right for West or East Traffic

High frequency detector track circuits are coupled to the rails at crossbonds which divide the track stretch into sections without insulated joints. The HF transmitters supply track energy both directions from alternate bonds into each track section of the adjoining pair. Correspondingly tuned receivers at the other end of each section control track relays which indicate the track occupancy condition. Successive pairs of track sections have different frequencies selected on a random basis from a predetermined plurality. Train control energy of a different, single frequency is supplied to the rails at the exit end of each section and is modulated by one of a plurality of low frequency code rates selected in accordance with the track occupancy condition of advance sections as determined by the track circuits. Each train is equipped with train control apparatus including at least cab signals and overspeed protection. Receivers inductively coupled to the rails pick up and supply the speed signals through a demodulator and active filters to register an allowed speed indication in accordance with the detected code rate. Train speed sensing apparatus registers the actual train speed. Overspeed detection apparatus then compares allowable and actual speeds, detects an overspeed condition, and actuates an automatic braking action if the train operator does not initiate a speed reduction within a preset time limit.

3,794,834
MULTI-COMPUTER VEHICLE CONTROL SYSTEM WITH SELF-VALIDATING FEATURES

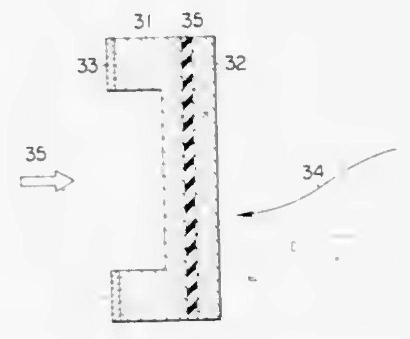
John H. Auer, Jr., Fairport; Donald B. Marsh, Rochester, and Henry C. Sibley, Adams Basin, all of N.Y., assignors to General Signal Corporation, Rochester, N.Y.
Filed Mar. 22, 1972, Ser. No. 237,196
Int. Cl. B61l *27/04*
U.S. Cl. 246—187 B **17 Claims**



An automatic vehicle control system for controlling the operation of a vehicle from a set of parallel operating computers in a central control station. A data communication link transmits vehicle performance reports from the vehicle to the central control station and transmits vehicle command messages from the central control station to the vehicle. Validating circuitry in the vehicle validates received vehicle command messages by verifying the messages originated from both computers in the central control station. A portion of the vehicle command message included in the vehicle performance report is subsequently used by the two computers to validate the performance report message transmitted from the vehicle to the central control station.

3,794,835
IMAGE PICKUP DEVICE

Tadaaki Hirai, and Eiichi Maruyama, both of Kodaira-shi, Tokyo, Japan, assignors to Hitachi Ltd., Tokyo, Japan
Filed Apr. 6, 1971, Ser. No. 131,717
Claims priority, application Japan, Apr. 6, 1970, 45-28619
Int. Cl. H01l *15/00*
U.S. Cl. 250—211 J **7 Claims**



A light conversion element used for a vidicon image pickup target characterized in that an amorphous semiconductor comprising more than 50 atomic percent of selenium and/or sulfur is disposed directly on a IV*a* group silicon, germanium or similar semiconductor single crystal or crystalline layer, or on such a semiconductor single crystal or crystalline layer with a very thin insulation layer, such as a very thin oxide layer interposed therebetween whereby a hetero-junction is formed in the element.

3,794,836
IMMERSIBLE ABSORPTION PROBE

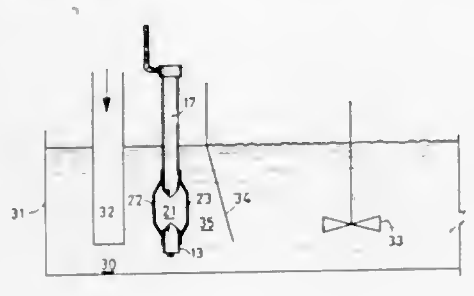
Douglas Albert Hinckfuss, Broken Hill, New South Wales, Australia, assignor to The Zinc Corporation Limited

Filed Mar. 21, 1972, Ser. No. 236,404

Claims priority, application Australia, Mar. 25, 1971, 4425/71

Int. Cl. G01n *21/26*

U.S. Cl. 250–363 **12 Claims**



A method and an immersible absorption probe for the continuous on-stream analysis of the composition of slurries and other liquids comprising immersing in a zone of the main process stream of said slurry the immersible absorption probe incorporating a radioactive source of gamma radiation of energy above 20 keV and a radiation detector, the radioactive source and the radiation detector being spaced from each other in said zone so that the main process stream may flow between them.

3,794,837
DEVICE FOR DETERMINING THE POSITION COORDINATES OF A LIGHT-IMPULSE EMITTING POINT

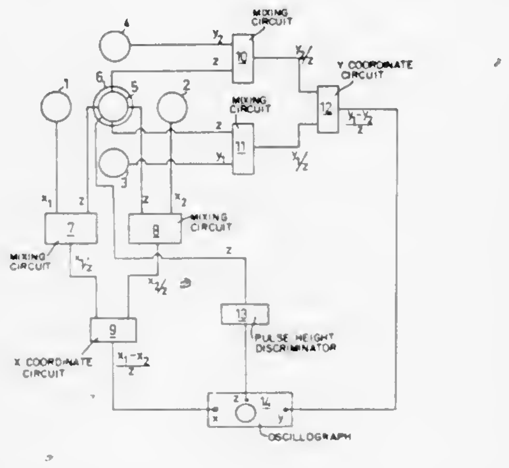
Adrianus Klem, Delft, and Hugo Vlasbloem, Maasland, both of Netherlands, assignors to N.V. Optische Industrie De Oude Delft, Delft, Netherlands

Filed Apr. 10, 1972, Ser. No. 242,659

Claims priority, application Netherlands, Apr. 13, 1971, 7104844; June 17, 1971, 7104304

Int. Cl. G01t *1/20*

U.S. Cl. 250–366 **2 Claims**



A device for determining the position coordinates of a scintillation on the anode screen of an image intensifier tube, which forms part for instance of a gamma camera containing five photomultipliers, four of which being mounted in a square that is centred on the axis of the fifth, the difference of the voltages of two multipliers divided by the voltage of the fifth multiplier being used as signal representative for one position coordinate, filters of which the transmittance varies over the surface being applied to the fifth photomultiplier and the anode screen to compensate for distortion and vignetting of the image on the anode screen.

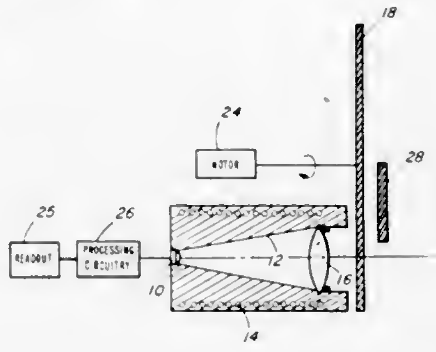
3,794,838
COMPENSATION MEANS FOR AMBIENT TEMPERATURE CHANGES OF A RADIATION CHOPPER IN A RADIOMETER

Morris Weiss, Stamford, and Robert E. Buckley, Norwalk, both of Conn., assignors to Barnes Engineering Company, Stamford, Conn.

Filed Feb. 10, 1972, Ser. No. 225,044

Int. Cl. G01t *1/16*

U.S. Cl. 250—351 **5 Claims**



A radiometer is provided with optics, a reference black body cavity, a radiation detector located at the apex of the black body cavity, a radiation chopper external to the black body cavity having alternate mirrored and open segments, and conventional electronic processing circuitry for receiving and processing an output signal from the radiation detector. A blackened vane is positioned in close proximity to the chopper for tracking the temperature of the radiation chopper, and extends into the field of view of the radiometer on the occurrence of an open sector of the chopper, with the area of the vane which extends into the field of view of the radiometer being equal to the clear aperture area of the optical means times the emissivity of the radiation chopper, which provides compensation for changes in the radiation chopper temperature.

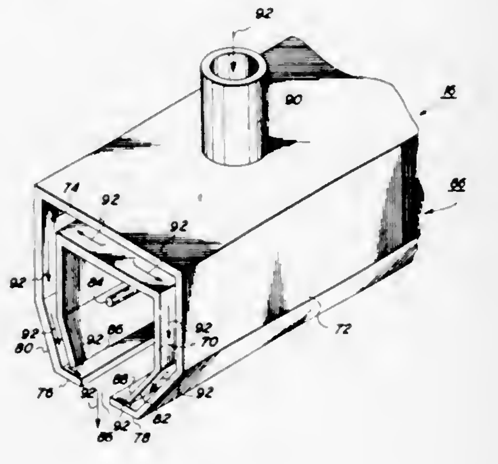
3,794,839
CORONA GENERATING APPARATUS

Thomas F. Hayne, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1973, Ser. No. 322,673

Int. Cl. H01j *37/26*

U.S. Cl. 250—324 **8 Claims**



A corona generating apparatus in which the shield thereof includes a control portion arranged to regulate the corona discharge from the discharge electrode. The shield directs fluid-flow over the control portion for effecting the removal of particles therefrom.

The foregoing abstract is neither intended to define the invention disclosed in the specification, nor is it intended to be limiting as to the scope of the invention in any way.

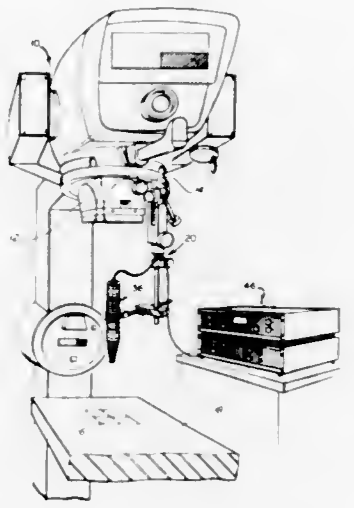
3,794,840
METHOD AND APPARATUS FOR DIRECTING A RADIATION BEAM TOWARD A TUMOR OR THE LIKE

Walter P. Scott, c/o Charlotte Memorial Hospital, P.O. Box 2554, Charlotte, N.C. 28201

Filed Mar. 27, 1972, Ser. No. 238,322

Int. Cl. G01j *39/18*

U.S. Cl. 250—363 **8 Claims**



Method and apparatus for accurately directing a therapeutic radiation beam to a tumor or the like within a human body, including the implantation at the tumor of a source emitting radioactive rays traveling in a straight line therefrom, sensing this ray emission to determine a straight line path to the tumor, and directing the radiation beam toward the tumor by having the center line of the radiation beam coincide with the straight line path determined from the ray emitting source. Preferably, a radioactive isotope is implanted in the tumor as the source, and a collimating tubular channel member is selectively mounted on the radiation head of a radiation teletheraphy machine with the axis of the channel member coinciding with the center of the beam from the radiation head. One end of the channel member is open to receive rays emitted from the implanted source and the other end is associated with a device for detecting these rays. The detecting device produces an electrical signal in response to the rays sensed, this electrical signal being greater as the straight line path of emitted rays come into coincidence with the axis of the opening in the channel member, and the magnitude of the electrical signal is visually displayed. The teletherapy machine operator manipulates either the patient or the radiation head until the displayed signal indicates a maximum magnitude, removes the channel member and energizes the radiation head.

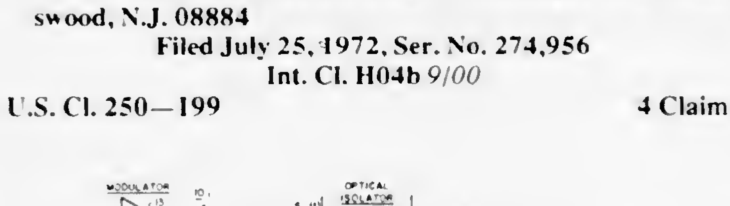
3,794,841
LIGHT COUPLING DATA TRANSFER SYSTEM

Louis Ciro Cosentino, 24350 Holly Ln. North, Wayzata, Minn. 55391, and Peter Richard Bove, 23 Sheffield Ave., Spotswood, N.J. 08884

Filed July 25, 1972, Ser. No. 274,956

Int. Cl. H04b *9/00*

U.S. Cl. 250—199 **4 Claims**



A system especially for use in accurately transmitting patient derived data comprising a light coupling unit employed for patient isolation purposes, a modulating unit for generating a constant amplitude switching waveform of a frequency higher than the patient derived data having zero crossings which are modulated thereby to drive the light coupling unit between an on and off state, and a demodulating unit connected from the light coupling unit for demodulating the zero crossing information derived to essentially recover the patient derived data.

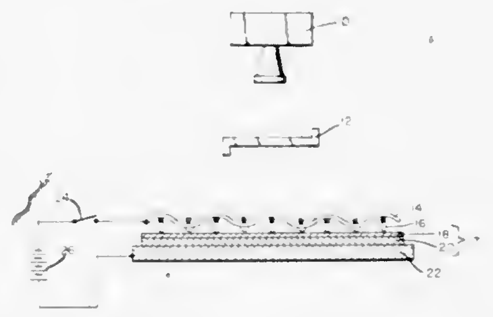
3,794,842
GENERATION OF RADIOGRAPHS

Richard A. Fotland, Warrensville Heights, Ohio, assignor to Horizons Incorporated, a Division of Horizons Research Incorporated, Cleveland, Ohio

Filed Dec. 13, 1972, Ser. No. 314,635

Int. Cl. G03b *41/16*

U.S. Cl. 250—315 **6 Claims**



Radiographs are generated in an apparatus comprising a fine mesh screen coated with an X-ray sensitive photoconductor by exposing said screen to an X-ray image while said coated screen is in physical contact with an insulating charge-supporting member and while an electrical potential is applied between the screen and an electrically conducting plate located on the side of the insulating member which is opposite the side the coated screen is on, and thereafter electrostatically toning the latent image formed on the charge-supporting member as a consequence of the X-ray exposure.

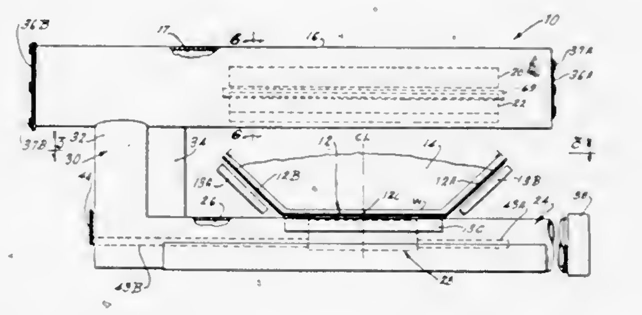
3,794,843
GAUGE FOR DETERMINING THE PERCENTAGE BY WEIGHT OF MOISTURE CONTAINED IN A BULK MATERIAL TRANSPORTED ON A MOVING CONVEYOR

You Min Chen, Cincinnati, Ohio, assignor to The Ohmart Corporation, Cincinnati, Ohio

Continuation-in-part of Ser. No. 142,127, May 11, 1971. This application Dec. 29, 1972, Ser. No. 319,355

Int. Cl. G01n *23/02*

U.S. Cl. 250—359 **8 Claims**



A moisture gauge including a radiation source for irradiating with fast neutrons and gamma radiation a bulk substance having moisture contained therein, a detector responsive to gamma radiation which has interacted with a predetermined fractional cross-sectional area of the bulk substance to produce a first electrical signal correlated to the total weight of the bulk substance including contained moisture, and a detector which is responsive to slow neutrons generated by the interaction of fast neutrons and hydrogen atoms of the contained moisture in said predetermined fractional cross-sectional area to produce a second electrical signal correlated to the weight of the moisture contained in the bulk substance. An electrical circuit divides the moisture weight signal and total weight signal to provide an output correlated to the percent by weight of moisture contained in the bulk material.

An alternative embodiment of the invention is disclosed which is particularly adapted to provide accurate measurements of the weight percentage moisture of bulk substances containing a relatively high degree of moisture and/or other bulk substances, such as iron or sodium chloride, having a relatively large thermal neutron reaction cross-section. This embodiment includes a first detector responsive to gamma radiation which has been transmitted through a predetermined fractional cross-sectional area of the bulk substance to produce a first electrical signal correlated to the total weight of the bulk substance, including contained moisture, and a second detector which responds to fast neutrons transmitted through the bulk substance in the predetermined fractional cross-sectional area to produce a second electrical signal correlated to the weight of the moisture contained in the bulk substance. These signals are then mathematically processed to provide an output correlated to the percentage by weight of moisture contained in the bulk material, which output is highly accurate notwithstanding the fact that the bulk substance has relatively high moisture content and/or contains material having a relatively large thermal neutron reaction cross-section.

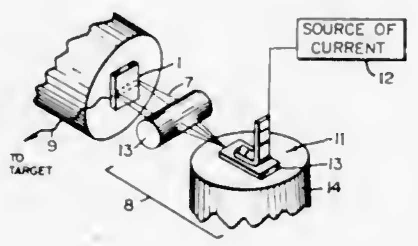
3,794,844
METHOD AND MEANS OF CONSTRUCTION OF A SEMICONDUCTOR MATERIAL FOR USE IN A LASER

John O. Dimmock, Acton; Ivars Melngailis, Sudbury, and Alan J. Strauss, Lexington, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 90,469, Nov. 17, 1970, Pat. No. 3,748,593, which is a continuation of Ser. No. 635,766, May 3, 1967, abandoned. This application June 25, 1973, Ser. No. 373,055

Int. Cl. G01t *1/24*

U.S. Cl. 250—370 **11 Claims**



A semiconductor material for use as a lasing medium is made of a solid solution of two materials, said materials being selected so that over some range of composition the solid solution is a semiconductor alloy having a direct band gap which is increased or decreased, depending on the proportion of said materials in the solid solution, there being a certain proportion at which the band gap is zero, at a given temperature and pressure, whereas greater or lesser proportions than said certain proportion results in an increase in the band gap of the semiconductor from said zero band gap.

3,794,845
ELECTRICAL CONTROL SYSTEM

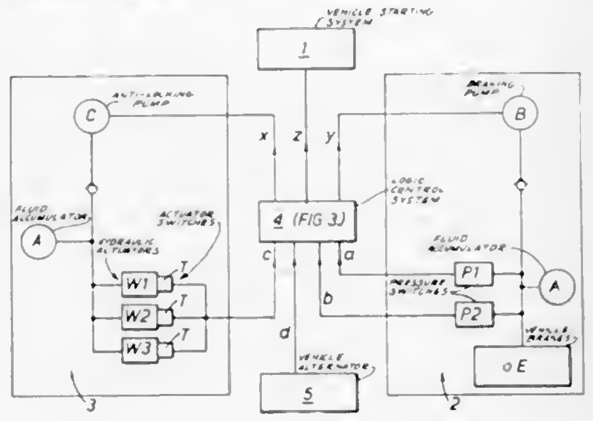
Henry Jameison Riddoch, Solihull, England, assignor to Girling Limited, Birmingham, England

Filed July 3, 1972, Ser. No. 268,828

Claims priority, application Great Britain, July 3, 1971, 31260/71

Int. Cl. F02n *11/08*

U.S. Cl. 290—38 R **9 Claims**



An electrical control system which is adapted to control both an electric pump in the hydraulic braking system of a motor vehicle and a control switch in the power supply to the starter motor in a manner dependent on the pressure in the braking system as sensed by a low pressure switch in the pressurised supply side of the pump so that if the pressure sensed by the pressure switch falls below a predetermined minimum level the control switch is operated to prevent energisation of the starter motor and the pump is started. The control system may be further adapted to respond in a manner dependent on operation of the motor vehicle engine and on the pressure as sensed by a second pressure switch is below a predetermined upper level the pump is operated until this upper pressure level is reached at which the second pressure switch operates and stops the pump. This upper pressure level corresponds to a normal acceptable braking force. The control system may be adapted to control the electric pump in an hydraulically powered brake anti-locking system, so as to maintain a predetermined minimum pressure therein. Typically, the control system is, adapted to give priority to the pump of the anti-locking system over the pump of the braking system.

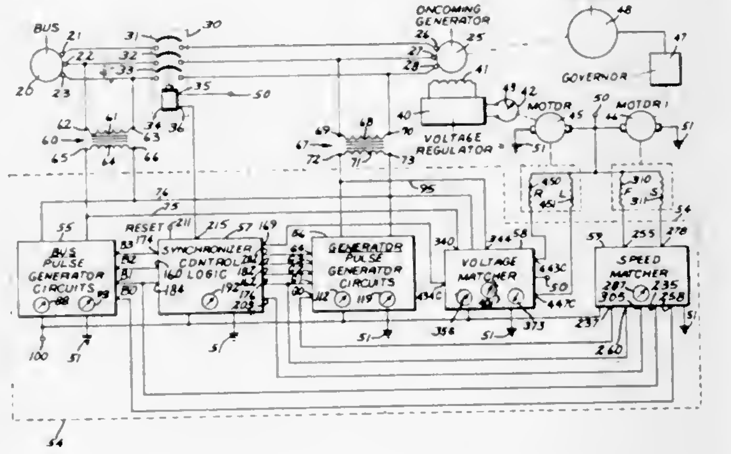
3,794,846
AUTOMATIC SYNCHRONIZING CONTROL SYSTEM

David W. Schlicher, and Denton C. Rowe, both of Minneapolis, Minn., assignors to Electric Machinery Mfg. Company, Minneapolis, Minn.

Filed Sept. 18, 1972, Ser. No. 289,791

Int. Cl. H02j *3/08*

U.S. Cl. 307—87 **38 Claims**



An accurate, miniaturized synchronizing system for automatically connecting an oncoming AC generator in parallel

with a three-phase bus source when the generator and bus source output parameters are simultaneously within predetermined phase, frequency and voltage synchronization limits of each other, and for automatically changing the rotational speed and voltage of the oncoming generator to achieve the predetermined synchronizing conditions. Sensing circuits monitor the oncoming generator and bus source output voltages. Pulse generator circuits produce a plurality of phase angle dependent pulse train signals from the sensed output voltage signals. A digital speed matching circuit determines the directional frequency difference between the oncoming generator and bus source signals and provides periodic compensating speed regulating signals to a prime mover of the oncoming generator in response thereto. A voltage matching circuit detects voltage synchronization unbalance between the oncoming generator and bus source output signals, and in response thereto, provides a digital output synchronization signal indicative of the voltage synchronization unbalance, and provides voltage matching control signals to a voltage regulator of the oncoming generator. Phase and frequency synchronizer logic circuits digitally compare the generated pulse train signals and provide therefrom logical phase and frequency synchronization output signals indicative of the phase and frequency unbalance between the oncoming generator and bus source output signals. A synchronizer control logic circuit provides an energizing signal to a circuit breaker for connecting the oncoming generator in parallel with the bus source when the voltage, phase and frequency synchronization output signals simultaneously indicate that the oncoming generator and bus source outputs are within the predetermined synchronization limits. A lockout circuit prevents repeated circuit breaker closure attempts if the circuit breaker fails to close after receiving the first energizing signal from the synchronizer control logic circuit.

3,794,847
WINDSHIELD WIPER CONTROL MEANS

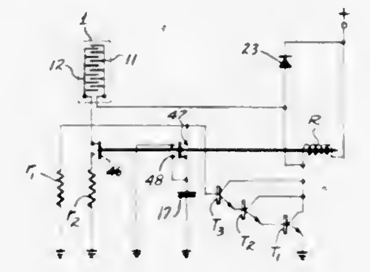
Jean Georges Cadiou, St. Cloud, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed June 2, 1972, Ser. No. 259,198

Claims priority, application France, June 11, 1971, 71.21251

Int. Cl. H01h *35/00*

U.S. Cl. 307—117 **11 Claims**



Windshield wiper control comprises a moisture detector in the form of two electrodes separated by a labyrinthine gap and positioned to be wiped by a windshield wiper blade. The motor controlling the wiper is started and stopped by a relay actuated by a control circuit containing the gap between the electrodes so as to start the wiper when the gap is bridged by moisture and stop it when the moisture evaporates. Means are provided for changing the threshold of response after the wiper has been started so that the wiper will stop when there is more moisture on the detector than is required to start it.

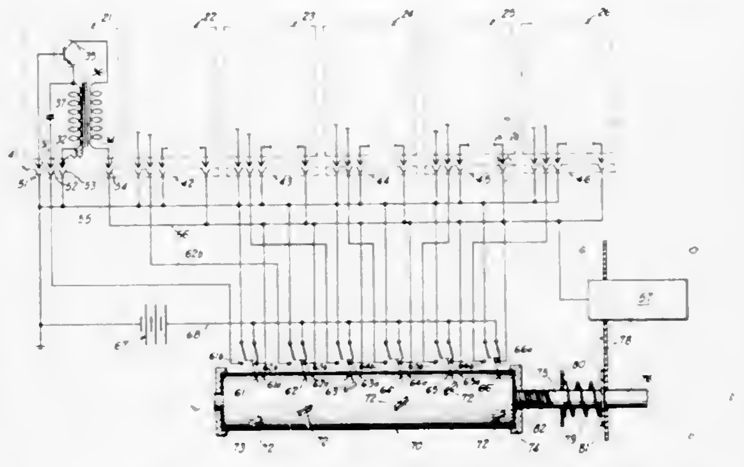
3,794,848
LOCKING APPARATUS

Sherman M. Peters, 30 Meadow Hill Dr., Bristow, Okla. 74010, and Lawrence M. Smith, 297 E. Valley Dr., NE, Marietta, Ga. 30060

Filed May 25, 1972, Ser. No. 256,975

Int. Cl. E05b *49/00;* **H01h** *47/20*

U.S. Cl. 307—129 **2 Claims**



An electronic control actuating system having signal transmitting or injector means and signal receiving means. The signal transmitting means includes a plurality of self-contained oscillator circuits, each oscillator circuit capable of producing an independent radio frequency output signal and wherein the oscillating circuits are adapted to be selectively positioned relative to an actuator means capable of sequentially supplying energy to each of the oscillator circuits for effecting an output of a plurality of sequentially transmitted coded signals. The signal receiving means includes a plurality of self-contained filter circuits, each filter circuit designed for receiving one of the coded radio frequency signals produced by the signal transmitting means, with the signal receiving means including a plurality of sequentially operable switching means, and wherein the filter circuits are adapted to be selectively positioned relative to the sequentially operable switching means for effecting a sequential operation of the switching means to produce an output actuator signal in response to a complete reception of the coded signals produced by the signal transmitting means. Should any signal be received out of sequence, there will be no output signal to the actuator (unlocking-locking unit).

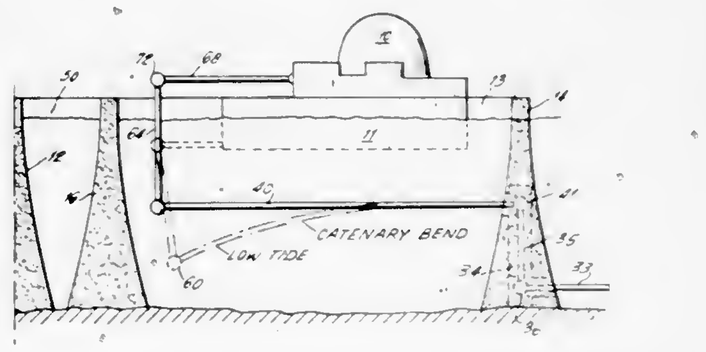
3,794,849
POWER TRANSMISSION SYSTEM FOR CONNECTING FLOATING POWER PLANT TO STATIONARY CONDUCTORS

Elijah Robert Perry, Scottdale, and Ralph W. Samm, Greensburg, both of Pa., assignors to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Aug. 18, 1972, Ser. No. 281,718

Int. Cl. H02g *3/00*

U.S. Cl. 307—147 **14 Claims**



A nuclear power plant is mounted on a floating barge stationarily moored within a sea wall, with the barge rising and falling with the tide. Underwater conductors fixed relative to the sea bed and extending from the shore to the barge are connected to the floating power plant by a freely suspended, horizontal transmission line section, which extends beneath the barge and is always completely submerged. This transmission line section is weighted to have neutral buoyancy, whereby the transmission line section flexes as a catenary as the barge rises and falls with the tide.

3,794,850
DEVICE FOR RECONDITIONING SWITCH CONTACTS

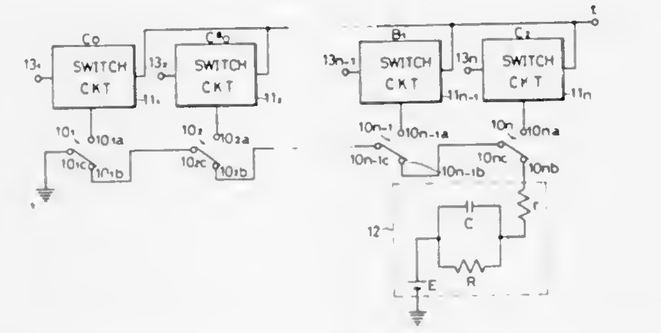
Yasunori Hirose, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Mar. 22, 1973, Ser. No. 343,897

Claims priority, application Japan, Mar. 24, 1972, 47/029942

Int. Cl. H01h *1/60*

U.S. Cl. 307—137 **5 Claims**



The so-called "coherer effect" is utilized for reconditioning the touching faces of a movable contact and a fixed break contact of each of several selector switches in a cascade connection. Connected in series in a closed circuit formed by the movable contacts and the fixed break contacts of the selector switches is power supply means such that each time the movable contact of any of the selector switches is returned to the break contact thereof from the corresponding make contact, the insulating oxide films or the like which may have been formed on the touching faces of the contacts are electrically ruptured by a sufficiently high voltage delivered from the power supply means.

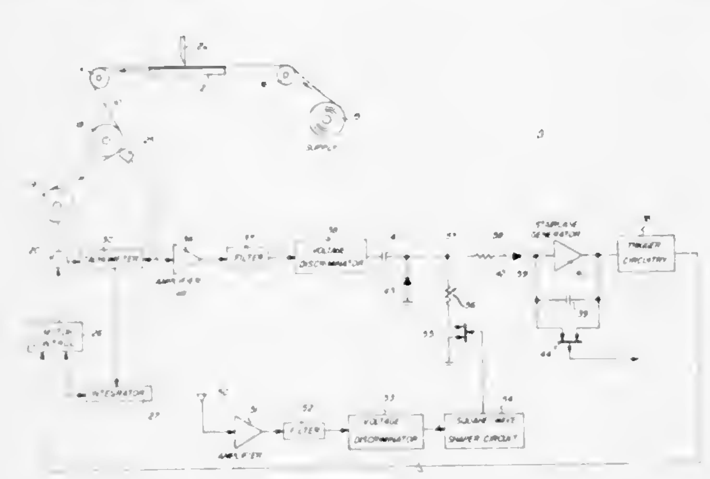
3,794,851
CIRCUITRY FOR ELIMINATING FALSE TRIGGERING BY TRANSIENT NOISE

Richard W. Scales, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 4, 1973, Ser. No. 357,443

Int. Cl. G01r *33/02*

U.S. Cl. 307—43 **7 Claims**



A circuit is provided for detecting a defect in the surface of a movable strip of material which, in effect, comprises two channels. The one channel is concerned with detecting an area in which the defect occurs and from the area deriving a series of pulses to ultimately generate a control pulse. The second channel detects any environmental transient noise and introduces the signal generated by such noise into the first channel. If the environmental transient noise is detected by both channels, the pulse and signal so generated are self-cancelling, thereby eliminating any false triggering that might be produced by the noise signal as related to the control pulse.

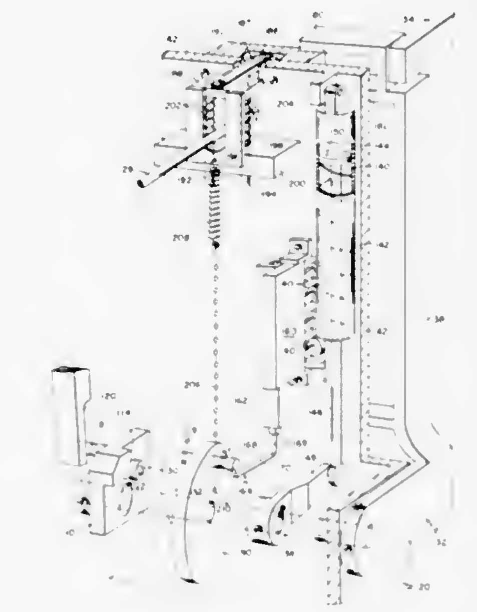
3,794,852
EMERGENCY SIGNALLING TRANSMITTER WITH IMPROVED LATCH AND LOCK

John George Willis, Wakefield, Mass., assignor to Solid State Technology, Inc., Wilmington, Mass.

Filed Sept. 20, 1972, Ser. No. 290,745

Int. Cl. H04b *1/04*

U.S. Cl. 325—185 **10 Claims**



Remote electrical signalling system featuring a storage unit which receives mechanical energy from a manually operable member and delivers it to an electro-mechanical generator for the transmitter, a lock assembly for preventing delivery of the stored energy to the generator until the manual operation is complete, and a latch for securing the manually operable member in a position covering the transmitter switches while the storage unit is delivering energy to the generator.

3,794,853
FREQUENCY DETECTION CIRCUIT

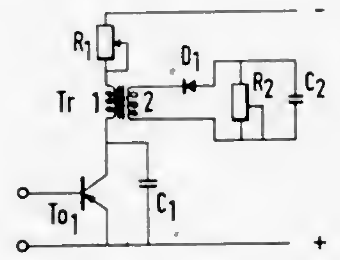
Salomon Carel Zwarenstein, Piet Heinlaan 16, Oegstgeest, Netherlands

Filed June 16, 1972, Ser. No. 263,410

Claims priority, application Netherlands, June 18, 1971, 7108412

Int. Cl. H03k *5/20*

U.S. Cl. 307—233 **10 Claims**



A frequency detection circuit having an input transistor connected to the primary winding of a coupling transformer. In the secondary winding circuit of the transformer there is connected a diode which cooperates with a parallel arrangement of a resistor and a capacitor arranged so that the current flowing through the resistor depends solely on the frequency of the input signal applied to the input transistor. The frequency detection circuit can simultaneously carry out a number of control functions in response to a corresponding number of frequencies of the input signal.

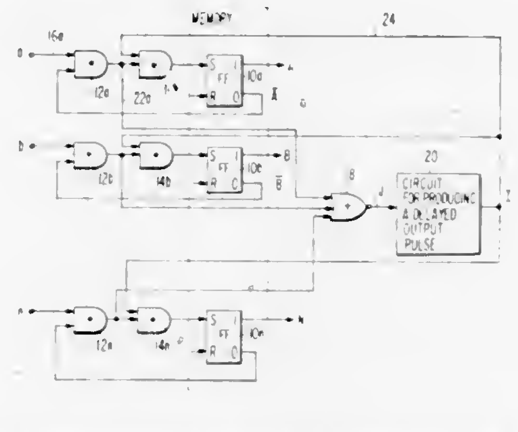
3,794,854
SIGNAL SENSING AND STORAGE CIRCUIT

Richard Eric Hanson, Woburn, and Howard Eisen Fineman, Newton Centre, both of Mass., assignors to RCA Corporation, Princeton, N.J.

Filed Nov. 30, 1972, Ser. No. 310,817

Int. Cl. H03k *5/00*

U.S. Cl. 307—238 **7 Claims**



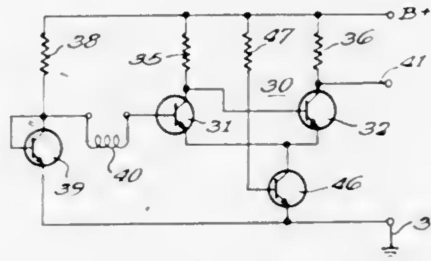
Circuit for distinguishing signals of relatively long duration (information) on a plurality of input lines from one or more signals of relatively short duration (noise) on these same lines. Any signal present on a line enables a gate for that line which is normally maintained in a primed state by a storage element connected to that line. The enabled gate causes a circuit which is common to all lines to produce a delayed pulse. If, when the delayed pulse occurs, a normally primed gate for a line is still enabled, the storage element of that line is set and the latter disables that gate. If, on the other hand, the normally primed gate is not enabled when the delayed pulse occurs, the storage element is not disturbed and the gate is retained in its primed condition.

3,794,855
REGENERATIVE TRANSISTORIZED SWITCH WITH CONSTANT VOLTAGE CIRCUIT

Gordon E. Gee, Sarasota, Fla., assignor to Electro Corporation Continuation of Ser. No. 146,175, May 24, 1971, which is a division of Ser. No. 875,983, Nov. 12, 1969, abandoned. This application Mar. 23, 1973, Ser. No. 344,364

Int. Cl. H03k *3/295*

U.S. Cl. 307—290 **8 Claims**



The switch is incorporated in a magnetic pickup to generate a high level digital signal, improving the signal form and the signal-to-noise ratio. A bistable switch includes input and output stages with a common coupling element having a constant voltage independent of the supply potential, enabling the use of one circuit over a range of operating voltages.

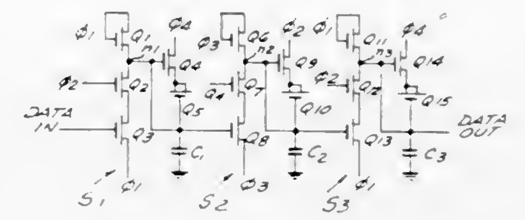
3,794,856
LOGICAL BOOTSTRAPPING IN SHIFT REGISTERS

Lamar T. Baker, West Islip, N.Y., assignor to General Instrument Corporation, Newark, N.J.

Filed Nov. 24, 1972, Ser. No. 309,084

Int. Cl. H03k *19/08*

U.S. Cl. 307—205 **19 Claims**



A novel booster circuit is disclosed which is effective to improve high and low frequency performance of synchronous MOS logic circuits. In a preferred embodiment, the circuit is effective to boost a logic "1" output from a logic stage by capacitively coupling a clock signal thereto just prior to sampling. The coupling capacitor comprises an MOS device having its gate connected to the output node, the clock signal source being selectively connected to the output circuit thereof through a switching device controlled by the level of the output signal. Upon the occurrence of a logic "1" output the gate to channel capacitance of the MOS device serves as a large coupling capacitance to which the clock signal is thereafter applied to boost the logic output prior to sampling by the next logic stage.

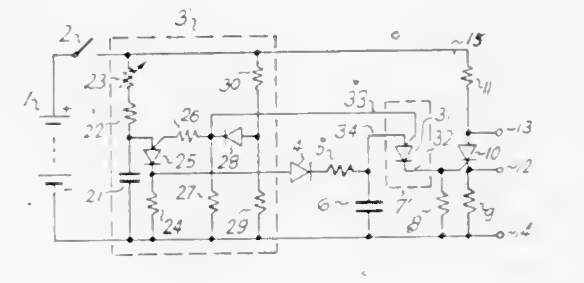
3,794,857
PULSATING TIMER

Slavko Milovancevic, P.O. Box 402, Torrance, Calif. 90508

Filed Feb. 7, 1972, Ser. No. 223,852

Int. Cl. H03k *17/28, 17/30, 17/72*

U.S. Cl. 307—293 **2 Claims**



A pulsating timer consists of two timers — first one produces repeatedly a short pulse at the end of its timing period, the second one produces a pulse at the end of the desired time period. Pulses from the first timer are fed through a diode and a resistor into a storage capacitor. Since the storage capacitor is charged with current pulses at time intervals as first timer dictates, many pulses are needed to charge it sufficiently to trigger a voltage sensing means. Said resistor, storage capacitor, and voltage sensing means form said second timer which will produce its first pulse after a long time interval and in synchronism with said first timer. Both timers are temperature compensated to assure longer and more accurate time intervals.

3,794,858
OFF DELAY TIMER AND PTC SENSING CIRCUIT

David J. Squiers, Attleboro Falls, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 13, 1972, Ser. No. 314,874

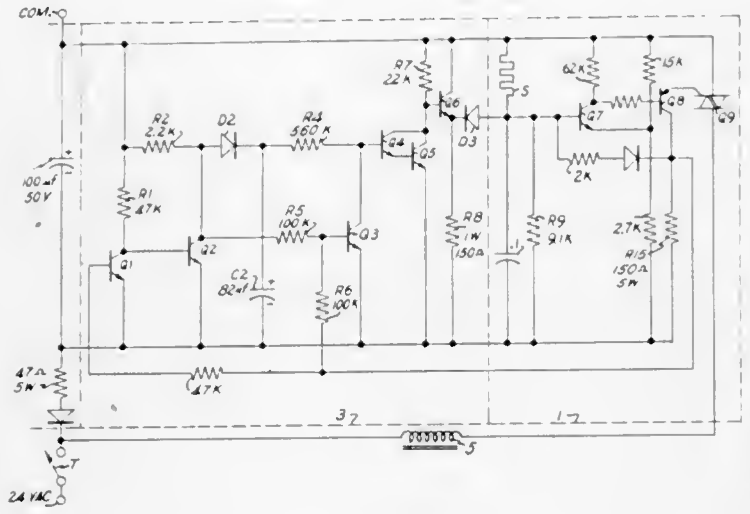
Int. Cl. H03k *17/28*

U.S. Cl. 307—293 R **5 Claims**

The disclosure relates to a timing circuit for use in conjunction with a protection circuit wherein, under normal opera-

3,794,862

sensing element the resistance of which varies with the intensition, the timing circuit is isolated from the protection circuit. Upon sensing of an alarm condition by the protection circuit, the timing circuit is activated and prevents the protection circuit from again becoming operable and allowing power to be supplied to the protective device for a predetermined time period as set by the parameters of the timing circuit. This prevents the reapplication of power to the protected device as soon as the alarm condition has been removed.



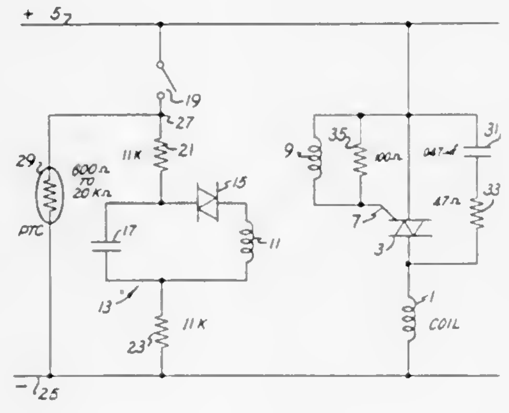
3,794,859
APPARATUS FOR OBVIATING UNDESIRABLE OPERATION OF AN ELECTRIC CIRCUIT DUE TO FAULTY SWITCHING

Francis Finnegan, Wrentham, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 6, 1972, Ser. No. 295,612

Int. Cl. H03k *5/08, 17/00*

U.S. Cl. 307—238 **6 Claims**



The disclosure relates to a gating circuit which is normally operated by means of an external switching device which supplies the necessary power to the gating circuit. A PTC element is provided in parallel with the gating circuit whereby, in the event that the switch which supplies power to the gating circuit is leaky and presents a high resistance rather than an infinite resistance in its open state, the currents provided to the gating circuit under these conditions will be shunted around the gating circuit through the PTC elements. Under operation where the switch is closed, the PTC elements will rapidly change to high resistance elements and thereby effectively remove themselves from the circuit.

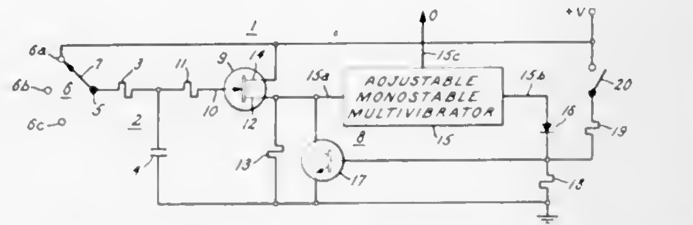
3,794,860
LONG-TIME DELAY CIRCUIT EMPLOYING HIGH-IMPEDANCE LEVEL DETECTOR

William C. Kotheimer, Lansdowne, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Sept. 28, 1972, Ser. No. 293,149

Int. Cl. H03k *3/26*

U.S. Cl. 307—272 **7 Claims**



In a protective relay timing circuit including a timing capacitor which is charged by a signal supplied to an input terminal, there is provided a junction-field effect transistor connected in a source-follower arrangement and coupled to the timing capacitor such that the voltage on the source electrode of the transistor is indicative of the voltage appearing on the timing capacitor. Circuitry is also provided to monitor the voltage on the source electrode and to render the gate-to-source junction of the transistor conductive in response to the voltage on the source electrode attaining a preselected level, whereupon the capacitor discharges through said junction.

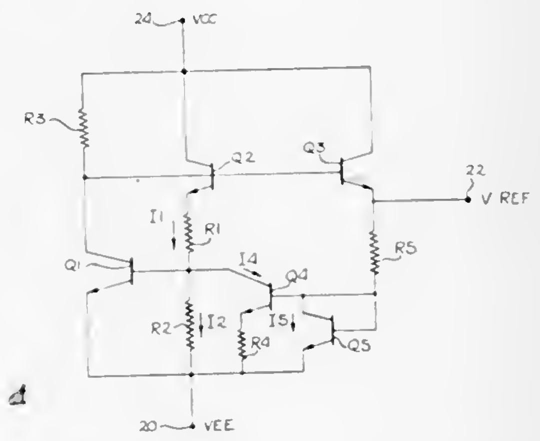
3,794,861
REFERENCE VOLTAGE GENERATOR CIRCUIT

Jerald Roy Bernacchi, Los Altos, Calif., assignor to Advanced Memory Systems, Inc., Sunnyvale, Calif.

Filed Jan. 28, 1972, Ser. No. 221,731

Int. Cl. H03k *1/12*

U.S. Cl. 307—297 **11 Claims**



A reference voltage generator circuit particularly suited for current source circuits having low temperature sensitivity and low voltage sensitivity. The circuit is comprised of a reference voltage circuit having low voltage sensitivity and relatively high temperature sensitivity, with an additional feedback circuit for feeding back a compensating temperature sensitivity to result in a low overall sensitivity. The temperature sensitivity of the reference generator is predominately due to the temperature sensitivity of a base to emitter diode voltage drop which may be selectively controlled or substantially cancelled by the proper selection of resistors in the feedback circuit so as to feed back a temperature sensitive component. The feedback signal is dependent upon the difference in the base to emitter voltage drops in two transistors conducting different magnitudes of current, and is similarly amplified so as to effectively allow cancellation of the basic reference generator sensitivity.

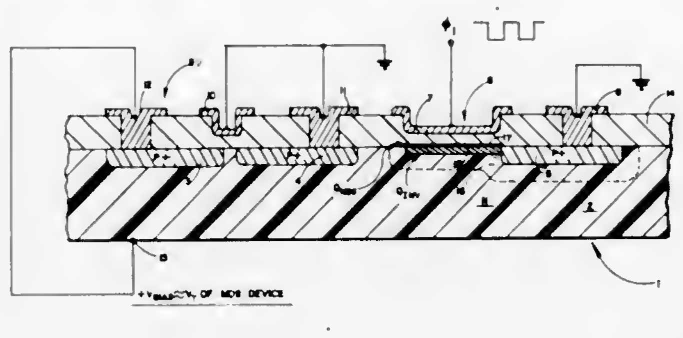
3,794,862
SUBSTRATE BIAS CIRCUIT

Frederick B. Jenne, Huntington Beach, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 5, 1972, Ser. No. 241,171

Int. Cl. H01l *19/00*

U.S. Cl. 307—304 **5 Claims**



A semiconductor substrate including a field effect charge pump for injecting charge into the substrate and a field effect transistor circuit, connected between the substrate and a reference voltage source, responsive to the level of substrate charge for clamping the substrate bias voltage at a desired level. By controlling the gate voltage applied to the field effect transistor circuit and the number and arrangement of transistors in the circuit, the substrate bias voltage can be clamped at a value greater than, equal to, or less than the transistor threshold voltage.

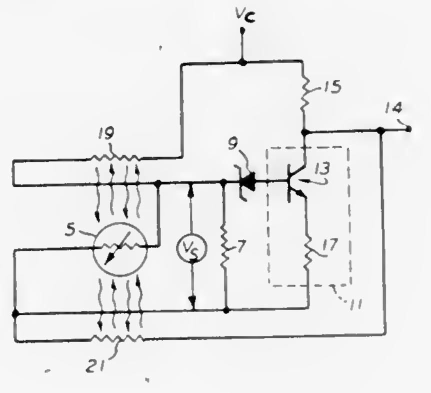
3,794,863
TURN SIGNAL INDICATOR SWITCHING CIRCUIT

L. Frank Emerson, Williamsport, Pa., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Continuation-in-part of Ser. No. 265,616, June 23, 1972, abandoned. This application June 6, 1973, Ser. No. 367,517

Int. Cl. H03k *17/60;* **G05f** *3/10*

U.S. Cl. 307—310 **8 Claims**



A turn signal switching circuit includes a thermistor coupled to a potential source by first and second heating means and shunted by a first load circuit with a second load circuit coupled to the first load circuit by a switching means and shunting the second heating means.

3,794,864
GALVANO-MAGNETO EFFECT APPARATUS

Noboru Masuda, Kawaguchi, Japan, assignor to Denki Onkyo Co., Ltd., Tokyo, Japan

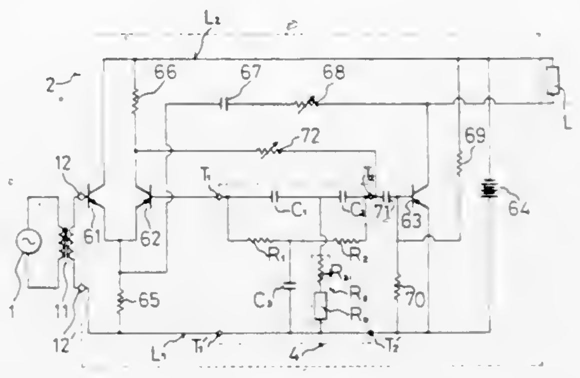
Filed June 13, 1972, Ser. No. 262,182

Claims priority, application Japan, Dec. 9, 1967, 42-78930

Int. Cl. H01v *5/00*

U.S. Cl. 307—309 **7 Claims**

A galvano-magneto effect apparatus in which a parallel T circuit consisting of resistors and capacitors is employed as the positive feedback circuit of an active element. A magnetism sensing element the resistance of which varies with the intensity of a magnetic field applied is employed as the resistance component, and an AC signal is supplied from the AC signal generating source to the input side of said active element. The center frequency of said parallel T circuit is varied in reference to the frequency of said AC signal by varying the intensity of said magnetic field, and the output to be supplied to a load is increased or decreased by varying said center frequency.



3,794,865
DEVICE FOR PRODUCING A ROTATING MOVEMENT BY MEANS OF AT LEAST ONE PULSATING DRIVING FORCE

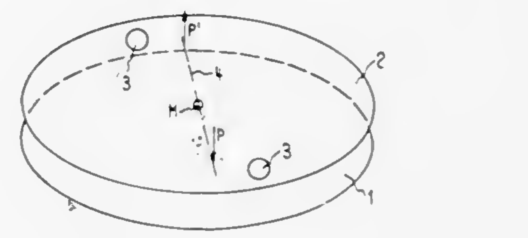
Kurt Guttinger, Murten, Switzerland, assignor to Saia A.G., Fabrik elektrischer Apparate, Fribourg, Switzerland

Filed July 10, 1972, Ser. No. 270,169

Claims priority, application Germany, July 17, 1971, 2135929

Int. Cl. H02k *7/10, 7/06*

U.S. Cl. 310—82 **18 Claims**



A device for producing a rotating movement by means of at least one pulsating or alternating driving force acting on a displaceable element such as a tumbler disc or wobble disc for imparting to this element a motion such that a track of this element rolls along a track of another element, a slow differential rotating movement between such elements being thereby produced due to a difference in length of the tracks on the elements. The tracks may be toothed rims meshing with each other. The device is particularly usefull in synchronous motors, wherein the pulsating driving force is produced by means of an exciting coil connected to an alternating current source.

3,794,866
ULTRASONIC SEARCH UNIT CONSTRUCTION

Jerry T. McElroy, and Gerald J. Posakony, both of Boulder, Colo., assignors to Automation Industries, Inc., Los Angeles, Calif.

Filed Nov. 9, 1972, Ser. No. 305,119

Int. Cl. H04r *17/00*

U.S. Cl. 310—8.2 **10 Claims**

An ultrasonic nondestructuve testing system and a search unit are disclosed herein. The search unit includes a transducer crystal for transmitting and receiving ultrasonic energy

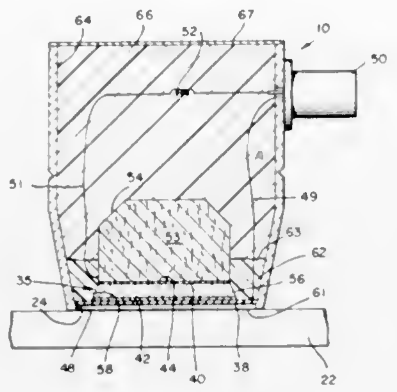
together with an acoustical backing structure which is

Surrounding the magnet within the frame is a winding whose

3,794,870

for sliding reciprocally lateral motion against a sliding surface.

together with an acoustical backing structure which is disposed on the backside of the transducer crystal for dampening spurious ultrasonic energy radiated from its back-side. The backing structure includes compacted or pressed fibers of a dense, non-resonant material.



3,794,867
FIXING DEVICE FOR AN OSCILLATORY CRYSTAL

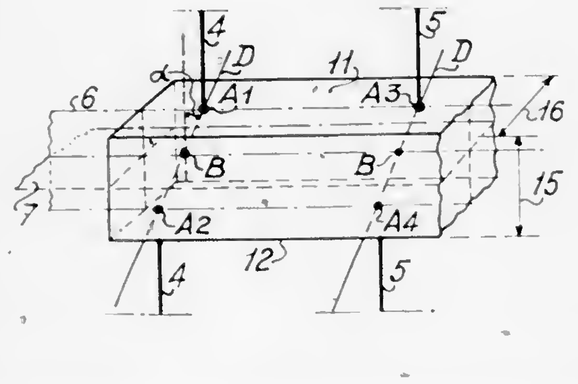
Guy Gibert, and Pierre Vidal, both of Sartrouville, France, assignors to Compagnie D'Electronique Et De Piezo-Electricite-C.E.P.E., Paris, France

Filed Feb. 9, 1972, Ser. No. 224,879

Claims priority, application France, Feb. 19, 1971, 71.05751

Int. Cl. H01v *7/00*

U.S. Cl. 310—9.1 **4 Claims**



A wire suspension device for oscillatory piezoelectric crystals made of a bar vibrating in a flexion mode, said wires being fixed on two parallel faces at points of minimum vibration of the crystal , determined by the intersection with these faces of a particular inclined straight line passing through a point of the median axis of longitudinal symmetry located at a distance from one end of approximately 0.2 times the total length.

3,794,868
ELECTROMAGNETIC DEVICE

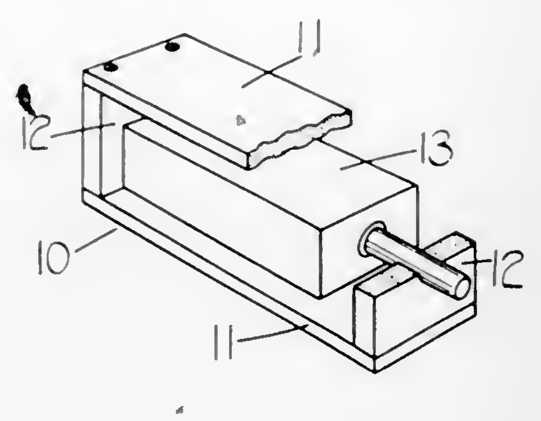
Richard Wolliscroft Haigh, Harborough Bank, Shelsley Beauchamp, near Worcester, England

Filed Aug. 31, 1971, Ser. No. 176,526

Int. Cl. H02k *33/00*

U.S. Cl. 310—36 **10 Claims**

An electro-magnetic torque motor has a permanent magnet pivotally mounted in a hollow frame of magnetisable material. Surrounding the magnet within the frame is a winding whose magnetic axis is angularly displaced from the magnetic axis of the magnet when the winding is not energised. Energisation of the winding tends to rotate the magnet within the winding in a direction to align the magnetic axes.



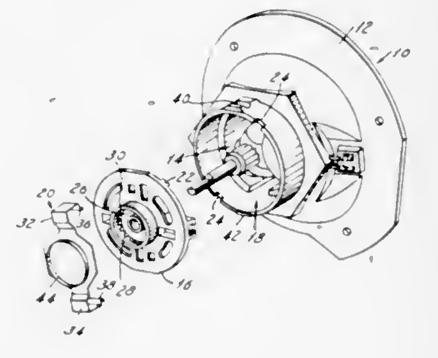
3,794,869
DYNAMOELECTRIC MACHINE END PLATE AND MOUNTING MEANS

Theodore G. Apostoleris, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 15, 1972, Ser. No. 306,778

Int. Cl. H02k *5/16*

U.S. Cl. 310—90 **8 Claims**



A bearing retaining unitary plastic end plate for a dynamoelectric machine is disclosed. The end plate includes a through passage for receipt of the normally provided armature bearing and armature bearing retaining means. In order to accommodate placement of the dynamoelectric machine so that the axis of rotation of the armature may be at or near the vertical, the through passage is provided with a discontinuous ridge for receipt of resilient fingers extending from the bearing retaining means. This ridge is formed by providing a plurality of passages extending part-way through the end plate structure parallel to the axis of the through passage and intersecting the through passage in the vicinity of bearing retaining means. The end plate structure is also formed with a pair of molded, opposed wire retaining clip members for receiving any internal wiring and preventing that wiring from entering the brush/commutator interface. A resilient clip means is provided for mounting the end plate structure on the housing of the dynamoelectric machine while providing central support for the end plate.

3,794,870
THREE-PHASE, POLE-CHANGING MOTOR

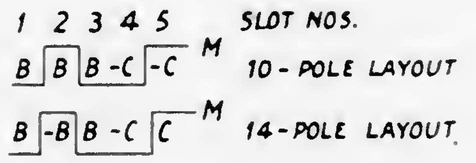
Alexander Richard William Broadway; William Fong, and Gordon Hindle Rawcliffe, all of Bristol, England, assignors to National Research Development Corporation, London, England

Filed July 17, 1972, Ser. No. 272,669

Claims priority, application Great Britain, May 19, 1972, 23,667/72

Int. Cl. H02k *3/00*

U.S. Cl. 310—180 **13 Claims**



A three-phase, alternating current, speed-changing electric motor, or generator, suitable for six-terminal, series/parallel switching and with pole-changing effected by pole-amplitide modulation, having a composite three-phase stator winding comprising two component windings with corresponding phase-winding parts connected in the same phase of the composite winding and spaced apart from each other around the winding periphery. Most commonly the spacing is uniform.

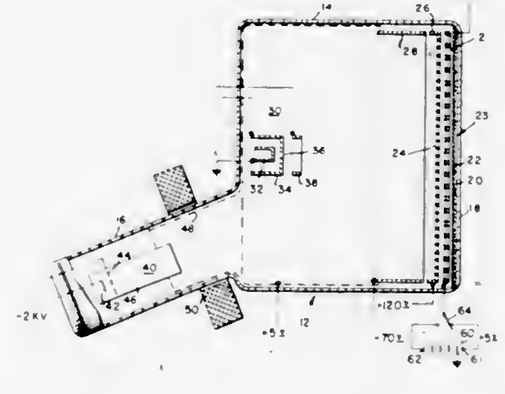
3,794,871
OPERATIONALLY RUGGED DIRECT VIEW STORAGE TUBE

Nobuo J. Koda, Vista, and John S. Ebert, Oceanside, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Sept. 14, 1972, Ser. No. 289,047

Int. Cl. H01j *31/48*

U.S. Cl. 313—68 R **4 Claims**



The present invention relates to an improved direct view storage tube having a non-storage mode of operation and incorporating an operationally rugged storage target with greatly improved retained image characteristics. This is generally achieved by using an overlay on the storage target having less resistance, a lower secondary emission ratio and a greatly enhanced bombardment induced-conductivity effect compared to the characteristics of the storage target dielectric.

3,794,872
MOVING TARGET SPRING LOADED X-RAY TUBE

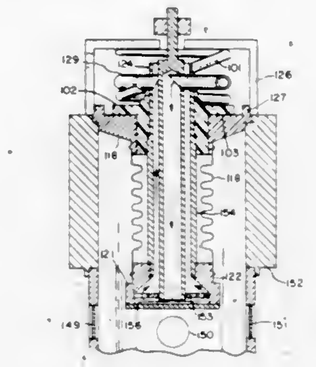
David J. Haas, 112 Three Lakes Dr., Stamford, Conn. 06902, and Jerome Pichert, Idle Day Dr., Centerport, N.Y. 11721

Continuation-in-part of Ser. No. 138,627, April 29, 1971. This application June 21, 1972, Ser. No. 264,805

Int. Cl. H01j *35/10*

U.S. Cl. 313—60 **10 Claims**

A sealed-off X-ray tube having a flat target surface facing an electron beam source and carried by a rigid support mounted for sliding reciprocally lateral motion against a sliding surface. A bellows is sealed vacuum tight to the target and to the wall of the tube opposite the sliding surface so that the target, the bellows, and the envelope of the tube form a closed surface. Conduits extend through the sliding surface to direct the flow of cooling fluid against the back surface of the target and carry the fluid away. The axis of the target reciprocates laterally in a direction perpendicular to the axis of the tube but the target does not rotate on its own axis. The target may be moved manually or by motor and with a linear, or circular motion. Because of the movement of the target, virtually constant X-ray beams radiate through windows of the tube and the effective life of the target is substantially increased.



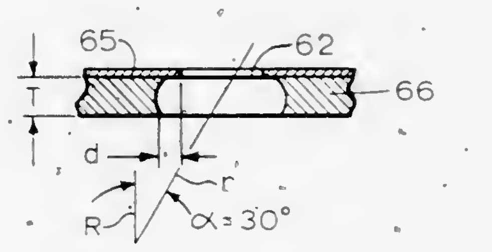
3,794,873
INTERCHANGEABLE SHADOW MASK

Sam H. Kaplan, and Raymond M. Stachniak, both of Chicago, Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 290,693, Sept. 20, 1972, abandoned. This application Nov. 6, 1972, Ser. No. 304,171

Int. Cl. H01j *29/06, 1/52*

U.S. Cl. 313—85 S **2 Claims**



A color television picture tube including an interchangeable multilayer shadow mask having a thin aperture-defining layer of a first material and a thick supporting layer of a second material. The mask is preformed while imperforate into its final curved configuration and the aperture pattern formed by photo-exposure and selective etching. The holes in the supporting layer are larger than the corresponding apertures in the aperture-defining layer to establish an increasing undercut graded in accordance with distance from the geometric center of the tube.

3,794,874
IMAGE TRANSFORMER TUBE WITH MOVABLE PHOSPHOR SCREEN

Hendrik Mulder, and Johannes Jacobus Houtkamp, both of Delft, Netherlands, assignors to N.V. Optische Industrie "De Ouda Delft", Delft, Netherlands

Filed Jan. 26, 1972, Ser. No. 220,745

Claims priority, application Netherlands, Feb. 8, 1971, 7101610

Int. Cl. H01j *39/10, 39/14*

U.S. Cl. 313—102 **1 Claim**

In an diode image amplifier or image transformer tube a

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the tube between the anode and cathode, which system includes an electrode dividend in segments. The

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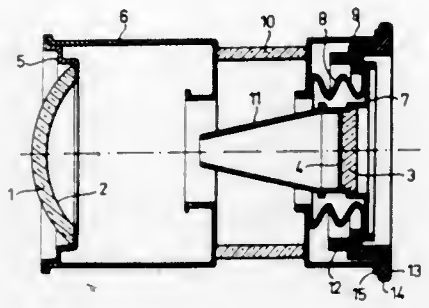
3,794,880

part of the wall of the tube between the anode and cathode window is composed of one or more interconnected metal



rings which can elastically be deformed to vary the distance between anode and cathode to avoid the use of a third focusing electrode.

3,794,875

NEUTRON GENERATORS

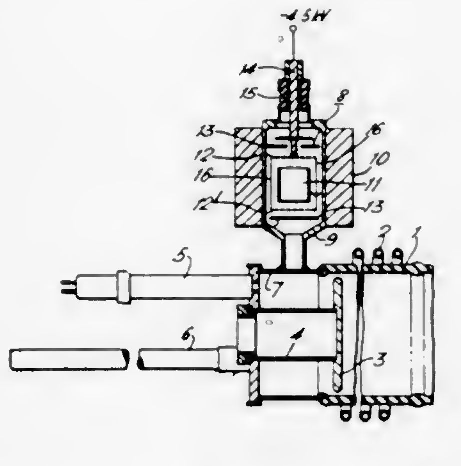
Donald Sutherland Stark, Baldock, England, assignor to Nationale Research Development Corporation, London, England

Filed Dec. 18, 1970, Ser. No. 99,331

Claims priority, application Great Britain, Dec. 30, 1969, 62570/69

Int. Cl. H01j *39/00*

U.S. Cl. 331—61 S **8 Claims**



In a sealed-off neutron generator containing tritium, for the production of neutrons by the D-T reaction, helium-3 gas accumulates owing to radioactive decay of the tritium and interferes with the proper operation of the generator. In the present generator a sputter-ion pump is sealed to the generator to remove the helium-3 from the envelope prior to admitting hydrogen isotope gas from the usual replenisher before use. The pump is adapted to remove only the unwanted helium-3 and not the wanted D and T, by having its sputterable cathodes made of, or coated with, a metal which has a low chemical affinity for hydrogen but is readily sputtered by helium, such as copper.

3,794,876

DEFLECTION CIRCUIT FOR AN ELECTRON BEAM IN A CATHODE-RAY TUBE

Willem Meijndert Van Alphen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

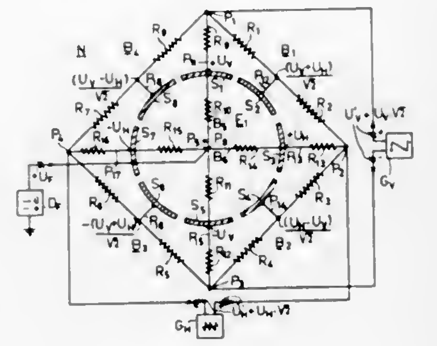
Filed Aug. 30, 1972, Ser. No. 284,966

Claims priority, application Netherlands, Sept. 4, 1971, 7112210

Int. Cl. H01j *29/70*

U.S. Cl. 315—17 **7 Claims**

A deflection circuit for an electron beam formed with an electrode system suitable for both focussing and deflection, which system includes an electrode dividend in segments. The electrode segments are incorporated in a bridge circuit built up from resistors while two deflection signal generators are



each connected to two bridge connection points. A focussing voltage source is connected to a central connection point of a bridge cross branch so that the source and the generators are mutually decoupled.

3,794,877

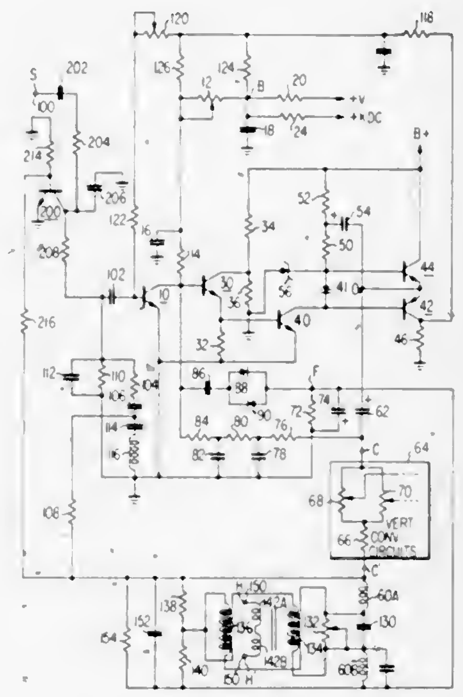
JITTER IMMUNE TRANSISTORIZED VERTICAL DEFLECTION CIRCUIT

Lawrence Edward Smith, and David Lynn Neal, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 30, 1972, Ser. No. 239,483

Int. Cl. H01j *29/70*

U.S. Cl. 315—27 TD **6 Claims**



U.S. Pat. No. 3,684,920 issued on Aug. 15, 1972 and based on U.S. Patent Application Serial No. 37,668, filed May 15, 1970, describes a transistor deflection circuit employing an output stage of class B, push-pull complementary symmetry type and a Miller integrator approach for the sawtooth wave generation. This invention describes a modification to the discharge circuitry thereof to improve the vertical deflection stability in the presence of spurious pulses which tend to undesirably and randomly trigger and/or retrigger the discharge switch. An additional "blanker" transistor is employed to sense the voltage across the vertical yoke winding so as to bypass the spurious signals away from the discharge switch during the vertical retrace interval when the danger exists that the deflection circuits will be falsely triggered.

3,794,878

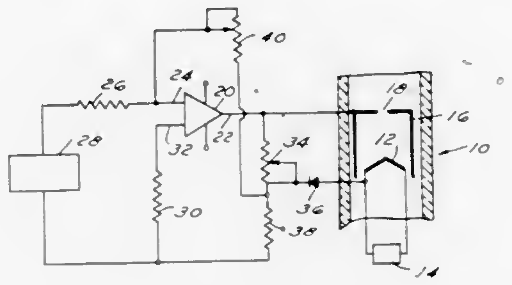
ELECTRON BEAM REGULATOR

Edward N. Sickafus, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 61,156, Aug. 5, 1970, abandoned. This application Dec. 11, 1972, Ser. No. 313,701

Int. Cl. H01j *29/52*

U.S. Cl. 315—30 **5 Claims**



A resistor connected between the filament and a filament can of an electron beam device also is connected to an auxiliary operational amplifier that establishes and controls an auxiliary current through the resistor. The operational amplifier can be connected to maintain a constant current through the resistor or a constant potential difference across the resistor despite wide variations in the potential of the filament power supply, the electron producing ability of the filament, or other operational disturbances. In addition, the operational amplifier can be programmed to produce predetermined variations in the quantity of electrons making up the electron beam with a much wider band width.

3,794,879

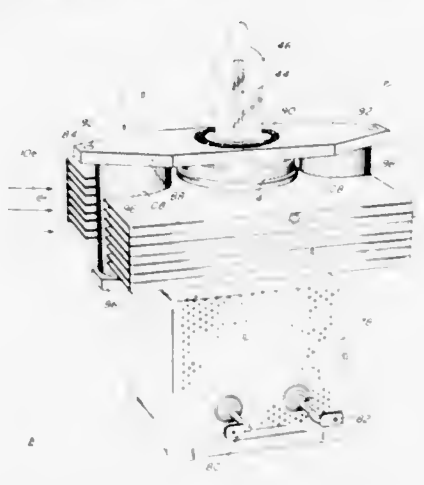
MICROWAVE MAGNETRON

Robert E. Edwards, Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Oct. 24, 1972, Ser. No. 300,066

Int. Cl. H01j *25/50*

U.S. Cl. 315—39.71 **2 Claims**



A crossed field electromagnetic energy device of the magnetron type is provided with integral magnetic field producing means including permanently magnetized members of a ferromagnetic material diametrically disposed adjacent to opposing sides of the anode member sidewalls together with spaced return path members. The magnetic field leakage flux is reduced by tapering the return path member walls to as close as possible to the magnet member outline. Energy leakage is controlled by eliminating axial clearance passageways for the cathode assembly found in prior art axially mounted magnet packages. A circulating fluid medium is directed between cooling fins which partially surround each magnet member and are appended to the anode member walls to control magnet material temperatures during operation and improve magnetic field efficiencies. A lighter weight device which is simple to assemble results with lower manufacturing costs as well as reduced shipping and handling costs.

3,794,880

ELECTRIC INCANDESCENT LAMP FOR SERIAL CONNECTION, PROVIDED WITH A SHORT-CIRCUIT MECHANISM ACTING AS A FUSE AT THE SAME TIME

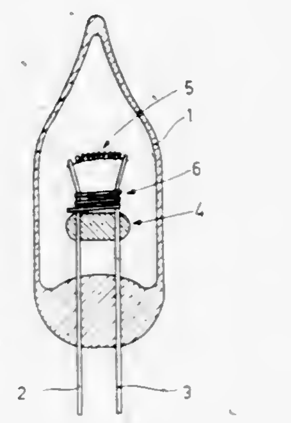
Enrico Peretti, Turin, and Piet Kramer, Alpignano, both of Italy, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 20, 1972, Ser. No. 264,493

Claims priority, application Netherlands, June 21, 1971, 7108537

Int. Cl. H01j *29/96*

U.S. Cl. 315—47 **4 Claims**



Electric incandescent lamp for serial connection, provided with a short-circuit mechanism consisting of a wirepiece wound about the current conductors. This wirepiece consists of an alloy of nickel and copper. The current conductors and/or the metal wire are provided with an oxide film.

3,794,881

SUPPLY CIRCUIT FOR A GAS DISCHARGE CHARACTER DISPLAY TUBE

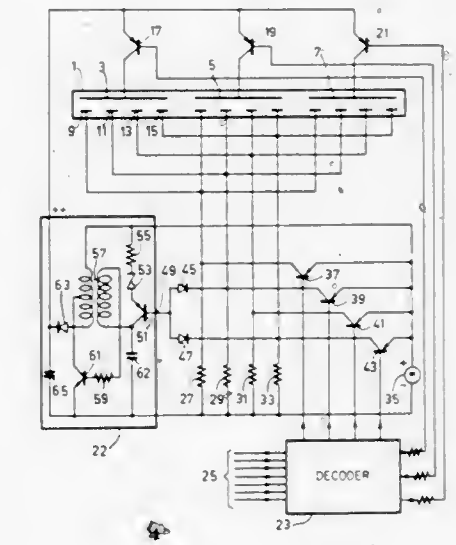
Daniel Johannes Gerardus Janssen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 13, 1972, Ser. No. 217,593

Claims priority, application Netherlands, Jan. 29, 1971, 7101186

Int. Cl. H01j *17/48*

U.S. Cl. 315—84.6 **10 Claims**



A supply circuit for a gas discharge character segment display tube in which the cathode circuit of one or more cathodes luminescing upon the display of each character includes a measuring resistor from which a control voltage is derived for a supply voltage control.

3,794,882
FLUORESCENT LIGHTING APPARATUS

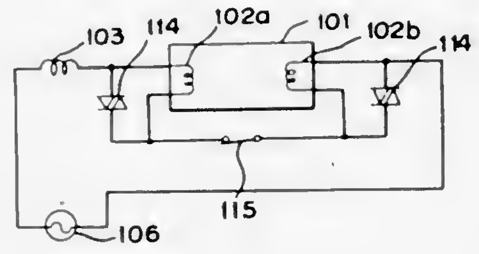
Tatsushi Kitanosono, 652 Tsutsumikata machi, Ohta-ku, Tokyo, Japan

Division of Ser. No. 119,613, March 1, 1971, which is a continuation of Ser. No. 735,823, June 10, 1968, abandoned. This application July 10, 1972, Ser. No. 270,206

Claims priority, application Japan, June 12, 1967, 42-50067

Int. Cl. H05b *39/04*

U.S. Cl. 315—100 2 Claims



The invention relates to an apparatus for identification of a concealed sign, such as a signature, on a card or the like and comprises a fluorescent member, a light source for stimulating the fluorescent member, a retaining member for holding the card carrying the concealed sign during the identification process and an infrared ray source. The apparatus of this invention may further include an optical system for directly comparing the visualize image of the concealed sign with a second sign and an instantly lighting circuit for the light source.

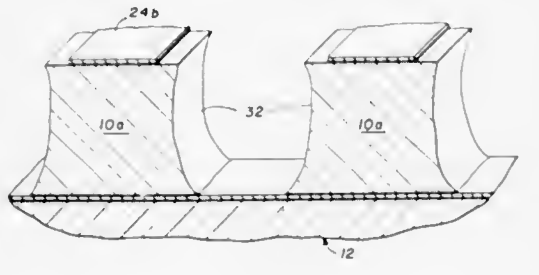
3,794,883
PROCESS FOR FABRICATING GE:HG INFRARED DETECTOR ARRAYS AND RESULTING ARTICLE OF MANUFACTURE

Ernest G. Bylander, Ervay, Dallas, Tex. 75201, and Hall E. Jarman, 555 Brookhurst, Dallas, Tex. 75218

Continuation of Ser. No. 32,490, April 13, 1970, abandoned. This application Feb. 1, 1973, Ser. No. 328,552

Int. Cl. H01l *15/00*

U.S. Cl. 317—234 R 8 Claims



An infrared detector array is fabricated by alloying a slice of mercury doped germanium to a degenerate germanium substrate. After being lapped to the desired thickness, the slice is etched through to the substrate to form individual detector bars using a metal mask which is then partially removed to form a gold contact strip on each bar. Output conductors are formed by patterning copper films thermocompression bonded to high temperature plastics, gold plating the conductors, and connecting the gold plated conductors to the gold contact strips by gold jumper wires thermocompression bonded to the conductors and to the contact strips.

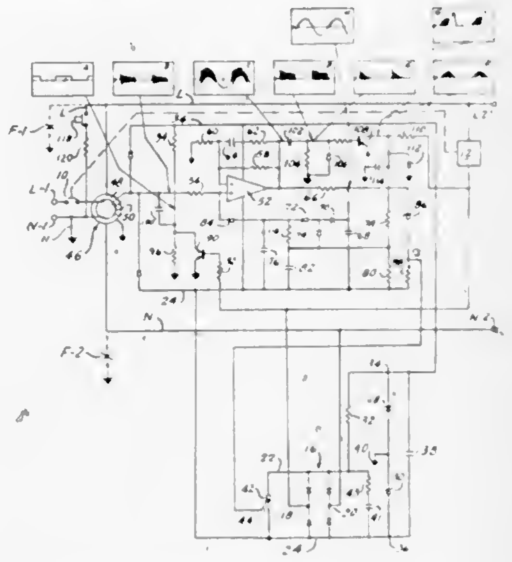
3,794,884
GROUND FAULT INTERRUPTER WITH PULSED NEUTRAL-TO-GROUND FAULT DETECTOR

Richard C. Sircom, Scarborough, Ontario, Canada, assignor to Federal Pacific Electric Company, Newark, N.J.

Continuation-in-part of Ser. No. 320,855, Jan. 4, 1973. This application May 29, 1973, Ser. No. 364,890

Int. Cl. H02h

U.S. Cl. 317—18 D 7 Claims



Apparatus for monitoring an alternating-current circuit having a differential current transformer to sense line-to-ground faults includes a pulsed ringing circuit for evidencing freedom of the alternating-current circuit from neutral-to-ground faults that could reduce the sensitivity of the line-to-ground fault detector.

3,794,885
STATIC TYPE ELECTRIC CIRCUIT BREAKER

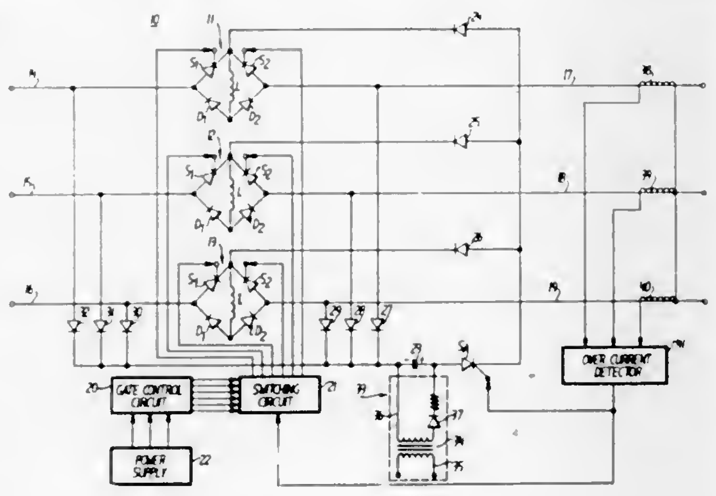
Heiji Kishi, Tokyo; Katshuiko Takigami, Kawasaki, and Yoshihiro Shirasaka, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Company, Ltd., Kanagawa-ken, Japan

Filed Nov. 9, 1972, Ser. No. 305,080

Claims priority, application Japan, Nov. 10, 1971, 46/89066

Int. Cl. H02h *7/20*

U.S. Cl. 317—33 SC 8 Claims



A single-phase full-wave type rectifier bridge is respectively provided within selected phases of A.C. line conductors and in series therewith to provide for the switching of an A.C. load current. Each rectifier bridge has four arms two of which respectively include a main thyristor and the other two arms of which respectively include a main diode. Additionally, the rectifier bridge functions such that one of the main thyristors passes a positive half wave of current therethrough, the other main thyristor passes a negative half wave of current therethrough, one of the main diodes becomes conductive during a positive half wave of the current and the other of the main diodes becomes conductive during a negative half wave of the current. A reactor is connected across the D.C. output terminals of the rectifier bridge for conduction of the load current. A series combination of a commutating capacitor and an auxiliary thyristor is connected between an intermediate connection point of the main thyristors of the rectifier bridge and other terminals of the main thyristors through an auxiliary diode. The commutating capacitor is normally charged from an auxiliary D.C. voltage supply and is discharged to negatively bias the main thyristor which is conductive when the auxiliary thyristor is turned on when a circuit-interruption is required.

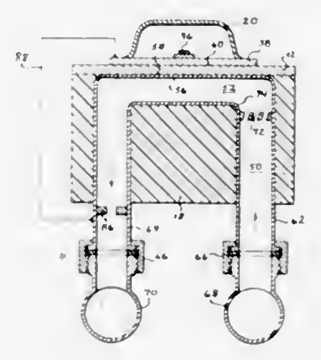
3,794,886
FLUID COOLED SEMICONDUCTOR SOCKET

Wayne E. Goldman, 33 Turning Mill Rd., Lexington, Mass. 02173

Continuation of Ser. No. 104,702, Jan. 7, 1971, abandoned. This application June 26, 1972, Ser. No. 266,326

Int. Cl. H05k *7/20;* **H02b** *1/04*

U.S. Cl. 317—100 10 Claims



A fluid cooled semiconductor socket comprising a thermally conductive plate adapted to hold the semiconductor in good thermal contact with the plate at a point of the semiconductor case having a hgh thermal conductivity with the semiconductor chip inside the case. A thermally conductive fluid conduit is attached to the plate on a face directly opposite from the semiconductor. The conduit is placed so as to maximize the thermal conductivity between the point where it is placed on the plate and the semiconductor chip, but still allow the electrical leads from the semiconductor to pass through the plate and establish electrical contact on the other side without obstruction by the fluid conduit. The fluid flowing through the conduit is made to absorb and conduct away increased amounts of heat by narrowing the conduit where it is in contact with the plate so as to increase the fluid velocity and reduce the slow moving fluid boundary layer in contact with an inner wall of the conduit, and by promoting turbulence in the field flow through ths narrowed portion. The plate and conduit are imbedded in a plastic housing which is keyed to lock into a multi-socket strip which orientates the conduit ends for mating with electrical leads and with manifolds conveying the cooling fluid.

3,794,887
MOUNTING ARRANGEMENTS FOR PRINTED CIRCUIT BOARDS

David John Brennan, and Loraine Leonard Williams, both of Solihull, England, assignors to Lucas Aerospace Limited, Birmingham, England

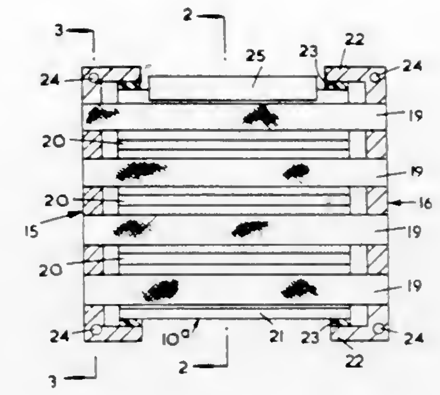
Filed Nov. 15, 1972, Ser. No. 306,818

Claims priority, application Great Britain, Nov. 17, 1971, 53,273/71

Int. Cl. H02b *1/02*

U.S. Cl. 317—101 DH 11 Claims

A printed circuit board arrangement includes a frame and a plurality of flexible metal webs secured to the frame by their ends. A printed circuit board is secured to the webs so that each web has a free length between said frames and an adjacent edge of the board.



3,794,888
REMOTE CONTROL SWITCH CIRCUIT

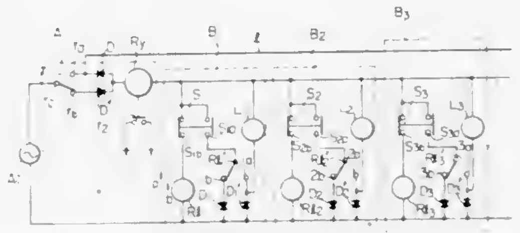
Tsuyoshi Hisano, Tsu, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Sept. 27, 1972, Ser. No. 292,604

Claims priority, application Japan, Oct. 1, 1971, 46-76887

Int. Cl. H01h *47/22;*

U.S. Cl. 317—150 2 Claims



A remote control switch circuit for switching on and off an associated load with a remote control relay operated by one of a plurality of remote control switches which is actuated independently of others. The circuit comprises a series circuit of a remote load section including the remote control relay connected to the load and normally closed and normally opened contacts connected in series through a pair of reversely connected diodes to the relay and a first operating switch section including the remote control switch for initiating and interrupting current fed to a polar relay and normally closed and normally opened contacts connected in series through a pair of reversly connected diodes to the switch, and an AC source providing source voltage to said series circuit. Other operating switch section or sections will be connected to said first section in parallel relation thereto.

3,794,889
OPEN AIR GAP OPERATION WITH STATIC OVERLOAD DEVICE

Challiss I. Clausing, Marlton, N.J., assignor to I-T-E- Imperial Corporation, Spring House, Pa.

Filed June 18, 1973, Ser. No. 370,766

Int. Cl. H02h *3/28*

U.S. Cl. 317—27 R 9 Claims

A tripping unit for a circuit breaker is energized by a current transformer which has two identical winding for each phase of the power circuit being protected. One set of windings is connected to one winding of an overload magnet, and the second set of windings is connected to a second and identical winding on the magnet. The second set of windings is further connected to the a-c terminals of a single phase, full

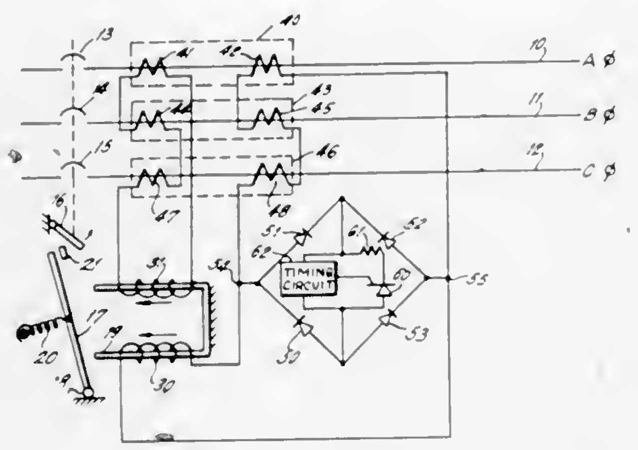
wave bridge which has its d-c terminals connected to a

3,794,891
HIGH SPEED RESPONSE PHOTOTRANSISTOR AND

across a source of supply of A.C. power. The series circuit branch includes the motor, a capacitor and two rectifying

3,794,895
ELECTRIC MOTORS WITH ELECTRONIC

wave bridge which has its d-c terminals connected to a switching device which is operable by a timing circuit. The armature of the magnet is spring loaded to a normally open position and the opposing fluxes produced in the two identical windings of the magnet are normally insufficient to close the armature to trip a circuit breaker. However, when a fault current is created, the timing circuits eventually fire the switching device in the full wave bridge to short-circuit the second winding on the overload magnet to permit the other winding to produce a sufficiently strong magnetic field to close the armature and trip the circuit breaker.



3,794,890
THYRISTOR WITH AMPLIFIED FIRING CURRENT

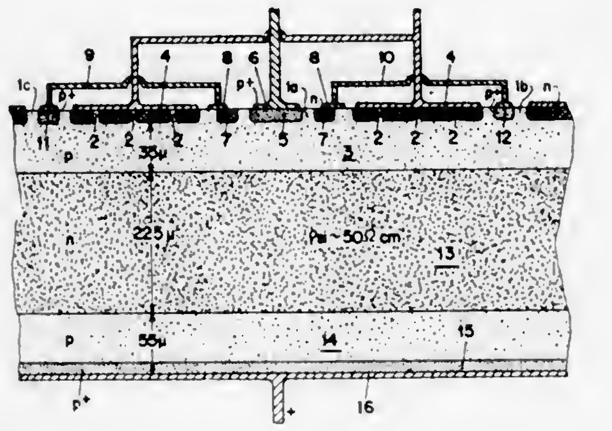
Klaus Weimann, Lampertheim; Elmar Muller, Alzey; Heinz Joachim Baab, and Jurgen Pape, both of Lampertheim, all of Germany, assignors to Brown, Boveri & Company Limited, Baden, Switzerland

Filed Sept. 14, 1972, Ser. No. 288,932

Claims priority, application Germany, Sept. 15, 1971, P 21 46 178.9

Int. Cl. H01l *15/00, 11/00*

U.S. Cl. 317—235 R **4 Claims**



A thyristor structure includes an outer emitter layer of one conductivity type provided with a main electrode and an underlying base layer of opposite conductivity. The emitter layer is provided with a central opening through which small-area contact is made to the base layer to establish a firing current, and surrounding the small-area contact is an annular zone also located within the opening and which exhibits the same type of conductivity as the emitter layer. One or more additional openings are provided in the emitter layer laterally outward of the annular zone and through which small-area contact(s) serving to establish auxiliary firing current is(are) made to the base layer, and the annular zone and said additional small-area contact(s) are linked to each other by way of a conductor without an intermediate barrier layer.

3,794,891
HIGH SPEED RESPONSE PHOTOTRANSISTOR AND METHOD OF MAKING THE SAME

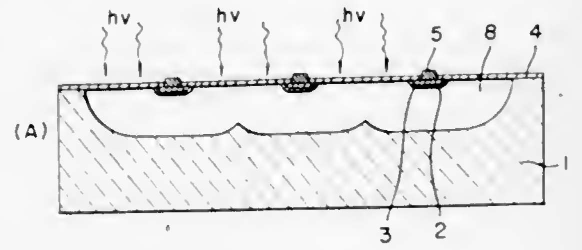
Saburo Takamiya, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1973, Ser. No. 338,252

Claims priority, application Japan, Mar. 3, 1972, 47/22008

Int. Cl. H01l *15/00*

U.S. Cl. 317—235 R **7 Claims**



A high speed response phototransistor comprises a plurality of pairs of base layers and emitter layers formed with progressive diffusions on a common collector, and an emitter electrode which commonly connects the plurality of emitter layers. The width of a depletion layer between the base and emitter layers is broadened so that a narrow base-emitter layer whose area is significantly smaller than a planar spread of the depletion layer.

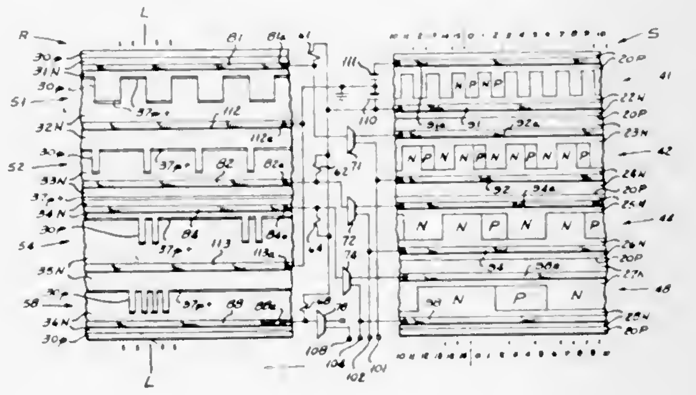
3,794,892
SEMICONDUCTIVE ENCODER

Frank S. Preston, Fairfield, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 16, 1965, Ser. No. 440,154

Int. Cl. H01l *11/00, 15/00*

U.S. Cl. 317—235 R **38 Claims**



A semiconductive encoder comprises a rotor having field-effect transistors the insulated gates of which are mounted on a stator. The stator comprises a backwardly biased p-n pattern which creates dielectric fields for the rotor transistors. Relative movement between rotor and stator varies the current through the insulated-gate field-effect transistors to provide a digital indication of the relative position of rotor and stator.

3,794,893
D. C. MOTOR AND POWER SUPPLY THEREFOR

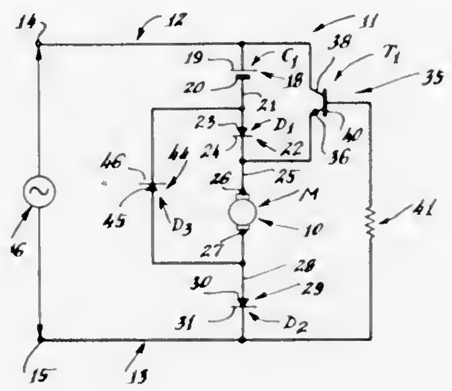
Ronald G. Arpino, Branford, Conn., assignor to Sperry Rand Corporation, Bridgeport, Conn.

Filed Mar. 12, 1973, Ser. No. 340,565

Int. Cl. H02m *7/04*

U.S. Cl. 318—138 **8 Claims**

A network including a D.C. motor and a transformerless voltage reducing power supply for driving the motor. The network includes a series circuit branch adapted to be connected across a source of supply of A.C. power. The series circuit branch includes the motor, a capacitor and two rectifying devices, connected in series with one another. The rectifying devices are connected in the same conductive direction. During alternate half cycles of source output voltage the source charges the capacitor in series with the motor to operate the motor. The network also includes means for switching the charged capacitor into a closed loop during the other half cycles of source output voltage. The closed loop includes the charged capacitor, motor and a third rectifying device. Since the charged capacitor is thereby connected in parallel with the motor, it discharges through the motor to operate the same.



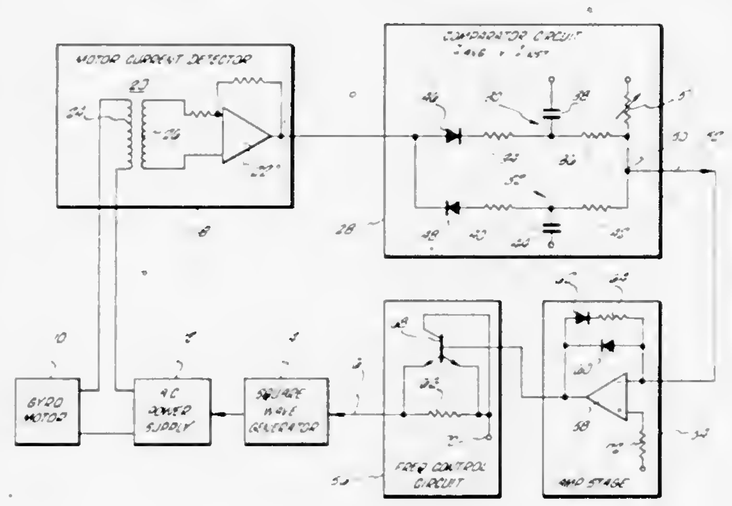
3,794,894
GYRO HUNT DAMPING CIRCUIT

Roger Van Leer, Woodland, Calif., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Mar. 24, 1972, Ser. No. 237,743

Int. Cl. H02p *5/28*

U.S. Cl. 318—184 **15 Claims**



A gyro hunt damping circuit for electrically changing the phase of the excitation current applied to a synchronous motor to slowly settle changes in the lag angle of a synchronous motor and thereby dampen motor hunting, is disclosed. The current drawn by a synchronous motor is continually sensed by a current detector circuit which provides an output signal representative of the motor current. The detector output signal is applied to a comparator circuit which serves to compare average current drawn by the motor over a long time period to instantaneous current demand over short time periods. The frequency of a square wave generator, which controls the frequency of excitation current from the AC power supply of the motor, is temporarily changed in accordance with any difference between the average and instantaneous motor current demand.

3,794,895
ELECTRIC MOTORS WITH ELECTRONIC COMMUTATION

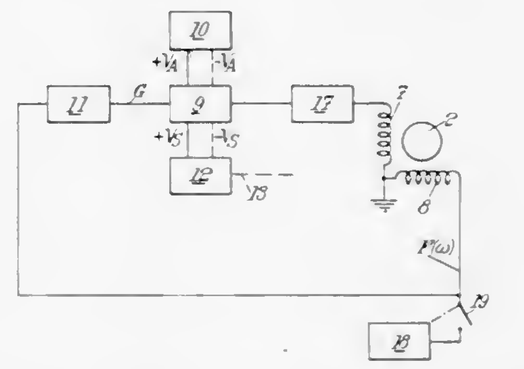
Claude Coupin, Argenteuil, and Alain Deval, Fontenay-le-Fleury, both of France, assignors to Societe D'Applications Generales D'Electricite Et De Mecanique SAGEM, Paris, France

Filed Oct. 28, 1971, Ser. No. 193,293

Claims priority, application France, Nov. 5, 1970, 7039856

Int. Cl. H02k *29/00*

U.S. Cl. 318—254 **9 Claims**



The motors are supplied by DC current and comprise two coils wound at 90° on a stator, the motor coil being supplied by a power amplifier, whilst the detector coil delivers a detector signal introduced into a dephaser. The motors are particularly useful for driving inertia wheel equipment, especially gyroscopes.

3,794,896
CONTROL CIRCUIT FOR COOLING FANS

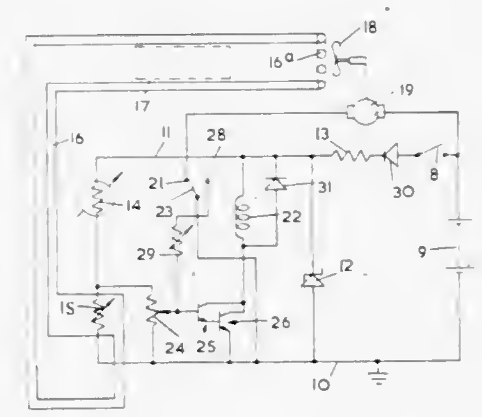
William David Holt, Colne, England, assignor to Joseph Lucas (Electrical) Limited, Birmingham, England

Filed Dec. 29, 1972, Ser. No. 319,795

Claims priority, application Great Britain, Dec. 1, 1972, 1,380/72

Int. Cl. G05d *23/30*

U.S. Cl. 318—471 **1 Claim**



A control circuit for an electrically driven cooling fan has a relay for switching the fan in and out. Associated with the relay is resistance means for reducing the differential between the on and off points of the fan.

3,794,897
ELECTRIC RAILWAY SPEED CONTROL

Robert Auldom Bradley, 18 Ralston Ave., Toronto 13, Ontario, Canada

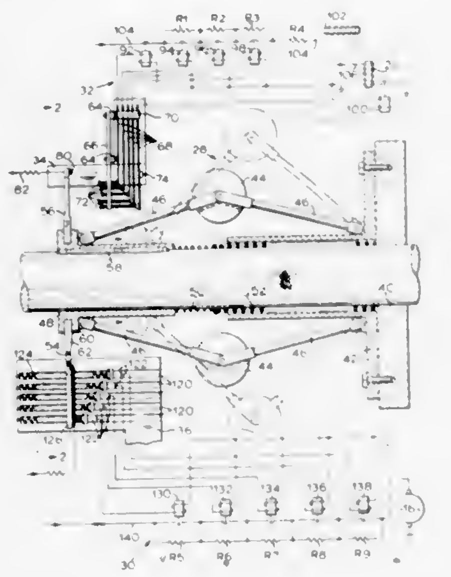
Filed Nov. 24, 1972, Ser. No. 309,061

Claims priority, application Canada, Feb. 10, 1972, 134456

Int. Cl. H02p *1/20, 3/14*

U.S. Cl. 318—270 **6 Claims**

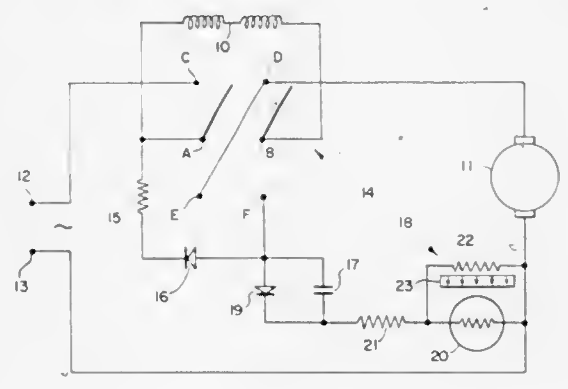
Regenerative braking systems which have previously been used in association with electrically driven vehicles have been manually controlled whereas the present invention provides a governor which automatically controls the starting resistance of the series winding of the motor and the regenerative braking resistance of the motor in proportion to the speed of the vehicle. The starting resistance means and the braking resistance means vary in a series of steps which progressively decrease the starting and braking resistance as the speed of the vehicle increases and progressively decreases the starting and braking resistance as the speed of the vehicle decreases within predetermined limits so that the variation in the starting resistance is effective in the low speed range while the variations in the braking resistance are effective in the high speed range. In addition, the governor of the present invention is mounted directly onto the output drive shaft of the motor so that there is no danger of failure of the governor as a result of a failure of any transmission used to transmit power to the governor which might otherwise permit the motor to rotate at high speed while the governor is inoperative.



3,794,898
DYNAMIC BRAKING OF ELECTRIC MOTORS WITH THERMISTOR BRAKING CIRCUIT

Thomas A. O. Gross, Concord Rd. R.F.D., Lincoln, Mass. 01773

Filed Feb. 26, 1973, Ser. No. 335,686
Int. Cl. H02p *3/24*
U.S. Cl. 318—380 **12 Claims**

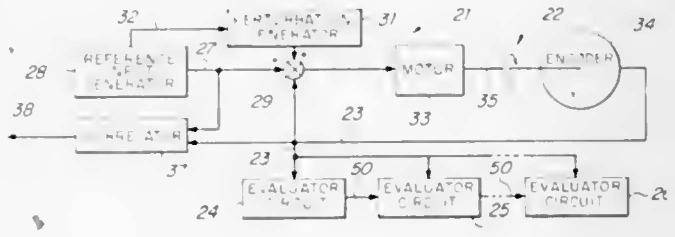


A motor system for energizing and deenergizing an electric motor and for dynamically braking the motor to a halt after deenergization. When the motor is turned off, a dynamic braking circuit is connected in series with the motor windings to assure generator action and to provide for dissipation of the kinetic energy of the motor. The braking circuit incorporates a thermistor through which braking currents flow. Because of its comparatively high resistance at ambient temperatures the thermistor opposes high surge currents at the initiation of braking, thereby reducing arcing at the motor brushes when the kinetic energy of the motor is highest. As the motor decelerates, the resistance of the thermistor reduces automatically because of self-heating, thereby maintaining large currents in the braking circuit to bring the motor quickly to a halt.

3,794,899
SERVO MOTOR DRIVEN ENCODER ERROR EVALUATION SYSTEM

Donald H. Breslow, Framingham Center, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed June 19, 1972, Ser. No. 263,886
Int. Cl. G05b *19/28*
U.S. Cl. 318—602 **22 Claims**

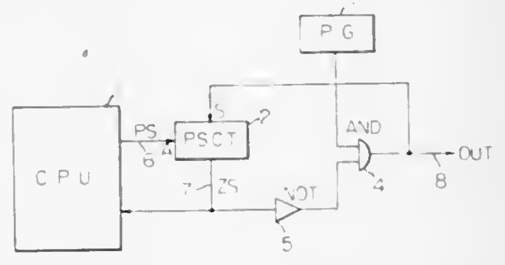


Disclosed is a system for evaluating errors in high precision encoders. A phase-lock servo system provides accurate and constant shaft speed control of an encoder under test and integration capability is provided to average either angle or time readings obtained during a plurality of revolutions of the encoder and thereby reduce the random errors originating in the testing apparatus. Also provided is a speed perturbation generator for checking the system's operability.

3,794,900
PULSE INTERPOLATION SYSTEMS

Kengo Kobayashi, Kawasaki, and Yoshiaki Kato, Tokyo, both of Japan, assignors to Fujitsu Limited and Fujitsu Fanuc Limited, both of Tokyo, Japan

Filed Sept. 7, 1972, Ser. No. 286,884
Claims priority, application Japan, Sept. 13, 1971, 46-71423
Int. Cl. G05b *19/28*
U.S. Cl. 318—603 **6 Claims**

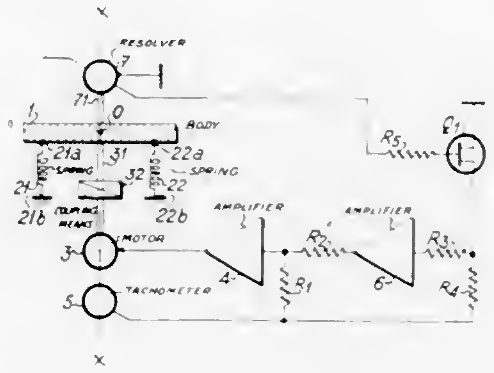


Pulse interpolation system for fast and accurate numerical control of machine tools, having a small scale computer with software which processes and sends out the numerical command; counting means which memorizes said numerical command, the content of said counting means being added or subtracted from each interpolation pulse, and; a pulse generator circuit which provides interpolation pulses from the time when said counting means memorizes said numerical command until the content of said counting means reaches the predetermined value, e.g., zero.

3,794,901
DEVICE FOR IMPARTING AN ALTERNATING ROTARY MOTION TO A BODY, ABOUT A MECHANICAL AXIS

Robert Gendreu, and Serge Platel, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sept. 8, 1972, Ser. No. 287,482
Claims priority, application France, Sept. 14, 1971, 7133073
Int. Cl. G05g *5/00*
U.S. Cl. 318—627 **5 Claims**

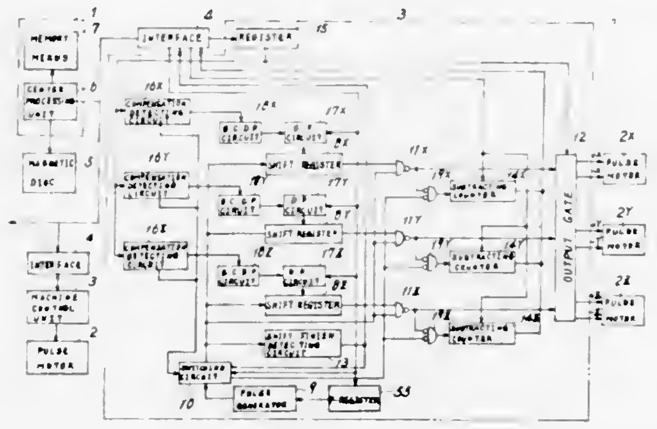


To a body, imparted in alternating rotary motion about a mechanical axis attached to a fixed support, by a motor, there are fixed the ends of springs whose respective other ends are connected to said fixed support. The springs restore, in the form of kinetic energy, the stored potential energy; the energy to be supplied by the motor in order to sustain the motion, is limited to that required to compensate for friction losses. An angle detector supplies a control signal from a negative feedback loop in the motor supply, the motor supply also comprising an ordinary feedback or reaction loop.

3,794,902
BACKLASH COMPENSATING APPARATUS FOR NUMERICALLY CONTROLLED MACHINE TOOL

Hideo Nishimura; Kimio Kanou, both of 2-52, Shintomi-cho, Kariya-shi, Aichi-ken, and Tamotsu Ishigaki, 1-3, Koue, Chiryu-shi, Aichi-ken, all of Japan

Filed Feb. 12, 1973, Ser. No. 331,370
Claims priority, application Japan, Feb. 12, 1972, 47-15018
Int. Cl. G05b *11/01*
U.S. Cl. 318—630 **6 Claims**

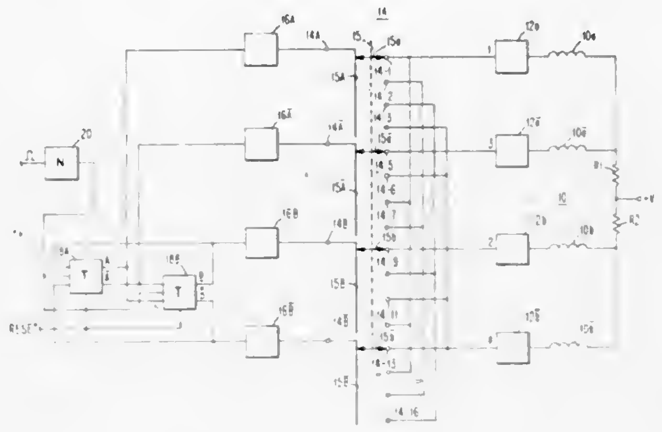


The backlash in the feed screw system of a machine tool is automatically compensated so as to obtain a high degree of machining accuracy. When the direction of the feed motion is required to be changed, the normal feed motion is temporarily interrupted, and backlash compensating data are supplied to a shift register, which is also used for normal feed operation, so that backlash compensation may be accomplished. Thereafter, a pulse generator supplies a series of pulse signals to the shift register to trigger drive pulse signals which are supplied to a pulse motor, the drive pulse signals being generated in accordance with the backlash compensating data.

3,794,903
VERNIER CONTROL FOR A STEPPER MOTOR

James G. Barcomb, Endicott, and John Mako, Vestal, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1972, Ser. No. 315,063
Int. Cl. G05b *19/40*
U.S. Cl. 318—696 **6 Claims**

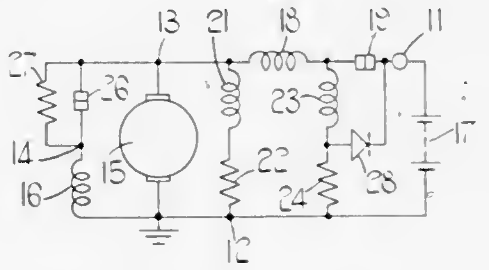


A multi-position switch is connected between the windings of a stepper motor and a pair of triggers which are connected to operate in a reflected binary mode for sequentially energizing the windings of the motor in response to a series of motor advance pulses causing the motor to advance in a stepwise fashion. The multi-position switch has one pole connected to each output of the triggers and has the different positions of each pole so connected to a different motor winding that movement of the switch in one direction causes the motor to advance one step for each position and movement in the other direction causes it to reverse one step for each position.

3,794,904
ELECTRO-MECHANICAL VOLTAGE REGULATORS WITH POLARITY PROTECTION FOR USE IN BATTERY CHARGING SYSTEMS ON ROAD VEHICLES

Albert William Winkley, Southall Cottage, Hadley, near Ombersley, Worcestershire; Wilson Hume Tannahill, 269 Ralph Rd., Shirley, Solihull, Warwickshire, and Jeremy Peter Freeman, 37 Park Ave., Solihull, Warwickshire, all of England

Filed Feb. 18, 1972, Ser. No. 227,553
Claims priority, application Great Britain, Mar. 1, 1971, 5,676/71
Int. Cl. H02j *7/14*
U.S. Cl. 320—25 **3 Claims**

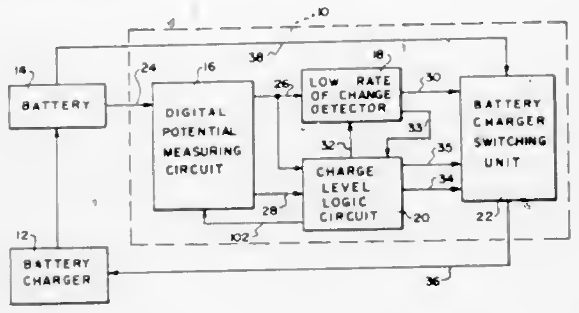


An electro-mechanical voltage regulator for a battery charging system on a road vehicle has regulator contacts in series with the field winding of a dynamo, and cut-out contacts for preventing the battery from discharging through the dynamo, the two sets of contacts being operated by windings. In such a regulator, means is incorporated for sensing incorrect connection of the battery and for reducing the regulated voltage if the battery is incorrectly connected so that the cut-out contacts are not closed by the cut-out winding, and cannot therefore be damaged.

3,794,905
BATTERY CHARGER CONTROL

Ronald E. Long, Redlands, Calif., assignor to Lester Electrical of Nebraska, Inc., Lincoln, Nebr.

Filed Oct. 17, 1972, Ser. No. 298,344
Int. Cl. H02j *7/04*
U.S. Cl. 320—20 **19 Claims**

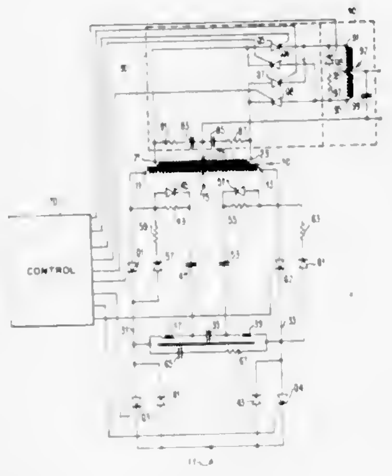

10
14
BATTERY
24
16
DIGITAL POTENTIAL MEASURING CIRCUIT
38
18
26
LOW RATE OF CHANGE DETECTOR
30
33
32
35
34
BATTERY CHARGER SWITCHING UNIT
CHARGE LEVEL LOGIC CIRCUIT
28
20
22
102
12
BATTERY CHARGER
36

To control a regulated battery charger that is providing a regular charge to a battery, a comparator compares the potential of the battery with the potential from a digital-to-analog converter, and in response to this comparison: (1) activates a multivibrator when the potential of the battery is greater than the potential of the digital-to-analog converter, with the multivibrator pulsing a first counter that is connected to the digital-to-analog converter so that the count of the first counter and the potential of the digital-to-analog converter follow in discrete increments the increase in the potential of the battery as the battery is charged by the battery charger; and (2) provides reset pulses to the reset terminal of a second counter each time that the potential of the battery increases above the potential of the digital-to-analog converter, with the second counter causing the battery charger to be de-energized when it reaches a predetermined count between reset pulses.

3,794,906
ELECTRICAL CONVERTER

Harry Swartzlander Hoffman, Jr., Saugerties, and Kenton Hugh Knickmeyer, West Hurley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 29, 1972, Ser. No. 293,707
Int. Cl. H02m *3/22*
U.S. Cl. 321—2 **6 Claims**

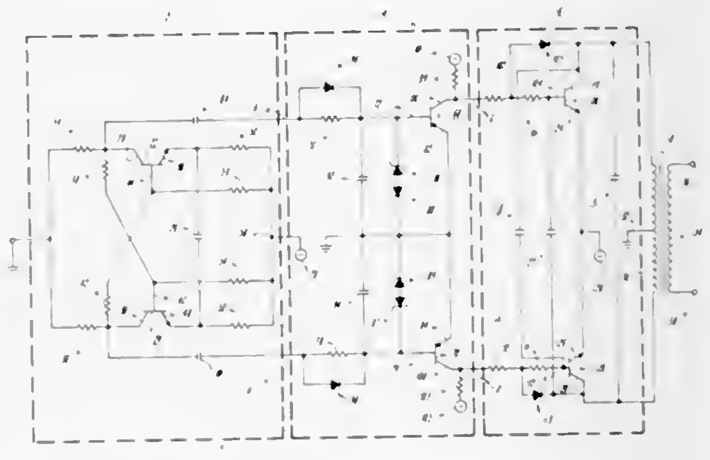


A full wave inverter circuit having a DC input voltage and an AC output voltage of controlled fundamental frequency. Constant amplitude voltage pulses are applied to a center tapped primary winding of a transformer to generate alternating current pulses in a center tapped secondary winding of the transformer. The center tapped secondary winding is connected to a converter to convert the alternating current pulses into unidirectional positive pulses and alternately into unidirectional negative pulses which are applied to an electrical load through a filter. The width and repetition of the constant amplitude voltage pulses is varied so that the integral of the converted alternating current pulses constitutes a lower frequency alternating current output waveform.

3,794,907
CONVERTER CIRCUIT

Dermot Thomas Fucito, Fairport, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Sept. 7, 1972, Ser. No. 287,140
Int. Cl. H02m *7/52*
U.S. Cl. 321—16 **12 Claims**

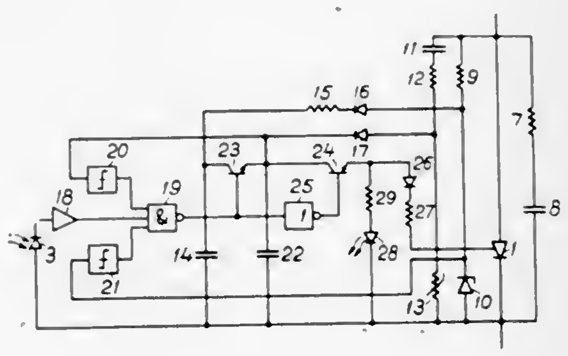


An oscillator driven converter circuit with a push pull power output stage including a regenerative feedback circuit wherein the signals from an oscillator circuit are applied to the power output stage so that the regenerative feedback circuit provides the switching current for the push pull power stage, under the control of, and at the frequency of, the oscillator signals.

3,794,908
THYRISTOR RECTIFIER FOR HIGH VOLTAGE

Georg Lindblom, and Karl-Erik Olsson, both of Ludvika, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Jan. 29, 1973, Ser. No. 327,439
Claims priority, application Sweden, Feb. 1, 1972, 1102/72
Int. Cl. H02m *7/48;* **H03k** *17/72*
U.S. Cl. 321—27 R **6 Claims**

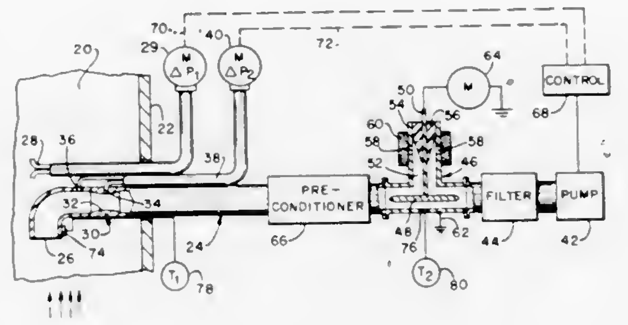


A thyristor rectifier for high voltage is formed of a plurality of thyristors connected in series and each having a control circuit controlled from a common control device. Connected to each control circuit is a light emitter of semiconductor type which emits a signal for the corresponding thyristors as long as the control circuit is intact and is being properly fed and the thyristor voltage has the proper polarity.

3,794,909
APPARATUS FOR AND METHOD OF SENSING PARTICULATE MATTER

Thomas B. Smith, Brighton, Mass., assignor to Ikor Incorporated, Burlington, Mass.

Filed Dec. 8, 1971, Ser. No. 205,784
Int. Cl. G01r *5/28*
U.S. Cl. 324—32 **3 Claims**

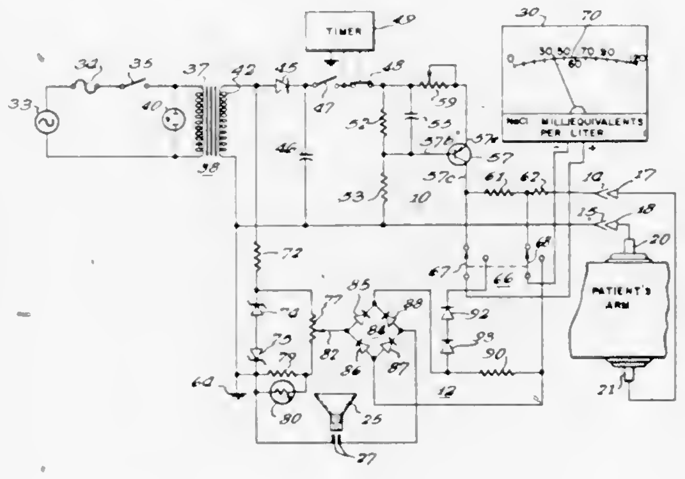


This invention concerns sensing particulate matter entrained in a gas flow that is isokinetically sampled. The sample is flowed past an ungrounded electrode with which the particles in the sample impact and transfer electrical charge. The sample also flows past a grounded electrode to complete a circuit. Measurement is made of the minute current flow in the circuit, which current is linear with respect to the square of the average velocity of the particles impelled by the gas flow.

3,794,910
—IONTOPHORESIS AND CONDUCTIVITY ANALYSIS CIRCUIT

Donald A. Ninke, Austin, Tex., and James F. LaHay, St. Louis, Mo., assignors to Sherwood Medical Industries, Inc., St. Louis, Mo.

Division of Ser. No. 880,807, Nov. 28, 1969, abandoned. This application July 26, 1971, Ser. No. 166,284
Int. Cl. G01n *27/02;* **A61b** *5/00*
U.S. Cl. 324—30 R **10 Claims**

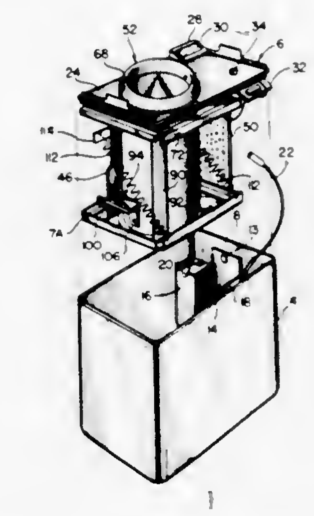


An iontophoresis inducing circuit includes means to limit to a safe value and to control a generated direct current for connection to iontophoresis electrides on a patient in order to produce sweat. A sweat sample is collected and analyzed to detect for cystic fibrosis. A sweat analysis circuit includes solid state switching for passing current of continuously alternating polarity through the sweat sample, and nonlinear means for converting the current into a direct reading of milliequivalents of sodium chloride per liter.

3,794,911
WEIGHT RESPONSIVE MOISTURE TESTER HAVING TIME DELAY MEANS AND TEMPERATURE COMPENSATION

George H. Fathauer, Decatur, Ill., assignor to Dickey-John Corporation, Chatham, Ill.

Filed Aug. 23, 1972, Ser. No. 283,216
Int. Cl. G01r *27/26*
U.S. Cl. 324—61 QS **21 Claims**

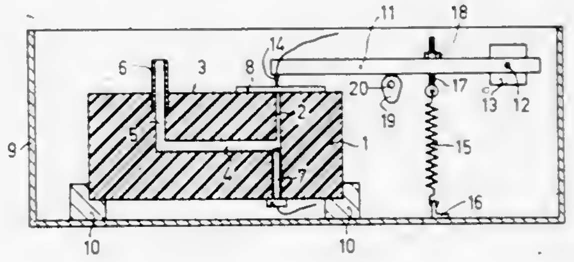


A grain sample moisture tester comprises a reference oscillator and a variable oscillator, the latter having a capacitor across its tank circuit that constitutes a test cell such that the dielectric constant of the capacitor is modified in accordance with the dielectric constant of the grain sample. The test cell is suspended on a frame or chassis such that when a predetermined amount of grain has been introduced into the test cell, a switch is closed to initiate a digital measuring circuit to provide a moisture reading. The readout is accomplished by relating the frequency of the variable oscillator to the frequency of the reference oscillator. Auxiliary temperature correction circuitry can be activated after the initial moisture determination has been made to correct the readout for temperature variations from a reference temperature.

3,794,912
CONTACT DEVICE USING CONDUCTIVE FLUID FOR MEASURING RESISTANCE AND CAPACITANCE OF SEMICONDUCTOR

Petrus Johannes Wilhelmus Severin; Gerardus Johannes Maria Poodt, and Gerard Vermeulen, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 15, 1972, Ser. No. 253,306
Claims priority, application Netherlands, May 19, 1971, 7106853
Int. Cl. G01r *27/02*
U.S. Cl. 324—62 **8 Claims**



A contact device comprising an insulating block having a flat upper surface which forms a place for receiving a semiconductor body, in which block at least one duct is present which opens into the upper surface and forms a contact place there, the block comprising a storage container for an electrically conductive liquid, for example mercury, communicating with the duct, said liquid being forced to the con-

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tact place by means of a gas under pressure in the duct, an electric conductor being passed through the block of which one end is connected to the liquid and the other end can be connected to a measuring instrument. The contact device may advantageously be used in carrying out a capacity-voltage measurement or a spreading resistance measurement in semiconductor materials.

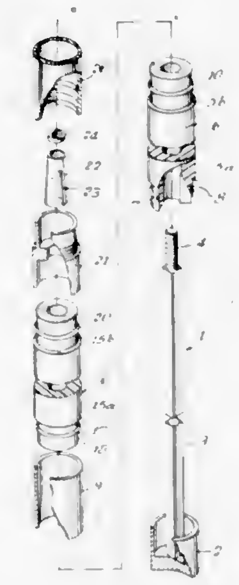
3,794,913
PHASE INTERFACE INDICATOR

Wendell P. Cropper, Olympia Fields; Sixt Frederick Kapff, and Robert B. Jacobs, both of Homewood, all of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed May 18, 1972, Ser. No. 254,446

Int. Cl. G01r *27/02*

U.S. Cl. 324—65 P **4 Claims**



Disclosed is an apparatus for detecting the location of the interface between two phases of matter of substantially different conductivity. The apparatus includes a plurality of insulated conductive members spaced along an axis and adapted for suitable electrical connections whereby it may be determined which of the conductive members are immersed in the conductive phase and which are in the non-conductive phase.

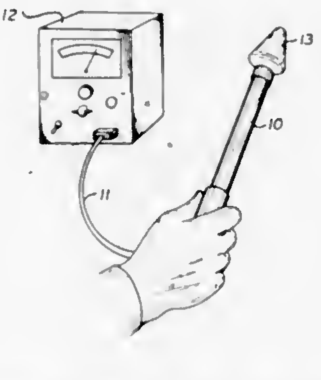
3,794,914
RADIATION DETECTOR EMPLOYING RESISTIVE CONNECTED THERMOCOUPLE ELEMENTS

Edward E. Aslan, Plainview, N.Y., assignor to The Narda Microwave Corporation, Plainview, N.Y.

Continuation-in-part of Ser. No. 848,620, Aug. 8, 1969, Pat. No. 3,641,439. This application Nov. 19, 1971, Ser. No. 200,536

Int. Cl. G01r *21/04, 5/22*

U.S. Cl. 324—95 **4 Claims**



A Radiation Detector having thin film thermo-couples disposed within a plane and supported by a non-perturbing probe which permits accurate measurement of an electric field in the near-field region.

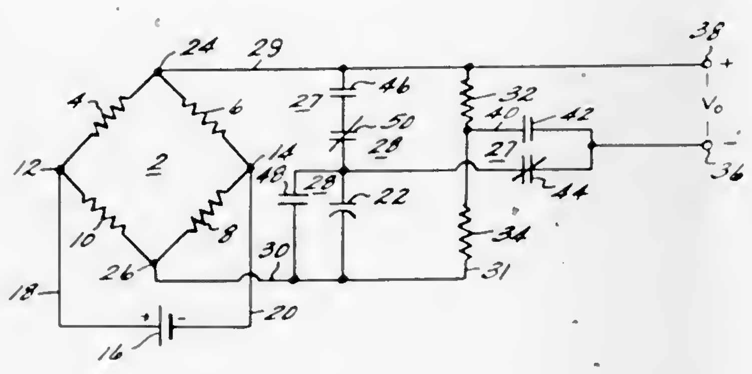
3,794,915
CIRCUITRY FOR DETECTING LOW AMPLITUDE RAPID VARIATIONS IN A HIGH AMPLITUDE OUTPUT SIGNAL

John F. Wolfinger, Schenectady, N.Y., assignor to General Electric Company, Cincinnati, Ohio

Filed July 23, 1971, Ser. No. 165,522

Int. Cl. G01r *19/00, 1/02*

U.S. Cl. 324—111 **2 Claims**



Measuring circuitry is described having the capability of providing output signals indicative of low amplitude, rapid variations in a higher amplitude, slowly changing signal. The circuitry includes a transducer upon which the signals are imposed, a storage device such as a capacitor which is intermittently connected to output terminals of the transducer, means for coupling the capacitor to a data recovery system, and a sampling relay for changing the capacitor connection between the transducer and the data system whereby the average input voltage to the data system is reduced to zero but any variations in the signal are faithfully indicated.

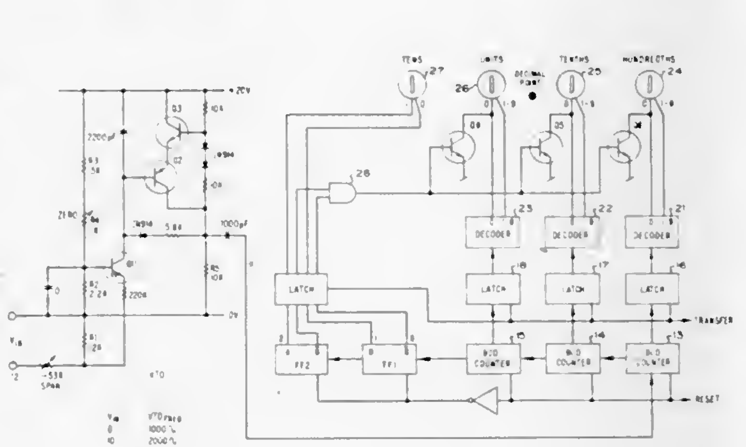
3,794,916
DIGITAL VOLTMETER

Jean Ritzenthaler, Geneva, Switzerland, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 9, 1972, Ser. No. 233,123

Int. Cl. G01r *17/06;* **H03k** *13/00*

U.S. Cl. 324—99 D **3 Claims**



A digital voltmeter wherein the DC voltage to be measured is converted into a linear current which in turn is converted into a proportional voltage used to drive a voltage tunable oscillator producing an output pulse train with a repetition rate proportional to the input voltage, a digital counter system being utilized to count the pulses and record the count on a digital display. In one embodiment, the voltmeter measures positive input voltages in voltage increments producing 1 Hz pulse rate changes over a range of 1,000 Hz. In a second embodiment the voltmeter measures both positive and negative incoming voltages, with means for indicating to the operator the sign of the measured voltage.

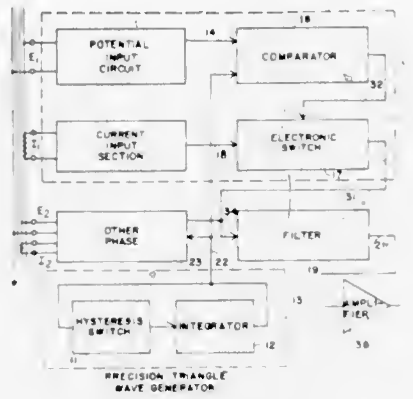
3,794,917
ELECTRONIC WATT TRANSDUCER

Joseph A. Martin, Hilliard, and James M. Hoover, Columbus, both of Ohio, assignors to Esterline Corporation, New York, N.Y.

Filed Mar. 9, 1972, Ser. No. 233,067

Int. Cl. G01r *21/00*

U.S. Cl. 324—142 **4 Claims**



A potential input circuit and a current input circuit, each having a transformer therein, receives the input information from the power line for which the true electrical power is to be measured. The scaled output from the potential input circuit, and a triangle wave signal from a generator therefor are coupled to a comparator (level crossing detector) employing an open loop operational amplifier (op amp) having an output controlling electronic switches to gate the current transformer secondary current, with a duty ratio proportional to voltage amplitude and polarity. The gated output of the current transformer is filtered and coupled through an amplifier, or directly, to an external load. The filtered output is in the form of a linear direct current analog of true power in the power line.

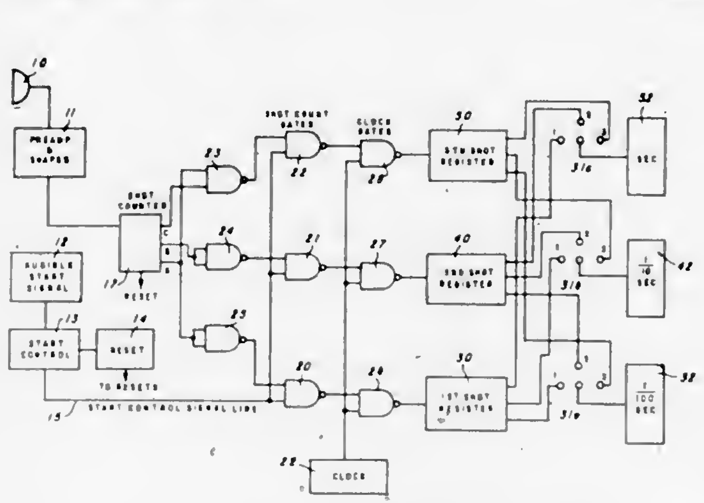
3,794,918
TIMING SYSTEM FOR TIMING A SERIES OF EVENTS

Paul H. Mallett, Rt. 5, Box 226, and Calvin Pipes, both of Monroe, La., assignors to said Mallett, by said Pipes

Filed Jan. 8, 1973, Ser. No. 321,746

Int. Cl. G04f *9/00, 11/06*

U.S. Cl. 324—186 **7 Claims**



The invention relates to a timing system designed to count a series of events and the time lapse of the occurance of each event from a starting signal. A plurality of gates control clock pulses which are counted by a number of counter-registers, the number of which depends upon the number of events to be counted. As each event is counted, a different one of the counter-registers is stopped from counting clock pulses thereby recording the lapse time from the starting signal to the occurance of the event.

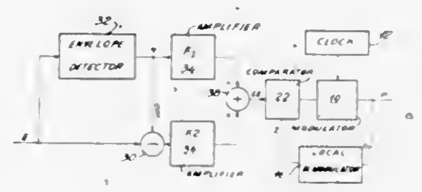
3,794,919
OUTSIDE LOOP ADAPTATIVE DELTA MODULATION SYSTEM

Michel Villeret, Sherbrooke, Quebec; Hubert Stephenne, Rock Forest, Quebec, and Pierre A. Deschenes, Sherbrooke, Quebec, all of Canada, assignors to Universite De Sherbrooke, Bureau des Recherches et des Bourses, Sherbrooke, Quebec, Canada

Filed Jan. 5, 1973, Ser. No. 321,522

Int. Cl. H03k *13/22*

U.S. Cl. 325—38 B **3 Claims**



An outside loop adaptive delta modulation system. The transmission side of the system includes an envelope detector for detecting the envelope of an analog input signal and a divider for dividing the analog input signal by the envelope signal detected in order to produce a normalized analog signal. An adder is provided for adding the envelope signal and the normalized analog signal and the output of such adder is fed to a non-adaptative delta modulator for modulating the output signal of the adder. The receiving end of the delta modulation system includes a first local demodulator for demodulating an input signal received from the modulator and composed of the envelope of the analog signal and of the normalized signal resulting from the division of such analog signal by the envelope signal, and a low pass filter connected to the output of the first local demodulator for recovering the envelope signal. Such envelope signal corresponds to the envelope signal detected at the input of the transmission side of the delta modulation system. A second local demodulator is also provided for demodulating the normalized signal. The input of such second local demodulator is connected to the input of the receiving system through delay means so as to delay the input of the second local demodulator in such a way that its output is in phase with the output of the above-mentioned low pass filter. The output of the low pass filter and the one of the second local demodulator are fed to a multiplier so as to permit to recover the analog signal. The output of the multiplier is fed to a band-pass filter to eliminate the envelope signal present in the output of the second local demodulator and to filter the high frequency components of the signal which are higher than the audio level.

3,794,920
FAIL-SAFE CODE KEYING TRANSMITTER

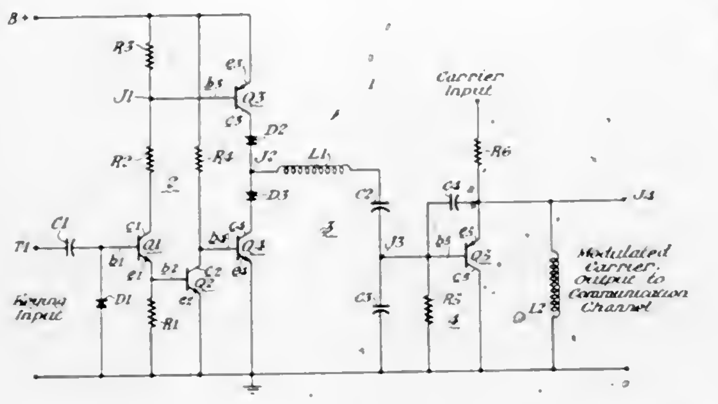
John O. G. Darrow, Murrysville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Sept. 15, 1971, Ser. No. 180,644

Int. Cl. H04b *1/04*

U.S. Cl. 325—105 **6 Claims**

This disclosure relates to a fail-safe code keying transmitter wherein a modulating signal is reshaped to remove the harmonic producing portions therefrom prior to the modulation of a carrier wave. The code keying transmitter includes an electronic switching circuit and a series resonant L-C circuit for transforming the leading edge of the square-wave input signal into one half cycle of a cosine wave and for transforming the trailing edge of the square wave input signal into



another half cycle of a cosine wave and employs a modulating circuit for varying the carrier wave in accordance with the transformed cosine wave.

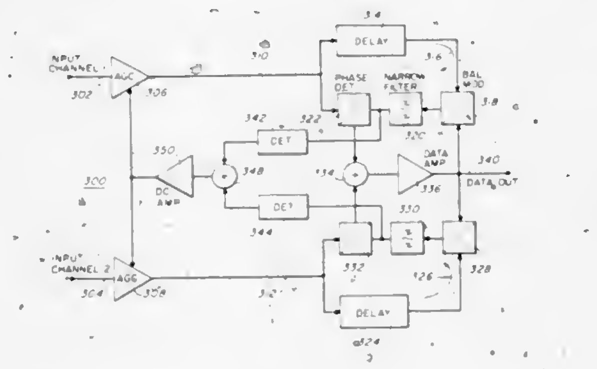
3,794,921
DIFFERENTIALLY ADAPTIVE COMMUNICATION SYSTEM

Manfred G. Unkauf, Franklin, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Nov. 24, 1971, Ser. No. 201,750

Int. Cl. H03d *3/00*

U.S. Cl. 325—42 **32 Claims**



A communication system for improved reception of signals over distorted communication channels, multipath environments and telephone cables is disclosed in which phase shift keyed coded pulses are transmitted such that their respective multipath contributions are separable at a differentially adaptive receiver which stores previous samples of the distorted transmitted pulse for use as a reference in a coherent matched filter type detector employing decision feedback to allow coherent detection without channelizing filters in systems using both binary and four phase modulation. The differentially adaptive receiver is employed both in modulator-demodulator type systems and in predetection combination communication systems.

3,794,922
DATA SAMPLING COMMUNICATION SYSTEM

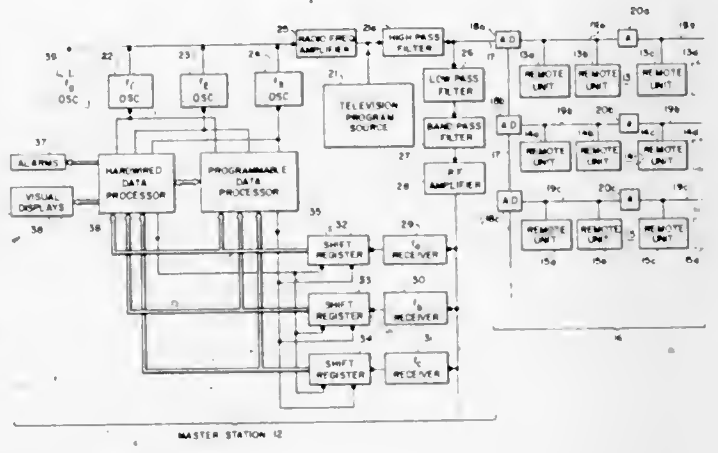
William Osborn, Dallas, and Bob Carter, Euless, both of Tex., assignors to Tocom, Inc., Irving, Tex.

Filed Jan. 26, 1972, Ser. No. 220,988

Int. Cl. H04b *1/00, 7/00*

U.S. Cl. 325—53 **9 Claims**

Disclosed is a system for sampling or interrogating selected ones of a plurality of remote units at which are located television receivers, to determine which of a plurality of television channels are being viewed at the interrogated remote units at the particular time of interrogation. The system includes a master station which transmits interrogation signals simultaneously to a plurality of remote units. Each remote unit includes a data transducer mechanism and a transmitter mechanism for transmitting reply signals back to the master station. The data transducer is coupled to the television receiver channel selector and is responsive thereto for generating data signals representing the particular channel being viewed at any given instant. Each remote unit also includes a data readout



mechanism responsive to readout signals transmitted from the master station for producing a digital data signal representative of the data signal generated by the data transducer and supplying same to the transmitter mechanism. The disclosed system is especially adapted for use in a community antenna or cable television system in which each remote unit is coupled to the cable system.

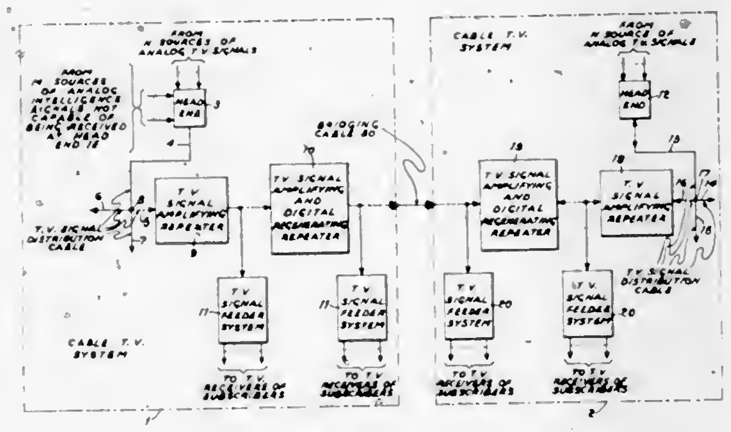
3,794,923
HEAD END INTERCONNECTION SYSTEM FOR CABLE TV SYSTEMS

Lynn W. Ellis, Westport, Conn., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Dec. 14, 1972, Ser. No. 315,067

Int. Cl. H04n *7/16, 7/08*

U.S. Cl. 325—308 **40 Claims**


FROM N SOURCES OF ANALOG T.V. SIGNALS
FROM N SOURCES OF ANALOG INTELLIGENCE SIGNALS NOT CAPABLE OF BEING RECEIVED AT HEAD END 12
HEAD END
BRIDGING CABLE 80
T.V. SIGNAL DISTRIBUTION CABLE
T.V. SIGNAL AMPLIFYING REPEATER
T.V. SIGNAL AMPLIFYING AND DIGITAL REGENERATING REPEATER
T.V. SIGNAL FEEDER SYSTEM
CABLE T.V. SYSTEM
TO T.V. RECEIVERS OF SUBSCRIBERS
CABLE T.V. SYSTEM
FROM N SOURCE OF ANALOG T.V. SIGNALS
HEAD END
T.V. SIGNAL DISTRIBUTION CABLE

This relates to an arrangement for interconnecting head ends of two or more conventional cable TV systems over the distribution cable or trunk employed for the TV signal distribution in a cable TV system. The technique employed is frequency division multiplexing a digitally encoded TV signal or signals capable of being received at one head end but not at the other head end of the two cable TV systems on the distribution cables of the two cable TV systems employed for conventional TV signal distribution under conditions avoiding mutual interference between the frequency division multiplexed digitally encoded TV signal or signals and the conventional analog TV signal or signals being distributed.

3,794,924
MULTI-CHANNEL WAVE RECEIVER

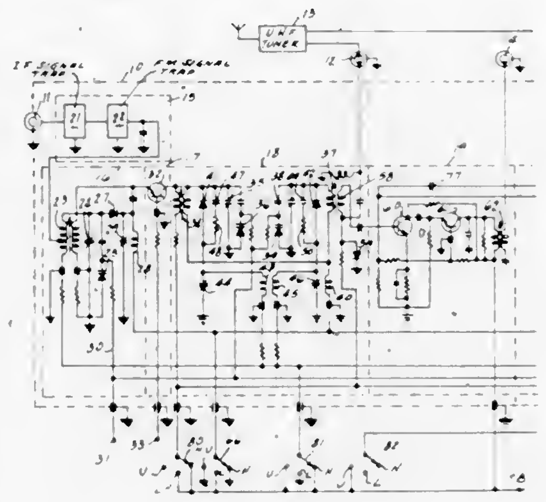
Shigeo Furuya, Tokyo, and Koji Ouchi, Kanagawa-ken, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed June 12, 1972, Ser. No. 262,155

Claims priority, application Japan, June 17, 1971, 46/43745

Int. Cl. H04b *1/16*

U.S. Cl. 325—439 **3 Claims**



A television signal receiving circuit having a solid state VHF and UHF tuner. The VHF tuner includes a number of resonant circuits and solid state switching means to switch between low and high bands within the VHF frequency range. The UHF tuner is coupled directly to an input of the mixer associated with the VHF tuner. The local oscillator associated with the VHF tuner has two means for injecting the oscillator voltage into the mixer. One of the injection means operates only on high frequency band and is controlled by a switching diode. The various resonant circuits of the VHF tuner utilize dumping impedances which are switched in and out of operation in order to equalize the resonant gain between low and high frequency band operation.

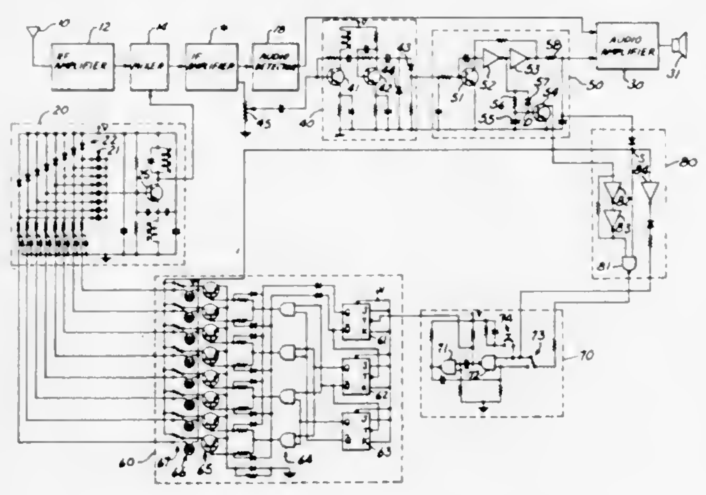
3,794,925
FREQUENCY-SKIPPING SYSTEM FOR A SIGNAL-SEEKING RECEIVER

Kazuyoshi Imazeki, Tokyo, Japan, assignor to General Research of Electronics, Inc., Chicago, Ill.

Filed June 27, 1972, Ser. No. 266,712

Int. Cl. H04b *1/32*

U.S. Cl. 325—470 **1 Claim**



A frequency-skipping system is provided for a signal-seeking receiver which automatically tunes the receiver to one of a plurality of predetermined frequencies whenever a signal corresponding to one of the predetermined frequencies is received. A scanning circuit causes the receiver to automatically scan a plurality of predetermined frequencies and tune to a received signal having a frequency corresponding to one of the predetermined frequencies. A switching network is operable to cause the scanning circuit to skip those frequencies which the operator does not want to monitor.

ERRATUM

For Class 325—185 see:
Patent No. 3,794,852

3,794,926
DIVERSITY COMBINING ARRANGEMENTS

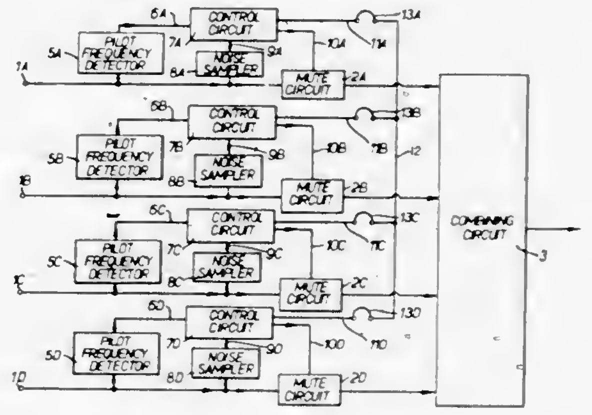
Brian Stanley Skingley, and Anthony Thomas Curtis, both of Essex, England, assignors to The Marconi Company Limited, Chelmsford, Essex, England

Filed Nov. 6, 1972, Ser. No. 303,868

Claims priority, application Great Britain, Dec. 3, 1971, 56127/71

Int. Cl. H03k *17/02*

U.S. Cl. 328—104 **5 Claims**



A diversity combining arrangement for combining signals on at least two paths, each path comprising, a muting circuit and means for detecting a pilot frequency signal on the path, control means being provided, responsive to a loss of pilot frequency on the path for rendering the associated muted circuit operative, the control means for each path being interdependent such that upon a loss of pilot frequency on more than one path all of the control means are inhibited from rendering the muting circuits operative.

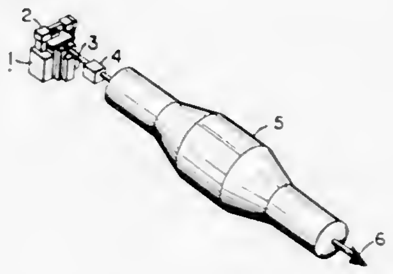
3,794,927
SYSTEM FOR PRODUCING HIGH ENERGY POSITIVELY CHARGED PARTICLES

Allan A. Fleischer, Lafayette; George O. Hendry, Napa, and Dale K. Wells, Martinez, all of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Jan. 20, 1970, Ser. No. 4,223

Int. Cl. H05h *5/06*

U.S. Cl. 328—233 **15 Claims**

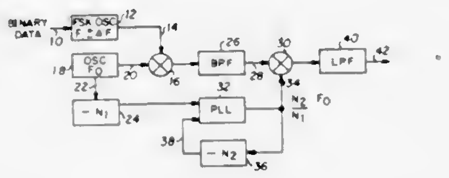


A system for producing high energy positively charged particles which includes in series a source of negative ions; means axially injecting these ions into a small cyclotron which accelerates the ions to a first energy level; means extracting negative ions from the cyclotron in a high quality beam; and a two-stage tandem Van de Graaff accelerator which accepts the beam of negative ions at the first energy level, then accelerates them to a second higher energy level, strips their negative charge, and finally accelerates the resulting positive particles to a still higher third energy level.

3,794,928
FREQUENCY SHIFT KEYED DEMODULATOR

Theodore M. Stump, Costa Mesa, and Jerry G. Williford, Tustin, both of Calif., assignors to Collins Radio Company, Dallas, Tex.

Filed Apr. 18, 1973, Ser. No. 352,377
Int. Cl. H04l *27/14;* H03b *3/06*
U.S. Cl. 329—104 **4 Claims**

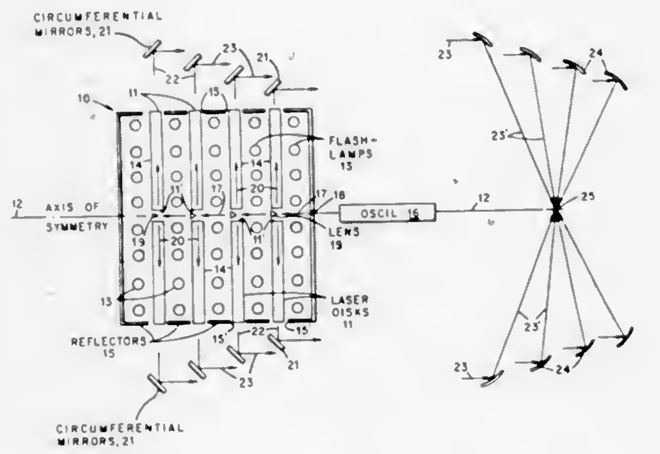


A frequency shift keyed (FSK) modem (modulator and/or demodulator) utilizing a phase lock loop which modem may operate at any of several predetermined frequencies and whose output for the modulator section, is combined with a frequency shift keyed signal and the result passed through a low pass filter to provide a frequency shift keyed output. The phase lock loop also supplies signals to the receive or demodulation section. The use of a multiple frequency phase lock loop negates the requirements for a plurality of bandpass filters of different frequencies to be used with the frequency shift keyed source.

3,794,929
COMPACT LASER AMPLIFIER SYSTEM

Ronald B. Carr, Livermore, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Oct. 13, 1972, Ser. No. 297,537
Int. Cl. H01s *3/02*
U.S. Cl. 330—4.3 **8 Claims**

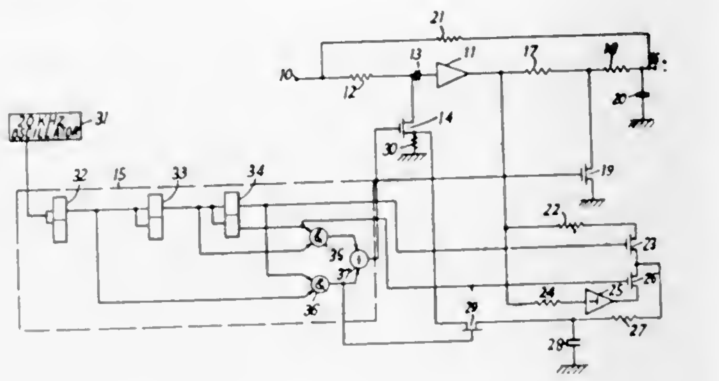


A compact laser amplifier system in which a plurality of face-pumped annular disks, aligned along a common axis, independently radially amplify a stimulating light pulse. Partially reflective or lasing means, coaxially positioned at the center of each annular disk, radially deflects a stimulating light directed down the common axis uniformly into each disk for amplification, such that the light is amplified by the disks in a parallel manner. Circumferential reflecting means coaxially disposed around each disk directs amplified light emission, either toward a common point or in a common direction.

3,794,930
ELECTRICALLY CONTROLLED SWITCHING CIRCUITS

Howard Anthony Dorey, Farnborough, England, assignor to The Solartron Electronic Group Limited, Farnborough, England

Filed Mar. 12, 1969, Ser. No. 806,644
Claims priority, application Great Britain, Mar. 15, 1968, 12847/68
Int. Cl. H03f *3/38*
U.S. Cl. 330—10 **12 Claims**

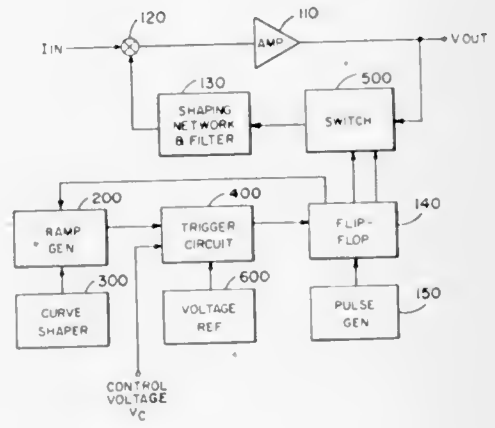


In a chopper stabilized amplifier using FET or other electronic chopper switches, the input chopper switch introduces a frequency dependent error on account of inter-electrode capacitances leading to asymmetrical coupling through the chopper drive waveform. The invention discloses apparatus which modulates the frequency or amplitude of the drive waveform, synchronously demodulates the amplifier output and uses the error signal thus derived to apply corrective feedback at the input to the amplifier.

3,794,931
ELECTRONIC GAIN CONTROL

Peter Albrecht, Manhattan Beach, and Kenneth L. Bays, Huntington Beach, both of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 10, 1972, Ser. No. 296,474
Int. Cl. H03g *3/30*
U.S. Cl. 330—29 **9 Claims**

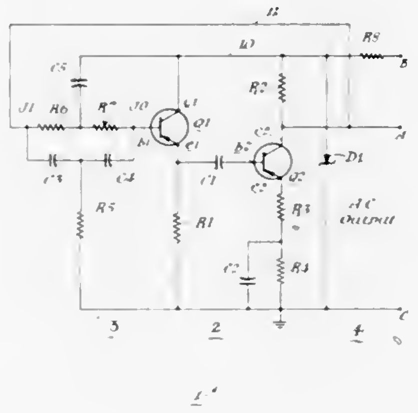


An automatic gain control circuit is disclosed for varying the gain of an amplifier as a function of a separate control voltage. Feedback around the amplifier is varied independently from the amplifier output signal, changing the amplifier gain curve without changing the feedback control voltage therefor. Pulse-time modulation is used for feedback control with the pulse amplitude being proportional to the amplifier output and the pulse width a function of the control voltage. An electronic switch in the amplifier feedback path affords complete isolation between the driving voltage and the amplifier output signal. The switch is gated with a bistable multivibrator that is alternately triggered by pulses from a fixed pulse generator and pulses from a variable slope, ramp generator.

3,794,932
VITAL LEVEL DETECTOR

Reed H. Grundy, Murrysville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Apr. 26, 1972, Ser. No. 247,552
Int. Cl. H03b *5/26*
U.S. Cl. 331—110 **10 Claims**

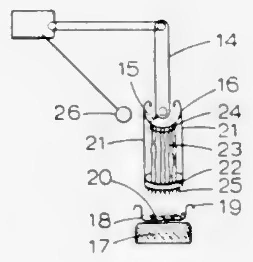


This disclosure relates to a fail-safe level detecting circuit including a solid state amplifier having a feedback loop. The feedback loop includes a frequency determining twin-tee network and a voltage breakdown device. The amplifier produces a.c. oscillations when and only when the level of a d.c. voltage exceeds the threshold value of the voltage breakdown device.

3,794,933
HAIR POPULATED MATERIAL

Terence Francis Moorhead, 53 Childwall Priory Rd., Liverpool, England

Filed Mar. 8, 1973, Ser. No. 339,044
Int. Cl. A41g *3/00*
U.S. Cl. 132—5 **24 Claims**

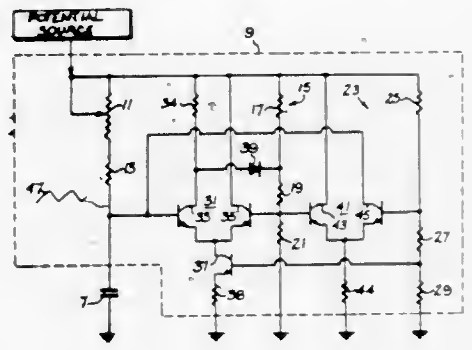


The invention relates to a process for the manufacture of hair-populated material, more particularly hair-pieces, by the embedment of natural or synthetic hair in a fluid base material and the solidification of the base material to anchor the hairs therein. Prior to embedment the hairs in a bundle are separated from each other by electrically charging the hairs in a bundle resulting in the mutual repulsion of the hairs from each other.

3,794,934
NON-SATURATING OSCILLATOR AND MODULATOR CIRCUIT

Dong Woo Rhee, Williamsville, N.Y., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Continuation-in-part of Ser. No. 225,856, Feb. 14, 1972, abandoned. This application Nov. 2, 1972, Ser. No. 303,227
Int. Cl. H03c *3/00;* H03b *15/12*
U.S. Cl. 332—16 T **26 Claims**



A non-saturating oscillator and modulator circuit includes a charging circuit coupled to a potential source and potential reference level, first and second electron devices coupled to the potential source and by a third electron device to the potential reference level with the first electron device coupled to the charging circuit and by way of a fourth electron device to a first bias potential circuit. Fifth and sixth electron devices are coupled to the potential reference level with the fifth electron device coupled to the first bias circuit and potential source and the sixth electron device coupled to a second bias potential circuit and to the charging circuit.

3,794,935
VARIABLE EQUALIZER

Toru Tsuchiya, and Seiya Shida, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed May 30, 1972, Ser. No. 257,551
Claims priority, application Japan, June 9, 1971, 46-41296
Int. Cl. H03h *7/14*
U.S. Cl. 333—28 R **9 Claims**

An equalizer, having a variable amplitude characteristic, for equalizing amplitude distortion especially in frequency-division multiplexed systems. The equalizer includes parallel signal paths, one path transmitting received signals essentially unchanged while the second path includes a circuit network having the transfer function $t_4 = (2\alpha\, k/1 + \alpha k)$. The parallel paths are coupled to a subtraction circuit, the output of the subtraction circuit appearing as the output of equalizer. The ratio of the output signal V_2 at the output of the subtraction circuit to the input signal V_1 is equal to $(1 - \alpha k/1 + \alpha k)$. Various circuit arrangements which produce the transfer function T_4 are disclosed.

3,794,936

DIVIDING FILTER NETWORK FORMING AN ALL-PASS FILTER CIRCUIT

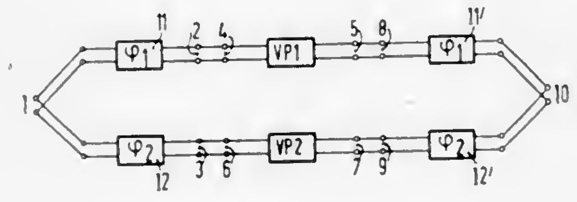
Werner Poschenrieder, Schuckertstrasse 14, and Erwin Buecherl, Gabriel-Max Strasse 43, both of Munich, Germany

Continuation-in-part of Ser. No. 73,879, Sept. 21, 1970, abandoned. This application Dec. 11, 1972, Ser. No. 313,858

Claims priority, application Germany, Sept. 22, 1969, 1947889

Int. Cl. H03h *7/02, 7/14;* **H04b** *3/14*

U.S. Cl. 333—28 R **7 Claims**



A dividing filter network wherein two port circuits, such as transformers, reactance circuits, equalizers and amplifiers, are interconnected in each branch of a mirror-image arrangement, the two-port circuits being designed and constructed in such a way that the frequency characteristics of the entire network agrees with the predetermined frequency characteristics of the interconnected two-port circuits, except for an additional phase.

3,794,937

FOLDED PATH ACOUSTIC DELAY LINE AND OPTICAL PROCESSOR

Milton Gottlieb, Pittsburgh, and John J. Conroy, Verona, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 20, 1972, Ser. No. 246,007

Int. Cl. H03h *7/30;* **G02f** *1/28*

U.S. Cl. 333—30 R **16 Claims**

A folded path acoustic device of a homogeneous solid material in which an acoustic signal is folded in a non-overlapping path used as a processor or delay line. The acoustic signal is reflected from facets of the body in a planar path in a manner to avoid mode conversion. The acoustic signal can also be folded from one planar path to another in a three-dimensional configuration of the delay line.

3,794,938

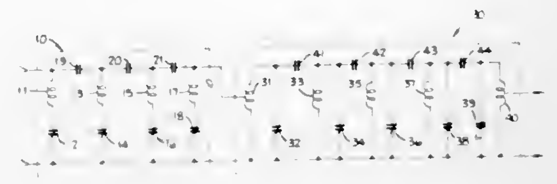
COUPLED BANDSTOP/BANDPASS FILTER

Donald A. Boelter, Indianapolis, Ind., assignor to General Aviation Electronics, Inc., Indianapolis, Ind.

Filed May 3, 1971, Ser. No. 139,639

Int. Cl. H03h *7/08, 7/38*

U.S. Cl. 333—70 R **1 Claim**



This disclosure includes a four pole bandstop filter coupled to a five pole bandpass filter tuned to an adjacent band to achieve a very steep attenuation curve between the two bands and an increased bandstop width.

3,794,939

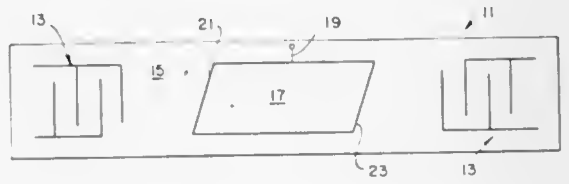
NONLINEAR SURFACE WAVE CONVOLUTION FILTER

Michael Waldner, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 2, 1973, Ser. No. 347,019

Int. Cl. H03h *7/02, 7/14, 9/32*

U.S. Cl. 333—72 **8 Claims**



Nonlinear surface wave interaction devices having a pair of input electro-acoustic transducers disposed on a piezoelectric substrate with a coupling plate disposed on the substrate and intercepting the intersecting acoustic surface wave signals generated by the two transducers are disclosed wherein one of the propagating input signals, upon overlapping and crossing the other input signal traveling in essentially an opposite direction, undergoes a time reversal with respect to the other signal to produce at the coupling plate an output signal that is the convolution of the two input functions. In order to reduce spurious signals in the output of these devices, which are caused by a traveling second harmonic signal, the edges of the coupling plate upon which the input signals are incident are angled to average the charge carried by the traveling second harmonic over a number of wave lengths.

3,794,940

SIGNAL CORRECTING APPARATUS

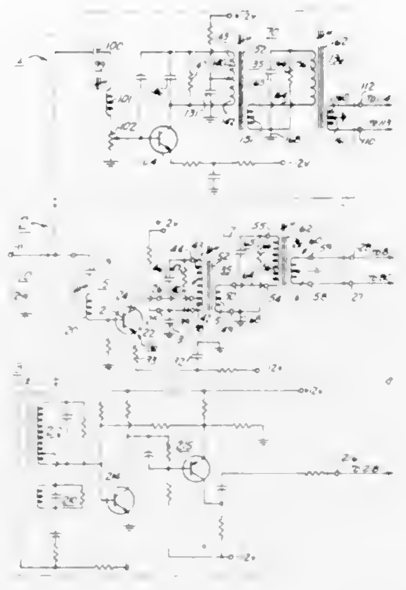
Bert H. Dann, Mountain View, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed May 18, 1972, Ser. No. 254,802

Int. Cl. H01h *7/08*

U.S. Cl. 333—77 **4 Claims**

An improved apparatus for correcting effects of angular errors in chrominance sideband components of a color video signal in which the chrominance sideband components, and signals indicative of the angular errors, as well as a substantially stable reference signal, are heterodyned to redispose the chrominance sideband components about a frequency which is displaced from a picture carrier frequency by a stable frequency difference.



The disclosure also covers an improved band filter useful in the above mentioned and other apparatus.

3,794,941

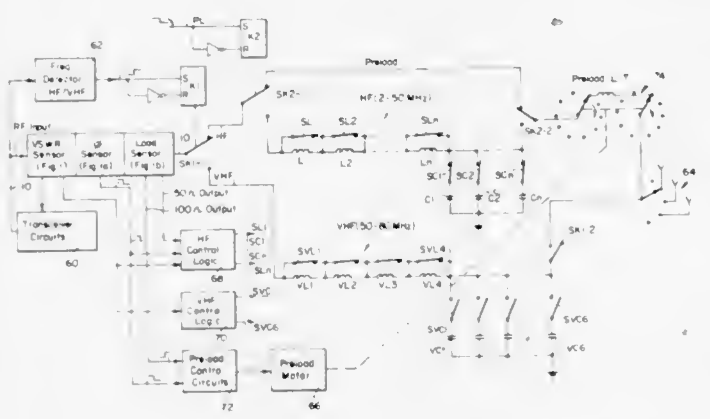
AUTOMATIC ANTENNA IMPEDANCE TUNER INCLUDING DIGITAL CONTROL CIRCUITS

Lawrence R. Templin, La Mirada, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed May 8, 1972, Ser. No. 251,232

Int. Cl. H03h *7/40*

U.S. Cl. 333—17 **31 Claims**



An automatic antenna tuner includes digital control circuits for selecting reactive tuning elements of an antenna impedance matching network. The tuner arrangement provides for rapid transforming of multiple antenna impedances to the load resistance required for efficient transfer of power from a power amplifier of a portable radio transmitter to any selected antenna over a broad frequency range of 2 to 80 MHz, for example. The impedance matching network includes series inductive elements and shunt capacitive elements in an L configuration. Both inductive and capacitive elements are incrementally adjustable in binary value and are adjusted automatically by digital control of latching relays in response to sensed antenna impedance to switch component values in a binary sequence. The tuning of the antenna for matching to the power amplifier is detected by individual phase and impedance broad band sensors for sequencing of capacitive and inductive reactances to approach 0° phase and the desired load resistance for efficient power transfer. The tuning is continuously monitored by a voltage standing wave ratio (VSWR) sensor which initiates and controls the duration of the tuning cycles according to the detected antenna impedance matching condition.

3,794,942

SYSTEM OF VARIABLE CAPACITY DIODES

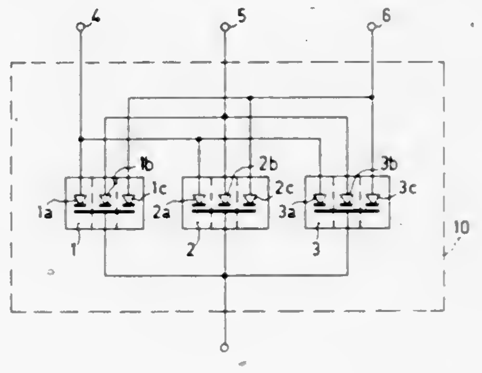
Gunther Blankenburg, Schuckshohe, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 103,762, Jan. 4, 1971, abandoned. This application Feb. 14, 1973, Ser. No. 332,290

Claims priority, application Germany, Feb. 12, 1970, 2006333

Int. Cl. H03j *3/20;* **H03h** *5/12*

U.S. Cl. 334—15 **2 Claims**



An arrangement for tuning a receiver over two or more frequency ranges comprising at least two interconnected variable capacity systems. Each system comprises at least first and second capacitor elements, means for connecting in parallel respective first capacitors of the two systems together to form a composite variable capacitor for tuning within one of the frequency ranges, and means for connecting respective second capacitors of the two systems together to form a composite variable capacitor for tuning within the second of the frequency ranges.

3,794,943

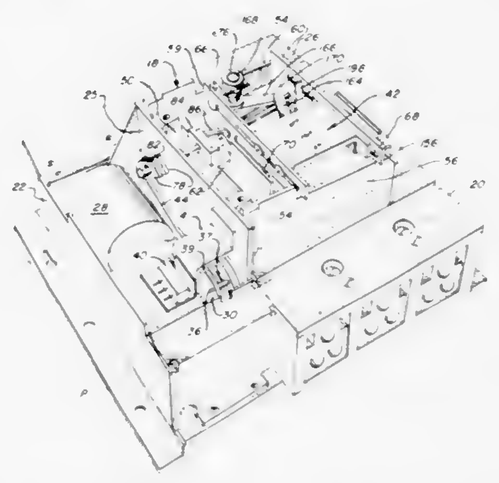
MOTOR-DRIVEN ACTUATING MECHANISM FOR A PIVOTABLE OPERATING HANDLE OF AN ELECTRICAL CONTROL DEVICE

Neil R. Palmer, Cedar Rapids, and Joseph R. Karge, Anamosa, both of Iowa, assignors to Square D Company, Park Ridge, Ill.

Filed Aug. 30, 1972, Ser. No. 284,814

Int. Cl. H01h *3/32*

U.S. Cl. 335—69 **9 Claims**



Through an arrangement of linkages the rotary motion of the output shaft of a reversible gear motor is converted into linear motion to actuate a handle operating carriage and thereby also a pivotable operating handle of an electrical control device. A manually operable means for moving the carriage is also provided which includes means for automatically disconnecting the power to the gear motor upon application of a tool.

3,794,944

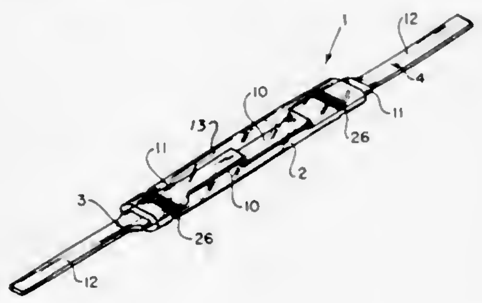
REED SWITCHES AND PROCESS FOR MAKING THEM

Vaughan Morrill, Jr., St. Louis, Mo., assignor to Morex, Inc., St. Louis County, Mo.

Filed Sept. 18, 1972, Ser. No. 290,113

Int. Cl. H01h *1/66, 51/28*

U.S. Cl. 335—154 **16 Claims**



A reed switch is provided preferably with an envelope noncircular and in particular a flattened oval in cross section. Reed switch elements, each having a reed section, a sealing section and a lead section are sealed into the envelope along a part less than the total length of the sealing section, the unsealed part of the sealing section being in close engagement with the inner wall of the envelope. A method of making a reed switch is provided wherein reed switch elements each including a reed section, a sealing section and a lead section are inserted into a tube, preferably non-circular, the sealing section of the elements and the interior of the tube being so closely dimensioned as to permit them to locate the reed sections with respect to one another before and during a sealing process. In the preferred method, a multiplicity of pairs of switch elements are inserted in a glass tube of oval cross section, lengthwise of the tube, and sealed in place in a horizontal position, providing symmetrical sealed joints, and thereafter the tube offal between the switches is removed.

3,794,945

AUTOMATIC TRIPPING ELECTRO-MAGNETIC CONTACTOR

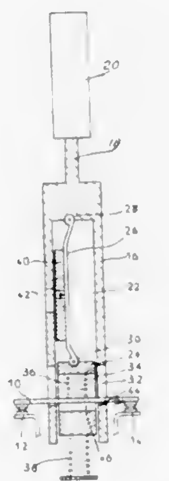
Claude Terracol, Grenoble, France, assignor to Merlin Gerin, Grenoble, France

Filed Oct. 11, 1972, Ser. No. 296,619

Claims priority, application France, Oct. 25, 1971, 71.38342

Int. Cl. H01h *5/00*

U.S. Cl. 335—188 **7 Claims**



Automatic tripping electromagnetic contactor having a trip-free mechanism such as a collapsible spring leaf to open the contacts automatically under predetermined conditions. A lost motion connection between the armature of the electromagnet operating the contacts and the movable contact bypasses and overrides the trip-free mechanism to permit the electromagnet to open the contacts strikingly.

3,794,946

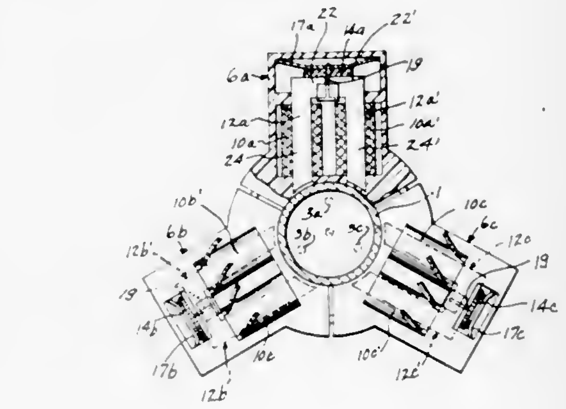
TEMPERATURE COMPENSATED ELECTRON BEAM CONVERGENCE APPARATUS

Maurice H. Brown, Palos Heights, Ill., assignor to Pemcor, Inc., Westchester, Ill.

Filed Nov. 2, 1972, Ser. No. 303,145

Int. Cl. H01f *3/12*

U.S. Cl. 335—211 **4 Claims**



The gap of a pair of core members of a convergence unit for a color producing cathode ray tube is provided with a U-shaped, flux permeable, temperature compensating, magnetic member extending part way around the core members. The U-shaped compensating magnetic member has a bridging portion extending across the gap of the core members on the side thereof opposite the side on which a manually adjustable magnetic flux-producing member is located, and a pair of opposite legs extending across the gap on the adjacent sides of the core members.

3,794,947

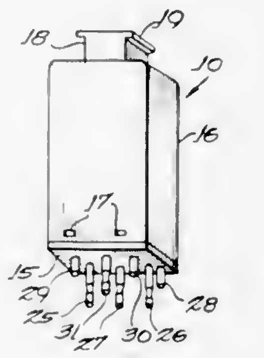
LINE PROTECTOR FOR A COMMUNICATION CIRCUIT

Bertram W. Baumbach, Arlington Heights, Ill., assignor to Reliable Electric Company, Franklin Park, Ill.

Filed Oct. 6, 1971, Ser. No. 187,018

Int. Cl. H01h *79/00*

U.S. Cl. 337—32 **14 Claims**



A plug-in line protector for a communications circuit provides protection for over voltage and over current conditions of the line. A cup and slug module containing carbon blocks provides an air gap for grounding high voltage transients. For an over current condition, a solder pellet melts causing the cup and slug to engage due to spring pressure and ground the line through a grounding strip. The grounding strip has plastic insulation bonded to a portion thereof and interposed between the line and ground. In an over current condition heat from one of the carbon blocks is transferred through the cup to the metalic strip. This heat may cause the plastic to melt to provide a back-up or secondary low resistance path to ground. The protector may also have a resettable over current responsive mechanism in the form of a heat coil in the line. When the heat coil breaks, a printed circuit board, on which the heat coil is mounted, is moved by a volute spring. In over voltage and in over current conditions, the volute spring conducts current from the printed circuit board to the slug and cup and to ground.

3,794,948

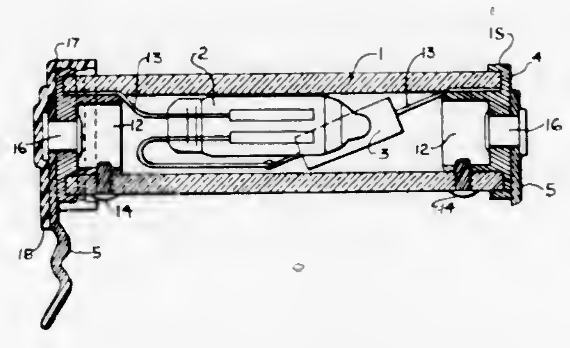
BLOWN FUSE INDICATORS

John C. Linton, Potomac, and Gordon W. Berry, Beltsville, both of Md., assignors to Fuse Indicator Corporation, Rockville, Md.

Filed Oct. 2, 1970, Ser. No. 77,532

Int. Cl. H01h *85/32*

U.S. Cl. 337—242 **2 Claims**



A dead front electrical blown fuse indicator for all standard cartridge enclosed fuses of both the ferrule and knife-blade types each comprising a casing or tube molded from insulating materials having an indicator lamp and contact terminal connected in series encased within the tube and said tube being opaque as to prevent the lamp and its electrical connections from being visible and yet being sufficiently translucent as to permit the lamp to glow over a wide area so as to be visible at all angles and at great distances from the tube. Resilient conductors electrically connected to said terminal for the lamp and each having a cantilever connection with the tube for causing the free ends of said resilient conductors to have a direct and positive snap-on electrical contact with the outer walls of the terminals of a fuse even when the fuse is subjected to undue vibration or shock. Said tube having sufficient tensile strength so as to prevent the bending or breakage of the tube due to its repeated application to and withdrawals from a fuse.

3,794,949

SOLID STATE MOTOR STARTING APPARATUS

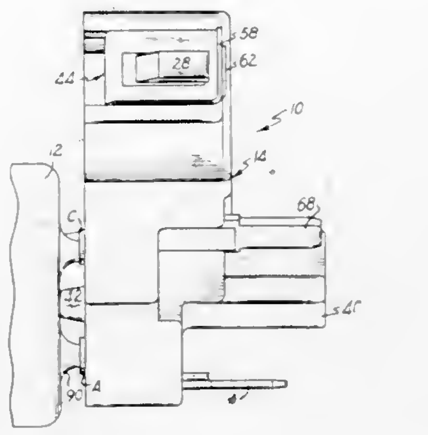
Odd Larsen, Kenyon, R.I., and Carl N. Johnson, Bridgewater, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 1, 1973, Ser. No. 328,553

Int. Cl. H01c *7/04*

U.S. Cl. 338—22 R **15 Claims**

A motor starting switch providing a predetermined time delay before permitting reenergization of a motor upon deenergization thereof comprises a generally cup-shaped casing having an open end adapted to receive a single or dual solid state starting elements. The dual elements are adapted to be coupled in series or parallel electrical circuit relation. An electrically conductive clip is disposed at the open end of the casing and provides electrical contact, serves as a casing half and maintains a mechanical bias on the solid state starting elements. The switch is provided with plug on terminals so that the switch can be directly plugged into a motor for starting thereof.



3,794,950

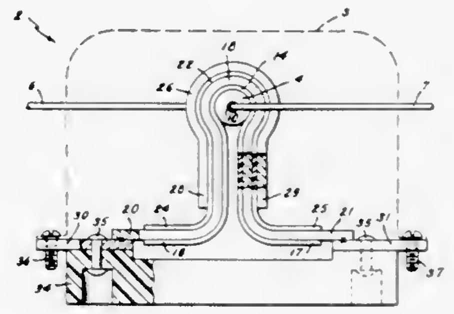
OVERCURRENT PROTECTION SYSTEM AND SENSOR USED THEREWITH

Oliver H. Kilner, Warwick, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 103,406, Jan. 4, 1971, Pat. No. 3,697,863. This application Mar. 13, 1972, Ser. No. 234,257

Int. Cl. H01c *7/04*

U.S. Cl. 338—23 **13 Claims**



An overcurrent sensor adapted to cooperate with a controller to control the power to a load is shown. In the embodiment illustrated, the controller is an electrical switching means to which the overcurrent sensor furnishes a passive signal in the form of circuit resistance to cause the controller to operate to decrease or increase electrical power to the load circuit at desired current values. The overcurrent sensor comprises a PTC (Positive Temperature Coefficient) thermistor or an NTC (Negative Temperature Coefficient) thermistor mounted in heat transfer relation, through a layer of electrical insulation, with a first heater which is electrically connected in series with an electrical load, and a heat sink member mounted in heat transfer relation through a layer of electrical insulation with the series heater to provide means for changing the transient response time of the thermistor to the series heater current. A second heater is optionally mounted in shunt relation to the first heater to provide a means of increasing the steady state current at which the controller operates, above that obtained solely with the first heater while maintaining approximately unchanged the transient response time of the thermistor assembly for corresponding overload currents.

3,794,951

ELECTRICAL CONNECTOR

cling a cooperating insulator block member. The spring member completes an electrical path to a frangible conductive

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3,794,955

CONNECTOR

trical junction when the members are in operative position and to brake it when the members are in inoperative position.

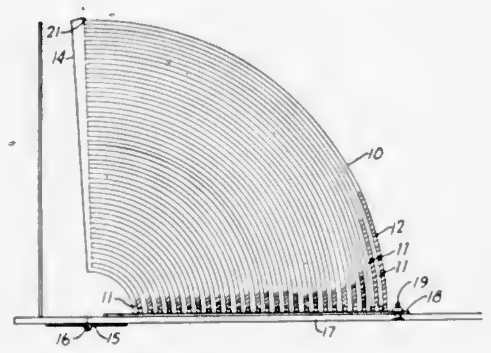
3,794,951
ELECTRICAL CONNECTOR

Raymond Hansen, Elko, Nev., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Mar. 29, 1972, Ser. No. 239,129

Int. Cl. H01r *39/00*

U.S. Cl. 339—4 **4 Claims**



A multi-conductor electrical connector for bridging electrical circuits between a hinged door and the fixed door frame. The connector consists of one or more bare printed circuits in the form of concentric arcs mounted on the door, together with a fixed set of contact members mounted on the door frame such that each fixed contact member is in continuous electrical contact with one of the concentric arcs of the printed circuit.

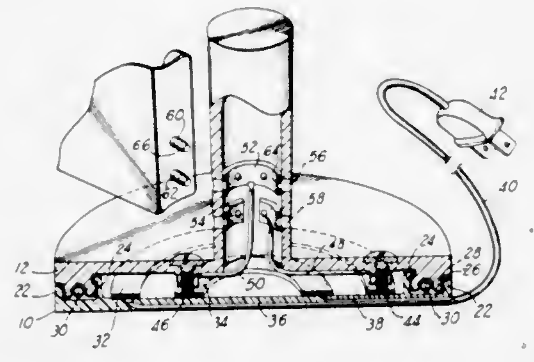
3,794,952
LAZY SUSAN ASSEMBLY

James W. Dowis, 127 Cambridge Ct., Hampton, Ga. 30228

Filed Sept. 26, 1972, Ser. No. 292,392

Int. Cl. H01r *39/00*

U.S. Cl. 339—5 P **12 Claims**



A rotatable platform is provided with a centrally disposed stanchion and a number of electrical kitchen appliances are grouped about the stanchion in a circular array. The platform is rotatably supported from a base about the axis of the stanchion and electrical connection to the appliances may be completed by pushing them inwardly toward the stanchion. An electrical outlet plug and cord extends to the base and a pair of electrical conductor rings and brushes complete the connection between the base and the platform so that the platform may be rotated to any desired position without interrupting the electrical circuit.

3,794,953
ELECTRICAL TERMINAL FOR CONDUCTIVE FOIL

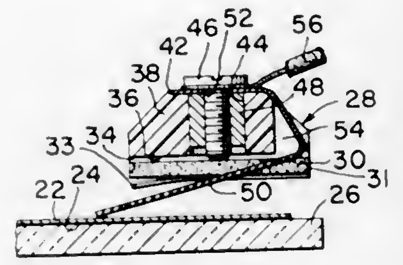
Jack Malin, Beechhurst, N.Y., assignor to Security Instruments, Inc., Bronx, N.Y.

Filed Jan. 22, 1973, Ser. No. 325,562

Int. Cl. H01r *9/10*

U.S. Cl. 339—17 C **7 Claims**

An electrical terminal is disclosed that is adapted to be adhesively retained upon a smooth surface such as glass. The terminal contains a flat generally U shaped spring member encircling a cooperating insulator block member. The spring member completes an electrical path to a frangible conductive tape carried by the glass from an electrically conductive wire held in intimate contact with the spring member by screws.



The aforementioned Abstract is neither intended to define the invention of the application which, of course, is measured by the claims, not is it intended to be limiting as to the scope of the invention in any way.

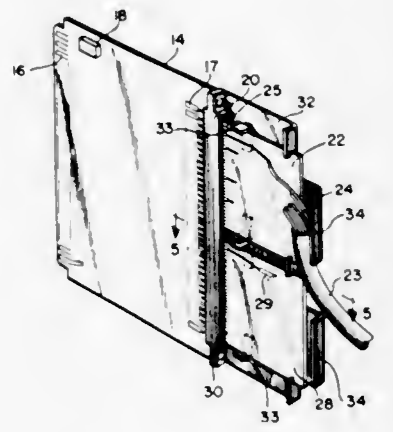
3,794,954
IMPROVED BUS SYSTEM FOR INTERCONNECTING SUBSYSTEMS OF A COMMUNICATION SWITCHING SYSTEM

William A. Reimer, Wheaton, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sept. 11, 1972, Ser. No. 288,201

Int. Cl. H01r *31/08;* **H05k** *1/02*

U.S. Cl. 339—19 **6 Claims**



A bus system arranged such that the number of interconnection points between subsystems or modules are substantially reduced so that interfacing costs likewise are reduced. The multiple for continuing the bus is located on an interface connector card which provides an interfacing between the bus cable and the subsystem or module, so that the continuity of the bus can be maintained, regardless of the system status of any subsystem or subsystems. Normally, with other similar bus systems, the continuity of the bus is disrupted if a subsystem is taken out of service. Furthermore, unlike many other bus systems, the bus can be extended in vertical and/or horizontal directions. The bus system also is such that the bus can be easily terminated by simply inserting a terminator card on the interface connector card, or it can be extended by withdrawing the terminator card and plugging in a bus jumper cable with a terminator card at the last module.

3,794,955
CONNECTOR

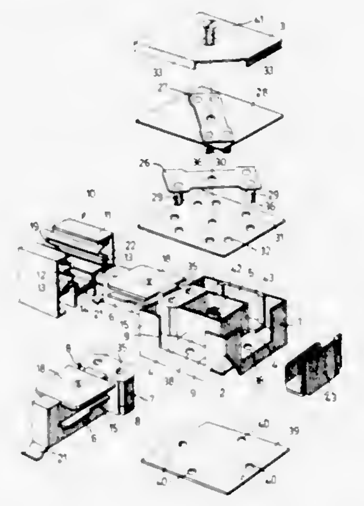
Johannes Kurt Bertrams, Mozartstrasse 30, Hilden, Germany

Filed Oct. 19, 1972, Ser. No. 299,045

Claims priority, application Netherlands, Oct. 27, 1971, 7114769

Int. Cl. H01r *9/00*

U.S. Cl. 339—21 R **5 Claims**



The invention relates to a connector for mechanically and electrically coupling current rails. The connector has a number of coupling members which can each be clamped in a current rail and a number of plates which are electrically insulated from each other. Each plate is connected by means of a plug contact to a lead-through element which is incorporated in the coupling member and which can be clamped against one of the current conductors of the current rail.

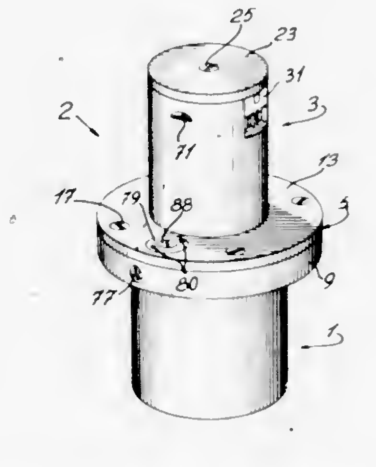
3,794,956
RECESSIBLE ELECTRIC FLOOR OR THE LIKE OUTLET ASSEMBLY

Real Rober Dubreuil, 10660 Papineau St., Montreal, Quebec, Canada

Filed June 30, 1972, Ser. No. 268,065

Int. Cl. H01r *13/46*

U.S. Cl. 339—34 **14 Claims**



A retractable electric floor outlet assembly formed of telescopic inner and outer members, the inner member being movable between an operative extended position to an inoperative retracted position; the members terminating at one end with flat transverse surfaces becoming flush with one another when the members are in inoperative position. A lock is provided to hold the inner member inside the outer one in inoperative position of the assembly. The lock is releasable to allow the inner member to extend out of the outer member under the bias of a spring mounted therebetween. A circuit braker is formed between the two members to make an electrical junction when the members are in operative position and to brake it when the members are in inoperative position. O-ring seals on the members prevent entry of water in the outlet member.

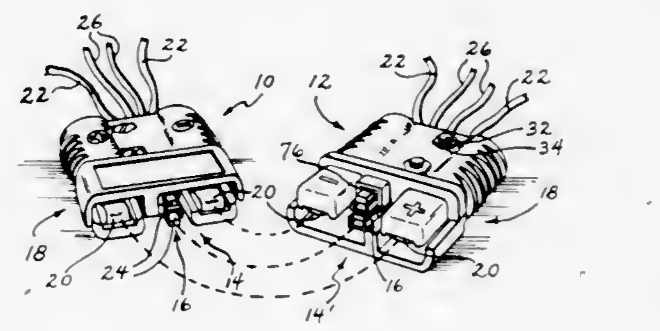
3,794,957
PLURAL-POLED, GENDERLESS ELECTRICAL CONNECTOR

Edward D. Winkler, Reading, Mass., assignor to Anderson Power Products, Inc., Boston, Mass.

Filed Jan. 22, 1973, Ser. No. 325,448

Int. Cl. H01r *25/00*

U.S. Cl. 339—49 R **9 Claims**



A plural-poled, genderless electrical connector having main and auxiliary contacts which telescopically engage with counterpart contacts on an identical connector. The contacts are arranged to provide a make first-break last electrical connection sequence for the main contacts and a make last-break first electrical contact sequence for the auxiliary contacts. A staggered peak insertion force load is obtained from a predetermined physical placement of the contacts within the connector.

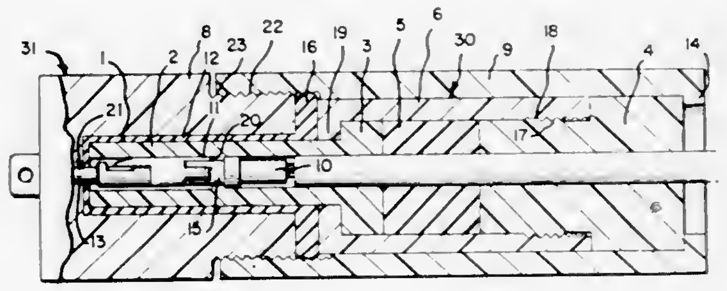
3,794,958
HIGH VOLTAGE CONNECTOR

Douglas Wade Glover, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed June 19, 1972, Ser. No. 263,839

Int. Cl. H01r *13/52*

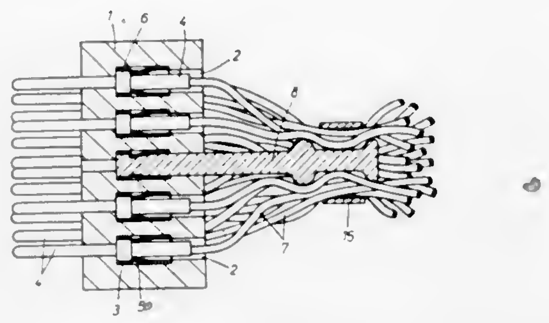
U.S. Cl. 339—94 R **3 Claims**



The disclosure relates to a high voltage connector, capable of being installed in the field, which displays minimal corona problems. The connector includes a pressure seal at both the wire-connector interface and the male connector-female connector interface with the elimination of voids or air pockets during assembly. The connector is installed without requirement for adhesion, potting or bonding and thereby eliminates the need for extreme process controls.

3,794,959
CABLE CONNECTOR WITH STRAIN RELIEF

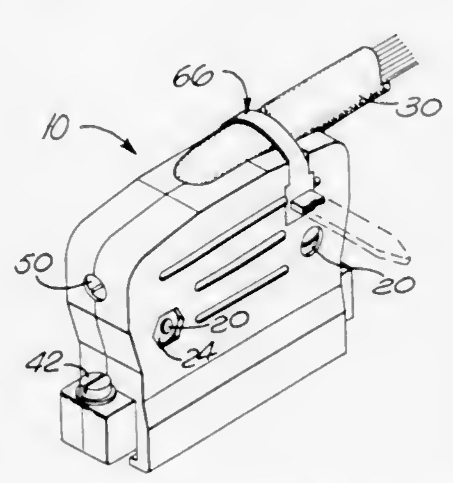
Gerd Kamolz, Stuttgart, Germany, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Nov. 19, 1971, Ser. No. 200,443
Int. Cl. H01r *13/58*
U.S. Cl. 339—103 M **7 Claims**



A cable connector assembly is provided. It incorporates cavities and contact elements for terminals of wires forming a cable and includes a cavity into which a strain relief rod may be inserted. The rod supports a pair of spaced bosses between which a cable tie can be used to hold the wires and thus translate strain on the wires to the strain relief rod.

3,794,960
JUNCTION SHELL

Joseph Sugar, Los Angeles, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Nov. 30, 1972, Ser. No. 310,924
Int. Cl. H01r *13/58*
U.S. Cl. 339—107 **4 Claims**

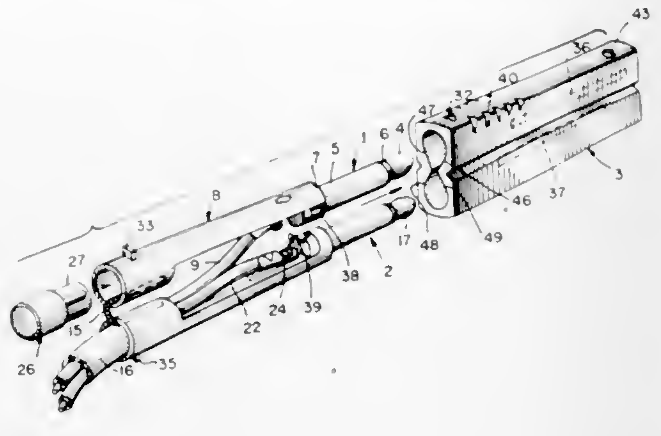


An electrical connector junction shell comprising a housing having an opening therein through which a cable extends. A first clamp engages the cable inside the housing. A second clamp is provided for clamping the cable outside of the housing in a position at a right angle to the axis of the opening. Thus, the cable may extend either straight or at a right angle with respect to an electrical connector mounted in the shell. The clamps may be self-locking cable ties.

3,794,961
ELECTRICAL TWIN PLUG

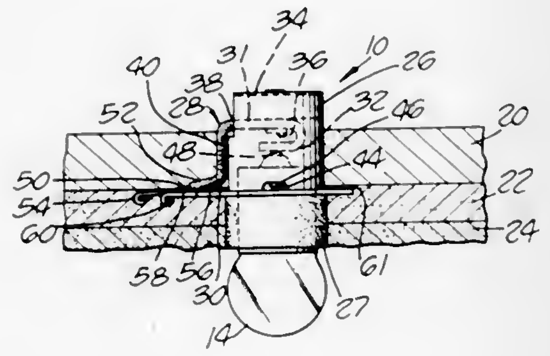
James R. Bailey, Chicago, and Vernon W. Lavigne, Rolling Meadows, both of Ill., assignors to Switchcraft, Inc., Chicago, Ill.
Continuation-in-part of Ser. No. 108,792, Jan. 22, 1971, abandoned. This application May 3, 1971, Ser. No. 139,339
Int. Cl. H01r *13/00*
U.S. Cl. 339—108 R **5 Claims**

An electrical twin plug useful in communication, patching, and for other purposes is constructed with a removable handle which is interlocked with the plug bodies and can be removed to expose the terminals within the plugs merely by pressing inwardly at the interlocking means and pulling axially. The handle and plug bodies can then be reassembled by aligning an interior boss of the handle with a recess in each plug body and pressing the two members together axially until they are interlocked. Assembly screws are thereby eliminated and a very narrow twin plug is obtained which can be mounted side by side with other plugs.



3,794,962
CEILING LAMP MOUNTING

Merlin Wayne Clark, 35426 Carter St., Yucaipa, Calif. 92399
Filed June 2, 1972, Ser. No. 259,228
Int. Cl. H02b *1/02*
U.S. Cl. 339—126 R **8 Claims**



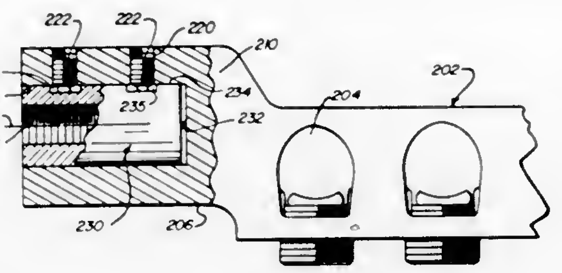
A bayonet type lamp socket for use with several such sockets randomly mounted in a ceiling to provide room lighting or a starlight effect depending on varying intensity, which has a tubular body portion, supporting flange member and a spring contact element mounted in the body portion in providing an external contact for the wiring together of the several sockets.

3,794,963
ELECTRICAL CONNECTOR

James Joseph Cooper, Jr., St. Louis, Mo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 71,772, Sept. 14, 1970, abandoned. This application Apr. 24, 1972, Ser. No. 246,836
Int. Cl. H01r *33/00*
U.S. Cl. 339—242 **6 Claims**

A connector is disclosed which permits electrical connection from a threaded stud such as used on transformer applications for power distribution to a plurality of secondary cables or the like. A conductive pad or adapter threaded at one end to receive the stud is mounted removably to the connector to

position the connector normal to the stud. By providing a removable adapter, the adapter to connector attachment can be released without the necessity of disconnecting any secondary or service conductors from the connector.

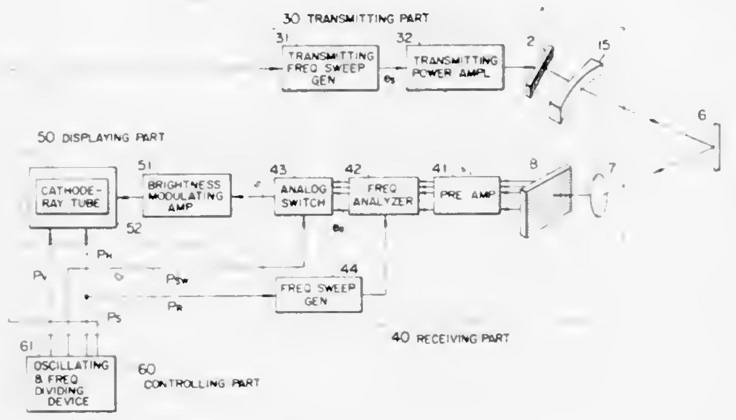


ERRATUM

For Class 340—172 see:
Patent No. 3,794,831

3,794,964
ULTRASONIC IMAGING DEVICE

Kageyoshi Katakura, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed May 25, 1972, Ser. No. 256,849
Claims priority, application Japan, May 30, 1971, 46/37266; Jan. 12, 1972, 47/5192
Int. Cl. G01s *9/66*
U.S. Cl. 340—1 R **9 Claims**

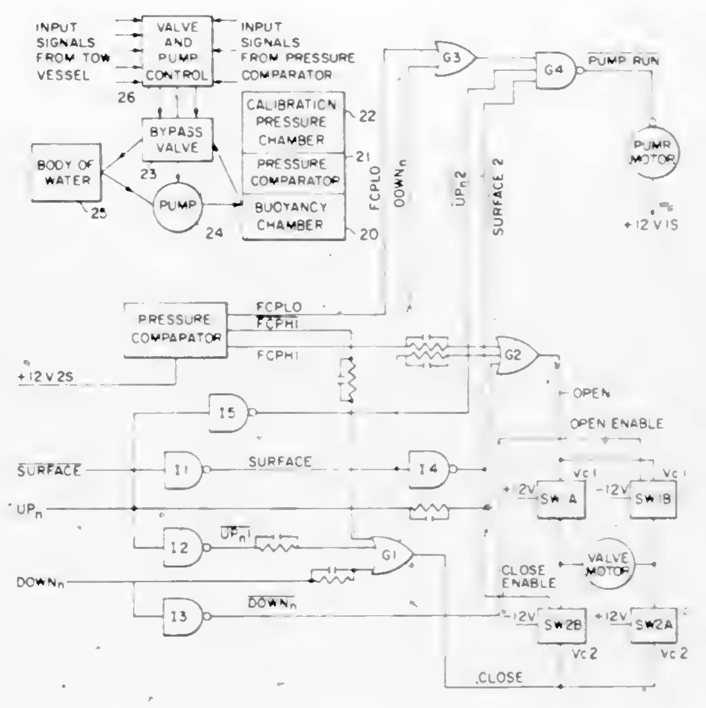


An ultrasonic imaging device comprising a transmitting transducer which is rectilinearly arranged and which transmits acoustic waves of input signal frequencies to a target object in directions corresponding to said frequencies, an acoustic lens which converges reflected acoustic waves from said target object, and a receiving transducer which is divided in a direction orthogonal to the scanning direction of said acoustic lens; each divided part constituting a receiving element, and which receives the acoustic waves converged by said acoustic lens.

3,794,965
MARINE SEISMIC CABLE BUOYANCY SYSTEM

Charles J. Charske, Houston, Tex., assignor to Esso Production Research Company, Houston, Tex.
Filed Sept. 18, 1972, Ser. No. 289,928
Int. Cl. B63b *21/56;* **H01b** *7/12;* **G01v** *1/16*
U.S. Cl. 340—7 PC **20 Claims**

The buoyancy of a marine seismic cable is controlled by transferring water into and out of individual buoyancy units located between sections of the cable. Each buoyancy unit includes a chamber containing a confined gas maintained at a pressure greater than ambient water pressure, a pump for introducing water into the chamber, and means for expelling water as necessary. A control system which permits both manual and automatic adjustments of the cable buoyancy is provided. This makes possible the towing of the cable at essentially constant depths behind an initial cable section fitted with a depth controller.

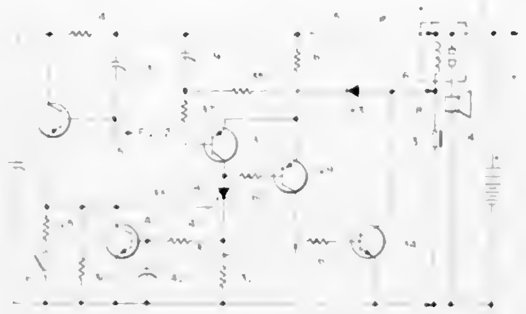


3,794,966
AUTOMATIC VEHICLE CLASSIFICATION AND TICKET ISSUING SYSTEM

Michael M. Platzman, 541 Green Pl., Woodmere, N.Y. 11598
Filed May 1, 1972, Ser. No. 249,068
Int. Cl. G08g *1/015*
U.S. Cl. 340—31 R **17 Claims**

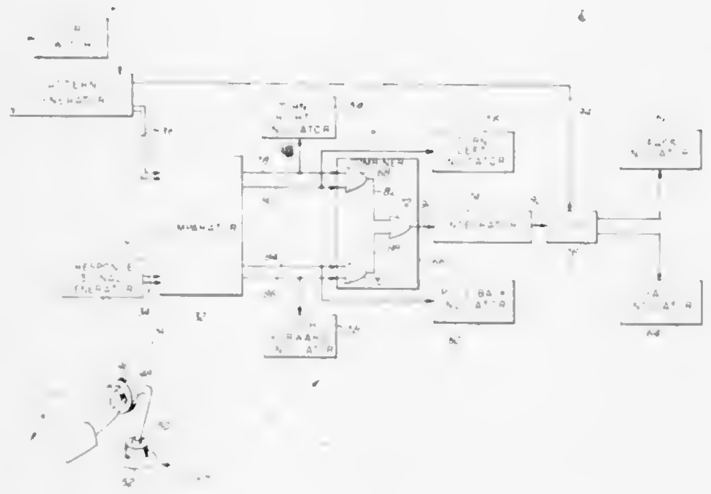
An automatic vehicle classification and ticket issuing system for vehicle toll facilities having a ticket issuing device alongside a discretely identified single lane, single feed entering lane. A detector spaced from the ticket issuing device detects characteristics of the vehicle and based upon these characteristics, a control system classifies the vehicle and has the ticket issuing device issue an appropriate ticket. The control system has a memory capability so that it can store the classifications of a number of successive vehicles and appropriately issue the tickets. Vehicle detection and barrier devices control the flow of traffic to properly space the vehicles for proper operation of the system.

3,794,967
INTRUDER ALARM FOR AUTOMOBILES
Laurence A. Fischer, 20 Arden Dr., Hartsdale, N.Y. 10530
Filed Aug. 3, 1972, Ser. No. 277,684
Int. Cl. B60r *25/10*
U.S. Cl. 340—63 **6 Claims**



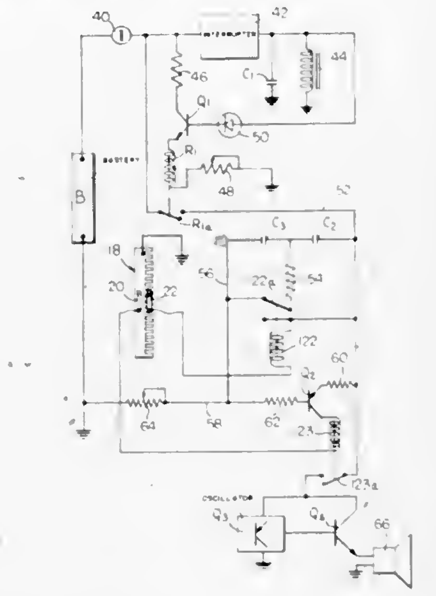
An intruder alarm particularly suited for installation in an automobile. The alarm includes a transistor connected to the A-line of an automobile electrical system in an inverse manner, i.e., emitter-base reverse biased, to detect A-line transients. The sensor can be made sensitive to body contact by wiring to insulated portions of the automobile or to a pressure sensitive capacitor. A latching circuit, controlled by the sensor, actuates the automobile horn whenever the sensor detects an A-line transient or is otherwise disturbed by an intruder. Timing circuits modify the horn action so that an alarm signal is distinguishable from a fault in the horn circuit.

3,794,968
ANALYZER FOR COMPARING THE RESPONSE OF AN ORGANISM TO A REFERENCE PATTERN
Lyle M. Hill, Portsmouth, R.I., assignor to Raytheon Company, Lexington, Mass.
Filed Sept. 11, 1972, Ser. No. 287,960
Int. Cl. G08b *21/00*
U.S. Cl. 340—52 R **29 Claims**



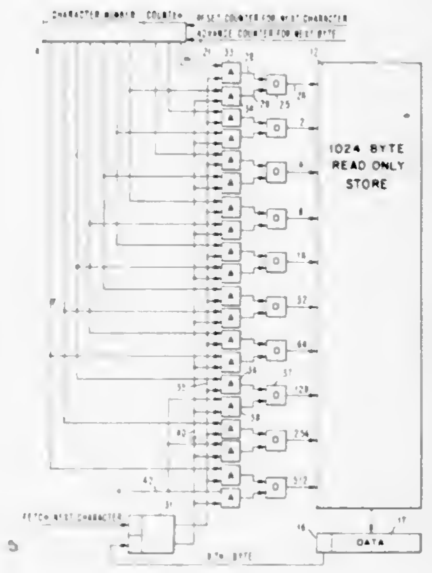
A system for testing the reaction of a human subject to a test stimulus for ascertaining the fitness of the human subject for performing a specific task, in particular, the driving of an automobile under the influence of alcohol. The test utilized in the preferred embodiment of the invention requires a human subject to monitor the magnitude of a quantity (such as the length of a line) which changes at a nonuniform predictable rate utilizing information provided by minimal cues, in particular, a pair of flashing lights which indicate whether the rate of change is being overestimated or underestimated. Circuitry for building a test device, as well as interlocking such a device with the ignition system of an automobile, are also disclosed.

3,794,969
APPARATUS FOR ALERTING VEHICLE DRIVER
Floren R. Klopfenstein, 9754 Diebold, Fort Wayne, Ind. 46825, and Gene J. Duff, Box 307, Willshire, Ohio
Filed Jan. 22, 1973, Ser. No. 325,920
Int. Cl. G08b *21/00*
U.S. Cl. 340—52 R **13 Claims**



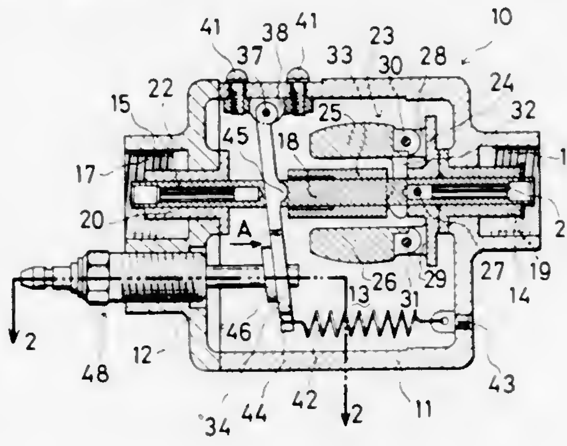
An apparatus for alerting the driver of a vehicle when the steering wheel is not moved in a normal manner in which a detector is provided which detects movements of the steering wheel as little as 2° when the steering wheel is within normal generally straight ahead driving range with the detector operating time delay means which cause an alarm to emit a signal if the steering wheel is not moved at least about 2° in a certain interval of time.

3,794,970
STORAGE ACCESS APPARATUS
Kenneth A. Pearson, Kingston, and Gordon M. Zook, Germantown, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 24, 1972, Ser. No. 309,387
Int. Cl. G06f *7/00, 15/00;* **G11c** *7/00*
U.S. Cl. 340—172.5 **9 Claims**



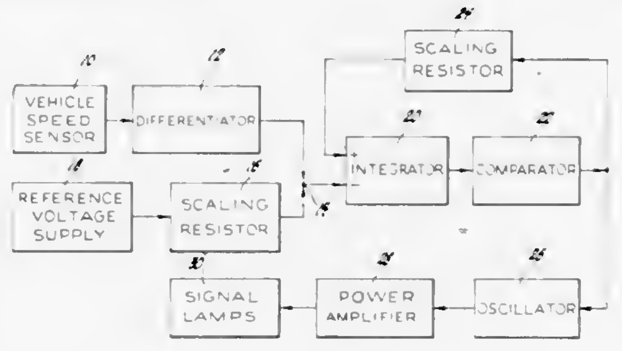
In a circuit for addressing a data store with an address having a portion identifying a character location having several byte locations and a portion identifying one of the bytes within the addressed character location, means is provided for addressing a number of bytes per character that is not an integral power of 2. The two address portions are used conventionally for addressing a first part of the store in which the number of byte positions for each character is an integral power of 2. A second part of the store holds the next byte position for each character and is addressed by the combination of a set of fixed address bits and the character portion of the address used for addressing the first part of the store.

3,794,971
VEHICLE SPEED SENSING DEVICE
Takashi Hida, Toyota; Naoji Sakakibara, Chiryu, and Nobuyuki Hashimoto, Nagoya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya City, Japan
Filed Aug. 25, 1972, Ser. No. 283,760
Claims priority, application Japan, Sept. 10, 1971, 46-070571
Int. Cl. B60q *1/54*
U.S. Cl. 340—53 **10 Claims**



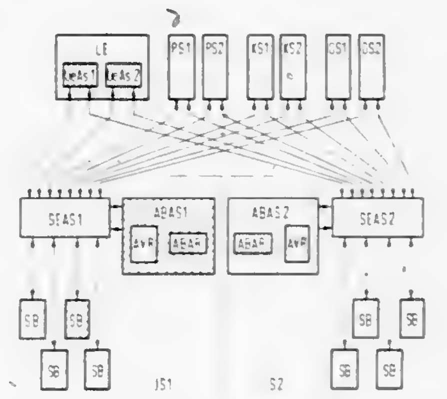
A speed sensing device for a vehicle comprising a governor means movable proportional to vehicle speed, a lever pivotally mounted on a housing of the device at one end thereof so as to oscillate in response to movement of the governor means, permanent magnet means secured to the other end of the lever and reed switching means secured to the housing and adapted for cooperating with the magnet means being displaced with the lever to thereby sense the vehicle speed.

3,794,972
DECELERATION SIGNALING APPARATUS HAVING VELOCITY AND DECELERATION DEPENDENT SIGNAL
David L. Van Ostrom, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 12, 1973, Ser. No. 323,034
Int. Cl. B60q *1/44*
U.S. Cl. 340—62 **2 Claims**



A deceleration signaling apparatus is provided for comparing actual vehicle deceleration with a reference deceleration and, when the actual vehicle deceleration exceeds the reference deceleration, integrates the net difference to generate a signal representing the difference between the actual vehicle velocity and a reference velocity determined by the reference deceleration. Means are provided for energizing signal lamps for providing deceleration warning while this velocity difference exceeds a predetermined constant. The comparator also functions to shift the magnitude of the reference deceleration from a first level to a second level less than the first level when the difference between the actual vehicle velocity and the reference velocity exceeds the predetermined constant so as to extend the duration of the deceleration warning.

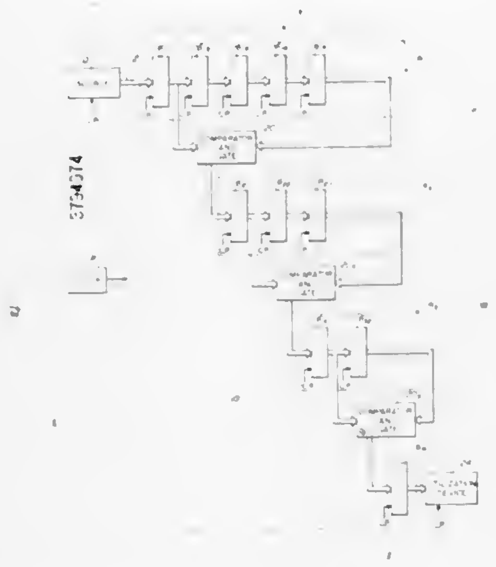
3,794,973
METHOD OF ERROR DETECTION IN PROGRAM CONTROLLED TELECOMMUNICATION EXCHANGE SYSTEMS
Josef Huber, and Ulrich Lenz, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed July 12, 1971, Ser. No. 161,617
Claims priority, application Germany, July 10, 1970, P 20 34 423.4
Int. Cl. G05b *23/02;* **G06f** *11/04*
U.S. Cl. 340—146.1 BE **3 Claims**



A method is described for accomplishing the diagnosis of errors in modular constructed, program controlled data exchange systems. The method contemplates the use of a specific program for error diagnosis. Redundance of the system is increased when several operating units in the system operate together in a cyclic fashion with central memories. When a particular unit of the system is recognized as malfunctioning, it is placed in a diagnosis state, and during the continuance of this state, the malfunctioning unit is active only for special test processes run under the control of the diagnostic program utilizing properly functioning units in the system. In carrying out the dianostic program, the properly functioning units are placed in the diagnostic state either constantly or at least for the duration of an operating cycle, as needed. A central sequence demand control, which receives, assigns and selects sequence requirements sent by the units of the system, is placed in a diagnostic state for running the diagnostic program in conjunction with the malfunctioning system unit now placed in the diagnosis state, along with a properly functioning program control unit for controlling the sequence and a properly functioning storage element. The sequence demand control operates in such a manner during the diagnosis state such that only particular cycle-related sequence demands of those units which are at the time in the diagnosis state are considered.

3,794,974
DIGITAL FLOW PROCESSOR
William Henn, Lexington, and Richard Serwetman, Medford, both of Mass., assignors to Raytheon Company, Lexington, Mass.
Filed Oct. 13, 1972, Ser. No. 297,534
Int. Cl. 328 *37;* **G06f** *7/02*
U.S. Cl. 340—146.2 **3 Claims**

An apparatus is disclosed for determining the maximum (or minimum) of a group of the most recent digital numbers sequentially applied thereto. The apparatus includes a first register R_1, having a number of storage stages. The first register is coupled to a source of the digital numbers. The number of storage stages in such first register is equal to the next integer greater than half the desired number, N, of samples in the group. Each one of a number of succeeding registers, R_2-R_n, is connected to its preceding register by a comparator means.



The inputs of such comparator means are connected to the first and last storage stage in such preceding register. The number of storage stages in each succeeding register, R_2-R_n, is equal to one plus the next integer greater than $(N-2^{N-1})/2^n$ where n is the number of the register.

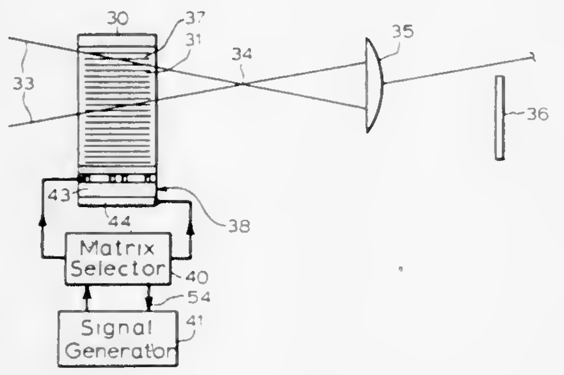
3,794,975
SYSTEM FOR TRANSLATING SOUND-BORNE CHARACTER OR PATTERN INFORMATION INTO OPTICAL FORM

Adrianus Korpel, Prospect Heights, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Jan. 3, 1972, Ser. No. 214,977

Int. Cl. G06k *9/00*

U.S. Cl. 340—146.3 F **22 Claims**



In a light-sound interaction cell, a plurality of spatially separated individual acoustic transducers are selectively energized to form a sound image of a character or other spatial pattern. A beam of light is projected through the light-sound interaction cell, the light being diffracted by the acoustic field established by the transducers. A Bragg image of that field is formed and projected upon an image plane to reproduce optically in the image plane an image of the desired pattern.

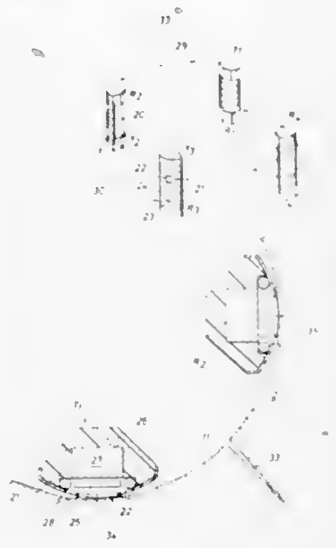
3,794,976
METHODS AND APPARATUS FOR ACOUSTICALLY INVESTIGATING EARTH FORMATIONS USING SHEAR WAVES

Brian E. Mickler, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed May 30, 1972, Ser. No. 257,748

Int. Cl. G01v *1/40*

U.S. Cl. 340—15.5 BH **44 Claims**



In the representative embodiments and modes for practicing the invention disclosed herein, one or more highly-damped acoustic transmitting transducers are arranged for respectively subjecting an adjacent wall surface of a borehole to an almost-instantaneous burst of acoustic energy having a duration which is so short that it may be considered to be a single impulse of acoustic energy in the borehole environment for propagating acoustic shear waves through the formation for reception by a broad-band acoustic receiving transducer disposed adjacent to a remote wall surface of the borehole. The electrical signals produced by these shear waves are processed to obtain measurements which are characteristic of anomalies such as fractures in the earth formation traversed by the acoustic waves.

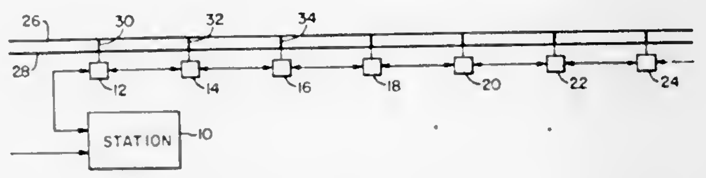
3,794,977
MULTIPLEX CONTROL SYSTEM FOR CONTROLLING THE OPERATION OF A PLURALITY OF STATIONS

George M. Thorne-Booth, Tarzana, Calif., and Robert C. Hoyler, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 762,563, Sept. 25, 1968, Pat. No. 3,593,022. This application Mar. 11, 1971, Ser. No. 123,258

Int. Cl. H04q *11/00*

U.S. Cl. 340—163 R **7 Claims**



A train control signalling system is provided for train speed command signals and train position detection signals which system is operative in a fail-safe manner with a plurality of isolated track circuit blocks. For a given train system, a plurality of wayside stations is provided, with each station being operative through a limited number of conductors to energize a predetermined number of track circuit blocks. Each station includes a crystal controlled signal generator to assure an accurate coherent base frequency control of the communicated signals and provide control signals for the signal communication operation relative to each station to thereby control, in effect as an extension of the crystal control concept, accuracy to each of the associated track circuit blocks.

Up to 32 separated track circuit block locations receive information from each wayside station, for this particular system as described, over a common time division multiplexed signalling system, so it is necessary that each location receive its particular information only at the correct time period. This is accomplished by an appropriate control signal sent for this purpose to each track circuit block location.

3,794,978
SYSTEMS FOR THE TRANSMISSION OF CONTROL AND/OR MEASUREMENT INFORMATION

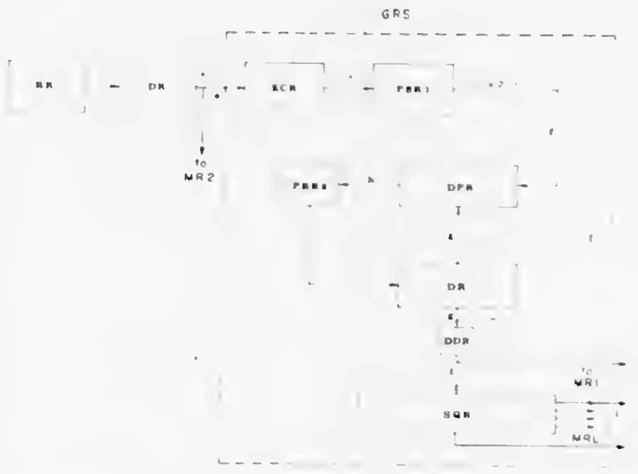
Philippe Staron, Ris Orangis, France, assignor to Compagnie Generale De Geophysique, Paris, France

Filed Aug. 20, 1971, Ser. No. 173,505

Claims priority, application France, Aug. 25, 1970, 7031056

Int. Cl. G08c *25/00;* **H04l** *7/08*

U.S. Cl. 340—170 **10 Claims**



Apparatus for and method of synchronous transmission of digital control and/or measurement information over a high frequency transmission link with high reliability. A predetermined number of known pseudo-random sequences of selected duration are generated synchronous with a low-frequency sinusoidal subcarrier, each representing one datum of digital information. These sequences are used to phase-reversal modulate the subcarrier which in turn modulates a high-frequency carrier. A receiver demodulates the signal, restoring the original series of pseudo-random sequences. The same pseudo-random sequences as are generated in the transmitter are independently generated in the receiver and are phase-locked and individually compared with each restored sequence. When a correlation is found, the datum of information which corresponds to the transmitted pseudo-random sequence is known. A preferred application is to seismic experimentation.

3,794,979
MICROPROGRAMMED CONTROL UNIT WITH MEANS FOR REVERSING AND COMPLEMENTING MICROINSTRUCTIONS

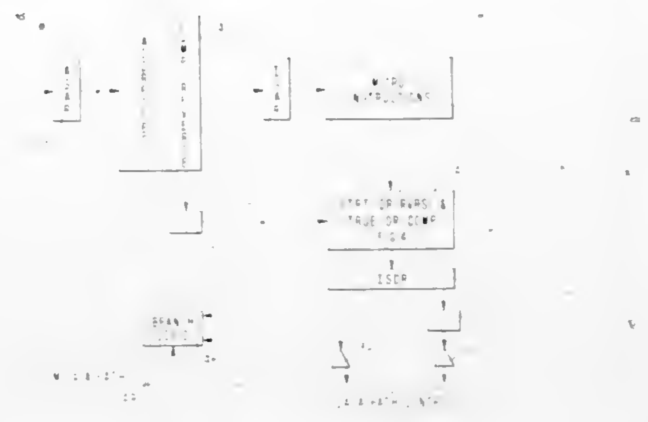
Robert F. McMahon, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 2, 1973, Ser. No. 337,490

Int. Cl. G06f *9/16*

U.S. Cl. 340—172.5 **10 Claims**

A microprogrammed control unit comprising an instruction memory for storing microinstructions and an address memory for storing the addresses of microinstructions which make up a microprogram. Each microinstruction within the instruction memory can be transmitted to an instruction data register in any of various formats. In the preferred embodiment, the microinstruction can be in one of four forms: unchanged; reversed; complemented; or reversed and complemented. Since each microinstruction within the instruction memory



can be transmitted to the data register in any of these four forms, the number of microinstructions that must be stored in the instruction memory is substantially reduced.

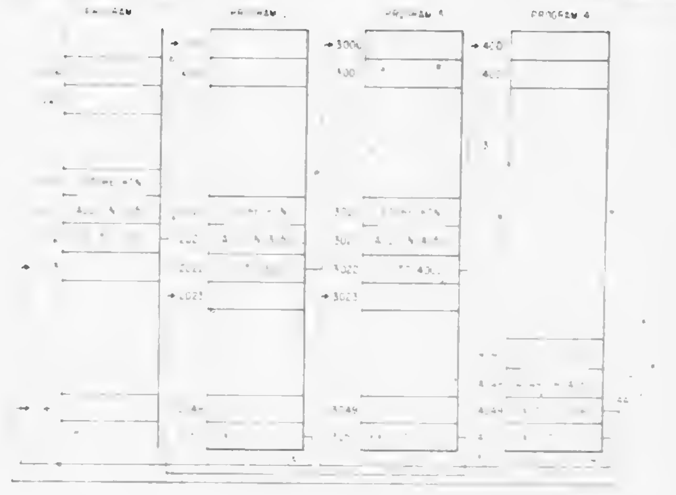
3,794,980
APPARATUS AND METHOD FOR CONTROLLING SEQUENTIAL EXECUTION OF INSTRUCTIONS AND NESTING OF SUBROUTINES IN A DATA PROCESSOR

George R. Cogar, Frankfort, and Arnold G. Huyck, Middleville, both of N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.

Filed Apr. 21, 1971, Ser. No. 136,054

Int. Cl. G06f *9/12*

U.S. Cl. 340—172.5 **14 Claims**



A stack pointer for identifying one of a group of instruction word address registers in a data processor. To fetch new instruction, the stack pointer is examined to identify the instruction word address register to be used. The address contained in this register is then incremented to derive the address of the new instruction to be executed. A branch instruction causes the stack pointer to be incremented and the base address of the new subroutine to be loaded into the instruction word address register newly identified by the stack pointer. An exit instruction causes the stack pointer to be decremented. Exit-and-branch instructions are possible because the stack pointer counts in a closed loop in both directions, there being no "-first" or "last" instruction word address register.

3,794,981
REALTIME COMPUTER OPERATION

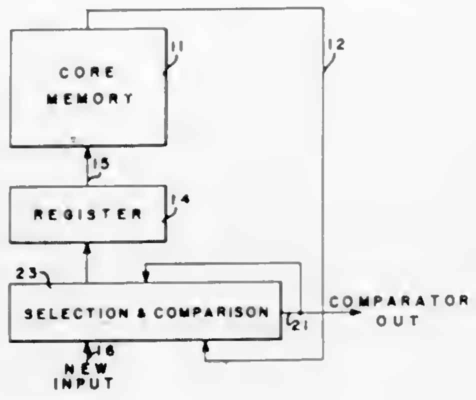
Daniel G. O'Connor, Endwell, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Filed June 2, 1972, Ser. No. 258,997

Int. Cl. G06f *7/04*

U.S. Cl. 340—172.5 **4 Claims**

In realtime systems which are controlled by digital computers, information is updated at prescribed time intervals regardless of whether or not there have been changes in the input values. This specification discloses a system for comparing the new values with the previous values for the same quantities and for reducing or eliminating computations performed by the computer when the values have not changed more than the prescribed amount. A digital comparator compares the old value from memory with the new value being transmitted to memory. When the difference between the two is within a prescribed amount, the output of the comparator signals the computer to ignore that computation and proceed to the next step.



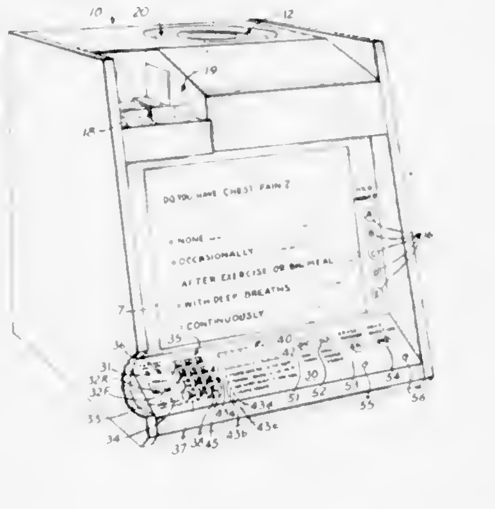
3,794,982
DATA ACQUISITION DEVICE

James B. McCormick; Radoslav T. Mijanovich, both of Hinsdale, and Shunjiro Ohba, Chicago, all of Ill., assignors to Pelam, Inc., Hinsdale, Ill.

Filed Apr. 17, 1972, Ser. No. 244,825

Int. Cl. G06f *3/08, 3/14*

U.S. Cl. 340—172.5 16 Claims



A data acquisition device for recording information supplied by an operator in response to a plurality of questions visually presented to the operator in a predetermined sequence has a slide projector and mirror system for visually displaying a sequence of slides on a screen readily observable by the operator. Each slide bears an image frame having a question, multiple-choice answers, and an identification code photographically recorded thereon. The operator selects and actuates a switch corresponding to the desired answer and the device automatically records information corresponding to the answer on a punch card at the location or column on the card associated with the particular frame being projected. Digital logic is utilized to compare the identification code with the card column to synchronize the visual display with the punch card recording of the answers, as well as to provide safety features which render the operation of the device relatively foolproof.

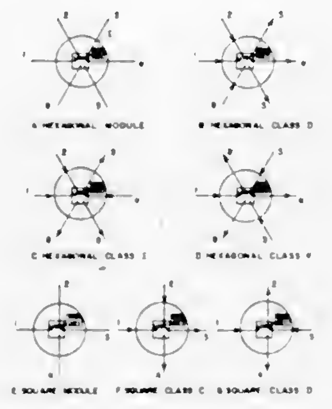
3,794,983
COMMUNICATION METHOD AND NETWORK SYSTEM

Kenan E. Sahin, 711 N. East St., Amherst, Mass. 01002

Continuation-in-part of Ser. No. 186,488, Oct. 4, 1971, which is a continuation-in-part of Ser. No. 819,395, April 25, 1969, abandoned. This application Apr. 17, 1973, Ser. No. 351,872

Int. Cl. H04b *1/38;* **G06f** *13/00*

U.S. Cl. 340—172.5 22 Claims



SQUARE AND HEXAGONAL MODULE CHANNEL ARRANGEMENTS

Communication methods in networks arranged and interconnected so that each memory-logic module of the network system can initiate an information request that will be propagated to the remaining modules in such manner that a module that is to respond to the information request can have its response transmitted along an efficient path to the module that initiated the request, though totally "uninformed" as to the location of the same; application of the networks embodying the communication methods to pattern recognition.

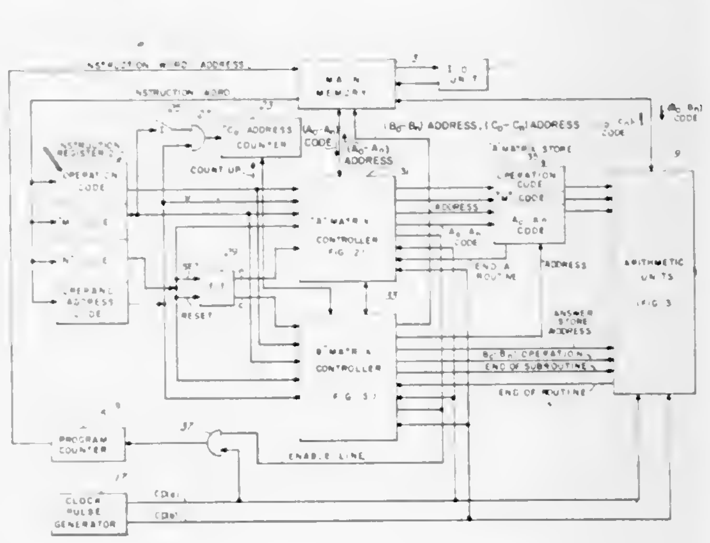
3,794,984
ARRAY PROCESSOR FOR DIGITAL COMPUTERS

Alan J. Deerfield, Newtonville, and Stanley M. Nissen, Billerica, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Oct. 14, 1971, Ser. No. 189,291

Int. Cl. G06f *7/00, 7/38, 9/00*

U.S. Cl. 340—172.5 6 Claims



A digital computer adapted to perform vector and matrix operations without detailed programs is disclosed. The dimensions of matrices or of vectors are entered as codes in reserved fields in successive instruction words and the computer's processor is made to be responsive to such codes to perform any required operations on the matrices or vectors to be processed.

3,794,985
REMOTE CONTROL OF A RECEIVER

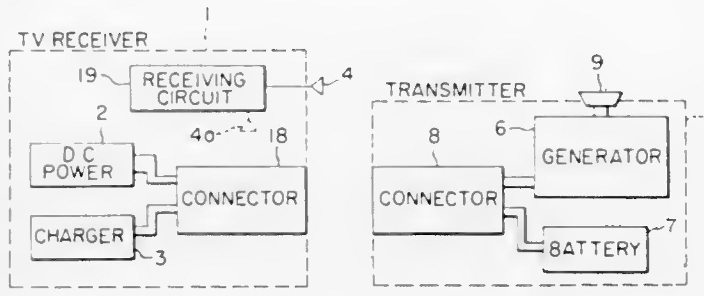
Yoshito Dezaki, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed May 25, 1972, Ser. No. 256,773

Claims priority, application Japan, May 31, 1971, 46/45473

Int. Cl. H04q *1/00*

U.S. Cl. 340—171 R 2 Claims



A wireless remote control for a television receiver. The television receiver or controlled system is provided with means for receiving a remote control signal transmitted by a control transmitter. The television receiver may be controlled by said transmitter either if the transmitter is mounted in the television receiver or is removed therefrom.

3,794,986
PYROELECTRIC ELEMENT OF POLYMER FILM

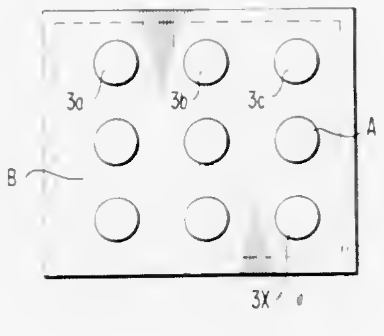
Naohiro Murayama, Iwaki, Japan, assignor to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 10, 1972, Ser. No. 242,448

Claims priority, application Japan, Apr. 8, 1971, 46-21374; Apr. 27, 1971, 46-27159

Int. Cl. G11c *13/02*

U.S. Cl. 340—173 CH 5 Claims



A pyroelectric element comprising a polymer film which can be converted into pyroelectric substance, the polymer film having a pyroelectric distribution along its surface. The process of producing such a film comprising:

poling desired local portions of the film while varying either the temperature and/or the electric potential of localized areas of the film;

a further process of producing such a pyroelectric element wherein a definite pyroelectricity is provided to the surface of the polymer film and then a non-uniform distribution of pyroelectricity is provided by locally reducing or eliminating the pyroelectricity;

a process of storing and reproducing signals in such a pyroelectric element comprising:

storing polarization signals of different pyroelectricities in different portions of such an element, and then

delivering the signals as a polarization change due to a temperature change.

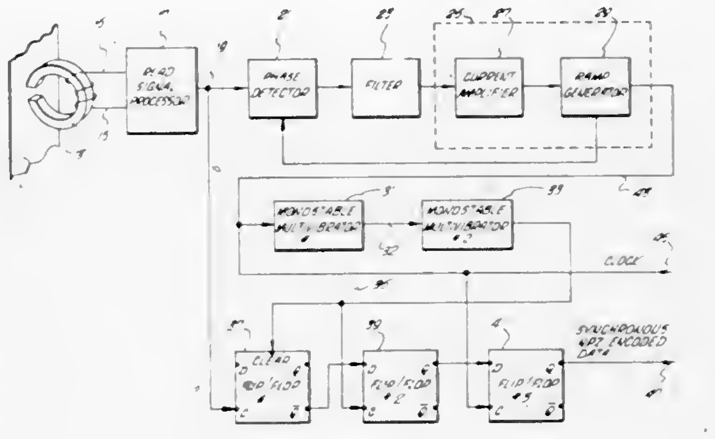
3,794,987
MFM READOUT WITH ASSYMETRICAL DATA WINDOW

Ivan Earl Walenta, Westlake, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 1, 1972, Ser. No. 302,915

Int. Cl. G11b *5/02*

U.S. Cl. 360—43 10 Claims



In the data retrieval system utilizing a recording medium with digital data encoded in accordance with a modified frequency modulation (MFM) encoding scheme, an encoded data detection method and apparatus utilizes an assymetrical data window, the longer time period window for the binary "one" information, to retrieve the recorded data. The length of this longer time period window and its occurrence in time is selectively adjusted until a minimum error ratio for the recovery process is obtained. The MFM encoded data, recovered from the recording medium is detected by the skewable assymetrical data windows, the detected data converted to NRZ encoded digital data to be supplied to an NRZ discrimination circuit and then to a utilization circuit.

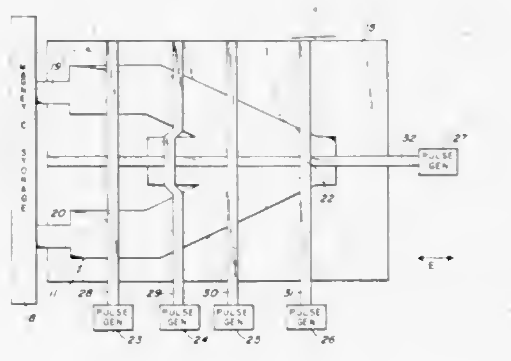
3,794,988
PROGRAMMABLE ELECTROMAGNETIC LOGIC

Ronald S. Entner, 8148 Lake Park Dr., Alexandria, Va. 22309

Filed July 22, 1969, Ser. No. 846,299

Int. Cl. G11c *11/14*

U.S. Cl. 340—174 TF 15 Claims



Performance of logic functions disclosed is accomplished by a thin film programmable configuration that can be programmed to function either as an AND or an OR gate. The arrangement of a plurality of these logic structures into a matrix configuration is accomplished by the use of a thin film technology. The very simple basic thin film logic device is not restricted to use in a matrix configuration but, may be used in any suitable configuration or manner that is especially adaptable to thin film construction.

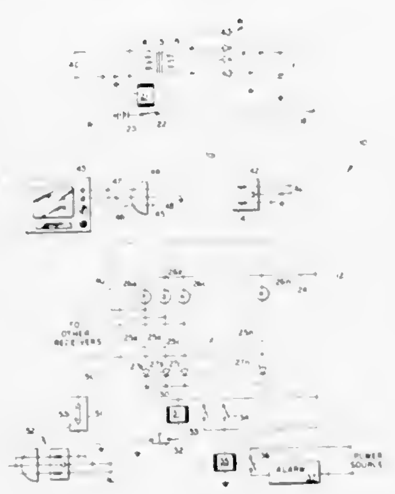
3,794,989
APPLIANCE THEFT ALARM SYSTEM

William T. Manley, 1825 Rockland Dr., S.E., Atlanta, Ga. 30316, and Emory T. Manley, 2898 Parkridge Dr., N.E., Atlanta, Ga. 30319

Filed Apr. 7, 1972, Ser. No. 242,033

Int. Cl. G08b *21/00*

U.S. Cl. 340—280 **9 Claims**



Alarm system for indicating unauthorized disconnection of an appliance such as a TV receiver or the like. The alarm system includes an indication device, such as a lamp, connected in series with a signal apparatus to receive a source of operating power. A shunt circuit including the appliance circuit or other circuit being monitored is connected to bypass the signal apparatus, so that current normally flows through the indication device and the shunt circuit to operate the indication device when the monitored circuit is uninterrupted. Opening of the monitored circuit, such as by unauthorized disconnection of a TV receiver, opens the shunt circuit and permits current to flow through the signal apparatus, initiating an appropriate alarm or other signal. The current flowing through the series circuit may be less than the amount necessary to produce the indication normally present while the monitored circuit is uninterrupted.

3,794,990
SYSTEM FOR DRIVING LIQUID CRYSTAL DISPLAY DEVICE

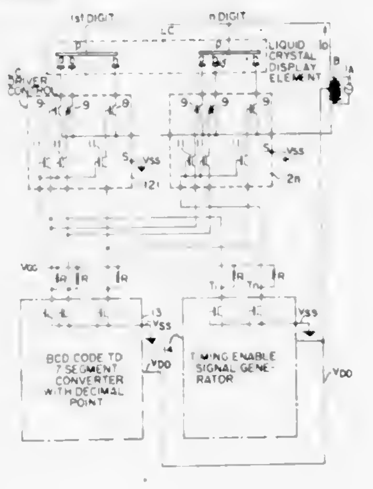
Juji Kishimoto, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 11, 1971, Ser. No. 197,896

Claims priority, application Japan, Nov. 17, 1970, 45-101620

Int. Cl. G08b *5/36*

U.S. Cl. 340—336 **6 Claims**


1st DIGIT
n DIGIT
LC
LIQUID CRYSTAL DISPLAY ELEMENT
DRIVER CONTROL
VSS
VDD
BCD CODE TO 7 SEGMENT CONVERTER WITH DECIMAL POINT
TIMING ENABLE SIGNAL GENERATOR

A liquid crystal display device is driven by alternating current applied thereto by a switching circuit comprising a group of MOS transistors. The transistors are switched in response to display signals applied to the respective gate electrodes by a control circuit such as the output circuitry of a computer.

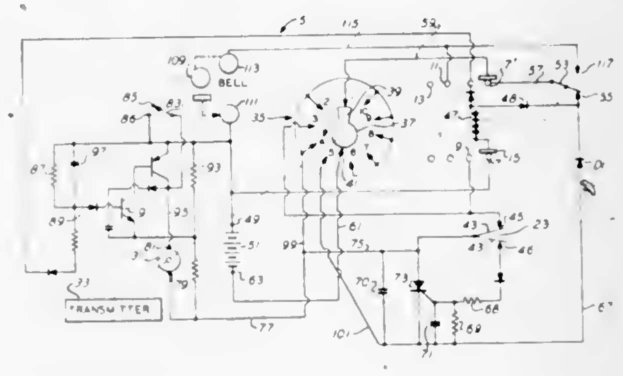
3,794,991
ALARM SYSTEM WITH TIMED EXIT CIRCUIT MEANS

Leo Guthart, Old Westbury, N.Y., assignor to Alarm Device Manufacturing Company, a division of Pittway Corporation, Syosset, N.Y.

Filed Feb. 7, 1972, Ser. No. 224,186

Int. Cl. G08b *13/08, 29/00*

U.S. Cl. 340—409 **7 Claims**



An intruder-activated alarm system operating pursuant to the McCullough loop principle. The system includes a protected circuit incorporating an exit means-controlled switch. Arming means for the protected circuit includes a delay circuit for suspending activation of the protected circuit for a predetermined period. Subsequent to such period, opening and closing of said exit means-controlled switch causes a motor to successively cycle and drive a coded transmitter which sends two rounds of signals to a central office. Subsequent disruption of the protected circuit causes further operation of said motor, which in turn effects transmission of alarm signals to said central office.

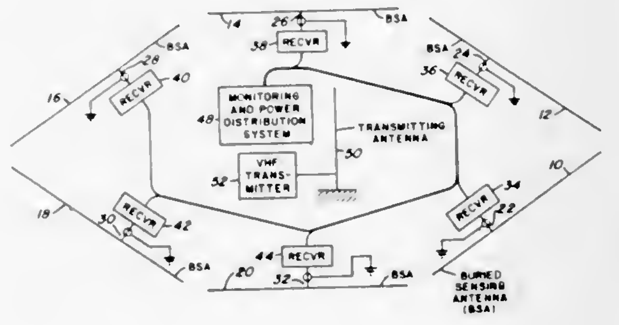
3,794,992
RADIO FREQUENCY INTRUSION DETECTION SYSTEM

John B. Gehman, La Jolla, Calif., assignor to General Dynamics Corporation, St. Louis, Mo.

Filed Feb. 7, 1972, Ser. No. 224,130

Int. Cl. G01s *9/02;* **G08b** *13/26*

U.S. Cl. 343—5 PD **24 Claims**


RECVR
BSA
MONITORING AND POWER DISTRIBUTION SYSTEM
TRANSMITTING ANTENNA
VHF TRANSMITTER
BURIED SENSING ANTENNA (BSA)

In order to detect personnel and other intruding objects in open terrain, one or more long wire antennas are buried in the ground and located orthogonal to a vertically polarized souce of VHF radiation, such as a continuous wave transmitter which feeds an elevated vertical dipole. The intruder couples the radiation to the buried antenna which feeds a receiver. The receiver produces an output responsive to the characteristics of the radiation coupled to the antenna by the intruder to produce an alarm indicative of the presence of the intruder.

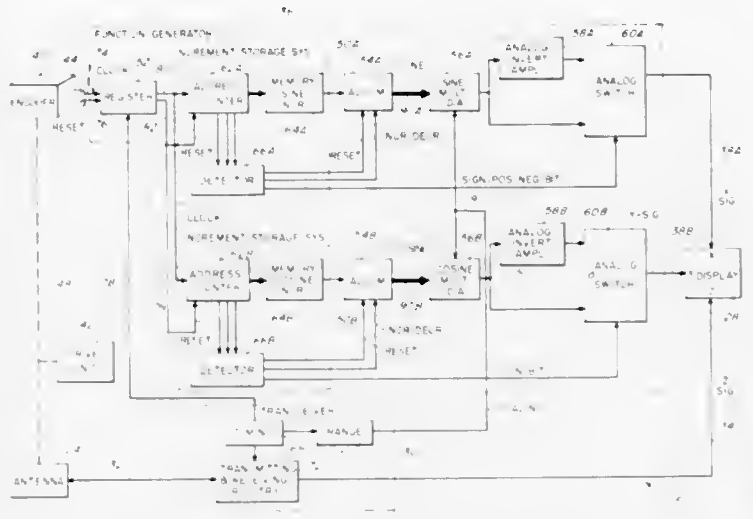
3,794,993
COORDINATE GENERATION SYSTEM

Daryl J. Christopher, Framingham, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed June 22, 1972, Ser. No. 265,121

Int. Cl. G01s *7/12*

U.S. Cl. 343—5 DP **24 Claims**



A coordinate generation system providing deflection signals for the X and the Y coordinates of an oscilloscope type display for producing a line on the display having a direction synchronized with a source of direction. Such a source of direction is typically a radar antenna in which case the line produced on the display is directed in the direction of the antenna such as in a plan position indicator (PPI). The coordinate generation system utilizes a sequence of pulses, each of which indicates a predetermined incremental change in the direction of the source of direction, for addressing a memory which stores corresponding incremental changes in the magnitude of the deflection signals to be applied to the X and to the Y coordinates of the display. The stored increments are accumulated and converted to analog signals suitable for driving the X and the Y coordinate axes of the display.

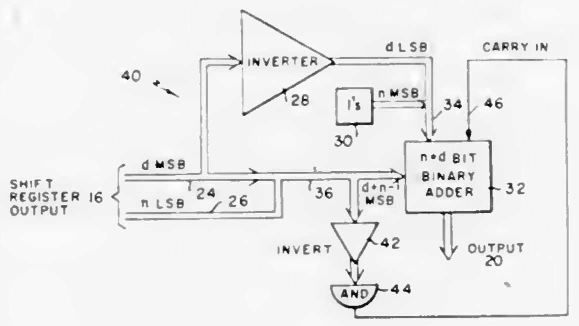
3,794,994
FEEDBACK INTEGRATOR WITH PEDESTAL ELIMINATION

Lawrence M. Leibowitz, Fairfax, Va., and Richard K. Baldauf, Greenbelt, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 29, 1972, Ser. No. 267,316

Int. Cl. G01s *9/06*

U.S. Cl. 343—5 DP **3 Claims**



A digital feedback integrator, especially adapted to provide increased target detection ability in radar systems. The feedback integrator is employed in the signal processing circuitry and compensates for arithmetic truncation errors by advantageously avoiding a final truncation pedestal in the integrating output.

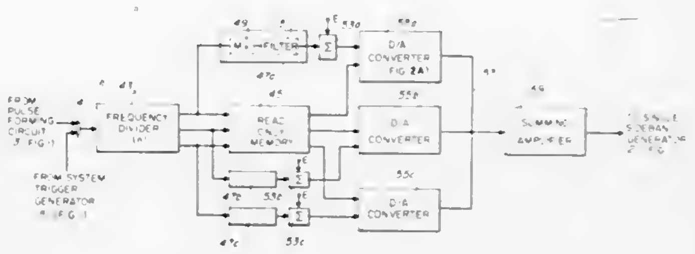
3,794,995
MODULATION SIGNAL GENERATOR AND APPARATUS USING SUCH GENERATOR

Bernard J. Thompson, Concord, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Aug. 2, 1972, Ser. No. 277,187

Int. Cl. G01s *7/28;* **H03k** *13/04*

U.S. Cl. 343—5 DP **3 Claims**



Improved apparatus for generating a time-varying analog signal, as for example, a chirp modulation signal for a pulse compression radar, is shown. The disclosed apparatus incorporates: a memory for storing a set of digital words representative of samples of the time-varying analog signal; at least two digital-to-analog converters having their outputs connected to a common bus; and means for distributing, at a predetermined rate, successively read digital words from the memory to the digital-to-analog converters. Each one of the latter elements is actuated also by a time-varying weighting signal so the frequency spectrum of the desired time-varying analog signal is within predetermined limits.

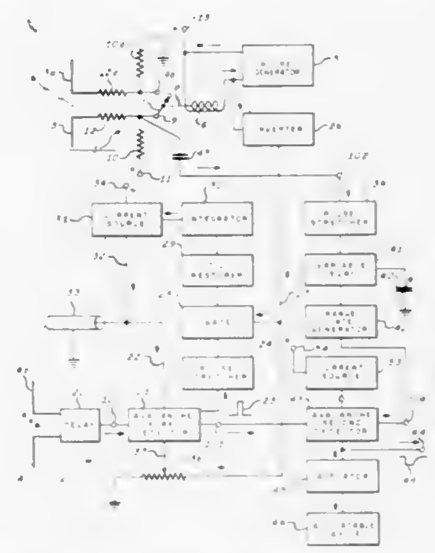
3,794,996
STABLE BASE-BAND SUPERREGENERATIVE SELECTIVE RECEIVER

Kenneth W. Robbins, Wilmington, and Gerald F. Robbins, Lexington, both of Mass., assignors to Sperry Rand Corporation, Great Neck, N.Y.

Filed July 12, 1972, Ser. No. 271,084

Int. Cl. G01s *9/06*

U.S. Cl. 343—7 A **11 Claims**



An energy-amplifying signal-selecting circuit for sampling base-band signals, such as directionally transmitted subnanosecond signals reflected from objects, is arranged to provide a substantial output signal for the operation of apparatus, for example, such as passenger protective or restraining apparatus in the event of a vehicular collision. The system includes a broad band transmission line antenna cooperating with biased semiconductor first and second detector elements, the first detector being located within the transmission line for detecting substantially the total energy of a received baseband echo signal. The second detector provides time selected or gated outputs indicating the presence of the gated echo pulse.

3,794,997

VEHICLE WITH APPARATUS FOR DETECTING POTENTIAL COLLISIONS

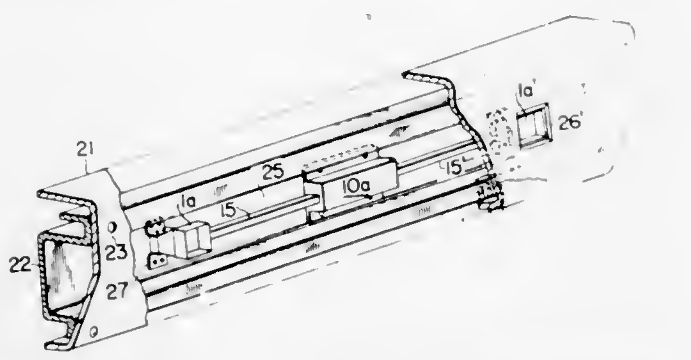
Kazuhito Iwatsuki; Masami Nishibu, and Tohru Toshioka, all of Aichi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan

Filed Mar. 23, 1972, Ser. No. 237,362

Claims priority, application Japan, Sept. 30, 1971, 46-88658; Oct. 7, 1971, 46-91640

Int. Cl. G01s *9/46;* **H01g** *1/32*

U.S. Cl. 343—7 ED **15 Claims**



In a vehicle having an apparatus for detecting potential collisions, a chamber is defined by a horizontal C-shaped reinforcing plate inside the vehicle's bumper. A horn-shaped antenna for transmitting and receiving microwaves and forming part of the detecting apparatus is mounted within the chamber, integrally with a lighting fixture. A waveguide connects the antenna to a cabinet incorporating a microwave circuit and mounted in the chamber.

3,794,998

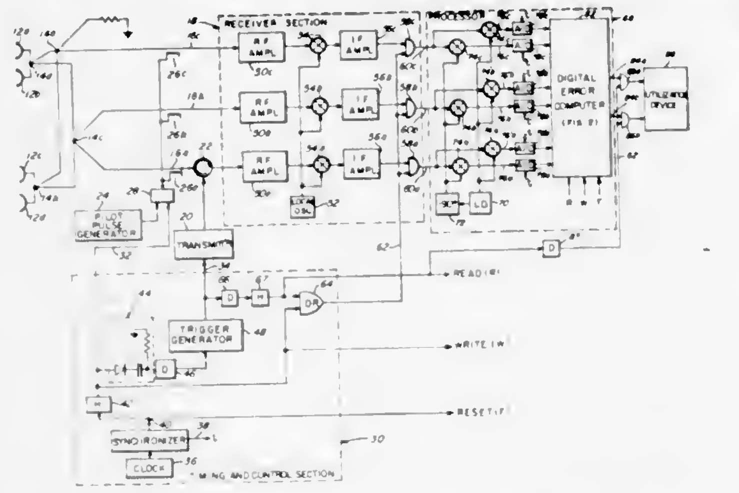
MONOPULSE RADAR RECEIVER WITH ERROR CORRECTION

Earl C. Pearson, Jr., Watertown; Gerrit B. Postema, Wayland; Willard W. McLeod, Jr., Lexington, and Frederick A. Fenzel, Natick, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Apr. 26, 1972, Ser. No. 247,674

Int. Cl. G01s *9/22*

U.S. Cl. 343—16 M **3 Claims**



A monopulse radar receiver is disclosed wherein angle error digital computation apparatus is used for correcting received target return signals in accordance with digital correction signals which are derived within such receiver in response to pilot pulses. Such digital computation apparatus includes means for generating, from pilot pulses, digital signals representative of the pair of quadrature components of video signals developed in the sum channel and each one of the difference channels. The quadrature components associated with the target return signals are then corrected in accordance with the quadrature components associated with the digital correction signals.

3,794,999

NOISE-FIGURE MEASURING CIRCUIT

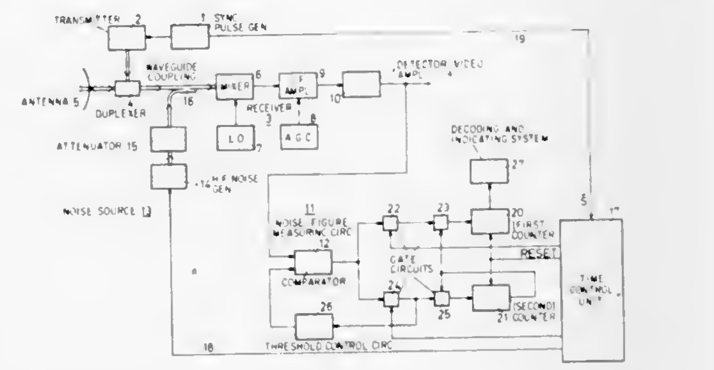
Bernard Gellekink, Hengelo, Netherlands, assignor to N.V. Hollandse Signaalapparaten, Hengelo, Netherlands

Filed Apr. 19, 1972, Ser. No. 245,560

Claims priority, application Netherlands, Apr. 20, 1971, 7105272

Int. Cl. G01s *7/40;* **H04b** *15/00*

U.S. Cl. 343—17.7 **5 Claims**



The invention relates to a noise-figure measuring circuit for the determination of the receiver noise in an operational radar receiver. A comparator is alternatively supplied with the receiver noise and the sum of the receiver noise and the noise signals, which are obtained from a noise source connected to the input of the radar receiver, each pulse repetition period. This comparator converts the noise signals exceeding a certain threshold into standardised noise pulses. The noise-figure measuring circuit comprises two counters which are supplied with the noise pulses derived from the receiver noise and also with the noise pulses derived from the sum of the receiver noise and the noise signals from the noise source. One of the two counters functions as reference counter. If this counter has reached a certain count position, the counters are both blocked, and the ratio of the count positions determines the ratio between the power of the receiver noise and the power of the noise signals from the noise source.

3,795,000

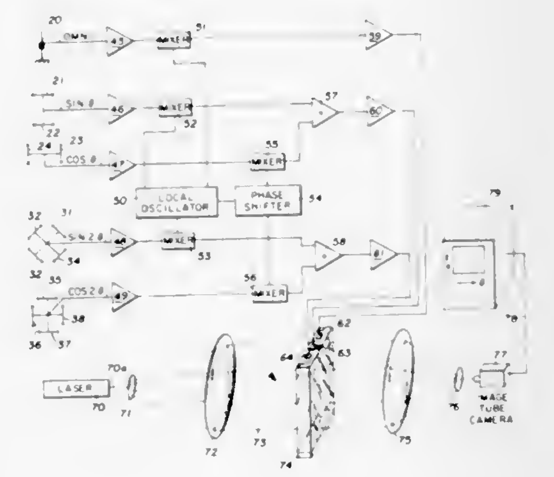
OPTICAL INTERFERENCE DIRECTIONAL SENSING

De Lamar T. Bell, Jr., and Robert E. Lee, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 23, 1966, Ser. No. 605,530

Int. Cl. G01s *3/46*

U.S. Cl. 343—113 **13 Claims**



Disclosed herein is a method and apparatus for determining the frequencies and angles ϕ between a reference direction and radial lines directed from a monitoring station toward radiating field sources of unknown locations by generating an

omni signal, a sin ϕ and cos ϕ signal, and a sin 2ϕ and cos 2ϕ signal to produce three parallel sound waves traveling through a body whose index of refraction is varied in dependence upon the signal from said sources so as to produce an interference pattern in light issuing from said body. The interference pattern is displayed on a two-dimensional basis in which one dimension represents the frequency of a given source and the other dimension represents the angle ϕ between a reference direction and a line extending from the monitoring station to the source.

3,795,001

DIRECTION FINDER WITH BEARING SENSE DETERMINATION

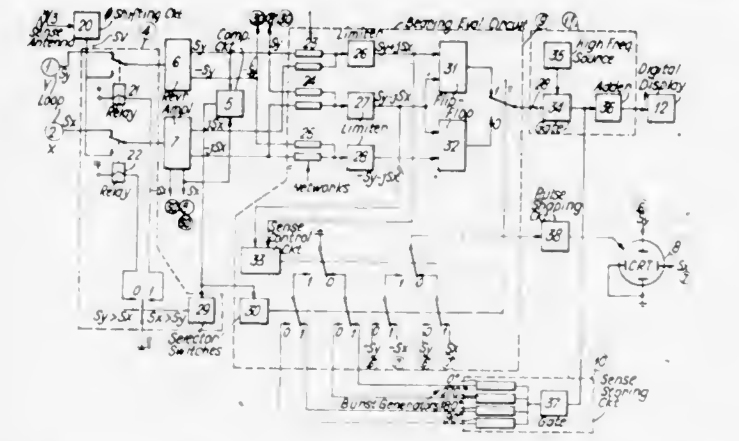
Dag Poppe, Gjettum, and Gunnar Viggo Odegaar, Simensbraten, both of Norway, assignors to International Standard Electric Corporation, New York, N.Y.

Filed May 8, 1972, Ser. No. 251,282

Claims priority, application Norway, May 7, 1971, 1733/71

Int. Cl. G01s *3/12*

U.S. Cl. 343—119 **8 Claims**



A dual orthogonal loop antenna direction finding system having corresponding dual receiver channels and a reference (sense) antenna. The equipment is programmed through at least "Updating," "Bearing," "Sense" and "Display" modes in which receiver channels are phase and gain equalized, bearing readings are taken without regard to ambiguities, and corrected readings are displayed respectively. Bearing readings are stored before display until corrected by a process including relative bearing angle calculation against more than one reference vector.

3,795,002

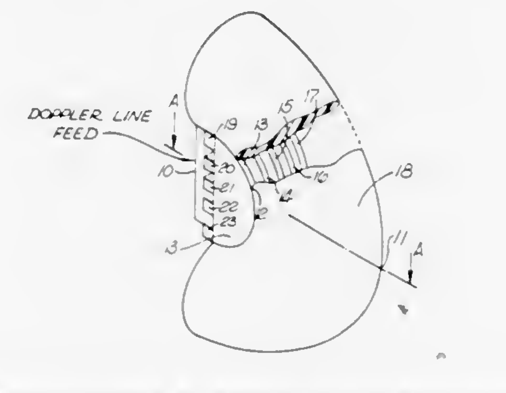
WIDE-ANGLE PLANAR-BEAM ANTENNA ADAPTED FOR CONVENTIONAL OR DOPPLER SCAN USING DIELECTRIC LENS

Jeffrey T. Nemit, Canoga Park, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 18, 1972, Ser. No. 316,240

Int. Cl. H01q *19/06, 3/26*

U.S. Cl. 343—754 **6 Claims**



An antenna involving a plurality of vertical-array-excited parallel-plate coordinate converters feeding a dielectric lens in the shape of a partial toroid. Each corresponding element of the array feeding each parallel-plate coordinate converter is fed in parallel through a wave guide feed arrangement from a Doppler line feed or phased array feed. The radiated beam shape tends to hold its focus and, therefore, has uniform width in elevation over the full azimuth beam width at all useful elevation beam positions.

3,795,003

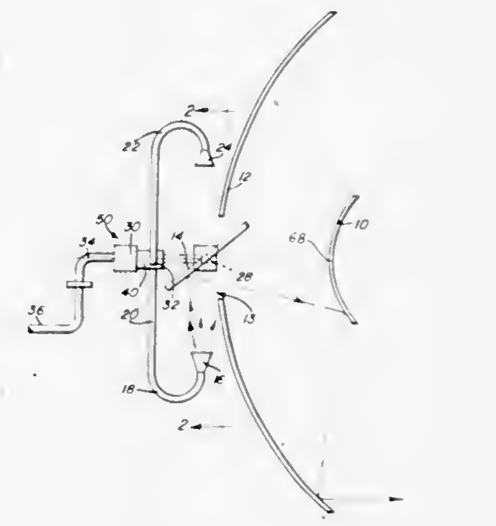
SCHWARZSCHILD RADAR ANTENNA WITH A UNIDIRECTIONAL TURNSTILE SCANNER

James M. Meek, Silver Spring; Clarence F. Ravilious, Rockville, and Whilden G. Heinard, Bethesda, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 26, 1973, Ser. No. 335,875

Int. Cl. H01q *19/14*

U.S. Cl. 343—754 **13 Claims**



A Schwarzschild Antenna includes feed horns respectively mounted on a turnstile waveguide switch. During transmission, as each horn passes a particular arc of rotation, microwave energy is emitted from the horn onto an adjacent mirror that reflects the energy to the antenna reflectors. The result is a unidirectional scan in the far field. A tracking mode of operation is also provided. Either of the two modes of operation may be selected by the operator.

3,795,004

CASSEGRAIN RADAR ANTENNA WITH SELECTABLE ACQUISITION AND TRACK MODES

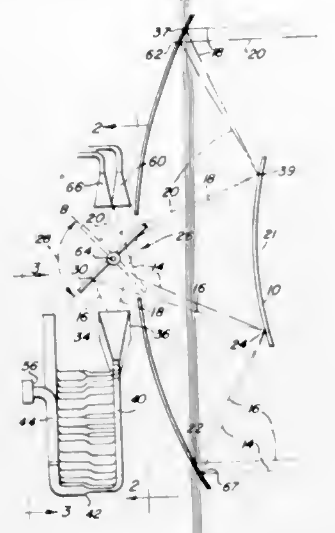
James M. Meek, Silver Spring; Clarence F. Ravilious, Rockville, and Whilden G. Heinard, Bethesda, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 26, 1973, Ser. No. 335,877

Int. Cl. H01g *3/18, 3/20, 3/26*

U.S. Cl. 343—761 **10 Claims**

A Schwarzschild Antenna cooperates with an organ pipe scanner to achieve wide angle sectoral scanning of a high gain pencil beam. A rotatable mirror switches the antenna to conical scanning whereby microwave energy communicates between a nutating horn and reflectors of the Schwarzschild Antenna. During conical scanning, the organ pipe scanner remains unenergized. The mode of operation is selectable by the operator and the system is designed for rapid switching.



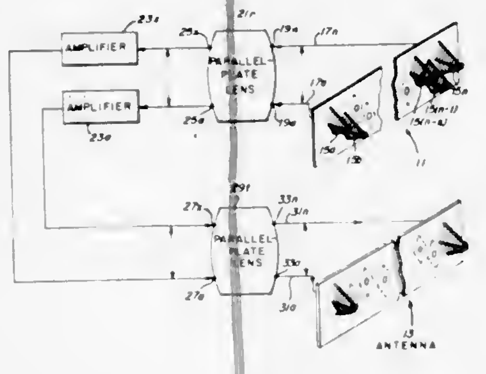
3,795,005
BROAD BAND SPIRAL ANTENNA

George J. Monser, and John R. Ehrhardt, both of Santa Barbara, Calif., assignors to Raytheon Company, Lexington, Mass.

Continuation-in-part of Ser. No. 142,223, May 11, 1971. This application Oct. 12, 1972, Ser. No. 297,112

Int. Cl. H01q *1/36*

U.S. Cl. 343—895 **5 Claims**



Antenna elements for substantially circularly-polarized electromagnetic energy are shown. The disclosed elements, formed on a tapered form having an elliptical cross section, are particularly well suited for use as elements in an antenna array because such a cross-sectional shape permits individual elements to be more closely positioned with respect to each other, thereby raising the frequency of the electromagnetic energy at which grating lobes occur.

In a second embodiment the eccentricity of the tapered form is relatively large, so the greater part of each antenna turn lies in a plane. Such a configuration radiates substantially linearly polarized radio frequency energy.

3,795,006
SEISMIC SHOCK RECORDER AND ANNUNCIATOR SYSTEM

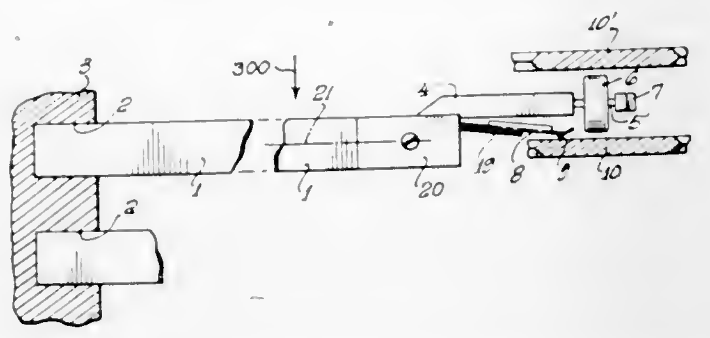
Paul D. Engdahl, 2850 Monterey Ave., Costa Mesa, Calif. 92626, and A. Wallace Russell, Altadena, Calif., assignors to said Engdahl, by said Russell

Filed May 17, 1973, Ser. No. 361,240

Int. Cl. G01d *15/02, 7/00*

U.S. Cl. 346—7 **11 Claims**

A seismic shock recorder and annuciator system for installation in locations where effects of earthquake or other shocks may be of critical importance, e.g., at nuclear power plants. The recorder is a sealed, passive instrument employing a set of resonant cantilever reeds provided with styli which emboss linear records on stationary record plates. The plates, as in my prior U. S. Pat. No. 3,683,397, may have special surface coatings which make detectible the individual excursion peaks of the motion of the styli, permitting the computation of the acceleration vs. time curve, as well as the response spectrum, even though the record plates do not move. The reeds are provided with novel improved damping and support means. The annunciator system signals the deflections of reeds beyond predetermined points, by means of contacts and novel electronic circuitry.



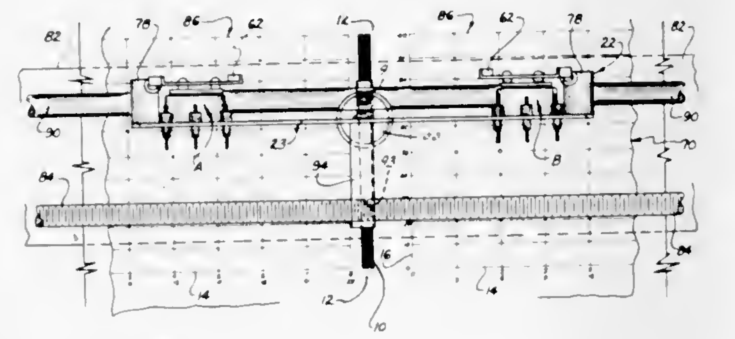
3,795,007
RECORDER WITH CHART LOCATION REFERENCE MEANS

James A. Mohrman, and Howard A. Sanford, both of Columbus, Ohio, assignors to Telmar, Inc., Columbus, Ohio

Continuation of Ser. No. 19,029, March 12, 1970, abandoned. This application Nov. 26, 1971, Ser. No. 202,549

Int. Cl. G01d *9/40*

U.S. Cl. 346—32 **4 Claims**



A recorder characterized by a chart, a chart location reference means, and associated marking means for marking values on said chart. The marking means is enabled to record a variable on the chart in response to the sensing of the chart location reference means by a light sensitive sensor means.

3,795,008
METHOD FOR THE DISCRETE SAMPLING OF CO-RELATED VALUES OF TWO OR MORE VARIABLES

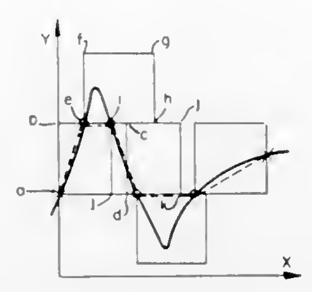
Bjorn Henrik Kolsrud, Nasbydalsvagen 6, S-183 31 Taby, and Claes Olof Ostman, Lillangsgatan 35, S 0161 52 Bromma, both of Sweden

Continuation-in-part of Ser. No. 869,768, Oct. 27, 1969, abandoned. This application Apr. 12, 1972, Ser. No. 243,131

Int. Cl. G01d *9/00;* **H03k** *17/00, 5/00*

U.S. Cl. 346—33 R **10 Claims**

Automatically controlled, discrete sampling of co-related values of two or more variables is triggered in response to at least two of the variables each time any of them reaches or passes predetermined values. The predetermined values are preferably equidistant and may be defined by one or more preceding samples. At the time of each sampling, the particular variable which has triggered the sampling is determined. An apparatus used to practice the method comprises means for triggering sampling of the variables when any of two or more of them is subjected to a predetermined variation in its magnitude, and the apparatus further includes means for supplying the sampled values to indicating, recording, or appropriate controlling means.



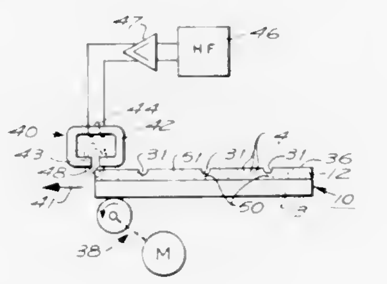
3,795,009
INFORMATION RECORDING METHODS, APPARATUS AND MEDIA USING DEFORMABLE MAGNETIZED MATERIALS

Joseph Gaynor, Arcadia, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed June 17, 1970, Ser. No. 47,064

Int. Cl. G11b *7/00;* **H04n** *5/82*

U.S. Cl. 346—74 M **40 Claims**



A method of recording information provides, in a deformable magnetic recording medium, deformed portions representative of the information, and magnetizes these deformed portions differently from other portions of the magnetic recording medium so as to establish a magnetic record of the information. Apparatus and media for practicing this method are also disclosed.

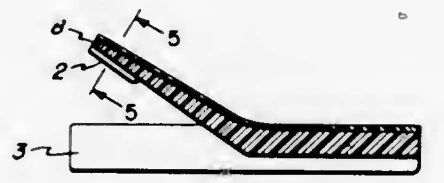
3,795,010
WRITING APPARATUS AND METHOD OF MANUFACTURE

Howard D. Ring, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 14,138, Feb. 25, 1970, abandoned. This application Dec. 29, 1971, Ser. No. 213,761

Int. Cl. G01d *15/24*

U.S. Cl. 346—74 ES **6 Claims**



A stylus and its method of manufacture for forming an image on the recording medium of a printing apparatus having the structure of a substrate upon which a plurality of conductors are etched or printed. The writing edge of the stylus containing the pin electrodes formed by the conductors has a chip of wear resistant or hard material laminated to the substrate to prevent excessive wear of the pin electrodes. Alternately, the substrate itself is made of a wear resistant or hard material to prevent wear of the pin electrodes.

3,795,011
ELECTROSTATIC PRINTING DEVICE

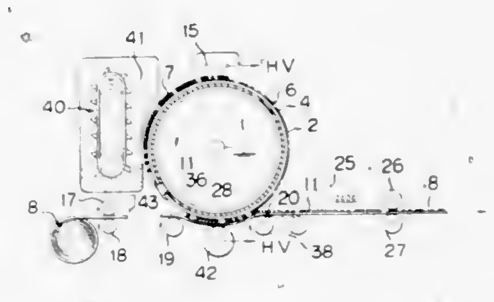
Wasaburo Ohta, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Division of Ser. No. 814,547, April 9, 1969, Pat. No. 3,697,268. This application Feb. 7, 1972, Ser. No. 224,363

Claims priority, application Japan, Apr. 10, 1968, 43/23888

Int. Cl. G06k *15/14;* **G03g** *13/14*

U.S. Cl. 346—74 P **3 Claims**



An electrostatic printing method and device therefor comprising the steps of (1) forming an electrostatic latent image upon a conductive photoreceptor by an electronic photography, (2) developing said image with an electrically insulating and water repellent developing agent and fixing the developed image if necessary, (3) rendering non-image portions (that is the portions having no developing agent attached thereto) hydrophilic with a hydrophilic agent after said fixing, (4) rendering said hydrophilic portions electrically conductive with a conducting agent, (5) electrically charging the electrostatic printing plate, thus obtained thereby binding the charge upon the electrically chargeable or charge retainable and water repellent image portion, (6) transferring said charge upon an electrically insulating body, thereby forming an electrostatic latent image, and (7) developing said electrostatic latent image and if necessary fixing said image thus developed.

3,795,012
FAR SIDE PLOTTER

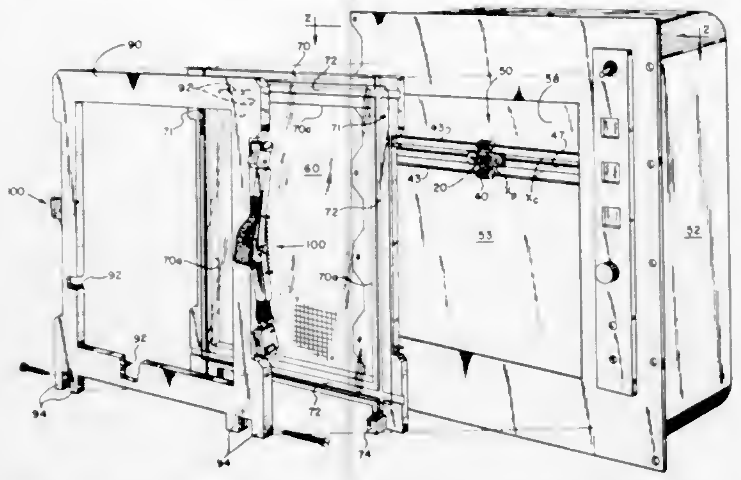
Frank A. Ramrath, Needham, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 31, 1972, Ser. No. 258,154

Int. Cl. G01d *9/40, 15/10*

U.S. Cl. 346—76 R **7 Claims**

Data plotting and display apparatus incorporating a light-passing thermally sensitive recording sheet diaphragmatically supported in the recording field of a positionally controlled thermal stylus. The stylus is provided with means for directing a beam of light on the sheet for visibility on the non-contacted side of the sheet to indicate stylus position in the recording field. The light beam preferably originates from a light bulb that also provides the source of heat for thermal plotting on the recording sheet.



ERRATUM

For Class 360—109 see:
Patent No. 3,794,769

3,795,013

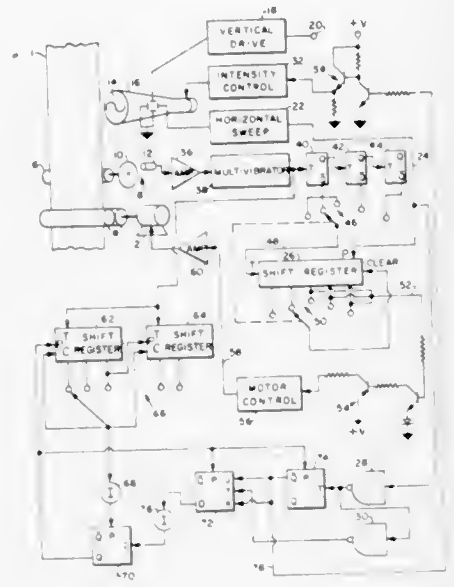
RECORDING SYSTEM HAVING DIGITAL CONTROL FOR CONTROLLING RECORDING MEDIUM MOVEMENT

Richard Eugene McKinley, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 13, 1972, Ser. No. 297,261
Int. Cl. G01d *15/24*

U.S. Cl. 346—136 **10 Claims**

A digital control for a recording system to provide incremental lengths of a recording medium between recordings of an input signal using digital counters to count signals representative of the passage of incremental lengths of the recording medium to either control the blanking and unblanking of a cathode ray tube used to record on the recording medium along a horizontal sweep action recording line or to control the motion of the recording medium after the termination of a recording operation.



DESIGNS

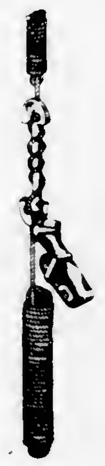
FEBRUARY 26, 1974

230,436

COMBINED ESCAPE APPARATUS AND LINE-BRAKE

Charles A. Clark, 764 N. Madison Ave.,
Los Angeles, Calif. 90029
Filed Aug. 21, 1972, Ser. No. 282,572
Term of patent 14 years
Int. Cl. D2—*02*

U.S. Cl. D2—27

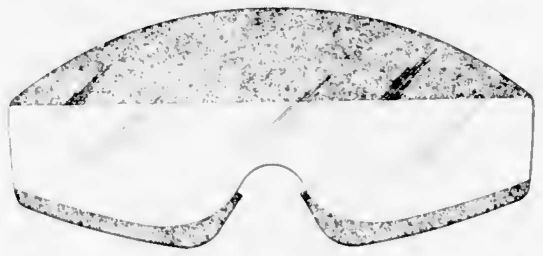


230,437

LENS FOR SKI GOGGLES OR THE LIKE

George R. Rabuse, Sunfish Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 12, 1973, Ser. No. 331,537
Term of patent 14 years
Int. Cl. D2—*03*

U.S. Cl. D2—234

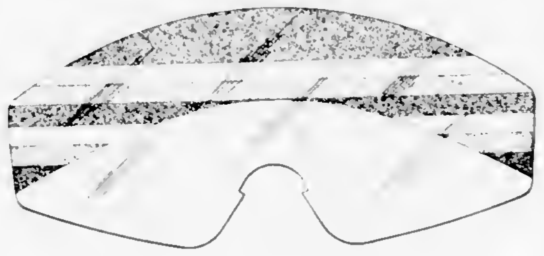


230,438

LENS FOR SKI GOGGLES OR THE LIKE

George R. Rabuse, Sunfish Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 12, 1973, Ser. No. 331,518
Term of patent 14 years
Int. Cl. D2—*03*

U.S. Cl. D2—234

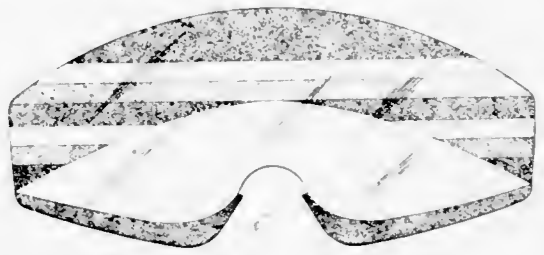


230,439

LENS FOR SKI GOGGLES OR THE LIKE

George R. Rabuse, Sunfish Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 12, 1973, Ser. No. 331,773
Term of patent 14 years
Int. Cl. D2—*03*

U.S. Cl. D2—234

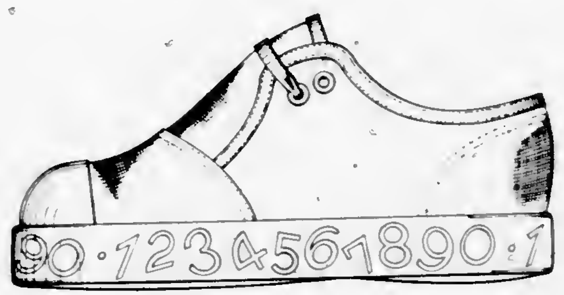


230,440

SPORT SHOE

William J. Cohen, 44 Farnsworth St.,
Boston, Mass. 02210
Original design application Aug. 21, 1972, Ser. No. 282,052. Divided and this application Mar. 5, 1973, Ser. No. 338,097
Term of patent 14 years
Int. Cl. D2—*04*

U.S. Cl. D2—279

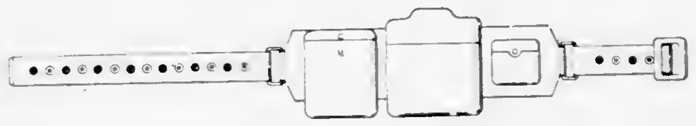


230,441

HUNTER'S BELT

Russell G. Moyer, 402 Deland Drive,
Utica, N.Y. 13502
Filed Feb. 10, 1972, Ser. No. 225,375
Term of patent 14 years
Int. Cl. D2—*07*

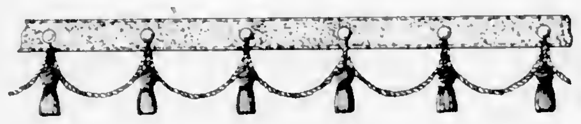
U.S. Cl. D2—381



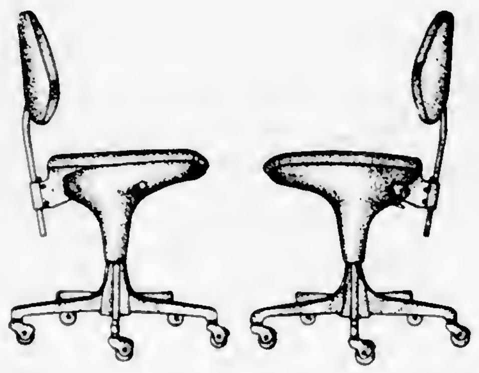
230,447

230,449

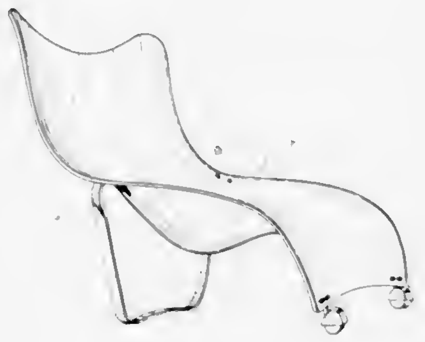
230,442
FRINGE FOR A MUSICAL INSTRUMENT
Rudolph Dopera, 18906 Normandie Ave.,
Gardena, Calif. 90247
Filed Dec. 15, 1971, Ser. No. 208,538
Term of patent 14 years
Int. Cl. D5—*08*
U.S. Cl. D3—32 E



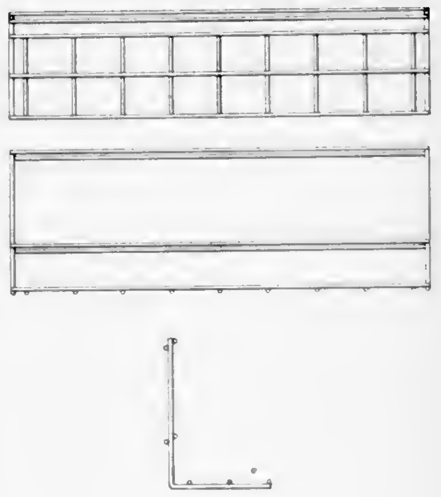
230,443
CHAIR OR SIMILAR ARTICLE
Odo Klose, Wuppertal-Elberfeld, Germany, assignor to Giroflex-Entwicklungs AG, Koblenz, Switzerland
Filed Feb. 4, 1972, Ser. No. 223,800
Claims priority, application Switzerland Aug. 13, 1971
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—30



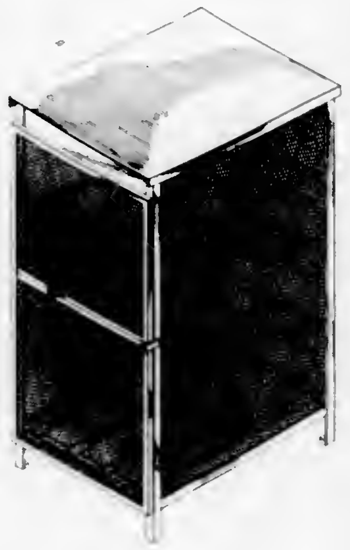
230,444
EASY-CHAIR
Oskar Kogoj, Miren pri Novi Gorici, and Boris Ferlat, Kromberg pri Novi Gorici, Yugoslavia, assignors to Institut pohistvene industrije "Meblo," Nova Gorica, Yugoslavia
Filed Oct. 4, 1971, Ser. No. 186,584
Claims priority, application Yugoslavia Apr. 21, 1971
Term of patent 3½ years
Int. Cl. D6—*01*
U.S. Cl. D6—37



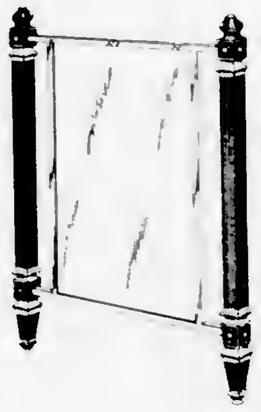
230,445
DISPLAY CASE DIVIDER
Tanner S. Chrisler, 5044 Westminster,
St. Louis, Mo. 63108
Filed Oct. 12, 1971, Ser. No. 188,646
Term of patent 7 years
Int. Cl. D6—*06*
U.S. Cl. D6—85



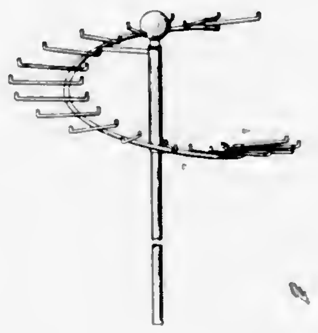
230,446
STORAGE CABINET FOR GAS CYLINDERS
Melvin E. Price, Warsaw, Ind., assignor to Price's Gas Equipment, Inc., Columbia City, Ind.
Filed Apr. 27, 1972, Ser. No. 248,346
Term of patent 7 years
Int. Cl. D6—*04*
U.S. Cl. D6—186



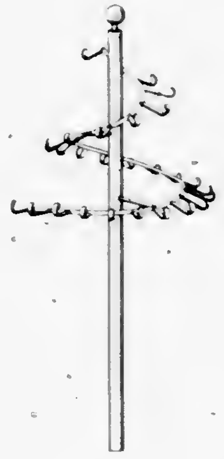
230,447
END SUPPORT FOR A GARMENT DISPLAY RACK
Maurice Cohen, 3580 NW. 52nd St.,
Miami, Fla. 33142
Filed Aug. 7, 1972, Ser. No. 278,592
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—193



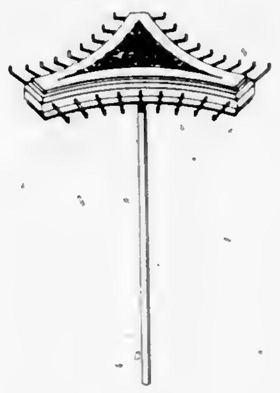
230,448
ARTICLE HOLDER FOR A DISPLAY RACK
Maurice Cohen, 3580 NW. 52nd St.,
Miami, Fla. 33142
Filed Apr. 7, 1972, Ser. No. 242,279
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—194



230,449
ARTICLE HOLDER FOR A DISPLAY RACK
Maurice Cohen, 3580 NW. 52nd St.,
Miami, Fla. 33142
Filed Apr. 7, 1972, Ser. No. 242,280
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—194



230,450
ARTICLE HOLDER FOR A DISPLAY RACK
Maurice Cohen, 3580 NW. 52nd St.,
Miami, Fla. 33142
Filed Apr. 7, 1972, Ser. No. 242,282
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—194

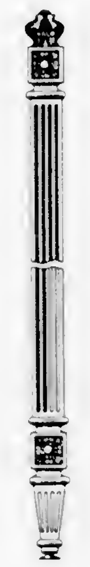


230,457

230,460

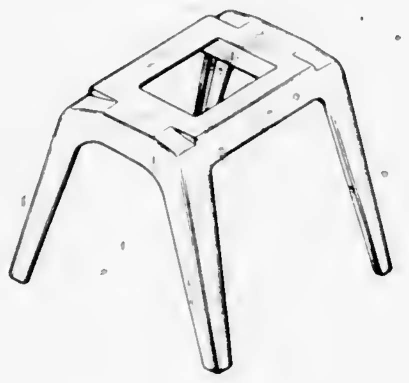
230,451
END POST FOR A GARMENT DISPLAY RACK

Maurice Cohen, 3580 NW. 52nd St.,
Miami, Fla. 33142
Filed Aug. 7, 1972, Ser. No. 278,591
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—195



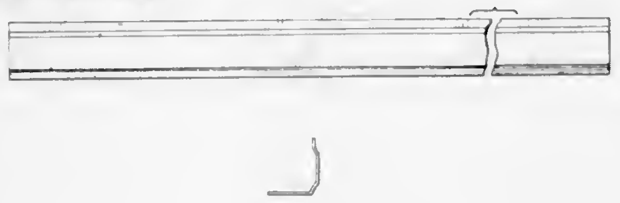
230,452
CHAIR BASE OR SIMILAR ARTICLE

Roy E. Jennings, Temple, Tex., assignor to Royal Seating Corporation, Cameron, Tex.
Filed July 3, 1972, Ser. No. 268,848
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—196



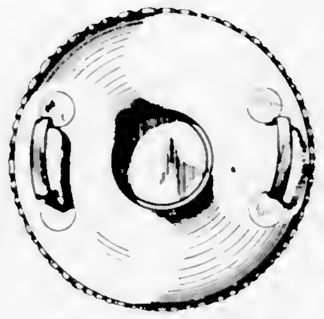
230,453
BED RAIL

George M. Harris, Chicago, Ill., assignor to Harris-Hub Company, Inc.
Filed Sept. 25, 1972, Ser. No. 291,784
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D6—198



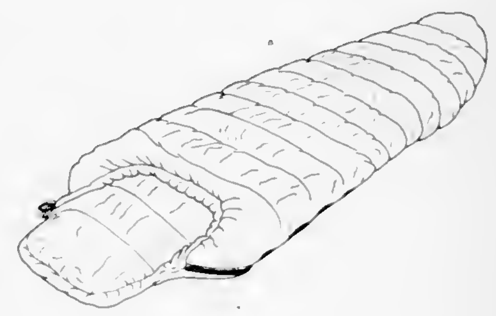
230,454
CUSHION

Ray N. Thompson, 4096 West 5010 South,
Kearns, Utah 84118
Filed Aug. 26, 1971, Ser. No. 175,414
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201



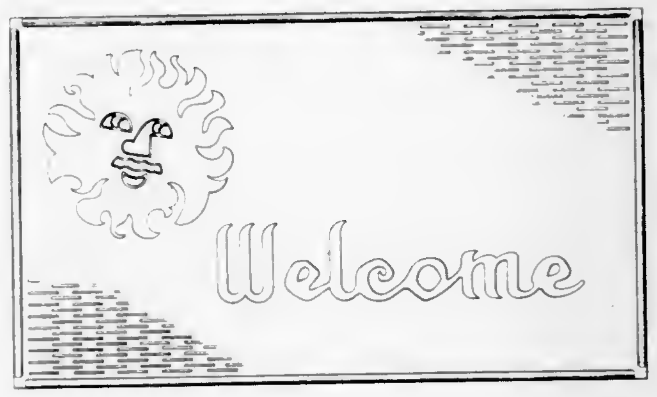
230,455
SLEEPING BAG

Harry E. Hunt, Boulder, Colo., assignor to Alpine Designs, Inc., Boulder, Colo.
Filed Aug. 21, 1972, Ser. No. 282,347
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D6—201



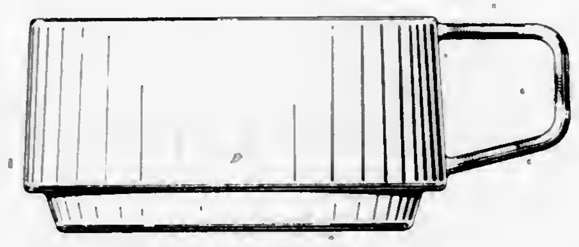
230,456
FLOOR MAT OR THE LIKE

Henry L. White, 24 Livingston St.,
Lincoln, R.I. 02865
Filed Dec. 29, 1971, Ser. No. 213,800
Term of patent 7 years
Int. Cl. D6—*11*
U.S. Cl. D6—212



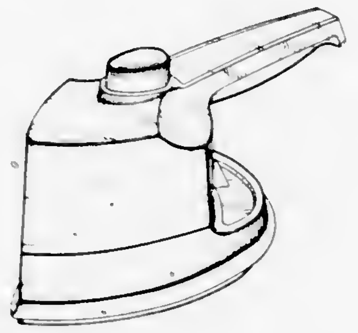
230,457
DRINKING CUP

Robert F. Bateman, St. Paul, Minn., assignor to Plastics, Inc., St. Paul, Minn.
Filed Aug. 18, 1971, Ser. No. 172,963
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—9



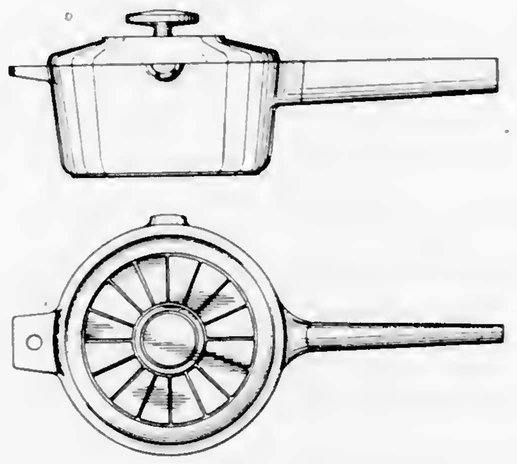
230,458
IRON

Richard B. Hall, Glen Ellyn, and Norman A. Steinkamp, Chicago Heights, Ill., assignors to Sunbeam Corporation, Chicago, Ill.
Filed May 26, 1972, Ser. No. 257,488
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—20



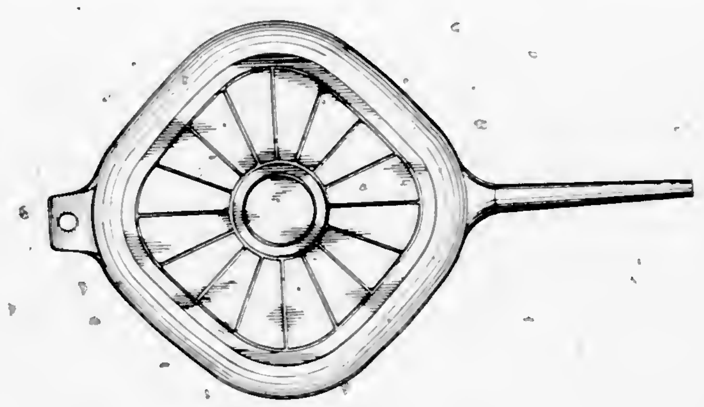
230,459
COVERED SAUCEPAN

Gerald Gulotta, New City, N.Y., assignor to J. C. Penney Company, Inc., New York, N.Y.
Filed Apr. 26, 1972, Ser. No. 247,922
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—95



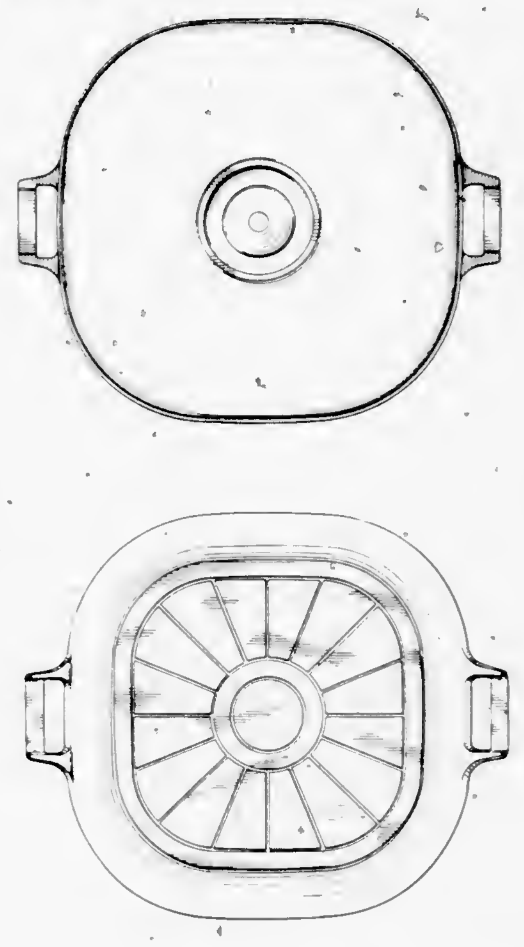
230,460
FRY PAN

Gerald Gulotta, New City, N.Y., assignor to J. C. Penney Company, Inc., New York, N.Y.
Filed Apr. 26, 1972, Ser. No. 247,923
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—95



230,461
COVERED PAN

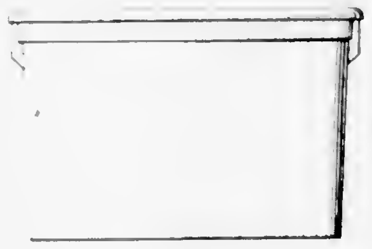
Gerald Gulotta, New City, N.Y., assignor to J. C. Penney Company, Inc., New York, N.Y.
Filed Apr. 26, 1972, Ser. No. 247,921
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—97



230,462
BUCKET

Cecil Renou, Johannesburg, Transvaal, Republic of South Africa, assignor to Renou Plastics (Proprietary) Limited, Isando, Transvaal, Republic of South Africa
Filed Nov. 12, 1971, Ser. No. 198,502
Term of patent 14 years
Int. Cl. D7—*05*

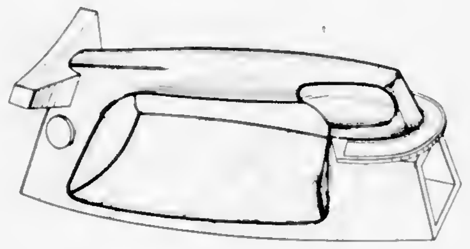
U.S. Cl. D7—187



230,463
ELECTRIC IRON HANDLE

Robert O. Ernest, Oak Park, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Jan. 17, 1972, Ser. No. 218,645
Term of patent 14 years
Int. Cl. D7—*05*

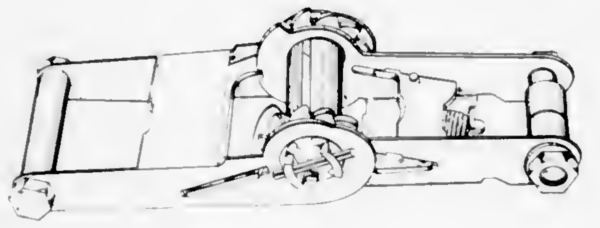
U.S. Cl. D7—204



230,464
WEB BUCKLE

James G. Gale, 9811 Lee Court, Leawood, Kans. 67855
Filed Mar. 13, 1972, Ser. No. 234,455
Term of patent 14 years
Int. Cl. D8—*05*

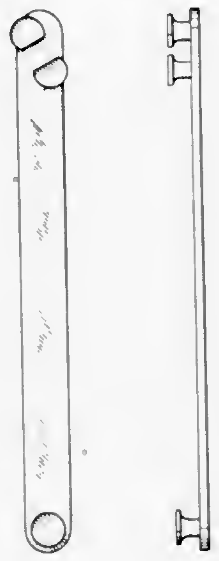
U.S. Cl. D8—44



230,465
HALYARD SHORTENER

Henry W. Lange, Waretown, N.J. (R.F.D. 1, 115 Bloomfield Road, Barnegat, N.J. 08005)
Filed June 13, 1972, Ser. No. 262,278
Term of patent 14 years
Int. Cl. D8—*05*

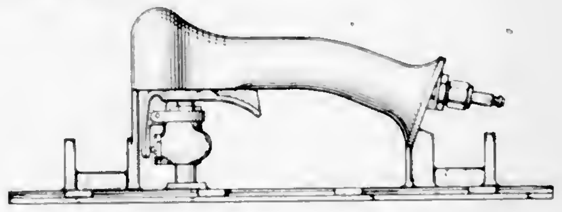
U.S. Cl. D8—44



230,466
WALL WASHING TROWEL

Maurice H. Miller, Oak Park, Ill., assignor to Hild Floor Machine Co., Inc., Chicago, Ill.
Filed Nov. 18, 1971, Ser. No. 200,278
Term of patent 14 years
Int. Cl. D8—*05*

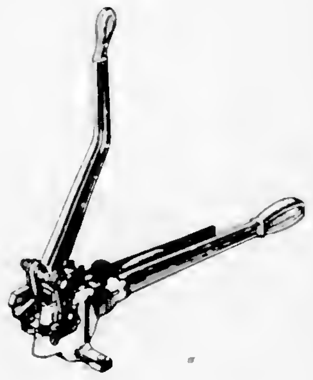
U.S. Cl. D8—45



230,467
MULTIPURPOSE BAND METAL FABRICATING TOOL

Karl A. Bohn, 109—16 222nd St., Queens Village, N.Y. 11429, and Francis Shaw, East Hampton, N.Y.; said Francis Shaw assignor to Karl A. Bohn
Filed July 3, 1972, Ser. No. 268,652
Term of patent 14 years
Int. Cl. D8—*05*

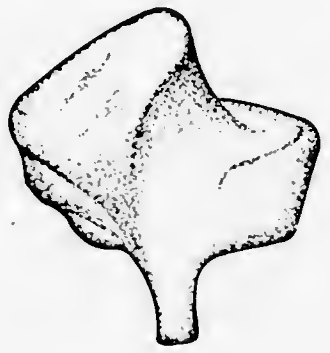
U.S. Cl. D8—55



230,468
HANDLE FOR A SCRIBING TOOL OR THE LIKE

Geoffrey Fairbairn, 24 Chesterton Towers, Chapel St., Cambridge, England
Filed Nov. 16, 1971, Ser. No. 199,404
Claims priority, application Great Britain May 21, 1971
Term of patent 14 years
Int. Cl. D8—*05*

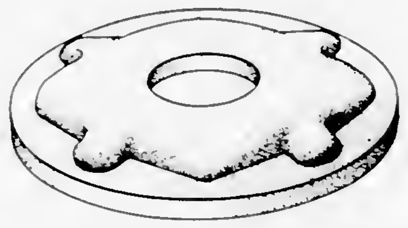
U.S. Cl. D8—107



230,469
WASHER DEVICE

Richard L. Reynolds, Carpentersville, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.
Filed Aug. 5, 1971, Ser. No. 169,580
Term of patent 14 years
Int. Cl. D8—*08*

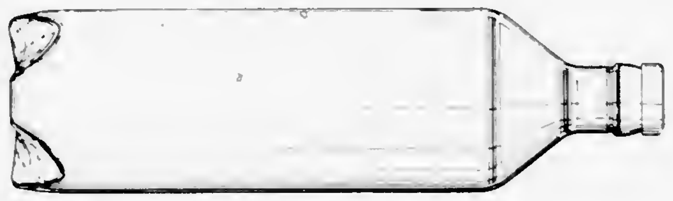
U.S. Cl. D8—274



230,470
BOTTLE

Walter Frohn, 100 Geiselgasteigstrasse, D8000 Munich 90, Germany
Continuation-in-part of design application Ser. No. 131,585, Apr. 5, 1971. This application June 30, 1972, Ser. No. 267,887
Claims priority, application Germany Oct. 6, 1970
Term of patent 14 years
Int. Cl. D9—*01*

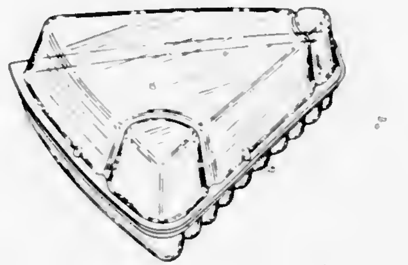
U.S. Cl. D9—158



230,471
FOOD CONTAINER

Charles Alfred Bernheiser, Reading, Pa., assignor to W. R. Grace & Co., Duncan, S.C.
Filed Jan. 13, 1972, Ser. No. 217,721
Term of patent 14 years
Int. Cl. D9—*03*

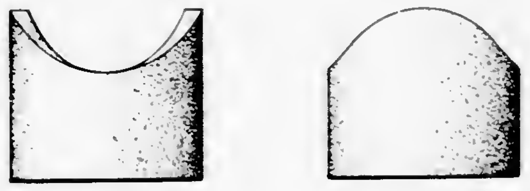
U.S. Cl. D9—182



230,472
COMBINED ACTUATOR AND DISPENSING CAP FOR A PRESSURIZED CONTAINER

Thomas H. Hayes, Greenwich, Conn., assignor to VCA Corporation, Greenwich, Conn.
Filed Nov. 20, 1972, Ser. No. 308,175
Term of patent 14 years
Int. Cl. D9—*01*

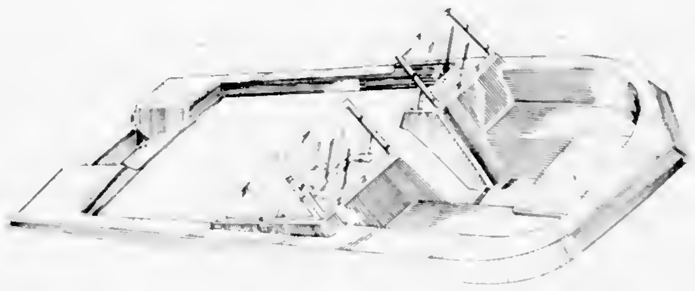
U.S. Cl. D9—258



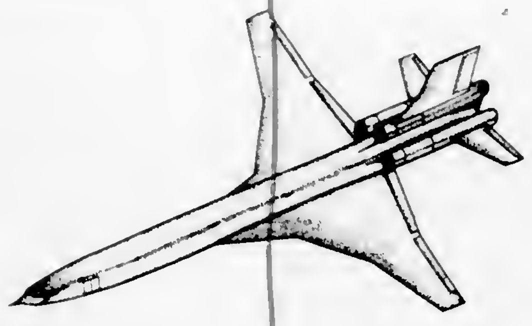
230,473
BOAT UPPER SHELL

Jay A. Potsdam, 3 Bright River Point, N. River Shores, Stuart, Fla. 33494
Filed Dec. 30, 1971, Ser. No. 214,525
Term of patent 14 years
Int. Cl. D12—*99*

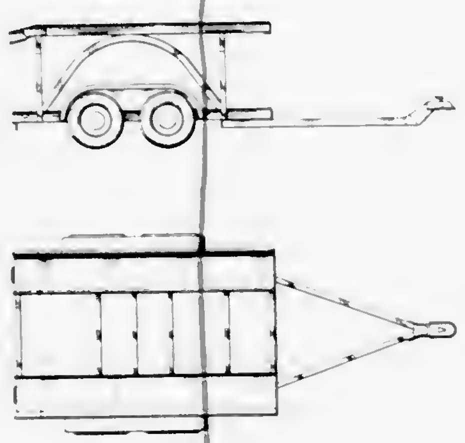
U.S. Cl. D12—70



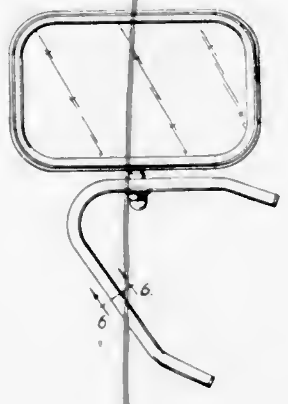
230,474
AIRCRAFT
Lawrence Bernard Rellis, 10460 SW. 163rd St., Miami, Fla. 33157
Filed June 14, 1972, Ser. No. 262,534
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—71



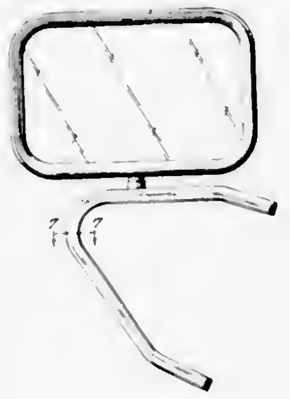
230,475
DOUBLE DECK RACING CAR TRAILER
Marjorie Ann M. Smith, 3825 Valley Blvd., 59, Walnut, Calif. 91789
Filed June 11, 1973, Ser. No. 368,601
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—101



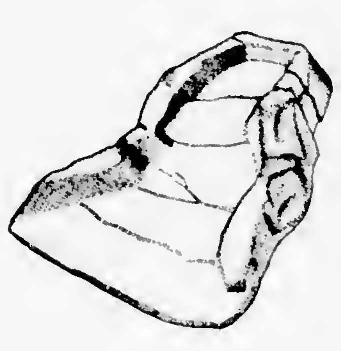
230,476
REAR VIEW MIRROR FOR VEHICLES
James W. Holzman, Haycock Township, Bucks County, Pa., assignor to Delbar Products, Inc., Perkasie, Pa.
Filed June 19, 1972, Ser. No. 264,252
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—187



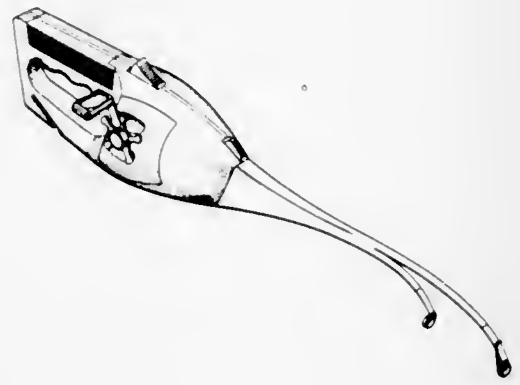
230,477
REAR VIEW MIRROR FOR VEHICLES
James W. Holzman, Haycock Township, Bucks County, Pa., assignor to Delbar Products, Inc., Perkasie, Pa.
Continuation-in-part of design application Ser. No. 264,252, June 19, 1972. This application Aug. 25, 1972, Ser. No. 283,635
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—187



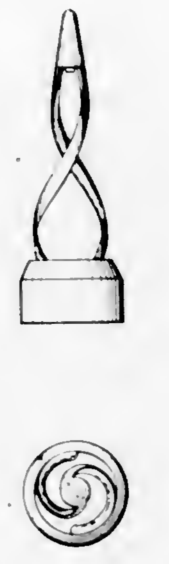
230,478
DOWNSPOUT SPLASH BLOCK
Bruce A. Littman, Highland Park, Ill., and Robert O. Memmel, Okauchee, and Jack B. Waldheim, Mequon, Wis., assignors to Benson Mfg. Corporation, Menomonee Falls, Wis.
Filed Apr. 24, 1972, Ser. No. 247,260
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2 A



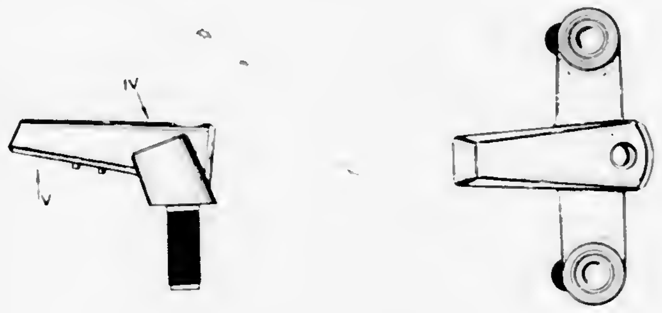
230,479
FISHING RIG
Samuel L. Popeil, Chicago, Ill., assignor to Popeil Brothers, Inc., Chicago, Ill.
Filed Dec. 4, 1972, Ser. No. 312,222
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—26



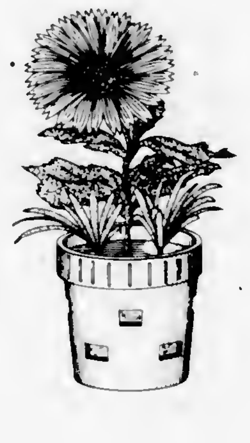
230,480
VALVE MEMBER
Gilbert Schwartzman, 20 Wilmot Circle, Scarsdale, N.Y. 10583
Filed Nov. 11, 1971, Ser. No. 198,064
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



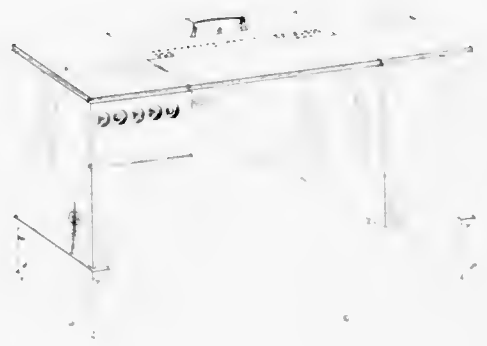
230,481
FAUCET BODY
Martin Omar Rowlands, Epping, England, assignor to IMI Opella Limited, Birmingham, England
Filed Aug. 23, 1971, Ser. No. 174,294
Claims priority, application Great Britain Feb. 25, 1971
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—32



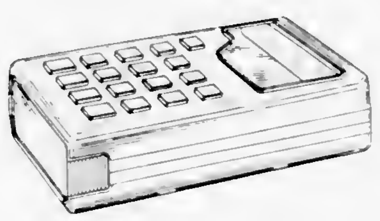
230,482
ROOM DEODORIZER
John S. Levey, Westlake Village, Calif., assignor to Days-Ease Home Products Corp., North Hollywood, Calif.
Filed May 15, 1972, Ser. No. 253,686
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150



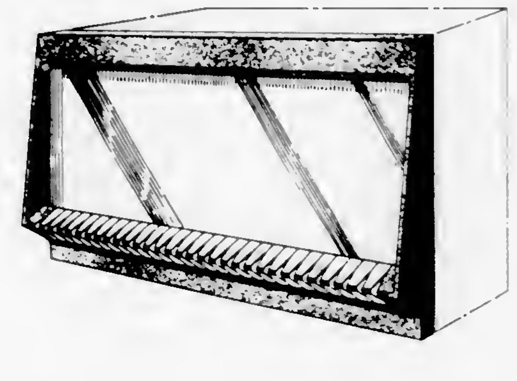
230,483
COMMUNICATION CONTROL DESK OR THE LIKE
Gilbert Pedinielli, Nice, and Daniel Richelet, St. Jeannet, France, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 28, 1972, Ser. No. 266,903
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 R



230,484
ELECTRONIC CALCULATING MACHINE
Masafumi Yamagami, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Sept. 20, 1972, Ser. No. 290,486
Claims priority, application Japan Apr. 12, 1972
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

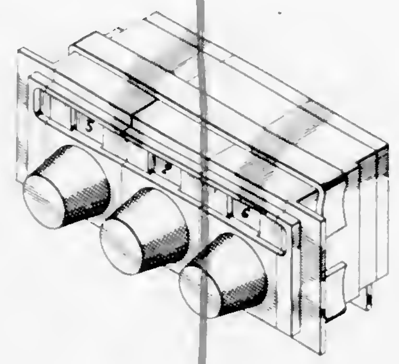


230,485
FRONT PANEL FOR A COMPUTER CONSOLE
Paul A. Jenkins, Groton, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.
Filed Sept. 29, 1972, Ser. No. 296,631
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



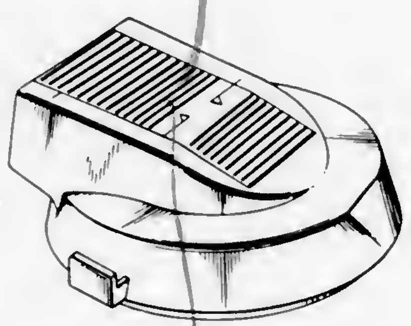
230,486
ELECTRICAL SWITCH ASSEMBLY

Dwayne A. MacDonald, Santa Ana, Calif.
(1921 Maryglade Drive, Grafton, Wis. 53024)
Filed May 5, 1972, Ser. No. 250,856
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R



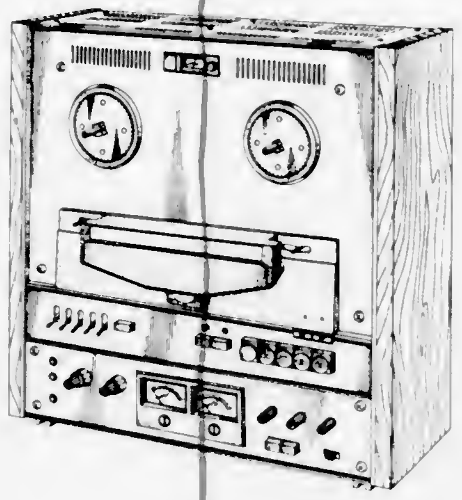
230,487
ACOUSTIC COUPLER

Clifford I. Dawson, Morgan Hill, and Royal G. Hazlitt, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 10, 1972, Ser. No. 296,464
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



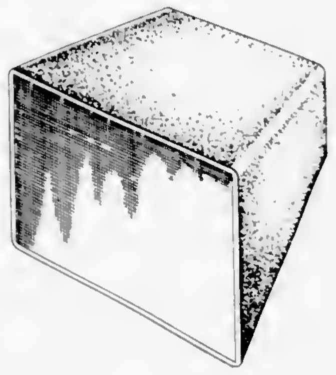
230,488
TAPE RECORDER

Haruo Shimizu, Yokohama, Japan, assignor to Denki Onkyo Co., Ltd., Tokyo, Japan
Filed Dec. 15, 1972, Ser. No. 315,558
Claims priority, application Japan June 17, 1972
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 B



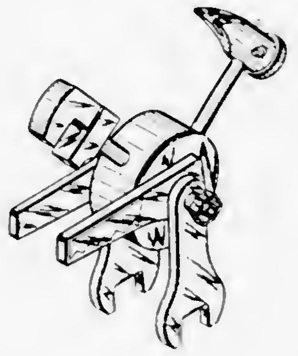
230,489
LOUDSPEAKER ENCLOSURE

Scott F. Everitt, Indianapolis, Ind., assignor to Acoustic Fiber Sound Systems, Inc., Indianapolis, Ind.
Filed Mar. 28, 1973, Ser. No. 345,714
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 G



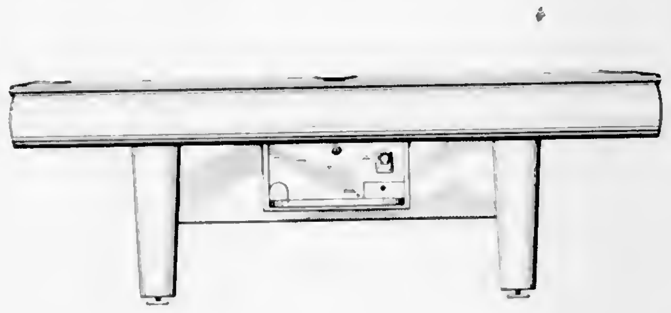
230,490
CONSTRUCTION TOY FIGURE

Sidney Bass, Los Angeles, and Alexandra B. Laird, Venice, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Apr. 26, 1972, Ser. No. 247,917
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R



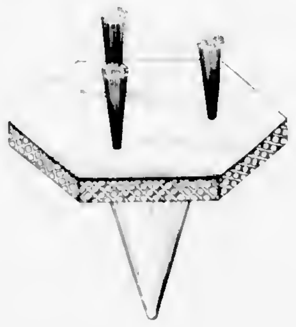
230,491
COIN ACTIVATED POOL TABLE

Harvey Heiss, North Miami, Fla., assignor to A.T.I. Recreation Inc., Miami Lakes, Fla.
Filed Jan. 13, 1972, Ser. No. 217,715
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—3



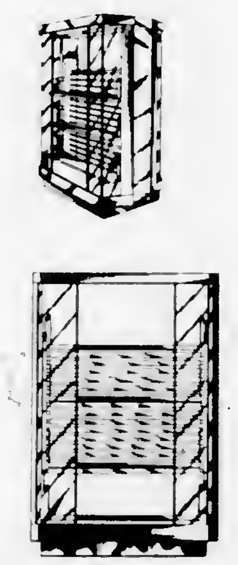
230,492
GOLF TEE

Carleton James Romer, Jr., and Nicholas M. Romer, Minnetonka, Minn., assignors to Romer Plastics, Inc., Minnetonka, Minn.
Filed May 11, 1973, Ser. No. 359,427
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GT



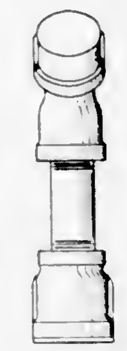
230,493
PLANT GROWTH APPARATUS

R. Louis Ware, 2108 Middle Fork Road, Northfield, Ill. 60093
Original design application Sept. 21, 1970, Ser. No. 25,087, now Patent No. 225,252, dated Nov. 28, 1972. Divided and this application Nov. 15, 1972, Ser. No. 306,684
Term of patent 14 years
Int. Cl. D6—*05;* D11—*02*
U.S. Cl. D35—3 A



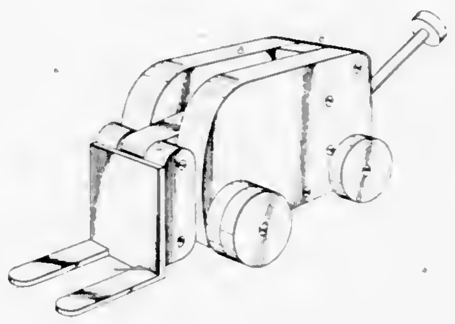
230,494
SET OF CHESS PIECES

Elbert F. Elam, 17620 Talford Ave., Cleveland, Ohio 44128
Filed July 28, 1971, Ser. No. 167,087
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 CH



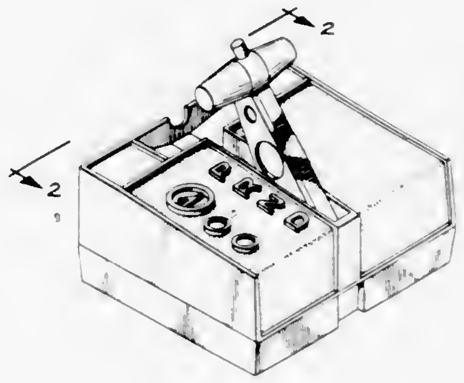
230,495
TOY FORK LIFT

Ernest Casper Wolf, 919 Washington SE., Albuquerque, N. Mex. 87108
Filed Mar. 17, 1972, Ser. No. 235,886
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 T



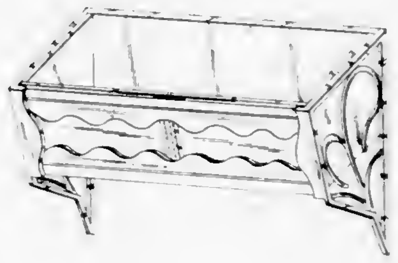
230,496
CONTROL FOR ELECTRICAL VEHICLE

Edwin O. Stastny, Pasadena, Calif.
(2122 N. Pasadena Ave., Santa Ana, Calif. 92701)
Filed Jan. 15, 1973, Ser. No. 323,905
Term of patent 7 years
Int. Cl. D21—*01;* D13—*03*
U.S. Cl. D34—15 A



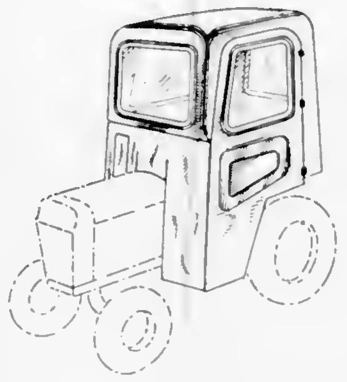
230,497
FLOWER BOX

Eugene T. Kleine, 87 Ocean Ave., Massapequa, N.Y. 11758
Filed Mar. 7, 1972, Ser. No. 232,649
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 R

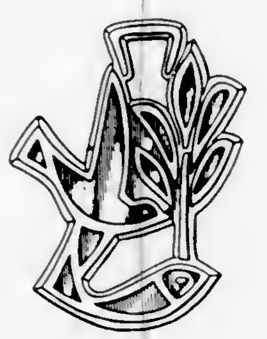


230,504 230,507

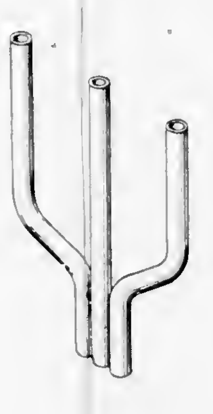
230,498
TRACTOR CAB
Oscar Stanley Williams, Arlington, Ind. 46104
Filed Jan. 5, 1972, Ser. No. 215,699
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D40—5



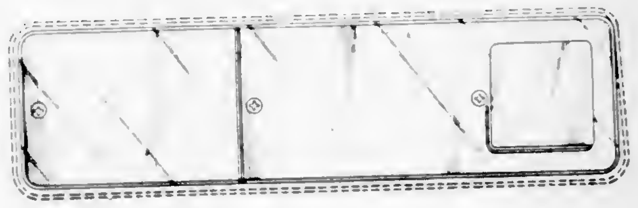
230,499
PENDANT
Ade Bethune, Newport, R.I., assignor to Terra-Sancta Creations, Inc., Philadelphia, Pa.
Original design application Nov. 18, 1970, Ser. No. 26,064, now Patent No. 225,560, dated Dec. 19, 1972. Divided and this application July 31, 1972, Ser. No. 276,388
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—16 A



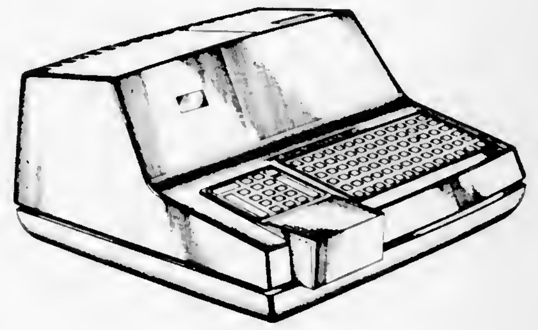
230,500
HAND-HELD CANDELABRUM
William Matichak, 424 Delaware St., Peckville, Pa. 18452, and John Zeleniak, 327 Oak St., Taylor, Pa. 18517
Filed Apr. 16, 1973, Ser. No. 351,302
Term of patent 14 years
Int. Cl. D26—*01;* D12—*16*
U.S. Cl. D48—2



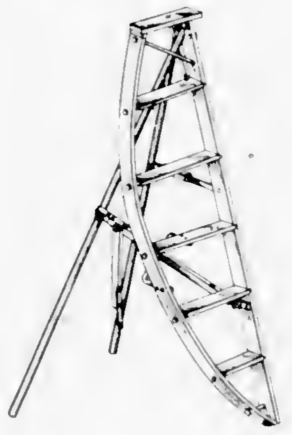
230,501
LENS FOR TAILLIGHT ASSEMBLY
Gianpaolo Boano, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy
Filed Aug. 9, 1971, Ser. No. 170,422
Claims priority, application Italy Feb. 19, 1971
Term of patent 7 years
Int. Cl. D26—*06*
U.S. Cl. D48—32 A



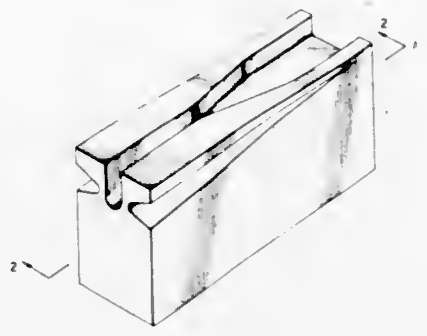
230,502
ELECTRONIC CASH REGISTER
Lynton Randolph Knapp, Orange, and Ralph Waldo Province, Westminster, Calif., assignors to MSI Data Corporation, Costa Mesa, Calif.
Filed Feb. 10, 1972, Ser. No. 225,363
Term of patent 14 years
Int. Cl. D18—*01;* D14—*02*
U.S. Cl. D52—4 A



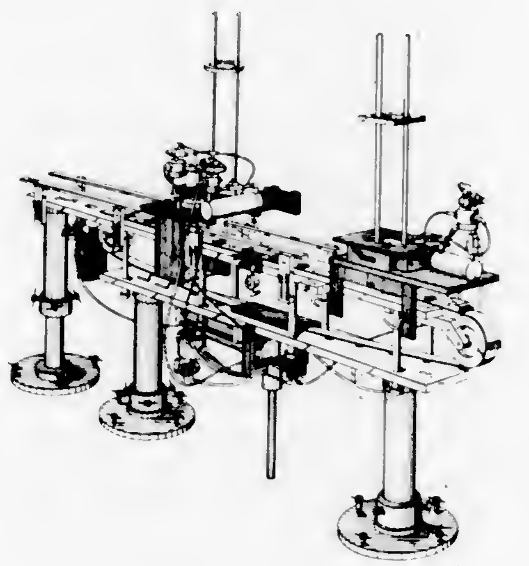
230,503
FOLDABLE LADDER
George Harvey Emmons, 11 S. 12th St., Marshalltown, Iowa 50158
Filed Dec. 29, 1971, Ser. No. 213,778
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D54—1 A



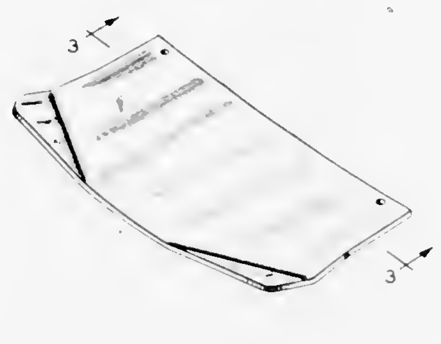
230,504
TAPE FOLDER
Bobby C. Gentry, P.O. Box 152, Temple, Ga. 30179, and J. Orbie Lowery, Rte. 1, Ranburne, Ala. 36273
Filed July 6, 1972, Ser. No. 269,299
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D54—4



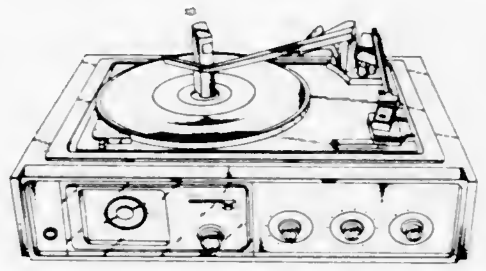
230,505
FILLING AND CAPPING MACHINE
Russell G. Rutherford, 8045 Beach Drive, Rockford, Ill. 61103
Filed Mar. 31, 1972, Ser. No. 240,342
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D55—1 C



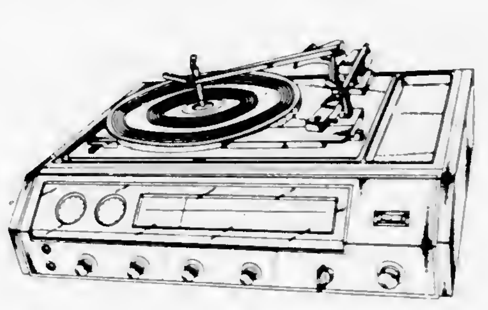
230,506
SHAKER BOARD FOR AUTOMATIC PIN SETTING MACHINES
George E. Tschann, 3316 Navarre Ave., Oregon, Ohio 43616
Filed May 18, 1972, Ser. No. 254,826
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 H



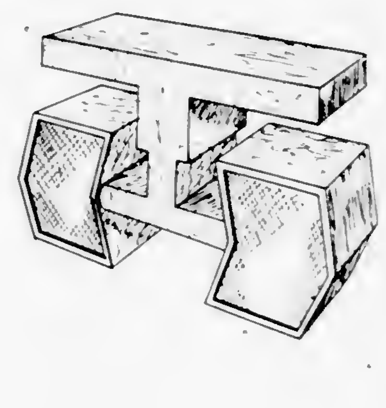
230,507
COMBINED RADIO AND PHONOGRAPH OR SIMILAR ARTICLE
Ken Okabe, Nara, and Hiroaki Yazawa, Yamatokoriyama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Oaza-Kadoma, Kadoma-shi, Osaka, Japan
Filed Apr. 14, 1972, Ser. No. 244,324
Claims priority, application Japan Oct. 15, 1971
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



230,508
COMBINED AMPLIFIER AND RECORD PLAYER
Yoshiaki Iida, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 26, 1972, Ser. No. 247,940
Claims priority, application Japan Nov. 27, 1971
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4 R

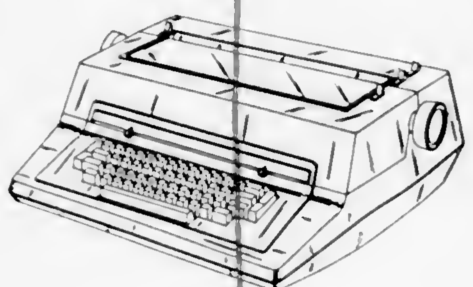


230,509
CABINET
Lorell White, 5041 S. Federal, Apt. 310, Chicago, Ill. 60609
Filed June 19, 1972, Ser. No. 264,273
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 R

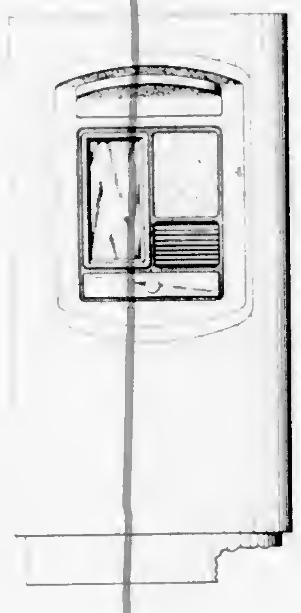


230,512

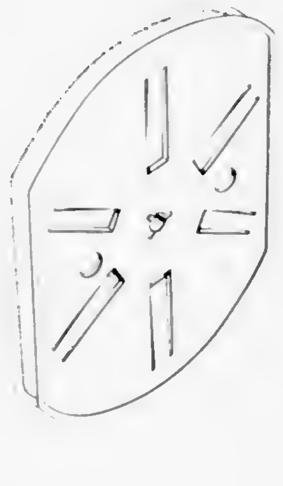
230,510
TYPEWRITER
Toshihiko Sakow, Teaneck, N.J., assignor to Triumph Werke Nuremberg A.G., Nuremberg, Germany
Filed Sept. 25, 1972, Ser. No. 291,721
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11 A



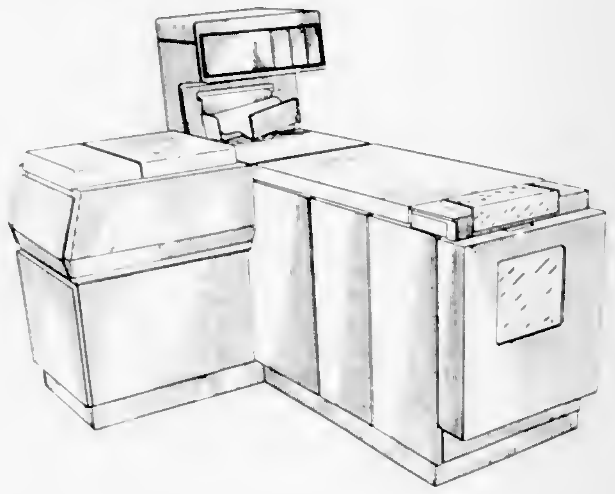
230,511
REMOTE CUSTOMER BANKING TERMINAL
Wolfgang R. Stieber, River Vale, N.J., assignor to The Mosler Safe Company, Hamilton, Ohio
Filed Nov. 24, 1971, Ser. No. 202,073
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D69—1



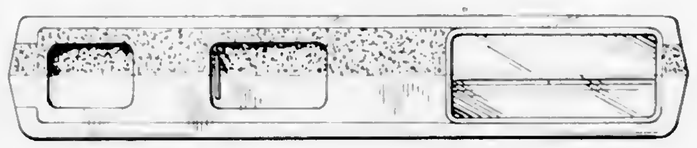
230,512
FILM REEL
Kazuki Kobayashi, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Oct. 27, 1972, Ser. No. 301,314
Claims priority, application Japan June 9, 1972
Term of patent 14 years
Int. Cl. D16—*99*
U.S. Cl. D61—1 T



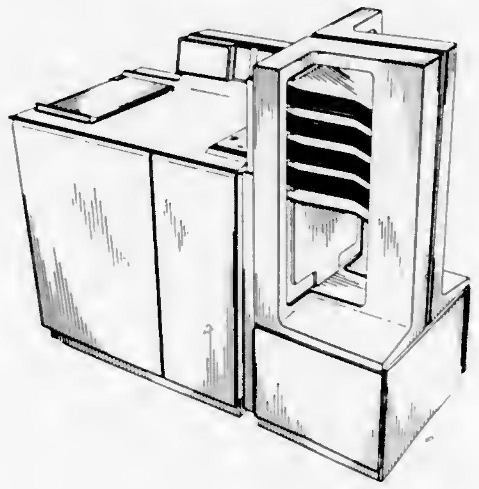
230,513
REPRODUCTION MACHINE
Jacob W. Patla, Fairport, and Leonard Schachner, Pittsford, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 5, 1972, Ser. No. 312,402
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q



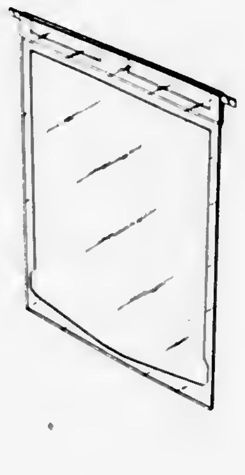
230,514
CAMERA HOUSING
Ronald Emmerling, New City, N.Y., assignor to Berkey Photo, Inc., Paramus, N.J.
Filed Dec. 15, 1972, Ser. No. 315,352
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1 B



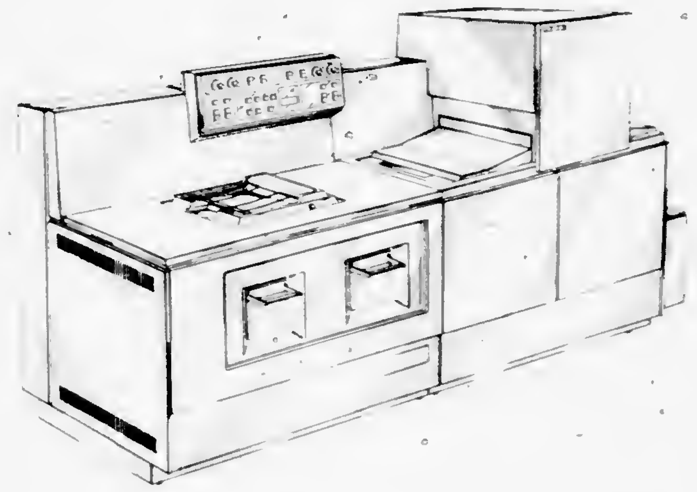
230,515
DOCUMENT REPRODUCING AND SORTING MACHINE
Claude H. Hutcheson, Fairport, N.Y., and John F. Zinni, London, England, assignors to Xerox Corporation, Stamford, Conn.
Filed Jan. 5, 1973, Ser. No. 321,491
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q



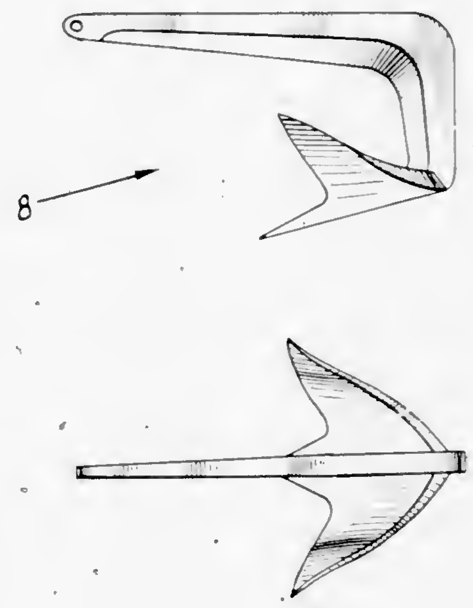
230,516
FILM HOLDER
Nobuyuki Yanagawa, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed June 1, 1973, Ser. No. 366,203
Claims priority, application Japan Dec. 4, 1972
Term of patent 14 years
Int. Cl. D16—*04*
U.S. Cl. D61—1 Q



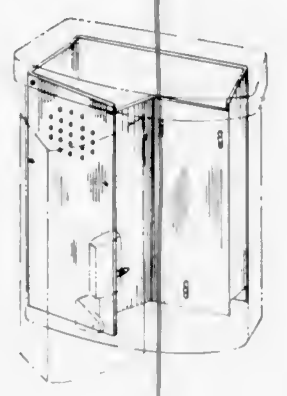
230,517
COMPUTER OUTPUT PRINTER OR SIMILAR ARTICLE
Robert E. Kalvitis, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Nov. 24, 1972, Ser. No. 309,541
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11 R



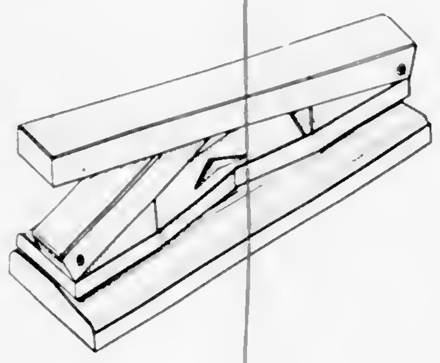
230,518
ANCHOR
Peter Bruce, 10 Torphichen Place, Edinburgh EH3 8Du, Scotland
Filed Oct. 28, 1971, Ser. No. 193,618
Claims priority, application Great Britain Apr. 30, 1971
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D71—1 P



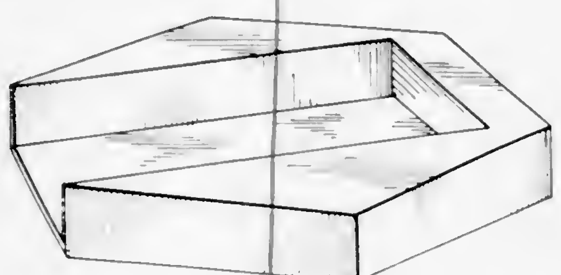
230,519
HOUSING FOR EMERGENCY REPORTING CALL BOX
Willis C. Reddick, Corinth, Miss., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Dec. 8, 1971, Ser. No. 206,237
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D72—1 A



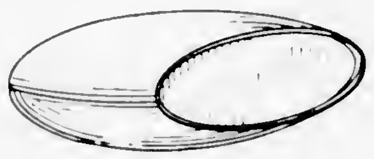
230,520
HAND-PUNCHER
Gerald Dahle, 19 Marienberg, D-863 Coburg, Germany
Filed Apr. 4, 1972, Ser. No. 241,096
Claims priority, application Germany Oct. 14, 1971
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—1 A



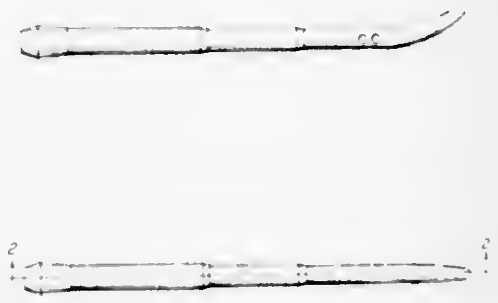
230,521
MEMO PAD HOLDER
Ira Saltz, Greenlawn, N.Y., assignor to Oxford Pendaflex Corporation, Garden City, N.Y.
Filed Sept. 28, 1972, Ser. No. 295,991
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—1 C



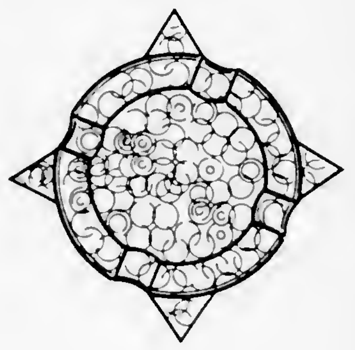
230,522
HOUSING FOR AN ELECTRONIC EXERCISE APPARATUS
Norman Rothman, Chicago, Ill., assignor to Rothman Industries, Inc., Chicago, Ill.
Filed Mar. 17, 1972, Ser. No. 235,869
Term of patent 14 years
Int. Cl. D13—*03*; D21—*02*; D24—*01*
U.S. Cl. D83—1 S



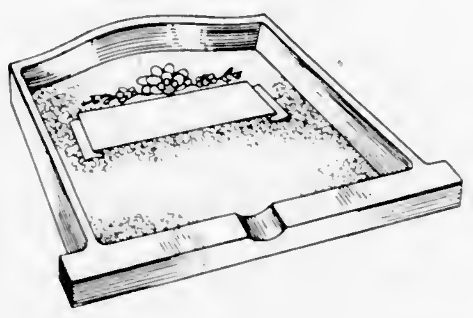
230,523
URETHRAL DILATOR-CATHETER OR SIMILAR ARTICLE
John Francis Carney, Joliet, Ill., assignor to Morton-Norwich Products, Inc.
Filed June 30, 1971, Ser. No. 158,664
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 A



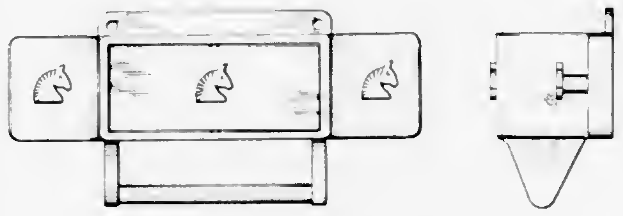
230,524
ASH TRAY OR THE LIKE
Hugh N. Pace, 3516 Poole Road, Raleigh, N.C. 27610
Filed Jan. 11, 1971, Ser. No. 105,765
Term of patent 14 years
Int. Cl. D29—*03*
U.S. Cl. D85—2 H



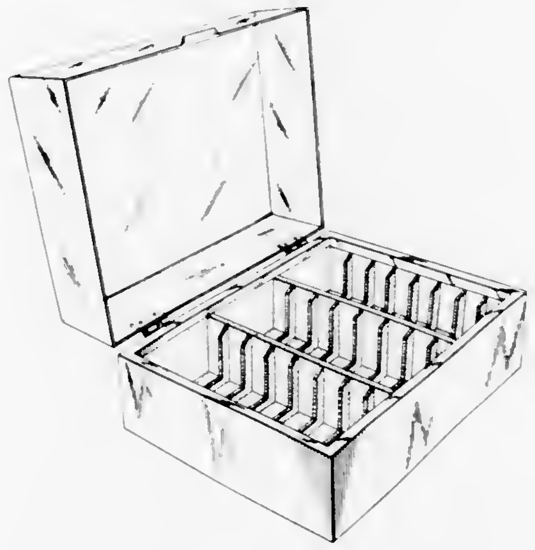
230,525
ASH TRAY
Helen A. Peterson, 5855 N. Sheridan Road, Apt. 5D, Chicago, Ill. 60626
Filed July 21, 1971, Ser. No. 164,986
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D85—2 H



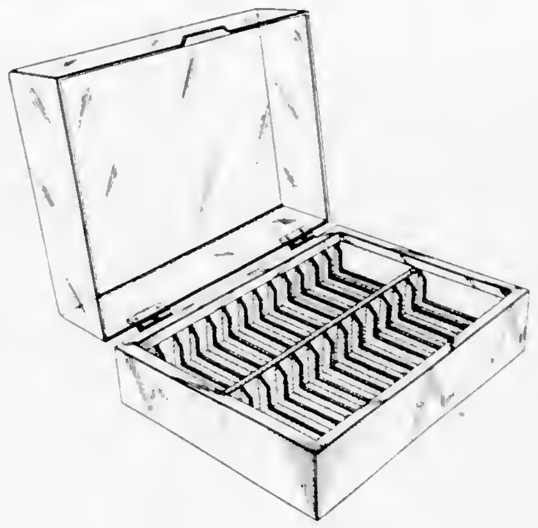
230,526
COMBINED JEWELRY BOX AND TIE RACK
Jeffrey S. Snyder, 535 E. 86th St., New York, N.Y. 10021
Filed Jan. 17, 1972, Ser. No. 218,641
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—1 B



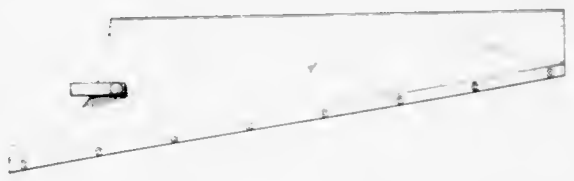
230,527
TAPE CASSETTE CABINET
Joseph L. Berkman, 17 Brewster Terrace, New Rochelle, N.Y. 10804
Filed Feb. 7, 1972, Ser. No. 224,400
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 D



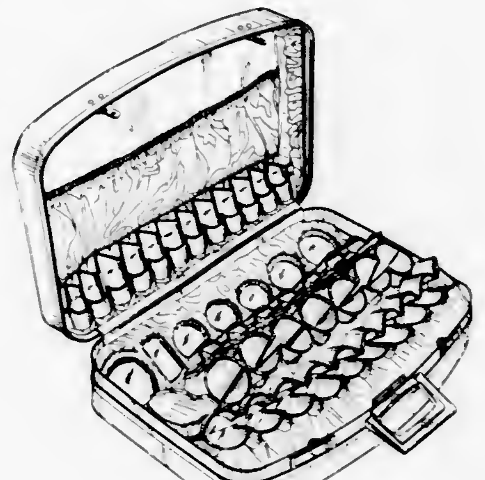
230,528
TAPE CARTRIDGE CABINET
Joseph L. Berkman, 17 Brewster Terrace, New Rochelle, N.Y. 10804
Filed Feb. 7, 1972, Ser. No. 224,401
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 D



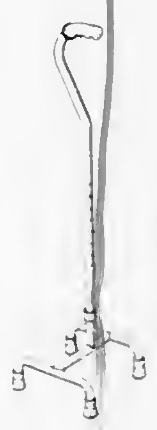
230,529
CASE FOR A HAND SAW
Robert A. Bailey, 2339 E. 12th St., Des Moines, Iowa 50316
Filed June 19, 1972, Ser. No. 264,393
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



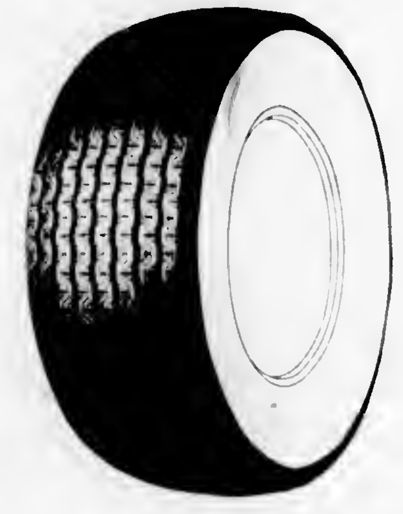
230,530
COMBINED CARRYING AND DISPLAY CASE FOR COSMETICS OR THE LIKE
John V. Shinn, 2925 NW. Mulkey Ave., Corvallis, Oreg. 97330
Filed Aug. 10, 1972, Ser. No. 279,706
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



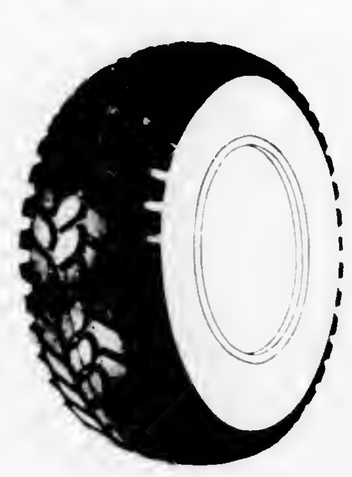
230,531
CANE
Morton I. Thomas, Monroe, N.Y.
(125 South St., Passaic, N.J. 07050)
Filed Dec. 15, 1971, Ser. No. 208,535
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D88—4



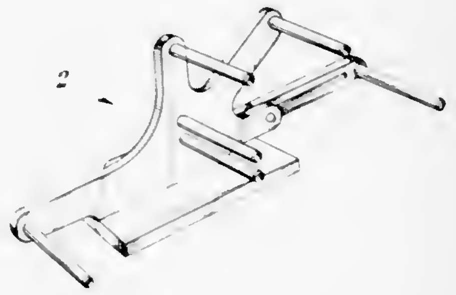
230,532
TIRE
Robert A. Stella, Mogadore, and James W. Stiffler, Tallmadge, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 1, 1971, Ser. No. 203,944
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20 R



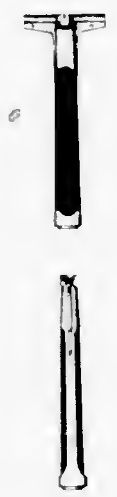
230,533
TIRE
William W. Wolford, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jan. 3, 1972, Ser. No. 215,259
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20 R



230,534
INKLE LOOM
Secondo B. Strona, 2525 Mountain Drive, Upland, Calif. 91786
Filed Dec. 2, 1971, Ser. No. 204,391
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D92—15



230,535
RAZOR HANDLE
Martin Glaberson, 200 Huntington Road, Stratford, Conn. 06497, and George L. Schick, 20 Gwendolyn Drive, Trumbull, Conn. 06611
Filed Feb. 15, 1973, Ser. No. 332,959
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A



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TO WHOM
PATENTS WERE ISSUED ON THE 26TH DAY OF FEBRUARY, 1974

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Abbott Machine Co., Inc.: *See—*
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Abbott, Samuel L., to Abbott Machine Co., Inc. Detecting means for yarn processing apparatus. 3,794,252, Cl. 242-38.000.
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  Round, Byron Joseph, and Abolins, Eizens, 3,793,991.
Aboutboul, Henri A.; Krekeler, Jerome H., and Kirch, William, to National Petro Chemicals Corporation. Preparation of silica gels. 3,794,712, Cl. 423-338.000.
Aboutboul, Henri A.; Krekeler, Jerome H.; and Kirch, William, to National Petro Chemicals Corporation. Preparation of silica gels 3,794,713, Cl. 423-338.000.
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Ace Controls, Inc.: *See—*
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Adams, Kenneth D., to Singer Company, The. Presser bar pressure control modules. 3,793,969, Cl. 112-235.000.
Adams, Thomas H.; and Miller, Warren K., to Du Pont de Nemours, E. I., and Company. Removing substances from a liquid by precipitation in porous glass beads 3,794,467, Cl. 23-230.00r.
Adamson, Arthur P. *See—*
  Campbell, William B.; and Adamson, Arthur P., 3,794,444
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  Barron, Roger L.; and Cleveland, Dixon, 3,794,271
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Adler, Edwin I., to Atlas Braid Company. Tension let off device for a knitting machine 3,793,852, Cl. 66-152.000.
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A E I Telecommunications (Canada) Limited *See—*
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Akashi, Goro; Fujiyama, Masaaki; Kasuga, Akira; Yamada, Yasuyuki; Suzuki, Osamu; Nakamura, Matsuaki; Sega, Kenji; and Kato, Kiroshi, to Fuji Photo Film Co., Ltd. Process for the production of a magnetic record member 3,794,519, Cl. 117-235.000.
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  Malmoren, Per Ake; and Johansson, Kurt Eilert, 3,794,130.
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Albertson, Robert V. Air driven pump. 3,794,448, Cl. 417-406.000.
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  Wirth, Christian; and Albi, George J., 3,794,548
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  Hitzler, Robert L., 3,794,830.
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Allied Chemical Corporation. *See—*
  Barton, Oliver A., 3,794,590.
  Beringer, Charles William; and Wilder, Marion Archer, Jr., 3,793,817.
  Lofquist, Robert Alden; Saunders, Peter Reginald, and Weedon, Gene Clyde, 3,794,464.
  Loomba, Yogendra S., 3,794,211.
  Wells, Rodney Lee; and Crescentini, Lamberto, 3,794,631.
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  Manko, Howard; and Langan, James, 3,794,570.
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- Alton Box Board Company: *See—*
  - Bonczyk, Bruno C., 3,794,239.
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  - Carter, Spencer Douglas, 3,794,658.
  - Carter, Spencer Douglas; and Berkelhammer, Gerald, 3,794,727.
- American Home Products Corporation. *See—*
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  - Wei, Peter H. L., 3,794,660.
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  - Seiler, Doanld J., Shalaty, John H.; and Anderson, Frederick V., 3,793,999
- Anderson, J. Frank, Jr.. *See—*
  - Achorn, Frank P.; and Anderson, J. Frank, Jr., 3,794,740.
- Anderson, Marvin R.; and Jungesjo, Harald N., to Anderson-Cook Incorporated Gear forming machines. 3,793,866, Cl. 72-88.000.
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- Anderson Power Products, Inc.: *See—*
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- Anderson, Raymond Paul, to Custom Resins, Inc., mesne. Highly transparent linear polyamides from caprolactam and a mixture of diaminobicyclohexyls and a dibasic organic acid 3,794,624, Cl. 260-78 001.
- Anderson, Richard D., Azelborn, Nicolas A., and Wade, Wallace R., to Ford Motor Company Isokinetic sampling probe 3,793,887, Cl. 73-421 50r
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- Anderson-Cook Incorporated *See—*
  - Anderson, Marvin R.; and Jungesjo, Harald N., 3,793,866.
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  - Berghof, Ernest H., 3,794,804.
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Bourbonnaud, Louis, to Societe Creusot-Loire. Apparatus for angular and axial regulation of a printing cylinder. 3,793,899, Cl. 74-397.000.
Bourne, Ronald Frederick, to Asbestos Grading Equipment Company, The. Filters for separating dust from air. 3,793,811, Cl. 55-294.000.
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  Frey, Sydney W., Jr., and Gaa, Donald L., 3,794,278
Bouwhuis, Gijsbertus. *See—*
  Ian, Sing Liong; Hofman, Jan August Marcel; and Bouwhuis, Gijsbertus, 3,794,408
Bove, Peter Richard. *See—*
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Bower, Barton K., to Hercules Incorporated. Tris (bicycloheptyl) chromium compounds and use as polymerication catalysts. 3,794,628, Cl. 260-94.90b
Bowerman, William J., to BRS, Inc. Athletic shoe for artificial turf. 3,793,750, Cl. 36-59.00c
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  Moore, Larry R., and Turek, Robert F., 3,794,055.
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Bowling, Dan P. Power driven surface finishing device. 3,793,782, Cl. 51-170.0pt.
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Bradley, Charles J. Therapeutic apparatus for the retardation of emphysema. 3,794,023, Cl. 128-68.000.
Bradley, Robert Auldom. Electric railway speed control. 3,794,897, Cl. 318-270.000.
Brandon, Clarence W. Use of liquefiable gas to control liquid flow in permeable formations. 3,794,114, Cl. 166-249.000.
Brandt, Gerald H.: *See—*
  Schmidt, Donald L., Cooper, Ronald H., and Brandt, Gerald H., 3,794,506.
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Brasch, Jerome F., and Albers, Rolf G., to Brasch Manufacturing Company. Electrical heating apparatus for circular ducts. 3,794,810, Cl. 219-366.000.
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  Brasch, Jerome F., and Albers, Rolf G., 3,794,810.
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Bray, Donald T., to Desalination Systems, Inc. Valve for reverse osmosis purification and storage system. 3,794,173, Cl. 210-257.000
Brazee, Donald K., to Lambert Engineering Company. Motor means for space heater and method of use. 3,794,461, Cl. 432-29.000
Breer, Karl, and Schulte, Klaus, to Bayer Aktiengesellschaft. Introduction of reactants into moulds. 3,794,451, Cl. 425-4.000.
Brennan, David John; and Williams, Loraine Leonard, to Lucas Aerospace Limited. Mounting arrangements for printed circuit boards. 3,794,887, Cl. 317-101.0dh
Brenner, Natalie S. Suction system for skin treatment. 3,794,035, Cl. 128-300.000.
Breslow, David S., to Hercules Incorporated. Divinyl ether-maleic anhydride copolymer. 3,794,622, Cl. 260-78.5bb
Breslow, Donald H., to Itek Corporation. Servomoter driven encoder error evaluation system. 3,794,899, Cl. 318-602.000.
Brewer, John C., to Garbalizer Corporation of America. Process and system for recovering carbon. 3,794,250, Cl. 241-21.000
Brice, George H., to Uniroyal, Inc. Process for oil-extending rubber. 3,794,614, Cl. 260-33.6ag
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Brockman, Henry J.; and Gloomis, Lawrence A., to General Motors Corporation. Occupant restraint system. 3,794,346, Cl. 280-150.0ab.
Brodasky, Thomas F., and Reusser, Fritz, to Upjohn Company, The. Antibiotic steffimycin B and process for the preparation thereof. 3,794,721, Cl. 424-120.000.
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Bronstert, Klaus; Kastning, Ernst-Guenther; deceased (by Kastning, Marie-Louise Hermine, heir), Kurze, Joachim, Ladenberger, Volker; and Stein, Dieter, said Bronstert, said Joachim, said Volker and said Stein assors. to Badische Anilin- und Soda-Fabrik Aktengesellschaft. Modified styrene polymers providing impact-resistant molded articles. 3,794,697, Cl. 260-876.00r
Brooks, Bertram, to Carolina Enterprises, Inc. One-piece plastic pool. 3,793,653, Cl. 4-172.000.
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Brown, Maurice H., to Pemcor, Inc. Temperature compensated electron beam convergence apparatus. 3,794,946, Cl. 335-211.000.
Brown, Melancthon S.; deceased (by Kohn, Gustave K., administrator), to Chevron Research Company. N-substituted arylcarbamoyl sulfides used as insecticides. 3,794,733, Cl. 424-300.000.
Brownlee, Thomas Harland; and Matsuda, Ken, to American Cyanamid Company. Product for the formation of fluorescent images. 3,794,512, Cl. 117-33.50r.
BRS, Inc.: *See—*
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- Bruce, William F., to American Home Products Corporation. Di(lower) alkylaminoa and heteroamino-(lower) alkyl-alpha,alpha,alpha-trifluoro-M-toluic acid esters and derivatives. 3,794,677, Cl. 260-477.000.
- Brucken, Byron L., to General Motors Corporation. Bulkhead mounting arrangement for tub seal and drive mechanism. 3,793,854, Cl. 68-23.700.
- Bruckner, Gyorgyi: *See—*
  - Gorog, Katalin, nee Privitizer; Bruckner, Gyorgyi; Farkas, Kalman, Grega, Erzsebet; Marosvolgyi, Sandor; Pinter, Zoltan; and Szilagyi, Gyula, 3,794,641.
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- Bryan, Carney J.; and Ful, James B., to Blue Bell, Inc. Work piece guide system 3,794,230, Cl. 226-3.000.
- Bryant, Ellis H., Jr.: *See—*
  - Smith, Leary W.; and Bryant, Ellis H., Jr., 3,794,778.
- Bryant, Jack A., to Electronics Corporation of America. Sensing apparatus. 3,794,812, Cl. 235-61 11e.
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- Buchel, Karl-Heinz: *See—*
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- Buchele, Wesley F.; and Peters, Leo C., to Iowa State University Research Foundation Inc. Safety door for the unloading mechanism of self-unloading wagons. 3,794,198, Cl. 214-519.000.
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- Buck, Willard E., deceased (by Buck, Gwynne, executrix), to Spray-A-Matic Products, Inc. Pressure powered aerosol timer. 3,794,216, Cl. 222-70.000.
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- Building Structural Systems, Inc.: *See—*
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- Burkhardt, Claus; Baichle, Karl, and Schnell, Hermann, to Bayer Aktiengesellschaft Use of β-dicarbonyl compounds derived from cyclopentanone as additional accelerators for polyester moulding and coating masses. 3,794,695, Cl. 260-863.000.
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- Burroughs Corporation *See—*
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- Butler, Robert F.: *See—*
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- Bylander, Ernest G.; and Jarman, Hall B. Process for fabricating GE:HG infrared detector arrays and resulting article of manufacture. 3,794,883, Cl. 317-234.00r.
- Bylander, Ernest Gerald, to Texas Instruments, Incorporated. Integrated circuit assembly using etched metal patterns of flexible insulating film. 3,793,714, Cl. 29-583.000.
- Bylo, John J. Marine transport. 3,793,974, Cl. 114-43.500.
- Bynum, Johnnie J. Pressure sensitive control for pump regulator. 3,794,789, Cl. 200-83.00z.
- Cadiou, Jean Georges, to Societe Anonyme Automobiles Citroen. Windshield wiper control means. 3,794,847, Cl. 307-117.000.
- Cahill, Steven P.; and Pateuk, Constantine J., to Honeywell Information Systems, Inc Axially and rotationally moveable print head. 3,794,150, Cl. 197-55.000
- Caldemeyer, Daniel F. Footrest for reclining chair. 3,794,381, Cl. 297-430.000.
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  - Petersdorf, Gerhard, 3,794,423.
- Cantrell, William T., to Square D Company Raintight enclosure with multiple covers 3,794,205, Cl. 220-29.000.
- Capra, Uberto. Vehicle-washing apparatus 3,793,667, Cl 15-21.00e.
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  - Huffman, Donald D., and Carey, Andrew J., 3,794,832
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- Carlson, Raymond H.; and Reiland, Bernard F., to Textron, Inc. Locking fastener. 3,794,092, Cl 151-22.000.
- Carolina Enterprises, Inc.: *See—*
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- Carr, Ronald B., to United States of America, Atomic Energy Commission. Compact laser amplifier system 3,794,929, Cl. 330-4 300.
- Carroll, Michael O; and Shirek, Lawrence J., to Thermo King Corporation. Refrigerant throttling valve. 3,794,063, Cl. 137-505 260.
- Carroll, Robert G Pressure regulated inflatable cuff for an endotracheal or tracheostomy tube. 3,794,036, Cl. 128-351 000
- Carter, Bob. *See—*
  - Osborn, William; and Carter, Bob, 3,794,922.
- Carter, Ronald E.; and Clifford, Jack S., to Sealed Power Corporation. Device for automatically loading an oil ring spacer-expander into the oil ring groove of a piston. 3,793,695, Cl. 29-211.00r
- Carter, Spencer Douglas, to American Cyanamid Company Substituted nitroimidazolylthiadiazolinones and method of using the same. 3,794,658, Cl. 260-302.00h.
- Carter, Spencer Douglas; and Berkelhammer, Gerald, to American Cyanamid Company. Method of controlling coccidiosis by the use of a nitroimidazolylthiadiazolinone. 3,794,727, Cl 424-270.000.
- Carter, Warren E.: *See—*
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- Cates, Robert E.; and Mitchell, Robert M., to Marley Company, The. Pneumatic weir water level control for cooling tower hot water distribution basin 3,794,304, Cl. 261-111.000
- Ceauselu, Constantin N.: *See—*
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- Centre de Recherches Metallurgiques-Centrum Voor Research In De Metallurgie. *See—*
  - Ponghis, Nicolas Gerassimos, and Vanosmael, Claude Henri, 3,794,308.

- Chadha, Rajendra Nath; Crawford, James Edwin; and Getson, John Charles, said Chadha, said Lewis and said Getson, assors. to Stauffer Chemical Company. Room temperature vulcanizable graft copolymers on silicone containing backbone 3,794,694, Cl. 260-827.00.
- Chandler, O Wayne, to Commercial Solvents Corporation. Nitromethane explosive with a foam and microspheres of air. 3,794,534, Cl. 149-2.000.
- Charlson, Thomas M. Horseshoe. 3,794,120, Cl. 168-24.000.
- Charske, Charles J., to Esso Production Research Company. Marine seismic cable buoyancy system 3,794,965, Cl. 340-7.0pc
- Chartet, Andre, to Societe Anonyme des Usines Chausson. Process for the connection by setting of collectors on water-boxes of heat exchangers. 3,793,701, Cl. 29-421.000.
- Check, Mathias M., 25% to Miller, Alfred E. Automatic wire clamp feeding device for bottles. 3,794,212, Cl 221-212.000.
- Cheek, Edward E.; and Sabin, Raymond H., to McDowell-Wellman Engineering Company. Railroad car spotting and wheel locking apparatus. 3,793,964, Cl. 104-162.000.
- Chelminski, Stephen V., to Bolt Associates, Inc. System for increasing the load-bearing capacity of soil. 3,793,844, Cl. 61-63.000.
- Chem-Trol Pollution Services Inc.: *See—*
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- Chen, You Min, to Ofmart Corporation, The. Gauge for determining the percentage by weight of moisture contained in a bulk material transported on a moving conveyor. 3,794,843, Cl. 250-359.000.
- Chesters, Allan Knight, to Secretary of State of Defence. Combustion system deflector plate. 3,793,828, Cl 60-39.660.
- Chevron Research Company. *See—*
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  - Freenor, Francis J., III, 3,794,699.
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- Chouings, Leslie Cyril, to Automotive Products Company Limited Valve devixes 3,794,076, Cl 137-115.000
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- Christie, Christopher E.; Fedor, James R; Harwell, Ishmael S., and Riggs, Robert S., to Goodyear Tire & Rubber Company, The Method for making a rolling lobe diaphragm 3,794,538, Cl. 156-187.000.
- Christie, Christopher E.; and Martin, Eugene Earl, to Goodyear Tire & Rubber Company, The. Method for building a foam-inflated tire 3,794,706, Cl. 264-45 000.
- Christopher, Daryl J; to Raytheon Company. Coordinate generation system. 3,794,993, Cl. 343-5.0dp.
- Chrokey, William J; Ellis, Larry C., and Heideman, Robert J., to Ace Controls, Inc. Adjustable stroke shock absorber. 3,794,309, Cl 267-34.000.
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  - Kleiner, Eduard Karl, and Knell, Martin, 3,794,623.
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- Cichetti, Michael Peter, Jr., and Kneuer, Joseph George, to Bell Telephone Laboratories, Incorporated Cross-office connecting scheme for interconnecting multiplexers and central office terminals. 3,794,768, Cl 179-15.0ba
- Cikalon-Vliesstoffwerk G.m.b.H *See—*
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- Clark Equipment Company: *See—*
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- Clark, Merlin Wayne. Ceiling lamp mounting. 3,794,962, Cl. 339-126.00r.
- Clark, Thomas L. Deodorized pet relief station. 3,793,989, Cl. 119-1.000
- Clausing, Challiss I., to I-T-E Imperial Corporation. Open air GAP operation with static overload device. 3,794,889, Cl. 317-27.00r.
- Clayton & Lambert Manufacturing Company: *See—*
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- Cleveland, Dixon: *See—*
  - Barron, Roger L.; and Cleveland, Dixon, 3,794,271.
- Clevenger, James T.; and Stohler, John L., to Sperry Rand Corporation. Quick-attaching mechanism. 3,794,195, Cl. 214-145.000.
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- Cline, Carl F.: *See—*
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- Coburn Optical Industries, Inc.: *See—*
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- Coburn, Orin W., and Stith, Joe D., to Coburn Optical Industries, Inc. Vacuum chuck for opthalmic lens finishing machinery. 3,794,314, Cl. 269-21.000.
- Coenen, Renier Gertruda Hubertus; Kuiper, Adrianus; and Collaris, Maria Antonius Alphonsus Andreas, to U.S. Philips Corporation. Method of electrophoretically covering helically wound heating wires with an insulating layer 3,794,593, Cl. 204-181.000.
- Cogar Corporation: *See—*
  - Cogar, George R., and Huyck, Arnold G., 3,794,980.
- Cogar, George R; and Huyck, Arnold G., to Cogar Corporation. Apparatus and method for controlling sequential execution of instructions and nesting of subroutines in a data processor 3,794,980, Cl. 340-172.500.
- Cohen, Abraham B., and Tobias, Herbert A., to Du Pont de Nemours, E I., and Company. Process and apparatus for delaminating an adherent receptor sheet on a sensitized element 3,794,546, Cl. 156-344 000.
- Colas, Louis. *See—*
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- Colbridge, Thomes D., to Rack Engineering Company. Adjustable storage rack. 3,794,183, Cl. 211-176.000.
- Cole, Thomas R., III, Kehr, William D.; and Wiitala, James R., to International Business Machines Corporation. Process for brazing a magnetic ceramic member to a metal member. 3,793,705, Cl. 29-473.100.
- Collaris, Maria Antonius Alphonsus Andreas: *See—*
  - Coenen, Renier Gertruda Hubertus; Kuiper, Adrianus; and Collaris, Maria Antonius Alphonsus Andreas, 3,794,593.
- Collin, Stanley, to Livingston and Doughty, Limited Fluid pressure-operated piston/cylinder units. 3,793,925, Cl. 92-13.100.
- Collins, John H Adjustable split door frame. 3,793,788, Cl. 52-211.000.
- Collins Radio Company: *See—*
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- Colomrani, Bruno; and Pacciarini, Antonio, to Industrie Pirelli S p A. Stitching apparatus for tire drum building machines. 3,794,542, Cl 156-358.000.
- Columbia Broadcasting Systems, Inc *See—*
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  - Bauer, Benjamin B., 3,794,781.
- Colwill, Richard H., Dewey, William E.; Vanbennekom, Hans Lochmann; and Mowry, William H., Jr., to Burroughs Corporation Bursting and separating apparatus for continuous forms. 3,794,228, Cl. 225-93.000.
- Combustion Engineering; Inc.. *See—*
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- Commercial Solvents Corporation: *See—*
  - Chandler, O. Wayne, 3,794,534.
- Commisso, Nicholas D., to Mobil Oil Corporation. Covered container for serving food. 3,794,090, Cl 150-.500.
- Compagnie d'Electronique et de Piezo-Electricite C E.P E.. *See—*
  - Gibert, Guy; and Vidal, Pierre, 3,794,867.
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- Entner, Ronald S Programmable electromagnetic logic. 3,794,988, Cl. 340-174.0tf.
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Hida, Takashi; Sakakibara, Naoji; and Hashimoto, Nobuyuki, to Aisin Seiki Kabushiki Kaisha Vehicle speed sensing device. 3,794,971, Cl 340-53.000.

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Huffman, Harold W. Cross perforating blade lock. 3,793,918, Cl. 83-698.000.
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Hughes, Robert. Modular building system. 3,793,796, Cl. 52-79.000.
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Humphrey, David H. Levelling instrument. 3,793,735, Cl. 33-348.000.
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Jarman, David J. Feedback conveyor system. 3,793,916, Cl. 83-155.000.
Jarman, Hall B.: *See—*
Bylander, Ernest G.; and Jarman, Hall B., 3,794,883.
Jaskolski, Stanley V.: *See—*
Linehan, John H.; and Jaskolski, Stanley V., 3,793,652.
Jeagtnes, Karl O., to Westinghouse Electric Corporation. Spool valve. 3,794,292, Cl. 251-31.000.
Jelusic, Fedor, to Escher Wyss Limited. Multi-stage pump-turbine. 3,794,456, Cl. 415-122.000.
Jenkintown Metal Products, Inc.: *See—*
Barrett, Edmund, 3,794,317.
Jenne, Frederick B., to Rockwell International Corporation. Substrate bias circuit. 3,794,862, Cl. 307-304.000.
Jet Line Products, Inc.: *See—*
Hamrick, James Carver, 3,793,732.
Jetzt, Fritz. Protective device for cutting machines. 3,793,784, Cl. 51-269.000.
Johansson, Kurt Eilert. *See—*
Malmoren, Per Ake, and Johansson, Kurt Eilert, 3,794,130.
Johns-Manville Corporation: *See—*
Williams, Frank Thomas, 3,794,364.
Johnson & Johnson: *See—*
Harmon, Carlyle, 3,794,557.
Johnson, Carl N.: *See—*
Larsen, Odd; and Johnson, Carl N., 3,794,949.
Johnson, Donald W., to Snyder Manufacturing Company Inc. Animal anesthesia machine. 3,794,027, Cl. 128-188.000.
Johnson, George. Worm rod. 3,793,770, Cl. 47-1.300.
Johnson, Matthey & Co., Limited: *See—*
Wilkinson, Geoffrey, 3,794,671.
Johnson, Norman Allen. Variable pitch propeller. 3,794,441, Cl. 416-152.000.
Johnson, Preston. Centrifugal expulsion and retraction apparatus with tethered object. 3,794,323, Cl. 273-97.00r.
Johnson, Sidney D.: *See—*
Frankeny, Richard F.; and Johnson, Sidney D., 3,794,831.

Johnson, Winston O., to Lockheed Aircraft Corporation. Method and apparatus forming plural focused images with a common lens system. 3,794,409, Cl. 350-194.000.

Johnston, Mack S. Dynamite detonator assembly. 3,793,954, Cl. 102-28.00r.

Johnston, Robert F., to Bell & Howell Company. Sensing fiducial markings from motion picture film. 3,794,416, Cl. 352-92.000.

Jones, Charles Elmer, Jr.: *See—*
Gagen, Paul Francis; and Jones, Charles Elmer, Jr., 3,794,128

Jones, Earl D.: *See—*
Madalozzo, David D.; Koons, Charles E.; McGuire, Michael E., and Jones, Earl D., 3,793,819

Jones, Herbert G. *See—*
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Jones, John Leslie, Sr. Door reductant body waste pad. 3,794,034, Cl. 128-290.00r.

Jones, Otho. Cleaning apparatus. 3,794,053, Cl. 134-141.000.

Jones, Peter Ronald Wright, to Multiscreen Corporation Limited. Rolling loop transport mechanism. 3,794,415, Cl. 352-184.000.

Jones, Ralph W. Connector. 3,793,858, Cl. 70-457.000.

Jones, Russell H.; Parker, Earl R., and Zackay, Victory F., to United States of America, Atomic Energy Commission. Spheroidization of grain boundary precipitates. 3,794,532, Cl. 148-142.000.

Jordan, Harold O. W.: *See—*
Hahn, Alan S.; and Jordan, Harold O. W., 3,794,756.

Josephson, Emanuel M., to Irving, Seidman. Devices and the art of prevention of disturbances in the tectonics of the earth's crust. 3,793,839, Cl. 61-35.000

Joslyn Mfg. and Supply Co. *See—*
Jahnke, Earl M., 3,793,786

Juhasz, John E.: *See—*
Davis, Dennis J.; and Juhasz, John E., 3,794,389

Jullien-Davin, Jean, to Crouzet. Mould for injection moulding presses. 3,794,286, Cl. 249-67.000.

Jungermann, Eric, to Armours-Dial, Inc. Synergistic antiseptic compositions. 3,794,587, Cl. 252-107.000

Jungesjo, Harald N.: *See—*
Anderson, Marvin R.; and Jungesjo, Harald N., 3,793,866.

Junkunc Bros. American Lock Company. *See—*
Lippisch, Guillermo W., 3,793,856.

Jurkiewicz, Walter J., to Robertshaw Controls Company. Method and apparatus for sensing the presence of threads on a surface. 3,793,875, Cl. 73-37.500

Just, George E.: *See—*
Just, George E.; and Simonovitch, Chaim (said Simonovitch assor. to said), 3,794,664.

Just, George E.; and Simonovitch, Chaim, said Simonovitch assor. to said Just, George E. Bicyclo [3.1.0] hexane intermediates for producing prostaglandins F and F. 3,794,664, Cl. 260-348.00a.

Justrite Manufacturing Company, The. *See—*
Flider, Frank S., 3,794,235.

Kaas, Povl, to Svejsa A/S. Device for separating the lanes in a swimming pool for swimming race. 3,793,657, Cl. 9-8.00r.

Kabushiki Kaisha Karial Gakki Seisakusho Haniatsu-shi. *See—*
Obayashi, Noburaru, 3,794,747.

Kabushiki Kaisha Ricoh. *See—*
Ohta, Wasaburo, 3,795,011.

Kabushiki Kaisha Yakult Honsha. *See—*
Shirota, Minoru; Fukada, Tetsuo; Ogata, Mayumi; and Yamada, Hiromi, 3,794,499

Kadison, Gloria C. Adjustable waist band arrangement. 3,793,645, Cl. 2-221.000.

Kahling, Joachim. *See—*
Pieper, Helmut, Kruger, Gerd, Noll, Klaus-Reinhold, Keck, Johannes; and Kahling, Joachim, 3,794,645.

Kai, Tsunetoshi, Inoue, Mitsuhiro, Yoshida, Matuo; and Ueda, Jun-Ichi, to Asahi Kasei Kogyo Kabushiki Kaisha. Photosensitive compositions for relief structures. 3,794,494, Cl. 96-35.100.

Kaiser Aluminum & Chemical Corporation: *See—*
Kinghorn, Charles M., 3,793,871.

Kalashnikov, Petr Georgievich. *See—*
Barsukov, Vladimir Vasilievich; Burakov, Savely Leonidovich; Grebennikov, Vladimir Vissarionovich, Kalashnikov, Petr Georgievich; Krasnov, Miron Vasilievich; Kuperman, Alexandr Yankelevich, Mikotin, Evgeny Emelyanovich; Nikolaenko, Evgeny Gigorievich; Stepnov, Alexandr Nikolaevich; Tsarev, Georgy Grigorievich; Yarovinsky, Grigory Abramovich; and Yassky, Dolya Iosifovich, 3,794,106

Kalium Chemicals Limited: *See—*
Dirksen, Alvin J., 3,794,478.

Kalle Aktiengesellschaft: *See—*
Rohrig, Luto; Kilian, Gunter; and Muller, Herbert Ewald, 3,794,487.

Kamber, Bruno; and Rittel, Werner, to Ciba-Geigy Corporation. Process for the manufacture of peptides containing cystine. 3,794,633, Cl. 260-112.500.

Kamei, Kazumi: *See—*
Atsukawa, Masumi; Kamei, Kazumi; Furumoto, Toshihiko; and Tsuneyoshi, Nikushi, 3,794,714.

Kamolz, Gerd, to International Standard Electric Corporation. Cable connector with strain relief. 3,794,959, Cl. 339-103.00m.

Kaneko, Keiji, and Ishida, Hiroshi, to Fuji Photo Film Co., Ltd. Bug conveyor system with automatic edge pressing. 3,794,315, Cl. 269-56.000.

Kaneko, Tamaki; and Mizuno, Katsumi, to Ricoh Co., Ltd. Combination new master supply and used master receiving assembly. 3,793,950, Cl. 101-142.000.

Kaner, Gary M.: *See—*
Kemmerly, Richard C.; Kaner, Gary M.; and Merritt, Gary C., 3,794,774.

Kanfer, Herman. *See—*
Ziegler, Charles O., 3,793,977.

Kano, Ichiro; and Yamada, Yu, to Canon Kabushiki Kaisha. Projected image viewing device. 3,794,421, Cl. 355-45.000.

Kanou, Kimio: *See—*
Nishimura, Hideo; Kanou, Kimio; and Ishigaki, Tamotsu, 3,794,902.

Kapff, Staxt Frederick. *See—*
Cropper, Wendell P., Kapff, Staxt Frederick; and Jacobs, Robert B., 3,794,913.

Kaplan, Sam H., and Stachniak, Raymond M., to Zenith Radio Corporation. Interchangeable shadow mask. 3,794,873, Cl. 313-85.00s.

Karady, Sandor. *See—*
Sletzinger, Meyer, Karady, Sandor; and Ly, Manuel G., 3,794,681.

Karge, Joseph R.: *See—*
Palmer, Neil R., and Karge, Joseph R., 3,794,943.

Kariyone, Kazuo; and Yazawa, Hisatoyo, to Fujisawa Pharmaceutical Co., Ltd. Pyrrolo-benzodiazepinone compounds. 3,794,644, Cl. 260-239.370

Kartridg Pak Co., The. *See—*
Keating, Raymond J., Shuh, Lewis M., and Wells, Roy E., 3,793,688.

Kasabian, Jack: *See—*
Thackston, Clyde David; and Kasabian, Jack, 3,794,335.

Kasper, Andreas; and Dietze, Wolfgang, to Siemens Aktiengesellschaft. Apparatus for the production of closed end tubes of semiconductor material. 3,793,984, Cl. 118-48.000.

Kastning, Ernst-Guenther: *See—*
Bronstert, Klaus, Kastning, Ernst-Guenther; Kurze, Joachim, Ladenberger, Volker; and Stein, Dieter, 3,794,697

Kastning, Marie-Louise Hermine. *See—*
Bronstert, Klaus, Kastning, Ernst-Guenther; Kurze, Joachim, Ladenberger, Volker, and Stein, Dieter, 3,794,697.

Kasuga, Akira. *See—*
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Kasuya, Hisashi. *See—*
Imamura, Kennosuke; Nabekawa, Shukichi; Otsubo, Itaru, and Kasuya, Hisashi, 3,794,702.

Katakura, Kageyoshi, to Hitachi, Ltd. Ultrasonic imaging device. 3,794,964, Cl. 340-1.00r.

Kato, Kiroshi. *See—*
Akashi, Goro; Fujiyama, Masaaki; Kasuga, Akira; Yamada, Yasuyuki; Suzuki, Osamu; Nakamura, Matsuaki; Sega, Kenji; and Kato, Kiroshi, 3,794,519.

Kato, Yoshiaki. *See—*
Kobayashi, Kengo, and Kato, Yoshiaki, 3,794,900.

Kawaguchi, Toyohiro; and Mizutani, Isao, to Toyo Contact Lens Co., Ltd. Apparatus for grinding inner and outer curved surfaces of a contact lens block simultaneously. 3,793,774, Cl. 51-117.000.

Kawai, Shoji, to Momoi Fishing Net Manufacturing Co., Ltd. Fishing net. 3,793,822, Cl. 57-140.0by.

Kawai, Yoshihiko, and Ihida, Mutsumi, to Nippon-Kokan Kabushiki Kaisha. Method for quick quantitative analysis of the content of metallic aluminium in a batch of molten metals. 3,794,569, Cl. 204-1.00t.

Kay, Walter: *See—*
Kay, Walter; and Poelvoorde, Raymond M., 3,793,756.

Kay, Walter; and Poelvoorde, Raymond M., to Kay, Walter. Combination litter container and display device. 3,793,756, Cl. 40-306.000.

Kaye, Gordon E. Battery assembly. 3,794,525, Cl. 136-108.000.

Keating, Raymond J.; Shuh, Lewis M.; and Wells, Roy E., to Kartridg Pak Co., The. Apparatus for hermetically sealing a package. 3,793,688, Cl. 29-33.500.

Keck, Johannes: *See—*
Pieper, Helmut; Kruger, Gerd, Noll, Klaus-Reinhold, Keck, Johannes; and Kahling, Joachim, 3,794,645.

Kehr, William D.: *See—*
Cole, Thomas R., III; Kehr, William D.; and Wiitala, James R., 3,793,705.

Keith, James M., to Marcona Corporation. Apparatus and method for anchoring submerged conduit. 3,793,845, Cl. 61-72.100.

Kelley Manufacturing Company: *See—*
Whitesides, Jack C., 3,794,123.

Kellner, Irving, to Lee, Raymond, Organization, Inc., The. Disposable apron. 3,793,644, Cl. 2-49.000.

Kellwood Company: *See—*
Matthews, Robert M.; and Petty, Albert W., 3,793,649.

Kemmerly, Richard C.; Kaner, Gary M.; and Merritt, Gary C., to Courtesy Communications Corporation. Telephone audio program system. 3,794,774, Cl. 179-81.00r.

Kemmetmueller, Roland, to American Waagner-Biro Company, Inc. Apparatus for drying coal. 3,793,743, Cl. 34-57.00a.

Kendall Company, The: *See—*

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Kendall Company, The, mesne. *See—*
Patel, Bhupendra C., 3,794,223.

Kennametal Inc.: *See—*
McKenry, Robert J., 3,793,960.

Kennedy, Eugene F., to Continental Oil Company. Anionic surfactant slurry containing dihexyl ether as viscosity reducer and method of providing said slurry. 3,794,601, Cl. 252-355.000.

Kennedy, John Frederick: *See—*
Barker, Sidney Alan, Kennedy, John Frederick; and Epton, John, 3,794,563.

Kennedy, Peter D., to United States of America, Navy. Automatic memory test and correction system. 3,794,818, Cl. 235-153.0am.

Keown, Robert William; and Nyce, Jack Leland, to Du Pont de Nemours, E. I., and Company. Aliphatic liquid-peptizable chlorinated butadiene polymer blends. 3,794,634, Cl. 260-33.60a

Kesling, Peter C.: *See—*
Begg, Percy R., and Kesling, Peter C., 3,793,730.

Khasin, Kim Moiseevich: *See—*
Medovar, Boris Izrailevich; Alferov, Jury Fedorovich, Schupak, Grigory Bentsionovich, Lanevsky, Valery Evgenievich, Dykan, Vitaly Grigorievich; Berezovsky, Mikhail Elevich; Baglai, Vitaly Mikhailovich; Shuruev, Lev Andreevich, Emelyanenko, July Georgievich Khasin, Kim Moiseevich; Lugovsky, Vladimir Ivanovich; Salmin, Valery Vasilievich, Marjuschenko, Vilen Fedorovich, Shaburov, Fedor Fedorovich, Tamozhnikov, Georgy Vasilievich; Popov, Viktor Andreevich, and Semin-Vadov, Gennady Mikhailovich, 3,794,104

Khatti, Ramkishan, to Allis-Chalmers Corporation. Electrolic control valve. 3,793,831, Cl. 60-471.000.

Kilcher, Fredy. Sliding and deformable bearing for insertion between building components. 3,794,390, Cl. 302-3.00r

Kilian, Gunter. *See—*
Rohrig, Luto; Kilian, Gunter, and Muller, Herbert Ewald, 3,794,487.

Kilner, Oliver H., to Texas Instruments, Incorporated. Overcurrent protection system and sensor used therewith. 3,794,950, Cl. 338-23.000.

Kim, Chang-Kyo, to United States of America, Atomic Energy Commission, mesne. Thermoelectric converter. 3,794,527, Cl. 136-208.000.

Kim, Yung K., to Dow Corning Corporation. Perfluoroalkyl silicon compounds containing sulfur. 3,794,672, Cl. 260-448.200.

Kimura, Hiroshiro; Yoshii, Seiji, and Tanaka, Masao, to Unitaka Ltd. Apparatus for purifying waste liquids. 3,794,171, Cl. 210-205.000.

Kimura, Ryuichi. *See—*
Yabuuchi, Takahiro, Fujimura, Hajime; Nakagawa, Akira, and Kimura, Ryuichi, 3,794,643.

Kimura, Shoji; and Ishida, Noboru, to Nippon Oil Co., Ltd. Lubricating oil composition. 3,794,586, Cl. 252-51.50r.

Kind, Guy, to Goodyear Tire & Rubber Company, The. Pneumatic tire. 3,794,097, Cl. 152-356.000.

Kinghorn, Charles M., to Kaiser Aluminum & Chemical Corporation. Blank holder device. 3,793,871, Cl. 72-349.000.

Kinoshita, Joseph, to Underwood Rivers Company. Carrier for portable heater. 3,793,643, Cl. 2-66.000.

Kirch, William: *See—*
Aboutboul, Henri A., Krekeler, Jerome H.; and Kirch, William, 3,794,712.
Aboutboul, Henri A., Krekeler, Jerome H., and Kirch, William, 3,794,713

Kirk, Harold L., to American Air Filter Company, Inc. Control arrangement for air ventilating and air heating systems having automatic reset and manual reset safety devices. 3,794,460, Cl. 431-37.000.

Kise, Mearl A.: *See—*
Ellis, Leonard C.; and Kise, Mearl A., 3,794,738.

Kishi, Heiji; Takigami, Katshuiko, and Shirasaka, Yoshihiro, to Tokyo Shibayra Electric Company, Ltd. Static type electric circuit breaker. 3,794,885, Cl. 317-33.0sc.

Kishimoto, Juji, to Canon Kabushiki Kaisha. System for driving liquid crystal display device. 3,794,990, Cl. 340-336.000

Kissell, Ronald E.: *See—*
Richards, David O., Beeson, Robert J.; and Kissell, Ronald E., 3,794,708.

Kitamura Valve Mfg. Co., Ltd.: *See—*
Soyana, Ryoji, 3,794,291.

Klasson, George A., to Air Products and Chemicals, Inc. Plasma arc welding torch. 3,794,806, Cl. 219-121.00p.

Klecak, George. Buzzing pyrotechnic device and method. 3,793,955, Cl. 102-31.000.

Kleiner, Eduard Karl, and Knell, Martin, to Ciba-Geigy Corporation. Perfluoroalkyl group containing a, B-unsaturated di- and triesters and polymers thereof. 3,794,623, Cl. 260-78.40e.

Kleinmann, Earl E., to Phillips Petroleum Company. Multilayered, insulated fluid tank and structure. 3,793,976, Cl. 114-74.00a

Klem, Adrianus; and Vlasbioem, Hugo, to N.V. Optische Industrie de Oude Delft. Device for determining the position coordinates of a light-impulse emitting point. 3,794,837, Cl. 250-366.000.

Klem, Charles D.; Riall, Robert T.; and Wallace, Richard A., to Sperry Rand Corporation. Precision reference pressure supply system. 3,794,070, Cl. 137-487.500.

Klinger AG: *See—*
Huber, Richard, and Wirz, Peter, 3,794,295.

Klomp, Edward D., to General Motors Corporation. Rotary machine apex seal. 3,794,450, Cl. 418-117.000.

Klopfenstein, Floren R.; and Duff, Gene J. Apparatus for alerting vehicle driver. 3,794,969, Cl. 340-52.00r

Kloss, Hans Joachim, to Montz, Julius, Firma, GmbH. Apertured column tray provided with bubble caps. 3,794,305, Cl. 261-114.00a

KLT Industries, Inc.: *See—*
Traeger, Robert S., 3,793,988.

Knabe, Frank-Torsten, to International Standard Electric Corporation. FM pulse discriminator for duplex FM system. 3,794,757, Cl. 178-58.000.

Knecht, Hillery G. Coupling apparatus for the mooring of boats or the like. 3,793,685, Cl. 24-230.0an.

Kneier, Joseph W., to Pendleton Tool Industries, Inc. Handle assembly. 3,793,674, Cl. 16-126.000.

Knell, Martin. *See—*
Kleiner, Eduard Karl; and Knell, Martin, 3,794,623.

Kneuer, Joseph George. *See—*
Cichetti, Michael Peter, Jr.; and Kneuer, Joseph George, 3,794,768.

Knickmeyer, Kenton Hugh. *See—*
Hoffman, Harry Swartzlander, Jr.; and Knickmeyer, Kenton Hugh, 3,794,906.

Knox, John A.; and Lasater, Reginald M., to Halliburton Company. Treatment of sandstone formations. 3,794,117, Cl. 166-307.000.

Knutsson, Ake. Countersink assembly. 3,794,438, Cl. 408-231.000

Kobayashi, Kengo; and Kato, Yoshiaki, to Fujitsu Limited and Fujitsu Fanuc Limited. Pulse interpolation systems. 3,794,900, Cl. 318-603.000.

Kobayashi, Tadaaki: *See—*
Watanabe, Kiyoshi; Saito, Kazuei, and Kobayashi, Tadaaki, 3,794,445.

Koble, Robert L., Jr.; and Goettl, John M. Pool-cleaning apparatus. 3,794,052, Cl. 134-167.00r.

Kock, Manfred; and Weiss, Hermann, to U.S. Philips Corporation. Method of and apparatus for optical multiple filtering. 3,794,406, Cl. 350-162.0sf.

Koda, Nobuo J.; and Ebert, John S., to Hughes Aircraft Company. Operationally rugged direct view storage tube. 3,794,871, Cl. 313-68.00r.

Kodama, Mikio, to Fuji Spinning Co., Ltd. Continuous yarn treating method. 3,793,816, Cl. 57-164.000.

Koeln-Stammheim, Heinrich, and Vollmann, Heinrich, to Bayer Aktiengesellschaft. Asymmetrically disubstituted isoindolines. 3,794,659, Cl. 260-305.000

Koeniger, Erich A. Device for inspecting eye-contacting surfaces of contact lenses. 3,794,429, Cl. 356-124.000.

Koh-I-Noor Rapidograph Inc.: *See—*
Kuparinen, Lasse, 3,794,214

Kohn, Gustave K. *See—*
Brown, Melancthon S., 3,794,733.

Kokx, Darrel Dayfield, and Smith, Grace Lechner, to Procter & Gamble Company, The. Catamenial wetness indicator. 3,794,024, Cl. 128-285.000.

Kollner, Paul; and Duczek, Ewald, to Linde Aktiengesellschaft. Apparatus for cryosurgery. 3,794,039, Cl. 128-303.100.

Komatsu, Akira; Akutagawa, Susumu; Sakaguchi, Toshiaki; and Someya, Taichi, to Takasago Perfumery Co., Ltd. Process for the production of squalene-type hydrocarbons. 3,794,692, Cl. 260-677.00r.

Komatsu, Ikuo I.: *See—*
Gallanis, George P.; and Komatsu, Ikuo I., 3,794,050.

Komiya, Takao; Tosaka, Umi; Ihara, Takashi; Matsuo, Takehiko, and Ohara, Katsunobu, to Canon Kabushiki Kaisha. Manufacture of electrophotographic plates. 3,794,539, Cl. 156-309.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Ishihara, Masao; Wada, Tsuneo; Yamaguchi, Hisashi; and Sugita, Sadao, 3,794,495.

Koons, Charles E.: *See—*
Madalozzo, David D.; Koons, Charles E.; McGuire, Michael E.; and Jones, Earl D., 3,793,819.

Korpel, Adrianus, to Zenith Radio Corporation. System for translating sound-borne character or pattern information into optical form. 3,794,975, Cl. 340-146.30f.

Korpi, Kenneth W.: *See—*
Converse, John O.; Korpi, Kenneth W.; and Diver, John R., 3,794,166.

Kosarev, Viktor Sergeevich. *See—*
Lidorenko, Nikolai Stepanovich; Landsman, Arkady Pavlovich, Strebkov, Dmitry Semenovich; Zaitseva, Aita Konstantinovna, Zadde, Vitaly Vinktorovich; and Kosarev, Viktor Sergeevich, 3,793,713.

Koshar, Robert J., to Minnesota Mining & Manufacturing Company. Substituted bis(fluoroalkylsulfonyl) halomethanes. 3,794,687, Cl. 260-607.00a.

Kotheimer, William C., to General Electric Company. Long-time delay circuit employing high-impedance level detector. 3,794,860, Cl. 307-272.000.

Koump, Valentin, to Urban Reclamation Technologies, Inc. High speed continuous casting system. 3,794,108, Cl. 164-283.00s.

Kouth, Herbert, to Golde, H. T., GmbH, Firma. Safety molding for electrically actuated sliding windows. 3,793,772, Cl. 49-28.000.

Kouwenwoven, Herman W.: *See—*

Dautzenberg, Frits M.; and Kouwenwoven, Herman W., 3,794,599.

Krabacher, Roy A., to General Electric Company. Mixer fabrication. 3,793,865, Cl. 72-197.000.

Krack, Carl E.: *See—*

Hall, Marchand B.; and Krack, Carl E., 3,794,086.

Krafft, Werner; and Kruck, Peter, to Agfa-Gevaert Aktiengesellschaft Process of applying a polymeric adhesive layer between a photochromic spiropyran compound containing layer and a polyester film support. 3,794,513, Cl. 117-34.000.

Kramer, Hyman Portable pedestal for lawn umbrellas, stanchions, and the like. 3,794,279, Cl. 248-44.000.

Kramer, Piet *See—*

Peretti, Enrico, and Kramer, Piet. 3,794,880

Kransco Manufacturing, Inc.: *See—*

Rosekrans, John N., Jr., 3,794,322.

Krapcho, John, and Bernstein, Jack, to Squibb, E. R., and Sons, Inc. Benzoxazepimes and benzothiazephines. 3,794,639, Cl. 260-238.30b

Krasnov, Miron Vasilievich: *See—*

Barsukov, Vladimir Vasilievich; Burakov, Savely Leonidovich, Grebennikov, Vladimir Vissarionovich; Kalashnikov, Petr Georgievich; Krasnov, Miron Vasilievich, Kuperman, Alexandr Yankelevich; Mikotin, Evgeny Emelyanovich, Nikolaenko, Evgeny Gigorievich, Stepnov, Alexandr Nikolaevich, Tsarev, Georgy Grigorievich; Yarovinsky, Grigory Abramovich, and Yassky, Dolya Iosifovich, 3,794,106.

Krekeler, Jerome H *See—*

Aboutboul, Henri A., Krekeler, Jerome H., and Kirch, William, 3,794,712

Aboutboul, Henri A., Krekeler, Jerome H., and Kirch, William, 3,794,713.

Kress, Thomas J., to Lilly, Eli, and Company. Oxidation of substituted methanes to the corresponding substituted methanols 3,794,642, Cl 260-251.00r

Kretschmer, Paul. Fastening arrangement for decorative wheel rings 3,794,385, Cl 301-37.00p

Kroes, Donald P.; and Lassen, Matthew S., to GTE Automatic Electric Laboratories, Incorporated Arrangement for integrating switching systems of different types. 3,794,772, Cl 179-16.0eg

Kroll, Fridthof Berg, and Lang, Berthold Gerhard Change-over unit for hoisting appliances. 3,794,185, Cl. 212-105.000.

Kronberg, Sven Gunnar. *See—*

Lindberg, Bernt Jabes, and Kronberg, Sven Gunnar, 3,794,654

Kruck, Peter *See—*

Krafft, Werner, and Kruck, Peter, 3,794,513

Kruger, Gerd. *See—*

Pieper, Helmut; Kruger, Gerd, Noll, Klaus-Reinhold, Keck, Johannes; and Kahling, Joachim, 3,794,645.

Krupansky, Carl S Waterproof flashlight. 3,794,825, Cl. 240-10.630.

Kuga, Mutsuo; Mashimo, Takeshi; and Tsuruta, Motohiro, to Unitika Kabushiki Kaisha. Polyamide films 3,794,547, Cl 161-1.000.

Kuhn, Patrick, to Clark Equipment Company. High dump bucket linkage. 3,794,191, Cl. 214-774.000.

Kuiper, Adrianus: *See—*

Coenen, Renier Gertruda Hubertus, Kuiper, Adrianus, and Collaris, Maria Antonius Alphonsus Andreas, 3,794,593.

Kunin, Robert, to Rohm & Haas Company Removal of poisons and drugs from blood. 3,794,584, Cl 210-24.000

Kunstle, Gerhard. *See—*

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La Hay, James F.: *See—*

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Ladenberger, Volker: *See—*

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Ladeur, Peter, to Shell Oil Company. Hydrocracking process 3,794,580, Cl. 208-110.000

Ladouceur, Harold A., to Multifastener Corporation. Method of forming a fastener 3,793,658, Cl 10-86.00f

Lahtvee, Toivo; Sethi, Bal Krishan, and Stark, William Hubbard, to Spring Chemicals Limited Process for reducing the amount of calcium contained in magnesium-base waste sulfite liquor by the use of an ammonium compound and additional calcium. 3,794,718, C 423-512.000.

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Brazee, Donald K., 3,794,461.

Lambertsen, Christian J Dual mode mixed gas breathing apparatus 3,794,021, Cl. 128-142 200

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Larralde, Edward; and Butler, Bryan V., to Vetoo Offshore Industries, Inc. Variable rate hydraulic-pneumatic weight control and compensating apparatus. 3,793,835, Cl. 60-413.000.

Larsen, Odd; and Johnson, Carl N., to Texas Instruments, Incorporated. Solid state motor starting apparatus 3,794,949, Cl 338-22.00r.

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Latinen, George A.; deceased (by Latien, May V.; administratrix), to Monsanto Company. Continuous polymerization apparatus. 3,794,471, Cl. 23-285.000.

Latone, Salvatore. Toner reclaiming system for electrostatic printing machines. 3,793,986, Cl. 118-637.000.

Latos, Edwin J., to Universal Oil Products Company. Working of nonferrous metals. 3,794,595, Cl. 252-42.100.

Lauchlan, Robert L.; and Snodgrass, Hugh E., to Uniroyal, Inc. Modified polyarylene polyether resin compositions 3,794,693, Cl. 260-823.000.

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Lawrence, Edwin F., Jr., to Lawrence Brothers, Inc Laterally adjustable door hanger. 3,793,673, Cl 16-97.000.

Lay, Clark M., Burkhardt, James H., Jr., and Davidson, Thomas W., to United States of America, Atomic Energy Commission. Continuous dynamic error monitoring device for numerically controlled machines. 3,794,814, Cl. 235-92.0mp.

Lazar, Melvin E.; and Lund, Daryl B., to United States of America, Agriculture. Deactivation of inner core enzymes by retained blanching heat. 3,794,500, Cl. 426-511.000.

Lazet, Frank J.; and Ahern, John R., to Philadelphia Quartz Company. Method of preparing a soluble silicate flakes or fibers. 3,794,475, Cl. 65-5.000.

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Lee, Thomas G. *See—*

Burnhard, Fort; Lee, Thomas G.; and Schuster, John R., 3,793,861.

Lee, Wei Hwa; Reimann, Hans P.; and Al-Mashat, Abdul J., to United States of America, Agriculture. Controlled fermentation and prevention of undesirable bacterial growth in food. 3,794,739, Cl. 426-8.000.

Leesona Corporation: *See—*

Tata, Raymond V., 3,794,160.

Lefebvre, Roger M., to Societe Francaise d'Agrafage Industrieel. Cutting device, particularly for positioning fasteners. 3,793,919, Cl. 83-583.000.

Lega, Berlando; and Cecchi, Giannangiolo, to Texfluid S.n.c. di G Cecchi e B. Continuously operating centrifugal hydroextractor provided with a mechanical timer. 3,794,177, Cl. 210-377.000.

Lehmann, Claude: *See—*

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Leiber, Heinz; and Wehde, Heinz, to Teldix G.m.b.H. Anti-skid brake control apparatus for sensing changes in the absolute rotational speed of a vehicle wheel 3,794,143, Cl. 188-181.00a

Leibowitz, Lawrence M.; and Baldauf, Richard K., to United States of America, Navy Feedback integrator with pedestal elimination. 3,794,994, Cl. 343-5.0dp.

Leibundgut, Hans Ulrich, to Saia AG. Electrical switch. 3,794,788, Cl. 200-67.00d.

Leifheit, Gunter; and Liebscher, Johannes, to Leifheit International Gunter Leifheit KG. Cleaning device. 3,793,664, Cl. 15-50.00c.

Leifheit International Gunter Leifheit KG: *See—*

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Leonard, Ronald J., to Baxter Laboratories, Inc. Mass transfer device having a wound tubular diffusion membrane. 3,794,468, Cl. 23-258.500.

Lerner, Irwin S., to Robins, A. H., Company, Incorporated. Intrauterine device saddle inserter. 3,794,025, Cl. 128-130.000.

Les Fabriques d'Assortiments Reunies: *See—*

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Lester Electrical of Nebraska, Inc.: *See—*

Long, Ronald E., 3,794,905.

Leufnberger, Pierre, to Creusot-Loire. Automotive truck for moving loads on a mobile platform. 3,793,959, Cl. 104-1.00r.

Levak, Michael Hand tool for installing points, condensers and other devices. 3,793,693, Cl. 29-203.00h.

Lever Brothers Company: *See—*

Boertje, Arie Leendert; and Philpott, Peter John, 3,794,745.

Hengtson, Eric G.; and Lanker, Lynn H., 3,794,709.

Newson, Brian George; and Tombs, Michael Peter, 3,794,735.

Lewis, Douglas L., to Sudbury Blasting Mates, Limited Blasting mat. 3,793,953, Cl. 102-22.000.

Lewis, G. B., Company: *See—*

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Leyland, Kenneth, to Rists Wires and Cables Limited. Electrical switches. 3,794,790, Cl. 200-86.00r.

Liddy, Clarence, to Mobil Oil Corporation Lubricants comprising a dimer or a trimer of a C[illegible] monocarboxylic acid. 3,794,585, Cl. 252-28.000.

Lidorenko, Nikolai Stepanovich; Landsman, Arkady Pavlovich, Strebkov, Dmitry Semenovich; Zaitseva, Aita Konstantinovna, Zadde, Vitaly Vinktorovich; and Kosarev, Viktor Sergeevich. Semiconductor photoelectric generator and method of its manufacture. 3,793,73, Cl. 29-583.000.

Liebig, Hans-Peter; and Umbach, Gunter, to Westinghouse Bremsen-und Apparatebau GmbH. Bellows-type dust boot with expandable sleeve. 3,793,892, Cl. 74-18.200.

Liebscher, Johannes: *See—*

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Lieffring, Gordon V., to Rolo-Wahs, Inc. Vehicle wash apparatus 3,793,663, Cl. 15-21.00d.

Lilly, Eli, and Company: *See—*

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Lindberg, Bernt Jabes; and Kronberg, Sven Gunnar, to Pharmacia Aktiebolag. Tetranicotinayl tris (hydroxymethyl)-aminometh. 3,794,654, Cl. 260-295.50a.

Lindberg, Ramon T.: *See—*

Fauth, Donald A.; and Lindberg, Ramon T., 3,794,574

Lindblom, Georg, and Olsson, Karl-Erik, to Allmanna Svenska Elektriska Aktiebolaget. Thyristor rectifier for high voltage. 3,794,908, Cl. 321-27.00r.

Linde Aktiengesellschaft: *See—*

Kollner, Paul; and Duczek, Ewald, 3,794,039

Lindsay, Eugene A. Convertible desk and conference table. 3,794,398, Cl. 312-241.000.

Linehan, John H.; and Jaskolski, Stanley V. Electrically non-conductive hospital bed. 3,793,652, Cl. 5-63.000.

Ling, Robin Sydney Mackwood; and Lee, Alan John Clive, to National Research Development Corporation. Prosthetic bone joint having a spacer device. 3,793,650, Cl. 3-1.000.

Linton, John C.; and Berry, Gordon W., to Fuse Indicator Corporation Blown fuse indicators. 3,794,948, Cl. 337-242.000.

Lipoma, Samuel P. Liquid treatment and extraction apparatus. 3,793,937, Cl. 99-355.000.

Lippisch, Guillermo W., to Junkunc Bros., American Lock Company. Padlock and key cylinder release. 3,793,856, Cl. 70-38.00a.

Litterio, James: *See—*

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Hammond, Philip D.; Litz, William E., Jr.; and Manemeit, Frederick E., 3,794,649.

Lively, David H.; Shah, Ramesh M.; and Whitney, John G., to Lilly, Eli, and Company. Process for the production of anticapsin, 3,794,564, Cl. 195-80.00r.

Livingston and Doughty, Limited: *See—*

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Lloyd, Milton H., to United States of America, Atomic Energy Commission. Solvent extraction process for producing low-nitrate and large-crystal-size PuO_2 sols. 3,794,715, Cl. 423-251.000.

LML Engineering & Manufacturing Corp.: *See—*

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Lochner, Herbert, to Cikalon-Vliesstoffwerk G.m.b.H. Varicolored ornamentally designed needled non-woven fabrics. 3,794,553, Cl. 161-

Lynker, Friedrich Wilhelm. *See—*

Markworth, Manfred; Lynker, Friedrich Wilhelm; and Rosen-

Margetts, Hugh Grenville, to Girling Limited. Vehicle brake adjuster 3,794,145, Cl. 188-79.50p.

The. High-permeability Ni-Fe-Ta alloy for magnetic recording-reproducing heads. 3,794,530, Cl 148-31.550.

Lochner, Herbert, to Cikalon-Vliesstoffwerk G.m.b.H. Varicolored ornamentally designed needled non-woven fabrics. 3,794,553, Cl 161-148.000.

Locke, Oscar Verlon. Adjustably mounted camper step assembly. 3,794,345, Cl. 280-163.000.

Lockhart, Bill E., and Scholl, Solomon P Handle for thermos bottle. 3,794,370, Cl. 294-31.200.

Lockheed Aircraft Corporation: *See—*

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Lockheed Missiles & Space Company, Inc.: *See—*

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Lockwood, George H. Adjustable sprinkler valve. 3,794,249, Cl. 239-539.000.

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Loed Corporation. *See—*

Snyder, Roderick C., 3,793,752.

Loewenthal, Horst, to Schweizerische Industrie-Gesellschaft. Dosaging device for liquids and paste-like substances. 3,794,222, Cl. 222-207.000.

Lofquist, Robert Alden; Saunders, Peter Reginald; and Weedon, Gene Clyde, to Allied Chemical Corporation. Alkoxylated aliphatic polyethylenimines to inhibit ozone fading of dyed polyamides. 3,794,464, Cl. 8-165.000.

Logan, Warner C., to Ajax Manufacturing Company, The. Forging press feed mechanism. 3,793,872, Cl. 72-422.000.

Lohmann, Adolf W.: *See—*

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Long, Raymond E.; and Boles, Ralph C , Jr Super heated vapor driven vehicle. 3,794,801, Cl. 219-10.550.

Long, Ronald E., to Lester Electrical of Nebraska, Inc. Battery charger control. 3,794,905, Cl. 320-20.000

Loomba, Yogendra S., to Allied Chemical Corporation. Cap assembly 3,794,211, Cl 220-89.00a.

Lopez, Enrique; Spidle, Robert D , and Beazley, Aubrey Glenn, to Farah Manufacturing Company, Inc. Fabric turnover device 3,794,153, Cl. 198-270.000.

Love, Samuel L., and Swain, Paul E., to Butler Manufacturing Company Frame construction with yieldable knee brace connection 3,793,790, Cl 52-393 000.

Loving, John M Soil conditioning process. 3,794,479, Cl. 71-9.000.

Low, John L., III. *See—*

Archer, Bill; and Low, John L., III, 3,793,794.

Lowenhaupt, Edward Harris, III, Edmunds, Edward, Jr., and Eliasen, Richard Dean, to S.E.C. Corporation Reduction of nickel contamination by zinc in α-hydroxy oxime extract. 3,794,719, Cl 423-139.000.

Lucas Aerospace Limited *See—*

Brennan, David John; and Williams, Loraine Leonard, 3,794,887.

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Lucas, Joseph, (Electrical) Limited. *See—*

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Tromans, Keith, 3,794,795

Lucas, Joseph, (Industries) Limited. *See—*

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Ludington, Robert L.; and Holloway, Robert M. Empty-load braking apparatus 3,794,146, Cl. 188-195.000.

Luft, Robert G , and Halvorson, Leroy G., to International Harvester Company. Electro pneumatic shift control 3,793,908, Cl. 74-870.000.

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Luther, Harald Johan, to Misomex Aktiebolag. Method for preparing printing forms and the like for continuous patterns 3,794,486, Cl. 96-37.000.

Luthi, Oscar, to Improved Machinery Inc. Rotary drum filtering apparatus and unitary drainage sectors therefor. 3,794,178, Cl. 210-404.000.

Ly, Manuel G.: *See—*

Sletzinger, Meyer; Karady, Sandor; and Ly, Manuel G., 3,794,681.

Lyczko, Felix J.: *See—*

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Mac-Fab Products, Inc.: *See—*

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Macaluso, Russell A.; and Michalski, Raymond J., to Nalco Chemical Company. Method for preventing the freezing together of coal particles. 3,794,472, Cl. 44-6.000.

Machmer, James Andrew, to International Business Machines Corporation. High speed printing system with heated roll fuser 3,794,417, Cl. 355-3.000.

Madalozzo, David D ; Koons, Charles E., McGuire, Michael E.; and Jones, Earl D., to Anaconda Company, The. Quist strander 3,793,819, Cl. 57-58.520

Magne, Frank C.: *See—*

Mod, Robert R.; Magne, Frank C.; and Skau, Evald L., 3,794,640.

Mahoney, Thomas P.: *See—*

Greuzerd, Charles F.; and Henkin, Louis Lawrence, 3,794,779

Maida, Osamu, to Nippon Kogaku K.K. Exposure meter having means for preventing erroneous metering. 3,794,430, Cl 356-226.000.

Maier, Roland, and Sauter, Robert, to Boehringer Ingelheim GmbH Pharmaceutical compositions containing certain 3-nitro-furyl-4-azolidinylidene-azolones-5-and method of use. 3,794,725, Cl. 424-270.000.

Maikish, Charles R , and Wiant, Herman R., to General Dynamics Corporation. Method of reshaping metal matrix composite material. 3,793,700, Cl. 29-419.000.

Mains, Harold Eugene, O'Brien, William Leo; Oehlschlaeger, H. Fred, Sharkey, Hubert Joseph; and Vatl, Robert Elwood, Jr., to Emery Industries, Inc. Copolyester fiber compositions having improved flame retardant properties. 3,794,617, Cl. 260-47.00c

Majeske, John Drexel Hill. Implements for holding and turning comestibles. 3,794,368, Cl 294-5.000

Makino, Katsuo; Yoshikawa, Akira; and Nagashima, Toshio, to Xerox Corporation. Imaging system. 3,794,418, Cl 355-3.000

Mako, John. *See—*

Barcomb, James G., and Mako, John, 3,794,903.

Malin, Jack, to Security Instruments, Inc Electrical terminal for conductive foil 3,794,953, Cl 339-17.00c

Malkiel, Arick S Floating breasting platform 3,793,843, Cl 61-46 000

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Mallett, Paul H , and Pipes, Calvin, said Pipes assor to said Mallett, Paul H. Timing system for timing a series of events 3,794,918, Cl. 324-186.000

Malmoren, Per Ake, and Johansson, Kurt Eilert, to Ake Malmgrens Mekaniska Vekstad AB Device for weighing of vehicle loads 3,794,130, Cl 177-137.000

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Malthy, Peter John, Malpass, Alan, and Ellis, Kenneth Harold, 3,794,276.

Maltby, Peter John, Malpass, Alan; and Ellis, Kenneth Harold, to Lucas Aerospace Limited Electro-hydraulic actuating systems for aircraft control surfaces. 3,794,276, Cl. 244-78 000.

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Peretti, Enrico, and Kramer, Piet, to U.S. Philips Corporation. Electric incandescent lamp for serial connection, provided with a short-circuit mechanism acting as a fuse at the same time. 3,794,880, Cl. 315-47.000.

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Perkins, Gerard T., to Parker-Hannifin Corporation. Filter with condition indicator. 3,794,168, Cl. 210-90.000.

Perreault, Jules, to Bomrardier Limited. Lubrication system for variable speed drive pulley. 3,794,142, Cl. 184-6.500.

Perrella, Guido, to DBM Industries Limited. Apparatus for treating a surface. 3,793,779, Cl. 51-5.000.

Perry, Elijah Robert, and Samm, Ralph W., to I-T-E Imperial Corporation. Power transmission system for connecting floating power plant to stationary conductors. 3,794,849, Cl. 307-147.000.

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Peterson, Donald J., to Procter & Gamble Company, The. Preparation of organotin compounds. 3,794,670, Cl. 260-429.700.

Peterson, Edwin R. Reverse motion alarm. 3,793,982, Cl. 116-60.000.

Peterson, Soren Eskel. Potato cutting machine. 3,794,161, Cl. 209-106.000.

Petri, Nello J. Collator and web feed control means for the same. 3,794,232, Cl. 226-50.000.

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Posso, Pierre Ludovic Andre; deceased (by Pierre, Patrick, heir). Reel for use with flexible strips. 3,794,258, Cl. 242-71.800.

Postema, Gerrit B.: *See—*

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Preston, Frank S., to United Aircraft Corporation. Semiconductive encoder. 3,794,892, Cl. 317-235.00r.

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Price, Richard. Sand blast apparatus. 3,793,778, Cl. 51-12.000.

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Procter & Gamble Company, The: *See—*

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Kokx, Darrel Dayfield; and Smith, Grace Lechner, 3,794,024.

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Pryslak, Nicholas E., to United States of America, Atomic Energy Commission. Thermoelectric generator. 3,794,526, Cl. 136-205.000.

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Puretic, Mario J. Fish loading method. 3,793,760, Cl. 43-4.500.

Pursley, Verna Lee. Foot covering. 3,793,748, Cl. 36-9.00r.

Raal, Johan D., to Canadian Patents and Development Limited. Vapour-liquid equilibrium still. 3,794,566, Cl. 202-160.000.

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Raidel, John E. Vehicle air suspension assembly. 3,794,344, Cl. 280-124.00f.

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Meek, James M.; Ravilious, Clarence F.; and Heinard, Whilden G., 3,795,004.

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Rhee, Dong Woo, to GTE Sylvania Incorporated. Non-saturating oscillator and modulator circuit. 3,794,934, Cl. 332-16.00t.

Rhodes, Herbert M., to Oil Mop, Inc. Method and apparatus for separating oil from an oil water mixture. 3,794,583, Cl. 210-23.000.

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Ridders, Johannes Antonius Maria; Van Der Wolf, Rein Willemse, and Mollet, Adrianus Josephus Theresia, to U.S. Philips Corporation. Method of manufacturing an electric discharge tube or an electric lamp. 3,794,402, Cl. 316-14.000.

Ridders, Johannes Antonius Maria; Van Der Wolf, Rein Willemse; and Mollet, Adrianus Josephus Theresia. Apparatus for introducing a substance into a discharge tube or electric lamp. 3,794,403, Cl. 316-30.000.

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Riesbeck, Laverne J., and Blackwell, Willis A., to Midwestern Industries, Inc. Motion control for a material separator. 3,794,165, Cl. 209-325.000.

Riester, William C.; and Graczyk, Bronislaus S., to Trico Products Corporation. Windshield washer assembly. 3,793,670, Cl. 15-250.040.

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Riley, John Terence. Pneumatic amplifiers. 3,794,058, Cl. 137-82.000.

Ring, Howard D., to Xerox Corporation. Writing apparatus and method of manufacture. 3,795,010, Cl. 346-74.

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Robbins, Kenneth W., and Robbins, Gerald F., to Sperry Rand Corporation. Stable base-band superregenerative selective receiver. 3,794,996, Cl. 343-7.00a.

Roberts, Helm. Combination bathtub and water and space heating unit. 3,793,654, Cl. 4-179.000.

Roberts, John T., and Wing, Ralph L., to Grace, W. R., & Co. Method of packaging items in bags. 3,793,797, Cl. 53-29.000.

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Rode, John E., to Temper Corporation. Coiled load element. 3,794,311, Cl. 267-158.000.

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Rogers, Crosby U. Domestic appliance for pets. 3,793,987, Cl. 119-1.000.

Rohm & Haas Company: *See—*
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Rohr, Franz. Fuel sphere pile reactor. 3,794,560, Cl. 176-81.000.

Rohrbach, Roger Phillip; and Rajnoch, Miroslav, to Research Corporation. Fruit harvester. 3,793,814, Cl. 56-1.000.

Rohrer, Dennis L. Snow conditioning machine. 3,794,122, Cl. 172-66.000.

Rohrig, Luto; Kilian, Gunter; and Muller, Herbert Ewald, to Kalle Aktiengesellschaft. Process for developing diazotype photoprints with ammonia gas. 3,794,487, Cl. 96-49.000.

Rohwedder, Richard O. Printing equipment. 3,793,949, Cl. 101-375.000.

Rolls-Royce (1971) Limited: *See—*
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Rose, Henry J.: *See—*
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Rosenkranz, Wilhelm: *See—*
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Rosenwald, Gary W., to Cities Service Oil Company. Cell for collecting and mixing fluids. 3,793,886, Cl. 73-421.00r.

Rosewald, Gary W., to Cities Service Oil Company. Cell for collecting and mixing fluids. 3,793,888, Cl. 73-421.00r.

Rossi, Eugene F., to Allis-Chalmers Corporation. Process for delivering fuel and air to a rotary reduction kiln. 3,794,483, Cl. 75-91.000.

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Rothrock, Larry R., to Union Carbide Corporation. Method and apparatus for standardizing optically pumped laser materials. 3,794,431, Cl. 356-256.000.

Round, Byron Joseph; and Aholins, Eizens, to Combustion Engineering, Inc. Expansion plate. 3,793,991, Cl. 122-6.00a.

Roush, Gale S.; and Fraser, Hugh B., to Phillips Petroleum Company. Tray. 3,794,208, Cl. 220-66.000.

Rowe, Denton C.: *See—*
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Royeton, John W. Storage hanging rack. 3,794,182, Cl. 211-94.000.

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Sadow, Peter T., Jr.; Baum, Gordon B., and Hurn, Richard L., to Black and Decker Manufacturing Company, The. Double insulated portable sander. 3,793,776, Cl. 51-170.0mt.

Safford, Franklin C. Apparatus for continuously quenching a heated metal plate. 3,793,867, Cl. 72-201.000.

Sahin, Kenan E. Communication method and network system. 3,794,983, Cl. 340-172.500.

Saia A.G. Fabrik elektrischer Apparate: *See—*
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Salvadorini, Rolando. System for the conveyance of passengers or goods using a continuous and fast belt. 3,793,961, Cl. 104-25.000.

Salzer, Thomas, and Martin, Charles T., Jr., to Raytheon Company. Monitoring and control means for evaluating the performance of vibratory-type devices. 3,794,236, Cl. 228-1.000.

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Santilli, Arthur A.; Scotese, Anthony C.; and Bell, Stanley C., to American Home Products Corporation. N,N-(9Oxoxanthene-2-7-diyl)bis [2-Di(lower) alkyl-aminoacetamides]. 3,794,663, Cl. 260-335.000.

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Scala, Luciano C., and Ciliberti, David F., to Westinghouse Electric Corporation. Electron beam masking method. 3,794,510, Cl. 117-8.000.

Scales, Richard W., to Eastman Kodak Company. Circuitry for eliminating false triggering by transient noise. 3,794,851, Cl. 307-43.000.

Scarlett, John A., and West, Eugene L., Jr., to Philco-Ford Corporation. Refrigeration apparatus. 3,793,847, Cl. 62-190.000.

Schafer, Augustin, to Zinser-Textilmaschinen Gesellschaft mit beschrankter Haftung. Method of and apparatus for regulating the speed of ring or spindle rails associated with textile machines. 3,793,821, Cl. 57-9.500.

Schatz, Martin L., 20% to Lee, Raymond, Organization, Inc., The. Bouncing toy rocket. 3,793,765, Cl. 46-74.00a.

Schatzel, Philip R.: *See—*
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Scheerer, Arthur M., to Curtiss-Wright Corporation. Rotary combustion engine with improved firing system. 3,793,996, Cl. 123-8.090.

Scheinpflug, Hans: *See—*
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Schindler, Herbert, and Winter, Gerhard, to Schoen & Cie Gesellschaft mit beschrankter Firma. Gripper device for a heel-lasting machine. 3,793,661, Cl. 12-14.500.

Schissler, Walter J., to Borg-Warner Corporation. Method of making flat clutch plates. 3,794,541, Cl. 156-228.000.

Schlaffer, Walter G., to Shell Oil Company. Catalyst preparation method. 3,794,598, Cl. 252-455.00z.

Schlage, Ernest L., to Schlage Lock Company. Removable cylinder for a lock. 3,793,857, Cl. 70-368.000.

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Schmidt, Robert L., to Riverside Laboratories, Inc. Laminating materials for low pressure laminates, method of making same, and laminates thereof. 3,794,552, Cl. 161-232.000.

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Schrank, George I., to Becton, Dickinson & Company. Sterile disposable scalpel. 3,793,726, Cl. 30-151.000.

Schroieler, Georg, to Chemiefac, GmbH, Firma. Foam sealing material with removable wrapping. 3,794,549, Cl. 161-43.000.

Schubel, Hans; Janssen, Paul, and Ratz, Heinz, to Dynamit Nobel Aktiengesellschaft. Optical antipodes D- and L-N-benzoyl-3,4-dihydroxy-phenylalanine and a process for their preparation. 3,794,655, Cl. 260-284.000.

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Schupack, Morris. Segmental precast concrete post-tensioned overpass bridges with cantilevered abutment. 3,794,433, Cl. 404-1.000.

Schupak, Grigory Bentsionovich: *See—*
Medovar, Boris Izrailevich; Alferov, Jury Fedorovich; Schupak, Grigory Bentsionovich; Lanevsky, Valery Evgenievich; Dykan, Vitaly Grigorievich; Berezovsky, Mikhail Elevich; Baglai, Vitaly Mikhailovich; Shuruev, Lev Andreevich; Emelyanenko, July Georgievich; Khasin, Kim Moiseevich; Lugovsky, Vladimir Ivanovich; Salmin, Valery Vasilievich; Marjuschenko, Vilen Fedorovich; Shaburov, Fedor Fedorovich; Tamozhnikov, Georgy Vasilievich; Popov, Viktor Andreevich, and Semin-Vadov, Gennady Mikhailovich, 3,794,104.

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Schwartz, Saul, to General Motors Corporation. Belt storage apparatus. 3,794,266, Cl. 242-107.400.

Schwartzman, Gilbert. Tube mounted applicator. 3,794,213, Cl. 222-107.000.

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- Scott, Walter P Method and apparatus for directing a radiation beam toward a tumor or the like. 3,794,840, Cl. 250-363.000.
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- Servos, Gerald H Automatic velocity component selector for electronysiagmographs 3,794,017, Cl. 128-2 10r
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- Sheckells, Amuel E., to International Steel Company. Collapsing mechanism for revolving door wings. 3,793,773, Cl 49-44.000.
- Sheffield, Wilbur L., to Dennison Manufacturing Company. Embosser having cooperating endless indicia carriers displaceable relative to one another. 3,793,946, Cl 101-18.000.
- Shelestak, John, to PPG Industries, Inc. Apparatus for marking flat glass. 3,793,983, Cl. 118-7.000.
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- Shellhause, Ronald L., to General Motors Corporation. Boot and control mechanism. 3,794,147, Cl. 192-3.00g.
- Sheran, Carl P , to Du Pont de Nemours, E. I., and Company Process for making a conductive-mix electrical initiator. 3,793,920, Cl 86-1.00r
- Sherman, Peter M , to Hydrodynamic Development Corporation Marine propulstion system. 3,793,980, Cl. 115-39.000
- Sherman, Roger M., to Lockwood Corporation. Valve construction for irrigation systems. 3,794,248, Cl. 239-533.000
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- Shinskey, Francis G., to Foxboro Company, The Adaptive non-linear control system. 3,794,817, Cl. 235-150 100.
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- Shockey, Donald A.; and Curran, Donald R , to Stanford Research Institute. Method for determining fracture toughness using small specimens. 3,793,874, Cl. 73-12 000
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- Sickafus, Edward N., to Ford Motor Company. Electron beam regulator. 3,794,878, Cl. 315-30.000.
- Siegel, Maxwell E.: *See—*
  - Rapoza, Edward J.; Siegel, Maxwell E.; Estelle, Weems E.; Petrucci, Pasquale M.; Linarducci, Joseph S.; Hamma, John; and Montgomery, John, 3,794,469
- Siegl, Herbert. *See—*
  - Spes, Hellmuth; Kunstle, Gerhard; and Siegl, Herbert, 3,794,686.
- Siegler, Lear, Inc.: *See—*
  - van Leer, Roger, 3,794,894.
- Siemens Aktiengesellschaft. *See—*
  - Berger, Helmut; and Hahn, Alfred, 3,794,313.
  - Huber, Josef; and Lenz, Ulrich, 3,794,973
  - Kasper, Andreas; and Dietze, Wolfgang, 3,793,984.
- Sievers, Robert E.: *See—*

  - Eisentraut, Kent J.; Tischer, Robert L.; and Sievers, Robert E., 3,794,473.
- Sights, Robert S. Amusement ride. 3,793,962, Cl. 104-61.000.
- Sigriz, Paul Non: *See—*
  - Hufnagl, Walter; and Sigriz, Paul Non, 3,793,869.
- Silva, Antonio V. System to compensate for roll eccentricity effects and/or to simulate a mill with variable stretch characteristics. 3,793,860, Cl. 72-11.000.
- Silverstone, Calvin Eric: *See—*
  - O'Neill, John Sidney; and Silverstone, Calvin Eric, 3,794,707.
- Simmonds, Robert C., Jr., to USM Corporation. Method and apparatus for mixing and dispensing. 3,794,301, Cl. 259-7.000.
- SimonOVermot, Andre; and Hofer, Eric M., to Les Fabriques d'Assortiments Reunies. Method for manufacturing dials for watches and dials for watches manufactured according to said method. 3,793,824, Cl. 58-91.000.
- Simonovitch, Chaim *See—*
  - Just, George E.; and Simonovitch, Chaim, 3,794,664
- Simpson, John I.: *See—*
  - Hogan, Elmer R.; and Simpson, John I., 3,793,675.
- Sims, Raymond E., to General Binding Corporation. Bookbinding and powered punch machine. 3,793,660, Cl. 11-1.0ac.
- Sinclair & Valentine Company, Inc.: *See—*
  - Hsia, Shwang, 3,794,594.
- Singer Company, The *See—*
  - Adams, Kenneth D , 3,793,969.
  - Darboven, Ernest F.; and Solomon, Leon R., 3,794,771
  - Mishcon, Lester; and Reagan, Donald W., 3,793,853.
  - O'Connor, Daniel G., 3,794,981.
- Singewald, Arno, to Wintershall Aktiengesellschaft. Process for flotation of large size mineral particles 3,794,159, Cl. 209-12.000.
- Sircom, Richard C., to Federal Pacific Electric Company. Ground fault interrupter with pulsed neutral-to-ground fault detector. 3,794,884, Cl. 317-18.00d.
- Sirk, Frank L.. *See—*
  - Tariabini, Joseph J., and Sirk, Frank L., 3,794,340.
- Sisk, Francis J.; and Watson, Robert F., Jr., to Westinghouse Electric Corporation Apparatus for dissociating collected solids from a filtration membrane 3,794,169, Cl. 210-140.000.
- Sisson, Kenneth O , to General Motors Corporation. Bulkhead mounting and sealing arrangement for improved roller drive mechanism. 3,793,855, Cl. 68-23.700
- Sittman, Brigitte, to Vereinigte Baubeschlagfabriken Gretsch & Co , GmbH. Front supporting mechanism of a ski safety binding. 3,794,337, Cl. 280-11.35t.
- Sittmann, Brigitte, to Vereinigte Baubeschlagfabriken Gretsch & Co., GmbH. Ski binding with ski brake. 3,794,336, Cl. 280-11.13b
- Skagerberg, William E., to General Mills Chemicals, Inc Process for forming borehold plugs 3,794,115, Cl. 166-294 000.
- Skamatsu, Takashi: *See—*
  - Hotta, Seiji, Yanagihara, Hideki; and Skamatsu, Takashi, 3,794,666
- Skau, Evald L. *See—*
  - Mod, Robert R., Magne, Frank C.; and Skau, Evald L., 3,794,640.
- Skingley, Brian Stanley; and Curtis, Anthony Thomas, to Marconi Company Limited, The. Diversity combining arrangements 3,794,926, Cl. 328-104 000
- Slaughter, Delia L., 20% to Lee, Raymond, Organization, Inc., The Foldable plant support 3,793,771, Cl 47-44 000.
- Slessor, John M., to Ford Motor Company Elastomeric energy absorber. 3,794,367, Cl. 293-88.000
- Sletzinger, Meyer; Karady, Sandor, and Ly, Manuel G., to Merck & Co., Inc. Process for the preparation of α hydrazino-β phenylproplonic acids. 3,794,681, Cl. 260-519.000.
- Smedley, Anderson B : *See—*
  - Smedley, Paul A.; and Smedley, Anderson B , 3,794,277.
- Smedley, Paul A.; and Smedley, Anderson B Earthquake resistant support. 3,794,277, Cl. 248-20 000
- Smidth, F. L., & Co.. *See—*
  - Sylvest, Karl Jens, 3,794,462
- Smith, A O., Inland, Inc.: *See—*
  - Fiser, James T., 3,794,359.
- Smith, Grace Lechner: *See—*
  - Kokx, Darrel Dayfield; and Smith, Grace Lechner, 3,794,024
- Smith, Horace L., Jr., to Smitherm Industries, Inc. Drying apparatus with moisture profile control. 3,793,741, Cl 34-48.000.
- Smith International, Inc.: *See—*
  - Pereau, Robert L., 3,794,126.
- Smith, John Cambridge, to Hydro-Mite, Limited Radial piston hydraulic machines 3,793,923, Cl. 91-488.000
- Smith, Lawrence Edward; and Neal, David Lynn, to RCA Corporation. Jitter immune transistorized vertical deflection circuit. 3,794,877, Cl. 315-27.0td.
- Smith, Lawrence M.: *See—*
  - Peters, Sherman M.; and Smith, Lawrence M., 3,794,848.
- Smith, Leary W.; and Bryant, Ellis H., Jr., to Audichron Company, The. Announcement apparatus having independently variable message segments. 3,794,778, Cl. 179-100.10c.
- Smith, Marion D.: *See—*
  - Williams, Russell C.; and Smith, Marion D., 3,793,906.
- Smith, Thomas B , to Ikor Incorporated. Apparatus for and method of sensing particulate matter 3,794,909, Cl. 324-32.000.
- Smith, Vigo N.; and Bowers, Richard C., to Shell Oil Company. Scanning infrared spectroscopic analyzer using rotating variable filter. 3,794,425, Cl. 356-51.000.
- Smith-Berger Manufacturing Corporation: *See—*
  - Hogan, Elmer R.; and Simpson, John I., 3,793,675.
- Smith-Inland, A.O., Inc.: *See—*
  - Fiser, James T.; Jackman, Robert M.; and James, Ray R., 3,794,081.
- Smith-Johannsen, Robert, to Raychem Corporation. Method of making self limiting heat elements. 3,793,716, Cl. 29-611.000.
- Smitherm Industries, Inc.: *See—*
  - Smith, Horace L., Jr., 3,793,741.
- Smithkline Corporation. *See—*
  - Pagano, Joseph F., 3,794,723.
- Smolka, Thomas Gordon, and Schweizer, Gottfried, to Gertsch AG, mesne. Safety release ski bindings. 3,794,338, Cl. 280-11.35t.
- Smolka, Thomas Gordon, to Gertsch AG, mesne. Releasable ski binding. 3,794,339, Cl. 280-11.35m.
- Snider, Richard J., to Atlantic Richfield Company Rotary wafer switch having rotor mounted, spiral arranged axial bridging contacts. 3,794,784, Cl. 200-11.00a
- Snodgrass, Hugh E.: *See—*
  - Lauchlan, Robert L.; and Snodgrass, Hugh E., 3,794,693.
- Snyder Manufacturing Company Inc.: *See—*
  - Johnson, Donald W., 3,794,027.
- Snyder, Roderick C., to Loed Corporation. Convertible snow plow with auxiliary ground support. 3,793,752, Cl. 37-42.00r.
- Snyderman, Joseph, to Eppler, John, Machine Works, Inc. Spiral tube winding machine. 3,793,929, Cl. 93-80.000.
- Sobel, Johannes; Nittel, Fritz; Pelz, Willibald, and Himmelmann, Wolfgang, to Agfa-Gevaert Aktiengesellschaft. Photographic layers which contain UV-absorbers. 3,794,493, Cl. 96-84 00r
- Societe Anonyme Automobiles Citroen. *See—*
  - Cadiou, Jean Georges, 3,794,847.
- Societe Anonyme des Usines Chausson. *See—*
  - Chartet, Andre, 3,793,701
- Societe Anonyme Poclain: *See—*
  - Martin, Louis E., 3,793,834
- Societe Creusot-Loire. *See—*
  - Bourbonnaud, Louis, 3,793,899
- Societe d'Applications Generales d'Electricite et de Mecanique. *See—*
  - Coupin, Claude; and Deval, Alain, 3,794,895
- Societe Francaise d'Agrafage Industrieel. *See—*
  - Lefebvre, Roger M., 3,793,919
- Societe Lannionnaise d'Electronique: *See—*
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- Societe Nationale des Poudres et Explosifs, mesne. *See—*
  - Bertrand, Yves H., Grebert, Robert E.; and Paquet, Jean P., 3,794,535.
- Solartron Electronic Group Limited, The: *See—*
  - Dorey, Howard Anthony, 3,794,930
- Solid State Technology Inc.. *See—*
  - Willis, John George, 3,794,852
- Solomon, Leon R.. *See—*
  - Darboven, Ernest F.; and Solomon, Leon R., 3,794,771.
- Someya, Taichi: *See—*
  - Komatsu, Akira; Akutagawa, Susumu, Sakaguchi, Toshiaki, and Someya, Taichi, 3,794,692.
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  - Muller, Robert, and Sommerer, Karl, 3,793,901.
- Songer, Robert D.; and Carter, Warren E., to Perfect Equipment Corporation. Wheel weight tool 3,793,656, Cl 7-8.000
- Sony Corporation. *See—*
  - Furuya, Shigeo, and Ouchi, Koji, 3,794,924
- Southgate, Al Paiso, and Battle, Jno R. Horse shoe. 3,794,119, Cl 168-18.000.
- Southwire Company: *See—*
  - Chia, Enrique C., and Schoerner, Roger J., 3,794,484.
- Sowell, Lyles Howard, to Du Pont de Nemours, E. I., and Company Textile core with a breakaway stringup slot 3,794,260, Cl 242-125.100.
- Soyana, Ryoji, to Kitamura Valve Mfg. Co , Ltd Ball valve apparatus 3,794,291, Cl. 251-171.000.
- Spano, Eduardo Victor; Sueiro, Otilia, Gonzalez, Oscar Pedro; and Campiani, Noem Mabel. Machine for continuously filling measured quantities of materials. 3,794,087, Cl. 141-131.000.
- Sparks, Meredith P Parking aid. 3,793,981, Cl. 116-28.00r
- Spatz Corporation. *See—*
  - Spatz, Walter B., 3,794,432.
- Spatz, Walter B., to Spatz Corporation Applicator for fluids. 3,794,432, Cl 401-262.000.
- Spears, Robert Wayne. *See—*
  - Todd, Theodore J.; and Spears, Robert Wayne, 3,794,073.
- Specht, Dieter, to Stein, Hans Von, OHG. Tubular roller 3,793,689, Cl. 29-116.00r.
- Sperry Rand Corporation: *See—*
  - Arpino, Ronald G., 3,794,828.
  - Arpino, Ronald G., 3,794,893.
  - Clevenger, James T.; and Stohler, John L., 3,794,195.
  - De Coene, Frans Jozef; and Hill, Edward Williman Rowland, 3,794,047.
  - Klem, Charles D.; Riall, Robert T.; and Wallace, Richard A., 3,794,070.
  - Muijs, Cornelis Gerardus, 3,794,046.

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Wagstaff, Robert A., and Waldrop, Thomas W., 3,793,792.

Spes, Hellmuth, Kunstle, Gerhard, and Siegl, Herbert, to Wacker-Chemie G.m.b.H. Process for continuously producing acetylacetone. 3,794,686, Cl 260-595.000.

Spetz, Mary Ann. Pre-constructed buttonhole and method of incorporating same in a garment. 3,793,647, Cl 2-266.000.

Spetz, William L., to Mosler Safe Company, The. Verification system. 3,794,813, Cl 235-61 70b.

Spidle, Robert D.: *See—*

Lopez, Enrique, Spidle, Robert D.; and Beazley, Aubrey Glenn, 3,794,153

Spindle, Harvey E.; Meyer, Jeffry R.; and Hess, Robert L., to Westinghouse Electric Corporation. Gas insulated switch with adjustable overcenter toggle actuator therefore 3,794,799, Cl 200-153.00g.

Sponseller, Trent A. *See—*

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Spray-A-Matic Products, Inc.: *See—*

Buck, Willard E., 3,794,216

Spring Chemicals Limited *See—*

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France, Jimmie J., Neubert, Fred J., Caldwell, Eugene L., Springer, Howard D., and Sutton, Max E., 3,794,383

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Wynberg, Nans, Emerson, David W., and Huurdeman, Wilhelmus F. J., 3,794,669

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Krapcho, John, and Bernstein, Jack, 3,794,639

Squiers, David J., to Texas Instruments, Incorporated. Off delay timer and PTC sensing circuit. 3,794,858, Cl 307-293 000.

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Stains, George S. Low volume insecticide aerosol generator 3,793,762, Cl. 43-124 000

Standard Oil Company *See—*

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Shockey, Donald A., and Curran, Donald R., 3,793,874

Stark, Donald Sutherland, to Nationale Research Development Corporation. Neutron generators 3,794,875, Cl 313-61 00s

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Staron, Philippe, to Compagnie Generale de Geophysique. Systems for the transmission of control and or measurement information 3,794,978, Cl 340-170.000.

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Chadha, Rajendra Nath, Crawford, James Edwin, and Getson, John Charles (said Chadha, said Lewis and said Getson, assors to), 3,794,694

Stearns, Stanley D. Bicycle carrier for vehicles 3,794,227, Cl 224-42 010.

Steggerda, Willem A., to Compagnie Francaise. Method for the recovery of isobutylene 3,794,690, Cl 260-677 00a

Steighner, John C., to Hockensmith Corporation, The. Cupola charging apparatus 3,794,189, Cl 214-18 0sc

Stein, Dieter *See—*

Bronstert, Klaus, Kastning, Ernst-Guenther, Kurze, Joachim, Ladenberger, Volker; and Stein, Dieter, 3,794,697

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D'Amico, Frank J.; and Stein, William H., Jr., 3,794,395.

Stender, Herbert. Target cups in ten pin configuration and projector having foul varying capability 3,794,325, Cl. 273-101 000.

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Stephens, William J., to Noxxe, Inc. Shuttle boxing method and apparatus 3,794,085, Cl. 139-185.000.

Stermann, Peter Henry, to BP Chemicals, Limited. Thermosetting compositions comprising high vinyl butadine polymer and a free radical initiator 3,794,638, Cl 260-94 70a.

Sterrett, John D.; and Baeslack, Alfred J., to Westinghouse Electric Corporation. Method and apparatus for controlling crown in a plate rolling mill. 3,793,859, Cl. 72-8.000.

Steuernagel, Walter, to Metallgesellschaft Aktiengesellschaft. Collector electrode for electrostatic precipitator 3,793,804, Cl 55-112.000.

Stewart, Joe K. Oil recovery apparatus. 3,794,175, Cl 210-242.000.

Stiles, Alvin B., to Du Pont de Nemours, E. I., and Company. Highly-active supported catalysts. 3,794,588, Cl. 252-462.000.

Stith, Joe D.: *See—*

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Stoll, Kurt, and Schwenk, Willy. Multiway valve 3,794,075, Cl. 137-625.660.

Stoltman, Donald D., to General Motors Corporation. Throttle pedal controlled throttle override system 3,794,004, Cl 123-97.00b.

Stout, James T., to Mead Corporation, The. Article carrier 3,794,210, Cl. 206-173 000.

Stout, Lilburn Grady, Butler, Robert F., and Morris, James Allen, to United States of America, Navy. Gun launched, digital, variable time fuxe 3,793,957, Cl 102-70 20r.

Stragier, Marcel G. Non-stop refuse collection system 3,794,197, Cl 214-302 000.

Strange, Lloyd K., to Mobil Oil Corporation. Combination in situ combustion displacement and steam stimulation of producing wells 3,794,113, Cl 166-245 000.

Stratton, Charlotte D. *See—*

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Strauss, Alan J. *See—*

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Strong, John D. Method of forming refractive optical elements for infrared radiation 3,794,704, Cl 264-1.000

Strunk, Larry L.: *See—*

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Stuber, Fred A. *See—*

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Stubits, Marcella C., to Anheuser-Busch Incorporated. Method of removing melted fats from the surface of an edible aqueous solution 3,794,743, Cl 426-417 000

Stump, Theodore M., and Williford, Jerry G., to Collins Radio Company. Frequency shift keyed demodulator 3,794,928, Cl 329-104 000

Sturm, Walter. Device for adapting the lengths of a pair of legs, such as those of a ladder, to unevenness of a supporting surface 3,794,141, Cl 182-202 000

Sudbury Blasting Mates, Limited *See—*

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Sueiro, Otilia *See—*

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Sugar, Joseph, to International Telephone and Telegraph Corporation. Junction shell 3,794,960, Cl. 339-107.000.

Sugi, Nagatoshi, Yoshikawa, Kiichiro, and Isokawa, Hideo, to Nippon Zeon Co. Ltd. Repeating elongation-fatigue testing machine of elastic materials under a constant load 3,793,880, Cl. 73-100.000

Sugita, Sadao: *See—*

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Sugiura, Shinzo, deceased (by Sugiura, Yoko, administratrix), and Morioka, Takeshi, to Hitachi, Ltd. Driving apparatus for motor vehicle, 3,794,133, Cl 180-65.00r.

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Sunbeam Corporation: *See—*

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Surving, Richard A. Model kit including temporary armature 3,793,768, Cl. 46-1.00r.

Sutton, Max E.: *See—*

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Sweet, Douglas W.: *See—*

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Swoager, Jon R., to Automation Equipment, Inc. Resiliently suspended railway vehicle 3,793,966, Cl 105-178 000

Sylvest, Karl Jens, to Smidth, F. L., & Co. Rotary kilns with uphill cooler tubes 3,794,462, Cl 432-80 000.

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Syverson, Martelle J., to Fountain Industries, Inc. Adjustable timing cam for hot drink dispensers 3,794,149, Cl 194-13.000

Szabo, Karoly, to Esso Research and Engineering Company. Control of insects with certain phosphorus-containing thiomorpholinones 3,794,730, Cl 424-200 000

Szentesi, Peter. Rotor for high speed centrifuges 3,794,241, Cl 233-26 000

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Tabuchi, Yukio, Yamazaki, Yuichi, and Sato, Yoshiharu, to Nippon Telegraph and Telephone Public Corporation and Anritsy Electric Company Ltd. Coin telephone sets 3,794,770, Cl 179-6 30r

Taconite Engineering & Manufacturing Co. *See—*

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Tajima, Tatsuya *See—*

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Takahashi, Kentaro, Masegawa, Minoru, and Nara, Kaoru, to Nippon Piston Ring Co., Ltd. Thermal and abrasion resistant sintered alloy 3,793,691, Cl 29-182 000.

Takahashi, Masaaki *See—*

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Takahashi, Masao *See—*

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Takamiya, Saburo, to Mitsubishi Denki Kabushiki Kaisha. High speed response phototransistor and method of making the same 3,794,891, Cl. 317-235 00r

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Tallman, Charles V., to United States of America, Navy. Method of making compliant suspension cable 3,793,823, Cl 57-163 000.

Taltavull, Ignacio. Non-luminance lighting panel 3,794,829, Cl 240-106.00r.

Tamny, Simon Z., Hastings, Donald R., and Wilhelm, Frederick R., to Nordson Corporation. Electrostatic spray apparatus and method 3,794,243, Cl. 239-3.000

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Medovar, Boris Izrailevich, Alferov, Jury Fedorovich, Schupak, Grigory Bentsionovich, Lanevsky, Valery Evgenievich; Dykan, Vitaly Grigorievich, Berezovsky, Mikhail Elevich, Baglai, Vitaly Mikhailovich, Shuruev, Lev Andreevich, Emelyanenko, July Georgievich. Khasin, Kim Moiseevich; Lugovsky, Vladimir Ivanovich; Salmin, Valery Vasilievich, Marjuschenko, Vilen Fedorovich; Shaburov, Fedor Fedorovich, Tamozhnikov, Georgy Vasilievich; Popov, Viktor Andreevich, and Semin-Vadov, Gennady Mikhailovich, 3,794,104

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  Lidorenko, Nikolai Stepanovich, Landsman, Arkady Pavlovich, Strebkov, Dmitry Semenovich, Zaitseva, Aita Konstantinovna, Zadde, Vitaly Vinktorovich, and Kosarev, Viktor Sergeevich, 3,793,713.
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Zens, John F., to General Motors Corporation. Occupant restraint system. 3,794,347, Cl 280-150.0ab.
Ziegler, Charles O., 25% to Kanfer, Herman. Vessel anchor. 3,793,977, Cl. 114-208.000.
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  Messinger, Werner; Zimmermann, Klaus; and Seiffert, Florian, 3,793,724.
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  Hinckfuss, Douglas Albert, 3,794,836.
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  Schafer, Augustin, 3,793,821.
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Zuckerman, Mathew M.; and Molof, Alan H., to Envirotech Corporation. wastewater treatment. 3,794,581, Cl. 210-9.000.
Zukerman, Yoram; Ben-Porath, Moshe; and Sabbah, Benjamin, to Elscint Ltd. Video-display-processor. 3,794,762, Cl. 178-6.800.
Zwarenstein, Salomon Carel. Frequency detection circuit. 3,794,853, Cl. 307-233.000.

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  Bruengger, Heinrich, and Boragine. Re. 27,933.
House, Randolph D., to United Aircraft Corp. Vacuum vapor deposition with control of elevation of metal melt. Re. 27,930, 2-26-74, Cl. 117—107.
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Von Strum, Ferdinand, and H. Kohlmuller, to Siemens Aktiengesellschaft. Device for producing gaseous reactants particularly hydrogen and oxygen for fuel cells. Re. 27,929, 2-26-74, Cl. 23—282.
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Yu, Edwin K. C., to RCA Corp. Gated flip-flop employing plural transistors and plural capacitors cooperating to minimize flip-flop recovery time. Re. 27,928, 2-26-74, Cl. 307—247.

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  Garrett, Curran L., and Mahoney. 3,491.
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Chrisler, Tanner S. Display case divider. 230,445, 2-26-74, Cl. D6—85.
Clark, Charles A. Combined escape apparatus and line-brake. 230,436, 2-26-74, Cl. D2—27.
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Holzman, James W., to Delbar Products, Inc. Rear view mirror vehicles. 230,477, 2-26-74, Cl. D12—187.
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Hutcheson, Claude H., and J. F. Zinni, to Xerox Corp. Document reproducing and sorting machine. 230,515, 2-26-74, Cl. D61—1.
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6	3,793,687
33.5	3,793,688
116R	3,793,689
157C	3,793,690
163.5F	3,793,692
182	3,793,691
201	3,793,697
203H	3,793,693
205R	3,793,694
211R	3,793,695
212P	3,793,696
256	3,793,718
401	3,793,698
408	3,793,719
415	3,793,699
419	3,793,700
421	3,793,701
426	3,793,702
463	3,793,703
470.1	3,793,704
473.1	3,793,705
559	3,793,706
563	3,793,707
568	3,793,708
571	3,793,721
577	3,793,710
	3,793,712
583	3,793,713
	3,793,714
588	3,793,709
592	3,793,715
595	3,793,711
610	3,793,717
611	3,793,716
626	3,793,720
CLASS 30	
6.1	3,793,722
41	3,793,724
45	3,793,723
63	3,793,725
151	3,793,726
383	3,793,727
CLASS 32	
6	3,793,728
14A	3,793,730
23	3,793,729
CLASS 33	
1PT	3,793,731
137R	3,793,732
166	3,793,733
180R	3,793,738
203.12	3,793,734
203.17	3,793,736
286	3,793,739
300	3,793,737
348	3,793,735
CLASS 34	
10	3,793,740
48	3,793,741
57A	3,793,743
57R	3,793,742
104	3,793,744
189	3,793,745
CLASS 36	
2 5AL	3,793,747
	3,793,749
2 5R	3,793,746
9R	3,793,748
59C	3,793,750
61	3,793,751
CLASS 37	
42R	3,793,752
CLASS 38	
77 6	3,793,753
141	3,793,754
CLASS 40	
102	3,793,758
132E	3,793,755
142	3,793,757
306	3,793,756
CLASS 42	
1K	3,793,759
CLASS 43	
4 5	3,793,760
26.1	3,793,761
124	3,793,762
129	3,793,763
CLASS 44	
6	3,794,472
63	3,794,473
CLASS 46	
1R	3,793,768
40	3,793,764
74A	3,793,765
189	3,793,767
232	3,793,766
243MV	3,793,769
CLASS 47	
1.3	3,793,770
44	3,793,771
CLASS 49	
28	3,793,772
44	3,793,773
CLASS 51	
5	3,793,779
12	3,793,778
	3,793,785
14	3,793,780
117	3,793,774
165 77	3,793,775
170MT	3,793,776
170PT	3,793,782
170TL	3,793,781
206.5	3,793,783
233	3,793,777
249	3,793,792
269	3,793,784
295	3,794,474
CLASS 52	
61	3,793,795
79	3,793,796
157	3,793,786
163	3,793,787
211	3,793,788
221	3,793,793
393	3,793,790
463	3,793,789
615	3,793,791
632	3,793,794
CLASS 53	
29	3,793,797
30	3,793,798
32	3,793,799
341	3,793,800
CLASS 55	
49	3,793,805
71	3,793,801
72	3,793,806
89	3,793,808
91	3,793,809
93	3,793,807
112	3,793,804
155	3,793,802
218	3,793,803
255	3,793,810
294	3,793,811
338	3,793,812
481	3,793,813
CLASS 56	
1	3,793,814
328TS	3,793,815
CLASS 57	
34HS	3,793,817
52	3,793,818
58.52	3,793,819
58.89	3,793,820
95	3,793,821
140BY	3,793,822
163	3,793,823
164	3,793,816
CLASS 58	
91	3,793,824
CLASS 60	
39 14R	3,793,825
	3,793,826
39 65	3,793,827
39.66	3,793,828
203	3,793,832
261	3,793,838
284	3,793,833
288	3,793,830
413	3,793,834
	3,793,835
471	3,793,831
521	3,793,836
527	3,793,837
547	3,793,829
CLASS 61	
35	3,793,839
36R	3,793,841
46	3,793,843
46.5	3,793,840
	3,793,842
63	3,793,844
72.1	3,793,845
CLASS 62	
6	3,793,846
190	3,793,847
315	3,793,861
402	3,793,848
CLASS 64	
13	3,793,849
CLASS 65	
5	3,794,475
116	3,794,476
158	3,794,477
CLASS 66	
50A	3,793,853
50R	3,793,850
152	3,793,852
185	3,793,851
CLASS 68	
23 7	3,793,854
	3,793,855
CLASS 70	
38A	3,793,856
368	3,793,857
457	3,793,858
CLASS 71	
1	3,794,478
9	3,794,479
122	3,794,480
CLASS 72	
4	3,793,862
8	3,793,859
11	3,793,860
84	3,793,863
88	3,793,866
136	3,793,864
197	3,793,865
201	3,793,867
226	3,793,868
236	3,793,869
255	3,793,870
318	3,793,873
349	3,793,871
422	3,793,872
CLASS 73	
12	3,793,874
37.5	3,793,875
46	3,793,876
49.3	3,793,877
88.5R	3,793,878
95	3,793,879
100	3,793,880
102	3,793,881
113	3,793,882
160	3,793,883
315	3,793,884
398C	3,793,885
421R	3,793,886
	3,793,888
421.5R	3,793,887
425.4R	3,793,889
490	3,793,890
538	3,793,891
CLASS 74	
18.2	3,793,892
22	3,793,893
50	3,793,902
55	3,793,894
63	3,793,895
89.15	3,793,896
199	3,793,897
335	3,793,898
397	3,793,899
413	3,793,900
473R	3,793,901
531	3,793,903
590	3,793,904
661	3,793,905
745	3,793,906
759	3,793,909
796	3,793,910
798	3,793,907
870	3,793,908
CLASS 75	
20F	3,794,481
62	3,794,482
91	3,794,483
147	3,794,484
CLASS 76	
107R	3,793,911
CLASS 81	
52.3	3,793,912
57.18	3,793,913
378	3,793,914
CLASS 83	
62	3,793,915
155	3,793,916
199	3,793,917
583	3,793,919
698	3,793,918
CLASS 84	
1.01	3,794,747
1.24	3,794,748
CLASS 86	
1R	3,793,920
CLASS 89	
33CA	3,793,921
180	3,793,922
CLASS 91	
487	3,793,924
488	3,793,923
CLASS 92	
13.1	3,793,925
CLASS 93	
1.1	3,793,928
33H	3,793,927
62	3,793,926
80	3,793,929
CLASS 96	
3	3,794,485
35.1	3,794,494
37	3,794,486
41	3,794,492
48R	3,794,491
49	3,794,487
50R	3,794,488
66R	3,794,489
76C	3,794,490
84R	3,794,493
87A	3,794,495
99	Re.27,933
114.1	3,794,496
115P	3,794,497
124	3,794,498
CLASS 98	
42	3,793,930
95	3,793,931
110	3,793,932
CLASS 99	
282	3,793,934
283	3,793,933
295	3,793,935
339	3,793,936
355	3,793,937
408	3,793,940
450.6	3,793,938
483	3,793,939
CLASS 100	
1	3,793,941
53	3,793,944
73	3,793,942
257	3,793,945
269R	3,793,943
CLASS 101	
18	3,793,946
93MN	3,793,947
111	3,793,951
132.5	3,793,948
142	3,793,950
157	3,793,952
375	3,793,949
CLASS 102	
22	3,793,953
28R	3,793,954
31	3,793,955
70.2P	3,793,958
70.2R	3,793,956
	3,793,957
CLASS 104	
1R	3,793,959
10	3,793,960
25	3,793,961
61	3,793,962
130	3,793,963
162	3,793,964
172S	3,793,965
CLASS 105	
178	3,793,966
CLASS 106	
15AF	3,794,501
52	3,794,502
87	3,794,504
90	3,794,506
119	3,794,505
288B	3,794,503
299	3,794,507
	3,794,508
CLASS 111	
7	3,793,967
CLASS 112	
121.29	3,793,968
235	3,793,969
CLASS 113	
1G	3,793,971
1H	3,793,970
113	3,793,972
CLASS 114	
39	3,793,973
43.5	3,793,974
65A	3,793,975
74A	3,793,976
208	3,793,977
221A	3,793,978
CLASS 115	
.5R	3,793,979
39	3,793,980
41HT	Re 27,932
CLASS 116	
28R	3,793,981
60	3,793,982
CLASS 117	
4	3,794,509
8	3,794,510
22	3,794,511
33 5R	3,794,512
34	3,794,513
46FS	3,794,514
107	Re.27,930
145	3,794,515
217	3,794,516
	3,794,517
227	3,794,518
230	3,794,520
235	3,794,519
CLASS 118	
7	3,793,983
48	3,793,984
637	3,793,985
	3,793,986
CLASS 119	
1	3,793,987
	3,793,988
	3,793,989
56R	3,793,990
CLASS 122	
6A	3,793,991
20B	3,793,992
33	3,793,993
52	3,793,994
235B	3,793,995
CLASS 123	
8.09	3,793,996
41.15	3,793,997
43R	3,793,998
44.05	3,794,001
90.11	3,794,002
90.67	3,793,999
97B	3,794,003
	3,794,004
119A	3,794,006
119R	3,794,005
122D	3,794,007
133	3,794,000
148DS	3,794,008
179F	3,794,009

196R	3,794,010
CLASS 124	
1	3,794,011
24R	3,794,012
CLASS 126	
40	3,794,013
110AA	3,794,014
360A	3,794,015
369	3,794,016
CLASS 127	
5	3,794,521
CLASS 128	
2 1R	3,794,017
58	3,794,018
68	3,794,023
77	3,794,019
79	3,794,020
130	3,794,025
142 2	3,794,021
145 8	3,794,026
188	3,794,027
202	3,794,030
214R	3,794,032
216	3,794,028
230	3,794,031
284	3,794,033
285	3,794,024
	3,794,029
287	3,794,038
290R	3,794,034
300	3,794,035
303 1	3,794,039
	3,794,040
348	3,794,041
349BV	3,794,043
349R	3,794,042
351	3,794,036
352	3,794,044
419P	3,794,045
422	3,794,022
597	3,794,037
CLASS 130	
271	3,794,046
	3,794,047
CLASS 131	
94	3,794,048
135	3,794,049
CLASS 132	
5	3,794,933
11A	3,794,050
CLASS 134	
1	3,794,522
3	3,794,523
31	3,794,524
46	3,794,051
141	3,794,053
167R	3,794,052
CLASS 135	
2	3,794,054
CLASS 136	
108	3,794,525
205	3,794,526
208	3,794,527
CLASS 137	
1	3,794,055
14	3,794,060
68	3,794,057
82	3,794,058
93	3,794,059
115	3,794,076
117	3,794,065
312	3,794,066
330	3,794,061
343	3,794,067
486	3,794,069
487 5	3,794,070
488	3,794,062
497	3,794,068
505 26	3,794,063
513 3	3,794,077
561A	3,794,056
599 2	3,794,071
604	3,794,072
608	3,794,073
615	3,794,064
625 4	3,794,074
625 66	3,794,075
CLASS 138	
30	3,794,078
103	3,794,079
121	3,794,080
141	3,794,081
CLASS 139	
54	3,794,083
55	3,794,082
185	3,794,085
369	3,794,084
CLASS 140	
93 2	3,794,086
CLASS 141	
131	3,794,087
237	3,794,088
CLASS 144	
1C	3,794,089
CLASS 148	
6 15R	3,794,529
12 7	3,794,528
31 55	3,794,530
142	3,794,532
159	3,794,531
175	3,794,533
CLASS 149	
2	3,794,534
3	3,794,535
CLASS 150	
5	3,794,090
52R	3,794,091
CLASS 151	
22	3,794,092
CLASS 152	
208	3,794,093
213	3,794,094
239	3,794,095
243	3,794,096
356	3,794,097
428	3,794,098
CLASS 156	
11	3,794,536
62 8	3,794,537
169	3,794,540
187	3,794,538
189	3,794,708
228	3,794,541
230	3,794,544
309	3,794,539
344	3,794,546
358	3,794,542
519	3,794,545
566	3,794,543
CLASS 159	
48R	3,794,099
CLASS 161	
1	3,794,547
43	3,794,549
58	3,794,551
89	3,794,548
109	3,794,554
147	3,794,550
148	3,794,553
185	3,794,555
206	3,794,556
232	3,794,552
CLASS 162	
157C	3,794,557
175	3,794,558
CLASS 164	
57	3,794,100
68	3,794,101
82	3,794,102
182	3,794,103
252	3,794,104
260	3,794,105
277	3,794,106
282	3,794,107
283S	3,794,108
CLASS 165	
1	3,794,111
8	3,794,109
90	3,794,118
164	3,794,110
CLASS 166	
64	3,794,112
245	3,794,113
249	3,794,114
259	3,794,116
294	3,794,115
307	3,794,117
CLASS 168	
18	3,794,119
24	3,794,120
CLASS 172	
21	3,794,121
66	3,794,122
624	3,794,123
CLASS 173	
104	3,794,124
CLASS 174	
28	3,794,749
36	3,794,750
40R	3,794,751
115	3,794,752
CLASS 175	
6	3,794,125
58	3,794,127
73	3,794,128
173	3,794,126
391	3,794,129
CLASS 176	
81	3,794,560
87	3,794,559
CLASS 177	
137	3,794,130
CLASS 178	
5 4CD	3,794,755
	3,794,756
5 4P	3,794,754
6 8	3,794,758
	3,794,762
7 2	3,794,761
58	3,794,757
68	3,794,759
69 STV	3,794,760
CLASS 179	
1GO	3,794,781
1SA	3,794,753
1SW	3,794,765
1VC	3,794,763
1P	3,794,766
2A	3,794,764
6R	3,794,767
6 3R	3,794,770
15BA	3,794,768
15BE	3,794,771
15BS	3,794,773
16EA	3,794,775
16FC	3,794,772
18GF	3,794,777
81R	3,794,774
99	3,794,776
100 1C	3,794,778
100 4S1	3,794,780
156R	3,794,779
170R	3,794,782
175 2C	3,794,783
CLASS 180	
5R	3,794,131
13	3,794,132
65R	3,794,133
79 2B	3,794,134
82	3,794,135
91	3,794,136
CLASS 181	
33F	3,794,137
48	3,794,138
56	3,794,139
CLASS 182	
92	3,794,140
202	3,794,141
CLASS 184	
6 5	3,794,142
CLASS 188	
4R	3,794,144
79 5P	3,794,145
181A	3,794,143
195	3,794,146
CLASS 192	
3G	3,794,147
CLASS 194	
4C	3,794,148
13	3,794,149
CLASS 195	
29R	3,794,561
63	3,794,563
66R	3,794,562
80R	3,794,564
CLASS 197	
55	3,794,150
CLASS 198	
19	3,794,151
20	3,794,152
34	3,794,154
131	3,794,157
136	3,794,156
194	3,794,155
233	3,794,158
270	3,794,153
CLASS 200	
11A	3,794,784
44	3,794,796
61 27	3,794,785
61 45R	3,794,786
61.53	3,794,794
61 89	3,794,787
61 93	3,794,791
67D	3,794,788
83Z	3,794,789
86R	3,794,790
153SC	3,794,792
153G	3,794,798
	3,794,799
293	3,794,795
308	3,794,800
CLASS 202	
100	3,794,565
160	3,794,566
CLASS 203	
8	3,794,567
67	3,794,568
CLASS 204	
1T	3,794,569
51	3,794,570
56R	3,794,572
94	3,794,571
159	3,794,573
159 11	3,794,576
181	3,794,593
195P	3,794,575
197	3,794,574
219	3,794,577
305	3,794,578
CLASS 206	
45 19	3,794,793
173	3,794,210
CLASS 208	
40	3,794,579
110	3,794,580
CLASS 209	
12	3,794,159
90	3,794,160
106	3,794,161
172 5	3,794,162
223	3,794,163
243	3,794,164
301	3,794,166
325	3,794,165
CLASS 210	
9	3,794,581
11	3,794,582
23	3,794,583
24	3,794,584
84	3,794,167
90	3,794,168
136	3,794,170
140	3,794,169
205	3,794,171
242	3,794,175
	3,794,176
257	3,794,172
	3,794,173
321	3,794,174
377	3,794,177
404	3,794,178
409	3,794,179
445	3,794,180
CLASS 211	
65	3,794,181
94	3,794,182
176	3,794,183
CLASS 212	
46A	3,794,184
105	3,794,185
CLASS 214	
1H	3,794,186
14	3,794,187
17CA	3,794,190
17DA	3,794,188
18SC	3,794,189
75G	3,794,193
75H	3,794,192
83 36	3,794,194
145	3,794,195
302	3,794,197
390	3,794,196
519	3,794,198
763	3,794,199
774	3,794,191
CLASS 215	
9	3,794,200
	3,794,201
22	3,794,202
CLASS 219	
10 55	3,794,797
	3,794,801
10 79	3,794,802
61	3,794,803
121EM	3,794,807
121P	3,794,806
137	3,794,804
152	3,794,805
203	3,794,809
366	3,794,810
497	3,794,808
501	3,794,811
CLASS 220	
5A	3,794,203
24 5	3,794,204
27	3,794,206
29	3,794,205
36	3,794,207
66	3,794,208
72	3,794,209
89A	3,794,211
CLASS 221	
212	3,794,212
310	3,794,214
CLASS 222	
1	3,794,215
	3,794,218
70	3,794,216
107	3,794,213
108	3,794,219
153	3,794,220
174	3,794,217
190	3,794,221
207	3,794,222
218	3,794,234
471	3,794,235
529	3,794,223
CLASS 223	
37	3,794,224
88	3,794,225
CLASS 224	
5R	3,794,226
42 01	3,794,227
CLASS 225	
93	3,794,228
CLASS 226	
3	3,794,230
25	3,794,229
36	3,794,231
50	3,794,232
183	3,794,233
CLASS 227	
111	3,794,237
CLASS 228	
1	3,794,236
CLASS 229	
44CB	3,794,238
52B	3,794,239
CLASS 232	
35	3,794,240
CLASS 233	
26	3,794,241
CLASS 235	
61 11F	3,794,812
61 7B	3,794,813
92MP	3,794,814
92WT	3,794,815
150 1	3,794,817
152	3,794,816
153AM	3,794,818
	3,794,819
	3,794,821
164	3,794,820
CLASS 237	
59	3,794,242
CLASS 239	
3	3,794,243
206	3,794,245
265 33	3,794,246
265 41	3,794,244
327	3,794,247
533	3,794,248
539	3,794,249
CLASS 240	
1 3	3,794,822
4 2	3,794,828
10 1	3,794,823
10 6R	3,794,824
10 63	3,794,825
84	3,794,826
106R	3,794,829
147	3,794,830
CLASS 241	
21	3,794,250
65	3,794,251
CLASS 242	
38	3,794,252
55	3,794,268
55 16	3,794,254
55 2	3,794,253
56A	3,794,256
56R	3,794,255
67 1R	3,794,257
68 3	3,794,265
71 2	3,794,259
71 8	3,794,258
84 2R	3,794,264
107 4	3,794,266
125 91	3,794,260
127	3,794,263
131	3,794,261
156 2	3,794,267
194	3,794,269
CLASS 244	
1SD	3,794,270
3 15	3,794,271
3 17	3,794,272
7A	3,794,273
41	3,794,275
78	3,794,276
130	3,794,274
CLASS 246	
33R	3,794,832
63C	3,794,833
187B	3,794,834
CLASS 248	
20	3,794,277
27	3,794,278
44	3,794,279
99	3,794,280
188	3,794,281
244	3,794,282
276	3,794,283
311	3,794,285
441	3,794,284
CLASS 249	
67	3,794,286
106	3,794,262
	3,794,287
CLASS 250	
199	3,794,841
211J	3,794,835
315	3,794,842
324	3,794,839
351	3,794,838
359	3,794,843
363	3,794,836
	3,794,840
366	3,794,837
370	3,794,844
CLASS 251	
31	3,794,292
62	3,794,288
130	3,794,293
145	3,794,294
149 7	3,794,289
171	3,794,291
189	3,794,295
309	3,794,297
347	3,794,290
CLASS 252	
28	3,794,585
42 1	3,794,595
51 5R	3,794,586
62 1	3,794,594
89	3,794,605
107	3,794,587
110	3,794,589
170	3,794,590
178	3,794,591
180	3,794,596
182	3,794,592
301 4S	3,794,597
355	3,794,601
389R	3,794,603
412	3,794,602
431C	3,794,604
455Z	3,794,598
	3,794,600
462	3,794,588
466PT	3,794,599
CLASS 254	
8B	3,794,296
185R	3,794,298
CLASS 259	
4	3,794,299
	3,794,300
7	3,794,301
102	Re 27,931
CLASS 260	
4R	3,794,606
18N	3,794,631
29 6RW	3,794,608
29 6TA	3,794,607
30 4FP	3,794,609
31 6	3,794,610
33 6AQ	3,794,611
33 6UA	3,794,613
33 6A	3,794,634
37SB	3,794,612
45 7P	3,794,615
	3,794,616
45 75B	3,794,614
45 8A	3,794,629
47CB	3,794,618
47LP	3,794,619
47C	3,794,617
75NH	3,794,621
781	3,794,624
	3,794,625
78 4F	3,794,623
78.5BB	3,794,622
78 5T	3,794,626
88 2R	3,794,627
94 7A	3,794,638
94 9B	3,794,628
112R	3,794,630
112 5	3,794,632
	3,794,633
210E	3,794,635
239B	3,794,645
239 3A	3,794,647
239 3B	3,794,639
239 3T	3,794,644
	3,794,646
247.1	3,794,636
247 7H	3,794,640
249 8	3,794,641
251R	3,794,642
256 4F	3,794,637
260	3,794,643
268BC	3,794,651
270R	3,794,648
	3,794,649
284	3,794,655

286A	3,794,650
290R	3,794,656
293 69	3,794,652
294 8G	3,794,657
295 5A	3,794,654
296R	3,794,653
302H	3,794,658
305	3,794,659
306.7	3,794,660
306 8D	3,794,665
308R	3,794,661
335	3,794,663
343 3	3,794,666
345 9	3,794,662
348A	3,794,664
396R	3,794,667
	3,794,668
397 2	3,794,669
429R	3,794,671
429 7	3,794,670
448 2B	3,794,673
448 2N	3,794,672
465B	3,794,674
468D	3,794,675
471C	3,794,676
477	3,794,677
514H	3,794,680
514L	3,794,678
519	3,794,681
544Y	3,794,679
561N	3,794,682
562B	3,794,683
565	3,794,685
566AF	3,794,684
566A	3,794,620
595	3,794,686
607A	3,794,687
614F	3,794,688
618E	3,794,689
677A	3,794,690
677R	3,794,692
683 43	3,794,691
823	3,794,693
827	3,794,694
863	3,794,695
876R	3,794,697
897A	3,794,696
897R	3,794,698
938	3,794,699
973	3,794,701
986	3,794,700
	3,794,702
990	3,794,703
CLASS 261	
36A	3,794,302
61	3,794,303
111	3,794,304
114A	3,794,305
116	3,794,306
CLASS 264	
1	3,794,704
37	3,794,705
45	3,794,706
56	3,794,707
323	3,794,709
CLASS 266	
32	3,794,307
41	3,794,308
CLASS 267	
34	3,794,309
139	3,794,310
156	3,794,312
158	3,794,311
CLASS 269	
21	3,794,314
56	3,794,315
322	3,794,313
CLASS 272	
60	3,794,316
86	3,794,317
CLASS 273	
1B	3,794,318
22	3,794,319
29A	3,794,320
54R	3,794,321
95R	3,794,322
97R	3,794,323
101	3,794,324
	3,794,325
131KC	3,794,326
148R	3,794,327
167E	3,794,328
191A	3,794,329
CLASS 274	
1G	3,794,330
10R	3,794,332
10S	3,794,331
CLASS 277	
180	3,794,333
235A	3,794,334
CLASS 279	
23	3,794,335
CLASS 280	
11 13B	3,794,336
11 35M	3,794,339
11 35T	3,794,337
	3,794,338
15	3,794,340
21R	3,794,341
106	3,794,348
106 5R	3,794,342
124A	3,794,343
124F	3,794,344
150AB	3,794,346
	3,794,347
	3,794,349
163	3,794,345
179R	3,794,350
204	3,794,351
209	3,794,352
291	3,794,353
478R	3,794,354
482	3,794,355
513	3,794,356
515	3,794,357
CLASS 285	
47	3,794,358
55	3,794,359
256	3,794,360
336	3,794,361
340	3,794,362
363	3,794,363
390	3,794,364
CLASS 290	
38R	3,794,845
CLASS 292	
62	3,794,365
251 5	3,794,366
CLASS 293	
88	3,794,367
CLASS 294	
5	3,794,368
31 2	3,794,370
90	3,794,371
96	3,794,369
CLASS 296	
1S	3,794,372
28A	3,794,373
	3,794,374
36	3,794,375
137R	3,794,376
146	3,794,377
CLASS 297	
219	3,794,378
250	3,794,379
379	3,794,380
430	3,794,381
457	3,794,382
CLASS 298	
1SG	3,794,383
CLASS 301	
5R	3,794,384
37P	3,794,385
CLASS 302	
10	3,794,387
58	3,794,388
60	3,794,386
CLASS 303	
21P	3,794,389
CLASS 307	
43	3,794,851
87	3,794,846
117	3,794,847
129	3,794,848
137	3,794,850
147	3,794,849
205	3,794,856
233	3,794,853
238	3,794,854
	3,794,859
247	Re 27,928
272	3,794,860
290	3,794,855
293	3,794,857
	3,794,858
297	3,794,861
304	3,794,862
309	3,794,864
310	3,794,863
CLASS 308	
3R	3,794,390
10	3,794,391
36 1	3,794,392
207	3,794,393
CLASS 310	
8 2	3,794,866
9 1	3,794,867
36	3,794,868
82	3,794,865
90	3,794,869
180	3,794,870
CLASS 312	
19	3,794,394
209	3,794,395
214	3,794,396
231	3,794,397
241	3,794,398
244	3,794,399
269	3,794,400
323	3,794,401
CLASS 313	
60	3,794,872
61S	3,794,875
68R	3,794,871
85S	3,794,873
102	3,794,874
CLASS 315	
17	3,794,876
27TD	3,794,877
30	3,794,878
39 71	3,794,879
47	3,794,880
84 6	3,794,881
100	3,794,882
CLASS 316	
14	3,794,402
30	3,794,403
CLASS 317	
18D	3,794,884
27R	3,794,889
33SC	3,794,885
100	3,794,886
101DH	3,794,887
150	3,794,888
234R	3,794,883
235R	3,794,890
	3,794,891
	3,794,892
CLASS 318	
138	3,794,893
184	3,794,894
254	3,794,895
270	3,794,897
380	3,794,898
471	3,794,896
602	3,794,899
603	3,794,900
627	3,794,901
630	3,794,902
696	3,794,903
CLASS 320	
20	3,794,905
25	3,794,904
CLASS 321	
2	3,794,906
16	3,794,907
27R	3,794,908
CLASS 324	
30R	3,794,910
32	3,794,909
61OS	3,794,911
62	3,794,912
65P	3,794,913
95	3,794,914
99D	3,794,916
111	3,794,915
142	3,794,917
186	3,794,918
CLASS 325	
38B	3,794,919
42	3,794,921
53	3,794,922
105	3,794,920
185	3,794,852
308	3,794,923
439	3,794,924
470	3,794,925
CLASS 328	
104	3,794,926
233	3,794,927
CLASS 329	
104	3,794,928
CLASS 330	
4 3	3,794,929
10	3,794,930
29	3,794,931
CLASS 331	
110	3,794,932
CLASS 332	
16T	3,794,934
CLASS 333	
17	3,794,941
28R	3,794,935
	3,794,936
30R	3,794,937
70R	3,794,938
72	3,794,939
77	3,794,940
CLASS 334	
15	3,794,942
CLASS 335	
69	3,794,943
154	3,794,944
188	3,794,945
211	3,794,946
CLASS 337	
32	3,794,947
242	3,794,948
CLASS 338	
22R	3,794,949
23	3,794,950
CLASS 339	
4	3,794,951
5P	3,794,952
17C	3,794,953
19	3,794,954
21R	3,794,955
34	3,794,956
49R	3,794,957
94R	3,794,958
103M	3,794,959
107	3,794,960
108R	3,794,961
126R	3,794,962
242	3,794,963
CLASS 340	
1R	3,794,964
7PC	3,794,965
15 5BH	3,794,976
15 5TC	3,794,827
31R	3,794,966
52R	3,794,968
	3,794,969
53	3,794,971
62	3,794,972
63	3,794,967
146 1BE	3,794,973
146.2	3,794,974
146.3F	3,794,975
163	3,794,977
170	3,794,978
171R	3,794,985
172 5	3,794,831
	3,794,970
	3,794,979
	3,794,980
	3,794,981
	3,794,982
	3,794,983
	3,794,984
173CH	3,794,986
174TF	3,794,988
280	3,794,989
336	3,794,990
409	3,794,991
CLASS 343	
5DP	3,794,993
	3,794,994
	3,794,995
5PD	3,794,992
7ED	3,794,997
7A	3,794,996
16M	3,794,998
17 7	3,794,999
113R	3,795,000
119	3,795,001
754	3,795,002
	3,795,003
761	3,795,004
895	3,795,005
CLASS 346	
7	3,795,006
32	3,795,007
33R	3,795,008
74ES	3,795,010
74M	3,795,009
74P	3,795,011
76R	3,795,012
136	3,795,013
CLASS 350	
3 5	3,794,412
81	3,794,404
160LC	3,794,405
160R	3,794,413
162SF	3,794,406
162R	3,794,408
171	3,794,407
194	3,794,409
285	3,794,410
302	3,794,411
CLASS 351	
161	3,794,414
CLASS 352	
92	3,794,416
184	3,794,415
CLASS 355	
3	3,794,417
	3,794,418
45	3,794,421
67	3,794,422
75	3,794,423
78	3,794,420
91	3,794,419
CLASS 356	
30	3,794,424
51	3,794,425
98	3,794,426
120	3,794,427
124	3,794,429
156	3,794,428
226	3,794,430
256	3,794,431
CLASS 360	
43	3,794,987
109	3,794,769
CLASS 401	
262	3,794,432
CLASS 404	
1	3,794,433
CLASS 408	
56	3,794,434
59	3,794,435
124	3,794,436
146	3,794,437
231	3,794,438
CLASS 415	
54	3,794,439
88	3,794,440
90	3,794,449
122	3,794,456
CLASS 416	
145	3,794,442
152	3,794,441
175	3,794,443
201	3,794,444
241	3,794,445
CLASS 417	
61	3,794,446
356	3,794,447
406	3,794,448
CLASS 418	
117	3,794,450
CLASS 423	
139	3,794,719
220	3,794,710
224	3,794,711
242	3,794,714
251	3,794,715
253	3,794,716
338	3,794,712
	3,794,713
512	3,794,718
515	3,794,738
594	3,794,720
598	3,794,717
CLASS 424	
78	3,794,736
120	3,794,721
147	3,794,722
200	3,794,723
	3,794,724
	3,794,730
249	3,794,726
270	3,794,725
	3,794,727
273	3,794,728
	3,794,737
283	3,794,732
300	3,794,733
330	3,794,734
337	3,794,729
CLASS 425	
4	3,794,451
15	3,794,452
28R	3,794,457
270	3,794,453
353	3,794,458
387B	3,794,454
403	3,794,455
CLASS 426	
8	3,794,739
69	3,794,740
72	3,794,499
156	3,794,741
276	3,794,731
302	3,794,742
364	3,794,735
417	3,794,743
424	3,794,744
439	3,794,745
479	3,794,746
511	3,794,500
CLASS 431	
5	3,794,459
37	3,794,460
CLASS 432	
29	3,794,461
80	3,794,462

CLASSIFICATION OF DESIGNS

D02—	27	230,436
	234	230,437
		230,438
		230,439
	279	230,440
	381	230,441
D03—	32E	230,442
D06—	30	230,443
	37	230,444
	85	230,445
	186	230,446
	193	230,447
	194	230,448
		230,449
		230,450
	195	230,451
	196	230,452
	198	230,453
	201	230,454
		230,455
	212	230,456
D07—	9	230,457
	95	230,459
		230,460
	97	230,461
	187	230,462
	203	230,458
	207	230,463
D08—	44	230,464
		230,465
	45	230,466
	55	230,467
	107	230,468
	274	230,469
D09—	158	230,470
	182	230,471
	258	230,472
D12—	10	230,473
	71	230,474
	101	230,475
	187	230,476
		230,477
D18—	2A	230,478
D22—	26	230,479
D23—	19	230,480
	32	230,481
	150	230,482
D26—	5C	230,484
	R	230,483
		230,485
	13R	230,486
	14A	230,487
	B	230,488
	G	230,489

CLASSIFICATION OF DESIGNS

D34—	2R	230,490	D40—	5	230,498		H	230,506		T	230,512	D83—	S	230,522		R	230,529
	3	230,491	D45—	16A	230,499	D56—	4B	230,507	D64—	11A	230,510		12A	230,523			230,530
	5CH	230,494	D48—	2	230,500		R	230,508		R	230,517	D85—	2H	230,524	D88—	4	230,531
	GT	230,492		32A	230,501			230,509	D69—	1	230,511			230,525	D90—	20R	230,532
	15A	230,496	D52—	4	230,502	D61—	1B	230,514	D71—	P	230,518	D87—	1B	230,526			230,533
	T	230,495	D54—	1	230,503		Q	230,513	D72—	A	230,519		D	230,527	D92—	15	230,534
D35—	3A	230,493		4	230,504			230,515	D74—		230,520			230,528	D95—	3A	230,535
	R	230,497	D55—	1C	230,505			230,516		C	230,521						

CLASSIFICATION OF PLANTS

P —	18	3,492	P —	54	3,493	P —		3,495	P —	68	3,498	P —	75	3,500	P. —	88	3,491
P —	34	3,496	P —		3,494	P. —	67	3,497	P. —	74	3,499						

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PATENTS

1	3,794,224		3,793,954		3,794,431		3,794,803		3,793,889		3,794,022
	3,794,740		3,793,974		3,794,432		3,794,866		3,793,962		3,794,050
4 :	3,793,906		3,793,975		3,794,482		3,795,013		3,793,980		3,794,061
	3,794,052		3,793,992		3,794,500	9	Re.27,930		3,793,981		3,794,067
	3,794,070		3,794,008		3,794,528		3,793,725		3,793,996		3,794,086
	3,794,178		3,794,013		3,794,551		3,793,809		3,794,011		3,794,092
	3,794,197		3,794,020		3,794,581		3,793,844		3,794,227		3,794,111
	3,794,216		3,794,023		3,794,598		3,793,903		3,794,244		3,794,131
	3,794,370		3,794,034		3,794,600		3,793,933		3,794,249		3,794,199
5	3,794,081		3,794,035		3,794,699		3,793,949		3,794,270		3,794,223
	3,794,359		3,794,042		3,794,710		3,793,973		3,794,284		3,794,235
6	3,793,643		3,794,051		3,794,724		3,793,987		3,794,365		3,794,239
	3,793,645		3,794,053		3,794,733		3,793,991		3,794,804		3,794,268
	3,793,659		3,794,057		3,794,739		3,794,019		3,794,818		3,794,282
	3,793,662		3,794,072		3,794,748		3,794,025		3,794,855		3,794,316
	3,793,672		3,794,073		3,794,765		3,794,212	13	3,793,771		3,794,333
	3,793,693		3,794,079		3,794,769		3,794,279		3,794,121		3,794,383
	3,793,696		3,794,116		3,794,779		3,794,326		3,794,123		3,794,393
	3,793,700		3,794,119		3,794,786		3,794,405		3,794,148		3,794,398
	3,793,716		3,794,125		3,794,798		3,794,433		3,794,157		3,794,414
	3,793,727		3,794,126		3,794,819		3,794,504		3,794,210		3,794,416
	3,793,729		3,794,127		3,794,825		3,794,511		3,794,261		3,794,436
	3,793,731		3,794,134		3,794,857		3,794,512		3,794,409		3,794,459
	3,793,738		3,794,172		3,794,861		3,794,537		3,794,484		3,794,468
	3,793,748		3,794,173		3,794,862		3,794,610		3,794,778		3,794,472
	3,793,751		3,794,181		3,794,871		3,794,626		3,794,952		3,794,478
	3,793,762		3,794,232		3,794,894		3,794,627		3,794,989		3,794,515
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	3,793,791		3,794,246		3,794,929		3,794,682		3,793,660		3,794,595
	3,793,807		3,794,247		3,794,931		3,794,726		3,793,673		3,794,662
	3,793,810		3,794,248		3,794,939		3,794,756		3,793,694		3,794,772
	3,793,815		3,794,265		3,794,940		3,794,780		3,793,711		3,794,830
	3,793,832		3,794,273		3,794,941		3,794,781		3,793,765		3,794,873
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